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Some Observations on the Hebrew Desiderative Construction – A Dependency-Based Account in Terms of Catenae[1]

Abstract

The Modern Hebrew (MH) desiderative construction must obey four conditions: 1. A subordinate clause headed by the clitic *še=* 'that' must be present. 2. The verb in the subordinate clause must be marked with future tense. 3. The grammatical properties genus, number, and person tend to be specified, i.e. if the future tense affix is underspecified, material tends to appear that aids specification, if contextual recovery is unavailable. 4. The units of form that make up the constructional meaning of the desiderative must qualify as a catena. A catena is a dependency-based unit of form, the parts of which are immediately continuous in the vertical dimension. The description of the individual parts of the desiderative must address trans-, pre-, and suffixes, and cliticization. Catena-based morphology is representational, monostratal, dependency-, construction-, and piece-based.

1. Purpose, means and claims

The main purpose of this paper is to analyze the Hebrew desiderative construction. This construction is linguistically interesting and challenging for a number of reasons. 1. It is a periphrastic construction, with fairly transparent compositionality. 2. It is transclausal, i.e. some parts of the construction reside in the main clause, and others in the subordinated clause. The complementizer is also part of the construction. 3. The construction consists of more than one word, but it does not qualify as a constituent. Rather the construction cuts into words. 4. Two theoretically

challenging phenomena are in play: transfixes, and clitics. These aspects are illustrated with the next example:[2]

(1) *hu*   *ro*t*se*   *še=*   *ʔani*   *ʔe-ft*or   *xid-ot.*
     3SG.M   want.SG   COMP-   1SG   FUT.1SG-solve.IRR   riddle-PL
     'He wants me to solve riddles.'

The boldface letters are the surface-based units that make up the desiderative construction. The boldface consonants, *r…t*s*…*, in the second word mark the construction root, a verb marked for volition.[3] The vowels *…o…e*, a transfix, are not part of the construction, because, for obvious reasons, the verb of volition may appear in any tense, mood, person, genus, number, or any combination thereof.[4] The distinction into transfixes (patterns) and radicals (roots), and how this distinction is represented in the dependency grammatical tree representations is addressed in section 3.1.[5]

    The verb in the subordinated clause must be marked with the future tense (cf. section 3.2). In Hebrew, future tense is prefixed, and these prefixes differ in how "cumulative" they are. The prefix *ʔe-* in (1) expresses tense (future tense), person (first person), and number (singular). It does not express genus, though. The lexical verb in the subordinated clause, indicated by the consonants *…ft…r*, sits in a slot opened up by the construction at the bottom. But it does not contribute to the grammatical meaning expressed by the construction, rather it provides content. A sentence almost identical to example (1) is analyzed in section 4 as example (25).

    The item *še=* 'that' is a clitic, and it functions as a complementizer. It is attached to the first word of the subordinated clause, which here is *ʔani*

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[2] I adopt a relative standard transcription of Modern Hebrew, with *h* and *ʔ*, which are often not pronounced (where *ʔ* is a merger of the historical *ʔ* and *ʕ*), and the first person *ʔe-*, which is increasingly being replaced with the 3rd person prefix *ji-*. *t*s* stands for /ts/.

[3] The symbol '…' is used for material that interrupts a catena in the horizontal dimension. See section 2.1.

[4] One anonymous reviewer remarks that some material appearing above the radical *can* influence whether a desiderative construction can be governed by the volitive radical. HITPA'EL forms of volitive verbs can result in passivized verbs, and since volitives as such cannot be passivized, desiderative constructions fail to be grammatical in these contexts. This, however, concerns valence and voice, but not tense, mood, genus, person, or number.

[5] While the term is "root-and-pattern" morphology, I will use "radical" instead of "root", because the latter carries a different meaning in this theory, namely the topmost node in a tree structure or construction. Sometimes I use "root" because it is preferable.

'I'. This pronoun is not part of the construction, rather it is used here to show that material not germane to the construction can appear between parts of the construction. The pronoun is not necessary, because the prefix *ʔe-* already expresses the respective grammatical meaning. It is important to note that the clitic *še=* 'that' and the pronoun *ʔani* 'I' form one prosodic word, but these two items do not entertain a syntactic relationship with one another. Rather the clitic dominates the verb in the subordinated clause, which dominates the pronoun. Cliticization is addressed in section 3.3.

The analysis to be proposed below is surface-, dependency-, and catena-based, and entirely representational. Operating exclusively on the surface, without acknowledging hidden levels of representation, leads to a piece-based theory of morphosyntax. This means that the current account acknowledges units of form smaller than the word. Such a unit is called "morph". Morphs constitute individual nodes of morph catenae. A catena is a scalable unit of form that comprises any immediately connected surface units in the dominance dimension. The required notions and terms are introduced in section 2.

The principal claims made here are:
1. The units of form that make up the Hebrew desiderative construction qualify as a catena, rather than as a word or a constituent.
2. The Hebrew desiderative is a construction that cuts into words.

A catena-based analysis of the Hebrew desiderative is attainable, once the groundwork for analyses within dependency morphology is laid. The analyses of the parts of the desiderative construction (section 3) are therefore integral to the entire argument. A secondary purpose of the paper is to develop a general understanding of the crucial notions of catena-based dependency morphology, and to illustrate how morphological relationships are represented.

The paper proceeds as follows: Section 2 provides general information on dependency grammar, and the notion of the catena. It also gives a historical account of dependency morphology. It then lays out morphological notions based on the catena. Finally it formulates several reservations against other approaches to morphology. Section 3 introduces the principal players involved in the Hebrew desiderative construction: transfixes and radicals (3.1), the future tense prefix system (3.2), and

cliticization (3.3). Section 4 then combines these phenomena in order to analyze the desiderative construction. Section 5 summarizes the paper.

2. Theoretical background

The proposal to be made here operates within dependency grammar. This framework originates with Lucièn Tesnière (1959), and has produced a considerable body of literature. The following list is by no means complete, but it reflects the historical development of the field: Hays (1964); Robinson (1970); Kunze (1975); Matthews (1981); Sgall, Hajičová & Panevová (1986); Mel'čuk (1988); Schubert (1988); Starosta (1988); Lobin (1993); Pickering & Barry (1993); Engel (1994); Jung (1995); Heringer (1996); Groß (1999); Eroms (1985, 2000); Kahane (2000); Tarvainen (2000).[6] Richard Hudson's Word Grammar (1984, 1990, 2007, 2010) has contributed significantly to making dependency grammatical concepts known. Many detailed introductions and discussions of specific issues pertinent to dependency grammar can be found in Ágel, Eichinger, Eroms et al. (2003, 2006). In recent decades, computer linguistics, too, has increasingly looked toward dependency (Nivre 2006).

The fundamental and overarching properties of dependency grammars are that they are word-based, and that they regard the dependency relation between words as basic. While phrases or constituents are at times involved in the analysis, they are not considered basic units of such an analysis. Apart from that, dependency grammars come in several flavors: derivational or representational, mono- or multistratal, construction- or rule-based. The account here is representational, monostratal, and construction-based.

This section provides a brief overview over catena-based dependency grammar (section 2.1), and also brief history of dependency morphology (section 2.2). In section 2.3, the extension of catenae into morphology is demonstrated. Section 2.4 briefly remarks on competing theories, in particular word/lexeme/paradigm-based accounts of morphology.

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[6] Dependency-based "Meaning-Text Theory (MTT)", founded by Igor Mel'čuk, has attracted a large number of linguists.

2.1 Catena-based dependency grammar

The current account is closely associated with the concept of the *catena*. Consider first the next representations:

(2)

a.

b.   *My   home   is   my   castle.*
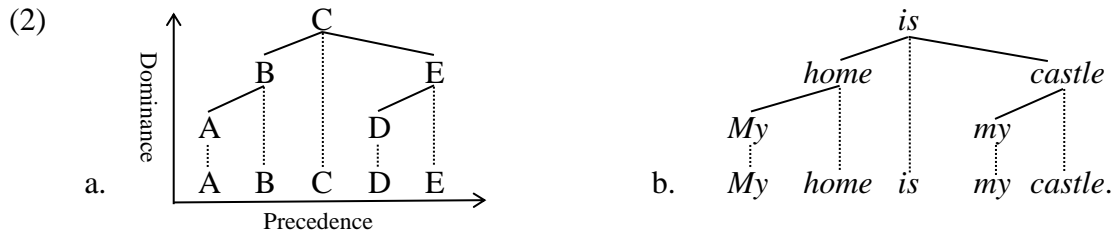
Representation (2a) is a virtual dependency tree. It is virtual because, instead of actual words, capitals appear as nodes. Two dimensions are distinguished: the horizontal dimension (x-axis) is called *precedence* because in this dimension the linear order of the nodes appearing in the tree structure is established. The vertical, dotted edges are called *projection edges*, and they show the order in which the individual nodes project to their position in the example shown at the bottom. The vertical dimension (y-axis) is called *dominance*: in this dimension the dominance relationships between the nodes are represented by angled, solid *dependency edges*. This type of tree representation is most closely associated with the work of Hays (1964). Tree representations in other dependency theories may look quite different, as they may concentrate only on one dimension. Tree (2b) is a "real-life" example the syntactic dependency structure of which is equivalent with that shown in (2a). For the most part, the individual dependencies are based on assumptions similar to constituency structure. The words *My home* constitute a noun phrase because the entire expression behaves like a noun. In dependency grammars the article thus depends on the noun.[7] The tree root is the verb *is*, rather than an exocentric node S.[8]

The term *string* is a unit with respect to the precedence dimension. Every node, and every combination of nodes that is continuous, i.e. uninterrupted, in this dimension is called a string. In (2a), the following units qualify as strings:

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[7] Apart from Word Grammar, most dependency grammars reject the idea of a DP.
[8] This property may be the overarching distinction between dependency and constituency grammars. For a discussion of finite vs. non-finite VPs, see Osborne, Putnam & Groß (2011: 323).

(3)   A, B, C, D, E, AB, BC, CD, DE, ABC, BCD, CDE, ABCD, BCDE, and ABCDE

Insert the individual words in (2b) for the respective capitals in (3), and one gets the set of strings valid for (2b).

The term *catena* is a unit with respect to the dominance dimension. Similar to the concept of string, every node, and every combination of nodes that is continuous, i.e. uninterrupted, in the dominance dimension is called a catena. In (2a), the following units qualify as catenae:

(4)   A, B, C, D, E, AB, BC, C…E, DE, ABC, BC…E, CDE, ABC...E, BCDE, and ABCDE

A comparison of (3) and (4) reveals that the node combinations CD, BCD, and ABCD only qualify as units in the precedence dimension, i.e. they are strings. The node combinations C…E, BC…E, and ABC…E, however, do NOT qualify as strings (because node D interrupts the continuity in the precedence dimension), yet these node combinations do qualify as catenae because they are uninterrupted in the dominance dimension. On the other hand, the string node combinations CD, BCD, and ABCD do NOT qualify as catenae because the node E interrupts the continuity in the dominance dimension.

Even though the proposal below uses two-dimensional tree representations, the term *string* and *catena* allow one to talk about relationships in different dimensions in isolation. A dependency grammar is particularly suited to visualize catenae. Recent research has established that the catena is centrally involved in a number of grammatical phenomena that have, over the decades, challenged theories of grammar, in particular constituency-based theories. Based on the precursor to the catena, O'Grady's (1998) "chain", Osborne (2005) introduces the notion to dependency grammar. Groß and Osborne (2009) use this notion in order to explain displacement and related phenomena, among them $w(h)$-fronting, topicalization, scrambling, extraposition, inversion, shifting, free relatives, and pied-piping. Osborne, Putnam and Groß (2012) introduced the label "catena" in order to avoid confusion with other uses of the term "chain" in linguistics. This paper discusses a number of pertinent properties of the catena, and it compares the concept to the constituent. Most importantly, the paper establishes that the catena plays a central role in analyzing idiom formation, ellipsis (answer fragments, gapping, stripping, VP ellipsis, pseudo-gapping, sluicing, comparative deletion), and predicate structure. Osborne, Putnam and Groß (2011) attempt a reevaluation of developments

within Minimalism in light of the concept of the catena, arguing that the latest Minimalist versions converge on core concepts of dependency grammars, though they also point to the limits of such developments. Osborne and Groß (2012a) argue that "constructions", as posited in Construction Grammar, can be recovered as catenae. Further, Osborne and Groß (2012b) argue that antecedent-containment can be parsimoniously explained when utilizing the catena concept.

2.2   Dependency morphology

While research on dependency-based syntax can draw on an extensive body of literature, contributions on dependency-based morphology are difficult to find. The earliest attempt at describing morphological structure with dependencies can be found in Heringer (1970: 96).[9] He has been using dependency-based morphological trees consistently, but sparingly (1973: 283–294, 1996: 117–118). The name "dependency morphology" was originally proposed by John Anderson (1980) in a dependency-based analysis of the Basque verb. The general dearth of dependency-based morphological analyses is lamented in Harnisch (2003) and Maxwell (2003). But what might the causes of this dearth be?

One reason has to do with the rigor of analysis. The unifying aspect of John Anderson's, Heringer's, and others' analyses is the assumption that affixes depend on lexical material. This assumption, however, conflicts with a significant body of knowledge accumulated since Joseph Greenberg. Bybee (1985) makes the compelling point that there is a hierarchy that orders the appearance of derivational and inflectional affixes on the verb. This hierarchy has semantic significance, and hence the assumption should be that the affixes dominate the lexical material. A similar observation accounts for nouns marked for number and/or case. The dependency-based attempts at morphology do not take the basic insight associated with Bybee's hierarchy into account. Assuming analyses that have affixes dominating lexical material conflicts, however, with a tenet held to be central by many dependency grammarians, namely the concept of valency. One wishes to see lexical material as the root (node) in order to maintain a

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[9] This early date is astonishing given the fact that hierarchical word structure within constituency-based theories of morphology is first proposed by Williams (1981).

valency-oriented description.[10] As long as valency is seen as central, the assumption that non-lexical material is somehow subsumed by lexical material seems logical.

Another factor that surely has contributed to scotching the development of dependency-based morphologies is the upswing of word/lexeme/paradigm-based morphology (Robins 1959; Matthews 1972; Aronoff 1976; Spencer 1991; Anderson 1992; Stump 2001; Booij 2010; Stump & Finkel 2013; and many others) making the case against piece-based morphology. Proposals such as those by Stephen Anderson (1992) and Stump (2001) go so far as to reject both the necessity and the possibility of segmenting words into individual morphemes. Of course granting credence to such a stance obviates any approach that sees internal word structure as similar to sentence structure.
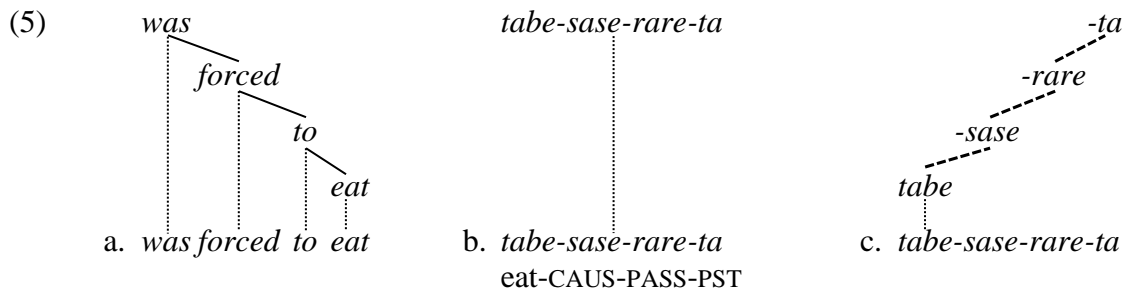
Yet another reason has to do with a core concept of dependency grammar. Dependency grammars seem, by their very nature, to be word grammars. If words are seen as the basic units of syntax, then their further analysis into component parts is deemed inappropriate, at least as long as it concerns syntax. MTT and Word Grammar are a case in point: while they account for morphological structure in detail, their morphologies always see the word as such as the domain within which these matters play out. While Mel'čuk (1988: 107, 2003: 193) acknowledges morphological dependencies, he also delimits them from dependency structure proper. And the networks assumed in Creider and Hudson (1999), and Hudson (2003: 514, 518; 2007: 63–116) purport to illustrate the interaction and realization of features, but these are encapsulated within the word itself. As Hudson (2010: 132) notes "[m]orphology…describes changes within a word". This stance forecloses the possibility of viewing the interplay between syntax and morphology as a continuum, and has thus helped to reinforce the view of morphology encapsulated from syntax.

To summarize, dependency morphology has floundered (until now) due to at least four considerations: analytic errors, overly strict adherence to valency theory, the influence of word/lexeme/paradigm-based morphology, and the emphasis on the word.

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[10] Especially in the European tradition, dependency grammar is seen as a supporting theory to valency theory. Ágel and Fischer (2010), for instance, devote 14 pages to valency theory but only 8 pages to dependency-based hierarchical organization of linguistic units.

2.3   Catenae in morphology and morphosyntax

The smallest catena consists of one node. In syntax, nodes are words. But "word" is a language-specific unit. At times, a purely word-based analysis is unsatisfactory. Consider the next examples, one from English, and its Japanese equivalent:

(5)   *was*   *tabe-sase-rare-ta*   *-ta*
            forced   *-rare*
                 to   *-sase*
                      eat   *tabe*
      a. *was forced to eat*   b. *tabe-sase-rare-ta*   c. *tabe-sase-rare-ta*
                                      eat-CAUS-PASS-PST

The English example (5a) contains four words, but the Japanese example (5b) contains only one word. The grammatical meanings causative and passive are expressed in Japanese by suffixes. In order to better compare, in particular, the dominance structure of both expressions, the Japanese word needs to be broken down into its meaning-bearing parts. (5c) shows the word-internal tree structure of the Japanese example.
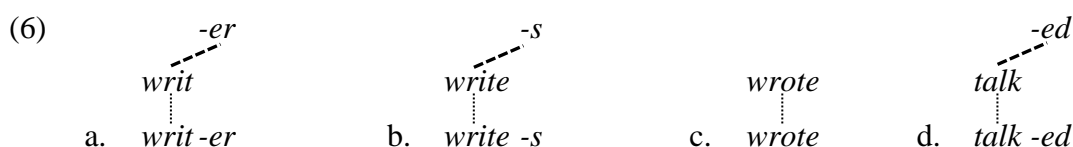
A node at the morphological or morphosyntactic level is called a *morph*. A morph is a unit of form, **not** a unit of meaning. A morph need not express exactly one unit of meaning, but rather it may – and often does – express complex meaning. No attempt at **always** matching exactly one unit of form to exactly one unit of meaning is made here.

If an expression can be reduced so that the remainder of the expression expresses a part of the entire meaning of the expression, and if the remainder cannot be reduced any further, then this remainder is a morph. E.g. German [machst] '(2SG) do' can be reduced to yield [st], which expresses [2SG].[11] [st] cannot be reduced further without compromising the meaning of the entire expression. Hence [st] qualifies as a morph. If this morph is reduced from the entire expression, [mach] remains, which expresses part of the entire expression, and which cannot be reduced any further either. Hence, [mach] is also one morph. It is evident that this

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[11] It is irrelevant whether one wishes to ascribe to [st] the meanings of tense or of mood. For one thing, it would only enhance the meaning expressed by [st], and since morphs are allowed to express complex meaning, no counter-argument is present. However, it is also not evident whether such an ascription would be accurate.

approach must proceed carefully, and in a conscientious manner. A second example illustrates this attitude. English *went* is considered as one morph because reduction is not possible, even though it expresses more than one meaning. An analysis of *went* as 'go' + PST is viewed here as a semantic analysis, not an analysis of the structure.

Immediate dominance relationships between morphs are justified by distribution. In this respect, it is irrelevant whether an affix is inflectional or derivational. This is demonstrated below with English examples:

(6)
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            -er                     -s                                        -ed
           ⁄                       ⁄                                         ⁄
        writ                    write                  wrote              talk
          |                       |                                         |
   a.   writ -er        b.   write -s        c.   wrote        d.   talk -ed
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The expression *writ(e)* in (6a) is viewed as dominated by the derivational suffix *-er* because even though it is a verb, the entire expression, i.e. *writer*, distributes like a noun. For this distribution the suffix is responsible: *a writer*, *the writer*, *famous writers*, rather than a verb: **quickly writer*, **would writer*, etc. In (6b), the non-past third person singular suffix *-s* causes the distribution to vary from that of *write* alone: *he/she writes* vs. **he/she can/has writes*. The verb *write* is irregular, since its past tense form is *wrote*. The expression *wrote* is viewed as **one** morphological node even though it is semantically complex, i.e. *write* + PST, and appears in the same paradigm as *talk-ed* in (6d). In (6d) the suffix *-ed* is viewed as dominating *talk*, because the suffix specifies the distribution of the entire expression *talked*, regardless of whether one wishes to see the inflectional past tense suffix, or the derivational past participle suffix *-ed*. This kind of approach is, of course, not limited to verbs, but can apply to all kinds of lexical and affix material.

It should be kept in mind, though, that this approach rests on the crucial notion that catenae are expressions of meaning. It does not matter whether a catena is simplex or complex, or whether the meaning expressed is simplex or complex. Nodes, be they syntactic or morphological, do not always produce compositional meaning. In syntax, expressions of non-compositional meaning are called idioms, if the meanings are lexical, and periphrastic constructions, if the meanings are grammatical. A catena-based analysis of idioms is proposed by Osborne, Putnam and Groß (2012). Osborne and Groß (2012a) argue that periphrasis should be analyzed as catenae. Finally, Groß and Osborne (2013) argue that periphrastic

constructions reach into words, and that they should be, as a result, analyzed as morph catenae.

The underlying theory here has been proposed by Groß (2010, 2011a, 2011b, 2014). Groß (2010) argues that internal word structure is not fundamentally different from syntactic structure. Groß (2011a) outlines the foundations of dependency relations within and across words. Groß (2011b, 2014) addresses the topic of cliticization. Groß and Osborne (2013) illustrate that constructions most often cut into words, i.e. a (periphrastic) construction does not qualify as a word combination, nor a constituent, but rather it qualifies as a catena, the individual nodes of which are parts of words. Most importantly, they argue that the catena is a scalable unit of form that can be applied to phenomena ranging from syntax to morphosyntax to morphology proper.

Two types of dependencies are distinguished: intra-, and inter-word dependencies.[12] Intra-word dependencies exist between morphs belonging to the same word, while inter-word dependencies exist between morphs of two (or more) different words. Tree (5c) is an example showing only intra-word morphological dependencies. Below, example (5a) is considered again as (7a). It illustrates an inter-word dependency in English. The arrows are symbols of meaning ascription, the labels of the meanings are shown in the center of the representation.

(7)

was ←	tense	→ *-ta*
-ed ←	passive	→ *-rare*
forc ←	causative	→ *-sase*
to ←		
eat ←	'eat'	→ *tabe*
a. *was forc -ed to eat*	meaning	c. *tabe-sase-rare-ta*

The only difference between (5a), and (7a) is that *forced* is now shown as two nodes.[13] The morph catena *forc-ed* is an instance of an intra-word dependency because this expression qualifies as one word. The morph

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[12] The distinction and the respective definitions for the two relationships are not given here. Groß (2011a) provides a detailed account.

[13] It is irrelevant here whether *forced* would better be rendered as *force-d* because it would not impact the argument made here. The Latin alphabet, instead of the phonetic alphabet, is used here for convenience.

catena *was…-ed* is an instance of an inter-word dependency because these two morphs do not qualify as one word, but rather belong to different words.

   The top node *was* is involved in the expression of tense and voice. The morph catena *was…-ed* is the expression of a periphrastic construction, namely the English passive. The morph catena *forc…to* is the expression of causative, the *to* being necessary in order to dominate another verb.
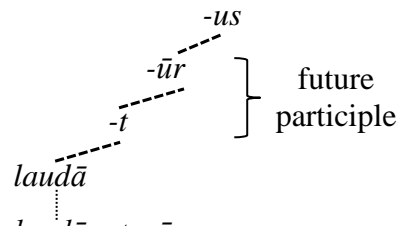
   If represented in this fashion, a comparison of the (grammatical) meaning structures of the two vastly different languages appears much more promising. In this light, periphrastic constructions, which are a challenging topic for any theory of grammar, are morph catenae across two (or more) words.

2.4   Remarks on other approaches to morphology

It is conventional to put forth at least some reservations against theoretical notions one opts not to follow, even though it is hoped that the explanations in section 2.3, and in sections 3 and 4 will actively demonstrate that a piece-based account utilizing the catena can, in fact, deal with phenomena that are difficult to address in any framework. The rejection of the word/lexeme/paradigm-based approaches to morphology must, for the sake of brevity, rest on two issues: the difficulties of capturing the expression of non-compositional morphology on the surface, and bracketing paradoxes.[14]

   According to Matthews (1972, 1991: 201) Priscianic, or parasitic, formation occurs when a form appears only as an attachment site for other material but fails to express the meaning(s) that it would have in isolation, or with yet other material. The prime example in the literature is the Latin future participle. Here an example from Aronoff (1992: 6):

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[14] In addition, several morphological phenomena, such as transfixes, circumfixes, infixes, suprafixes, reduplication, etc. have been put forward against piece-based analyses. Transfixes are discussed in section 3.1. I do not discuss the remaining phenomena here because I have done so already elsewhere (Groß 2011a) thereby showing that these issues are not insurmountable in a piece-based approach.

(8)   a.   *laudā -t*   *-ūr*   *-us*   *-us*

    b. [[[[*laudā*] *-t*]   *-ūr*]   *-us*]   *-ūr*   ⎤ future

        praise -PST.PTCP   -FUT.PTCP -NOM.SG.M   *-t*   ⎦ participle

        '[one who] will praise'   *laudā*

                                c. *laudā -t -ūr -us*

While the future participle is active, it is built on a passive past participle. The past participle marker *-t* in (8) does not contribute any meaning to the entire expression, but is a parasitic form in the presence of the future participle. In such cases, the meaning cannot be construed as compositional. It is also impossible to view the past participle and the future participle as one constituent, as (8b) shows. (8c) shows how a catena-based dependency account deals with this issue. The wavy bracket indicates that the non-compositional, grammatical meaning 'future participle' is expressed by the complex catena *-t-ūr*. This means that it is possible to attribute meaning to multiple morphological nodes, since on a catena-based description they are available as surface units and hence can be singled out from material that dominates them, or that is subordinated to them.[15]
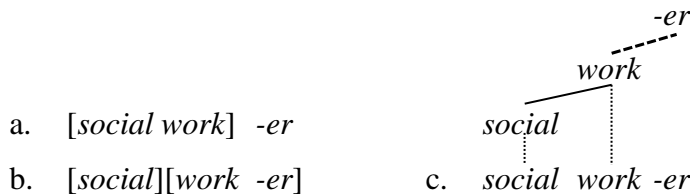
    The assumption that non-compositional meaning can be expressed by a complex unit of form is not unique. For instance, the idiom *kick the bucket* means 'die', but the individual parts of the idiom, namely *kick*, *the*, and *bucket*, are still words, even though they do **not** contribute their usual meaning to the meaning ascribed to the entire expression. The same argument applies to the Latin past participle *-t* in (8): even though this morph does not contribute its passive meaning to the entire expression, it is still a morph, as much as the parts of the idiom *kick the bucket* remain words.

    Bracket paradoxes are associated with Williams (1981), who not only advocated that words have internal structure, but who also pointed to the problems arising from constituent-based analyses of word structure.[16] These problems are illustrated with the next English example:

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[15] An anonymous reviewer doubts that the future participle is built on the past participle, but rather suspects that the future participle is attached to a supine stem. That assumption makes sense because the supine cannot receive a passive reading. Example (8) reflects Aronoff's analysis, and even if this specific example could be analyzed without incurring Priscianic formation, the treatment of Priscianic formation according to (8c) would still be accurate for other cases of this phenomenon.

[16] See (Groß 2011c: 88–90) for a more detailed discussion, and more sources.

(9)   *-er*
                                                                    ------
                                                           work

        a.   [*social work*] *-er*   *social*

        b.   [*social*][*work -er*]   c. *social work -er*

The expression *social worker* refers to a person who engages in social work, i.e. we usually understand the work of the person to be of a social nature, rather than the person. (9a) would thus represent the correct bracketing structure for this meaning attribution. It is seen as problematic, however, that in order to do so, one must acknowledge that the unit [*social work*] cuts into the word *work-er*. This assumption, namely, conflicts with the Lexical Integrity Hypothesis, which states that morphology is inaccessible to syntax. [17] Hence, structure (9b) is widely regarded as correct. The paradoxical nature of the conflict between (9a) and (9b) increases when the number of units of form is compared.

(10) a. social, social work, social worker   = (9a)
         b. social, work, social worker   = (9b)
         c. social, social work, work, worker, -er, social worker   = (9c)

The catena-based representation (9c) is preferable over the constituent-based analyses (9a or 9b) because it not only describes the correct semantic relationships, but it also identifies all units of form (10c). That is the result of the catena being a more inclusive unit of form than the constituent.[18] The blind spot of constituent structure is the inability to accurately single out units of form in the vertical, i.e. dominance, dimension.[19] If morphology only analyzes phenomena in the horizontal, i.e. precedence, dimension, and utilizes only constituent structure whenever structuring is desired, then these problems become predictable.

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[17] There are, in fact, several versions of this hypothesis. See Lieber and Scalise (2007).

[18] Inclusivity in catena-based dependency grammar: a unit of form U is more inclusive than another unit V, if more node combinations in a given expression qualify as U-type units, than as V-type units. There are three (four, if we include the suffix) constituents in each (9a) and (9b). The text lists six catenae obtained on a catena-based analysis. Since there are three (or four) constituents in (9a) and (9b), but six catenae in (9c), the catena is more inclusive than the constituent. Conversely, constituents are more exclusive than catenae.

[19] This would also be an important argument against the structuralist piece-based approach (Bloomfield 1933; Harris 1942; Hockett 1947, 1954; Nida 1948) because this approach is constituent-based.

One should, however, not overestimate the reach of word/lexeme/ paradigm-based morphology. The following authors also subscribe to internal word structure: Sadock (1991), Di Sciullo (2005), Williams (2011), and Distributed Morphology (Halle & Marantz 1993; Harley & Noyer 2003; Embick & Noyer 2001, 2007; Embick 2003; and others).[20]

A final comment addresses the cognitive and psycholinguistic implications of the catena. There is evidence from syntax, in particular from phenomena such as displacement, ellipsis, idioms, and constructions, that catenae are the primary unit of syntactic structure (Groß & Osborne 2009; Osborne & Groß 2012a; Osborne, Putnam & Groß 2012). Catena-based dependency grammar (Osborne & Groß 2012a; Groß & Osborne 2013) has in common with Cognitive Grammar and Construction Grammar the assumption of continua (syntax-morphology, grammar-lexicon, free-bound, etc.). A further commonality lies in rejecting specialized cognitive modules, instead preferring to assume a general-purpose module. The lexicon contains catenae (or, as Nanosyntax suggests, "subtrees", see Starke 2009: 2), and these are acquired by exposure, and fortified by repetition. As such catena-based dependency grammar concurs also with Usage- and Frequency-based accounts (Bybee 2003, 2010). However, the assumption of a general-purpose module, and the adoption of usage- and frequency-based principles do not logically imply that the units involved in the storing and processing of language must be words.

3.   The parts of the desiderative construction

This section intends to clear the way for the analysis of the Hebrew desiderative construction. The first subsection gives a brief introduction into the root-and-pattern morphology of Hebrew, thereby pointing out the challenges for piece-based accounts of morphology, and morphosyntax. The second subsection introduces the future tense formation in Hebrew, which appears in the desiderative construction. The final subsection briefly addresses cliticization because one unit in the desiderative construction is a clitic.

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[20] The reservation against Distributed Morphology is that it utilizes movement. The motivation for movement stems from overcoming bracketing paradoxes that occur whenever displacement is analyzed with constituent structure.

3.1 Transfixes and radicals

Hebrew is a root-and-pattern language. In such languages, non-concatenative phenomena play a more prominent role than in inflecting, or agglutinating languages. This account follows McCarthy (1981) in viewing radicals (used instead of "root"), and patterns as distinct meaning-bearing units. This decision stems from the possibility that a piece-based representation of morphological phenomena is in principle possible because catena-based dependency morphology can represent structure in the vertical, i.e. dominance, dimension (cf. section 2.3). Assuming radicals is, however, not universally the case in Hebrew linguistics. Bat-El (2001: 13) gives a brief overview over proponents, opponents, and linguists who ignore the issue.

The challenge to piece-based morphological theories that languages such as Hebrew posit, is demonstrated now with several possibility expressions from Modern Hebrew. Consider the next examples:

(11) a. *ʔa<u>xi</u>l*   b. *<u>s</u>a<u>vir</u>*   c. *na<u>ʔil</u>*   d. *pa<u>ti</u>r*
        'edible'   'reasonable'   'can be locked'   'solvable'

In examples (11a–d), the underlined letters designate a root phoneme, and the remaining letters a pattern phoneme. In (11a), for instance, the root phonemes are /ʔ/, /x/, and /l/, which together form the radical *ʔxl*, meaning 'eat'. In (11b), the radical is *svr*, meaning 'reason'. In (11c), the radical is *nʔl*, which means 'lock in'. Finally, the radical *ptr* in (8d) means 'solve'.[21]

The challenge these examples posit is evident. If the phonemes /ʔ/, /x/, and /l/ in (11a) are an expression of the meaning "eat", then this expression must include the possibility expression because the vowels of the transfix (= pattern) appear between the root consonants. Since all examples in (11) express possibility, and since all examples in (11) contain the vowels /a/ and /i/, one may well argue that the vocalic transfix ⁻*a*⁻*i*⁻ is the evident candidate to which to assign the possibility meaning.[22,23] However, this transfix (and others like it) cannot constitute a unit of form in any theory of
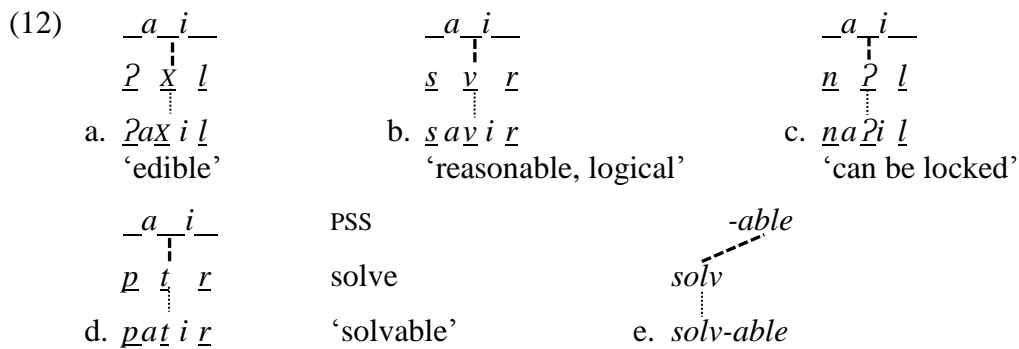
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[21] One reviewer criticizes the usage of verbal meanings. I agree that root meanings are probably more abstract. The choice here is merely a matter of convenience.

[22] In the text, a transfix is shown as ⁻*transfix*⁻.

[23] One reviewer points to examples that contain the /a-i/ pattern, but fail to express possibility. But that does not impact the fact that this pattern is highly productive in the verbal *PA'AL* and *PI'EL* classes as the expression of possibility.

morphology that cannot isolate units in the vertical dimension. The radicals, too, may be seen as expressions of their respective meanings. The same problem applies here, namely that these phonemes fail to form a string, i.e. a unit of form that is continuous with respect to the horizontal dimension.

If a theory of morphology can isolate the vertical from the horizontal dimension of representation, as the catena allows one to do, then it becomes possible to separate the transfixes from the radicals in a meaningful way. In the examples (11a–d), the transfixes dominate their radicals, because the entire expressions distribute like adjectives marked for possibility expressions, rather than like verbs. In the current dependency-morphological account the tree structures of the examples (11a–d) are represented in the following manner:

(12)   _a_i__   _a_i__   _a_i__
        ʔ x̱ l   s v̱ r   n ʔ l

     a. *ʔax̱il*   b. *s av̱ir*   c. *naʔil*
        'edible'   'reasonable, logical'   'can be locked'

        _a_i__   PSS   -able
        p ṯ r   solve   solv

     d. *paṯir*   'solvable'   e. *solv-able*

The structures in (12a–e) show representations of the meaningful units making up the individual words. One example, (12d), is explained in detail, the examples (12a–c) are constructed in the same fashion. In (12d), the tree structure distinguishes two units: the transfix on top, and the radical immediately below it. The transfix dominates the radical, and this fact is represented by the vertical dotted edge linking the two units. The underbars help to identify the positions into which the root consonants are inserted; the appearance of the consonants depends on the transfix, hence the underbars are part of the transfix.[24]

The transfix dominates the radical because the word in its entirety behaves like an expression marked for possibility. The possibility transfix is derivational; it produces an adjective. All the examples in (12) behave like adjectives. This is the kind of argument that also applies to English

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[24] This approach is reminiscent of Autosegmental Phonology (Goldsmith 1976, 1990; McCarthy 1981; Lieber 1987), which can be viewed as an attempt to introduce a vertical dimension into the analysis.

solvable, example (12e). Every occurrence of "X-able" is an adjective in English, hence the suffix should dominate the verb there, too.[25] Since the English possibility expression is a suffix, rather than a transfix, it can be separated from the lexical unit not only in the vertical, but also in the horizontal dimension. For this reason the dotted edge in (12e) is slanted.

The novelty in (12a–d) is the separation of meaningful units in the vertical, i.e. dominance, dimension, rather than in the horizontal, i.e. precedence, dimension. Looking exclusively at the vertical structure of (12a–d), the assumption that the radical, and the transfix, form units of form is justified because nothing intervenes between the two units in the vertical dimension. Abstracting from the horizontal dimension makes it possible to represent the gloss in a vertical fashion. The vertical gloss in (12d) is thus more informative than a horizontal gloss (such as e.g. solve.PSS). The comparison of (12d) with its English equivalent (12e) shows that a representation that identifies units of meaning and units of form across languages with fundamentally different word structure is achievable.

3.2   Future tense

The introduction into root-and-pattern morphology above has been brief, but was necessary because the desiderative construction requires that the verb in the subordinate clause be in the future tense.[26] The MH future tense serves two purposes: it is used to express events that have not happened yet, i.e. irrealis and imperfective cases. But it is also used as the imperative. A number of verbs with irregular features continue to form their Standard Hebrew imperative forms.

According to Bat-El (1994: 582), MH verbs have five different conjugations, so-called *binyan*. However, the introduction below will be concerned only with one conjugation, the so-called *PA´AL* conjugation. The example radical will be *ftr*, the radical of example (12d).

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[25] That includes cases like *convertible* which have undergone conversion after ellipsis, as they derive from *convertible car/automobile*.

[26] The term "future tense" is used here only as a label, and should not be taken as representing the grammatical meaning associated with this tense. Gesenius (1909: 117), for instance, named this tense as the imperfective, rather than the future. I refrain from a discussion of the appropriateness of this or other distinctions, and continue to use the term "future tense" as a label of convenience. But see also Coffin and Bolozky (2005: 38–40).

Future tense forms and imperatives share the property that they both appear with vowel transfixes ($^-o^-$ or $^-a^-$), or the epenthetic vowel /e/. Future tense and imperative expressions are thus marked as irrealis or imperfectives. Bat-El (2002) argues that MH imperatives are formed by true truncation from future tense forms.

The future tense is expressed by prefixes. The first person is expressed by the prefix *ʔe-* in the singular, and *ni-* in the plural. The second person prefix, and the third person singular feminine prefix is *ti-*. The third person is expressed with the prefix *ji-*.

In addition, suffixes appear. In the second person singular feminine the suffix *-i* appears, and in the second and third person plural the suffix *-u* is used. The next examples with the radical *ftr* illustrate the future tense forms:

(13)   a. *ʔe-ftor*   b. *ni-ftor*
          'I will solve'   'we will solve'

(14)   a. *ti-ftor*   a'. *ti-fter-i*   b. *ti-fter-u*
          'you[M.SG] will solve'   'you[F.SG] will solve'   'you[PL] will solve'

(15)   a. *ji-ftor*   a'. *ti-ftor*   b. *ji-fter-u*
          'he will solve'   'she will solve'   'they will solve'

The examples in (13) show the first person, (14) shows the second person, and (15) the third person. (a)-examples show the singular form (13a), or the masculine singular forms (14a, 15a). The barred examples show feminine singular forms. The (b)-examples show plural forms.

The vowel /o/ in (13a and 13b), (14a), and (15a, a') is the transfix $^-o^-$ marking irrealis or imperfective. The vowel /e/ in (14a' and 14b) and (15) is viewed as epenthetic. I will part from this conventional assumption, and assume that this vowel is a suppletive transfix $^-e^-$ that appears whenever a suffix appears.

The forms (14a, 14a' and 14b) can also be used as imperatives in MH, but truncated forms of (14a, 14a' and 14b) are also possible:[27]

(16)   a. *ftor!*   b. *fter-i!*   c. *fter-u!*
          'solve!' [SG.M]   'solve!' [SG.F]   'solve!' [PL]

---

[27] I am grateful to an anonymous reviewer for pointing me toward Bat-El's (2002) truncation analysis.

The forms in (16) will be analyzed first, and then the dependency morphological representation of future tense forms will follow. The suffixes are expressions of number: *-i* expresses the singular, and *-u* the plural. They are used whenever the prefix does not conclusively express number.

(17)

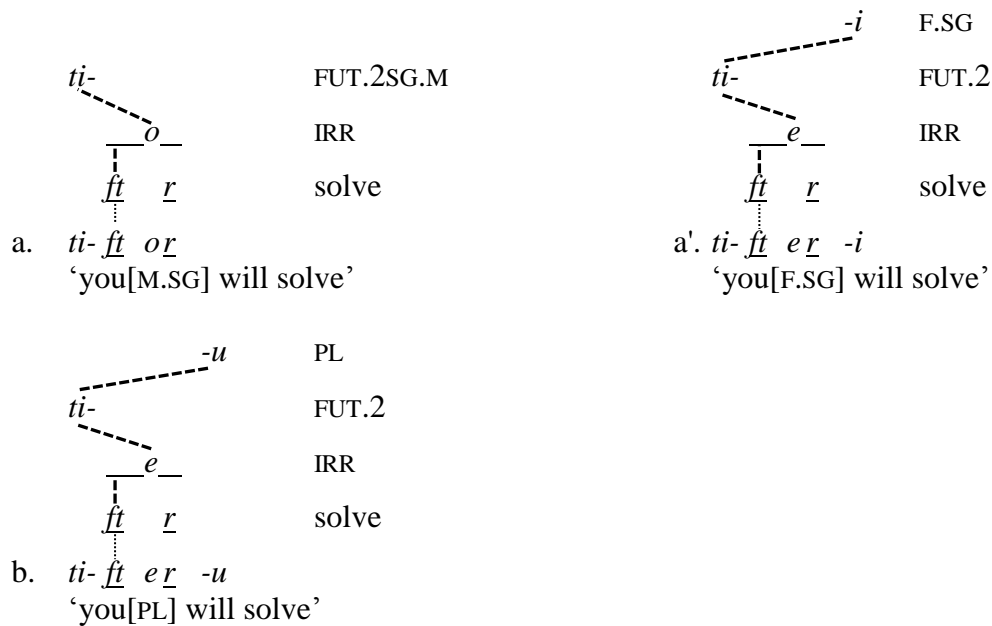| | *-i*   F.SG | *-u*   PL |
__*o*__ IRR	__*e*__ IRR^S	__*e*__ IRR^S
ft ¦ *r* solve	*ft* ¦ *r* solve	*ft* ¦ *r* solve
a. *ft o r*	b. *ft e r -i*	c. *ft e r -u*
'solve!' [M.SG]	'solve!' [F.SG]	'solve!' [PL]

In (17), IRR is used as a label to reference irrealis **or** imperfective grammatical meaning. The superscript in (17b and 17c) stands for SUPPLETIVE. Expressions of number appear farther from the stem than expressions of mood. Hence, one should expect the number suffixes to dominate the radical (here indirectly), and the transfixes. Mood should dominate lexical material, and this is how all the examples in (17) are represented.

     Having represented the imperative forms, the analysis now proceeds to the future tense forms.[28] The tree representations below follow the format used in the examples (13–15), repeated below as (18–20):
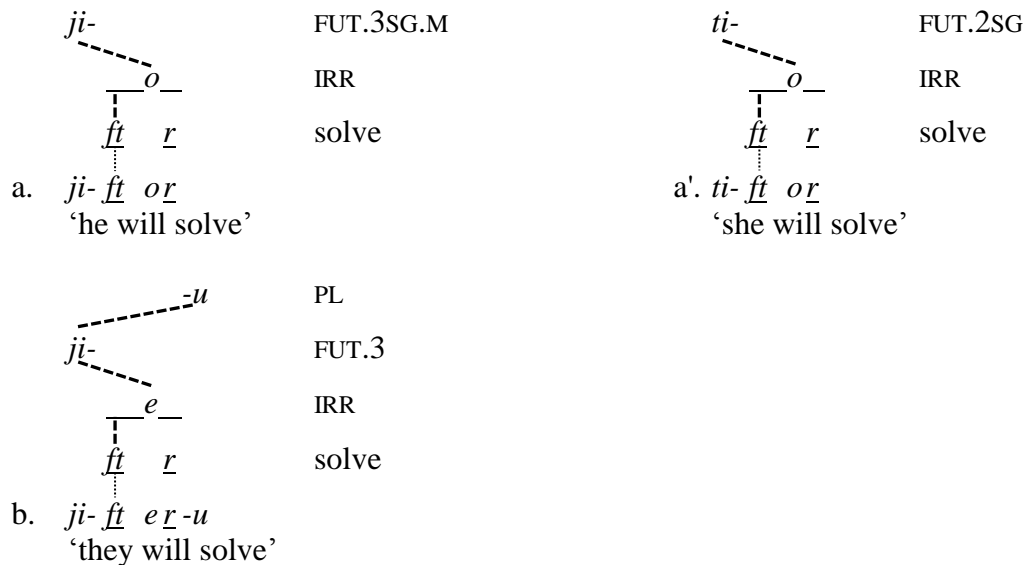
(18)

ʔe- FUT.1SG	*ni-* FUT.1PL
__*o*__ IRR	__*o*__ IRR
ft *r* solve	*ft* *r* solve
a. *ʔe- ft o r*	b. *ni-ft o r*
'I will solve'	'we will solve'

---

[28] The presentation here is limited to the default of the PA'AL conjugation. The vowels of the prefixes are seen here, for the purpose of simplification, as parts of the prefixes. Yet, these vowels can change: the verb may be irregular; the root may have a guttural or laryngeal as the initial consonant, etc. These issues are neglected here.

(19)

```
        ti-                    FUT.2SG.M                    -i        F.SG
           \__                                 ti-        __/    FUT.2
              o__           IRR                   \__  
               |                                    e__       IRR
              ft   r        solve                    |
                                                    ft   r    solve
   a.  ti- ft o r                            a'. ti- ft e r  -i
       'you[M.SG] will solve'                    'you[F.SG] will solve'
```

```
                 -u        PL
           __/
        ti-              FUT.2
           \__
              e__        IRR
               |
              ft   r     solve

   b.  ti- ft e r  -u
       'you[PL] will solve'
```

(20)

```
        ji-                 FUT.3SG.M            ti-                 FUT.2SG
           \__                                     \__
              o__           IRR                       o__           IRR
               |                                       |
              ft   r        solve                     ft   r        solve

   a.  ji- ft o r                            a'. ti- ft o r
       'he will solve'                           'she will solve'
```

```
                 -u        PL
           __/
        ji-              FUT.3
           \__
              e__        IRR
               |
              ft   r     solve

   b.  ji- ft e r -u
       'they will solve'
```

All structures in (17–20) follow the assumption by Bybee (1985) that there is an order in which affixes appear with respect to the lexical core. Her basic assumption is that the category valency is realized closer to the verb, than the category mood, for instance. The categories farthest from the lexical core are person and number, whereby number follows person.[29]

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[29] The current account subscribes to almost all of Bybee's (1985) claims about affix order. It differs in one very important respect, though. Affix order is not seen as operating in the horizontal dimension, but in the vertical dimension. Bybee is concerned

(19a' and 19b) and (20b) reflect that assumption by viewing the number suffixes dominating the person/tense prefixes. The assumption here is that number dominates tense, which dominates mood. Future tense in Modern Hebrew is an instance of "cumulative exponence" (Matthews 1991: 179) because the respective prefixes usually serve to express both tense, and at least person and number, sometimes also genus. When the gloss in (18–20) only references person, but not genus or number, it means that the default is set, which is interpreted as the masculine singular, in the absence of further grammatical markers.

The structures above are now discussed in detail. Example (18a) shows the first person singular of the future tense. In Modern Hebrew, the first person is not sensitive to genus. The tense/person prefix dominates the unmarked imperative transfix, which dominates the radical. (18b) shows the first person plural.

Example (19a) is not unambiguous. Without a subject, it is addressed to a male person. Together with a subject with feminine genus, it expresses the third person singular feminine (20a'). In (19a'), the suffix *-i* marks the expression as second person feminine singular. The presence of the suffix blocks the third person reading of the prefix *ti-*. The catena *ti-…-i* expresses the future tense for the second person singular feminine because, in combination, all relevant properties are present.[30] Example (20a) shows the third person default form, which expresses the singular masculine.

3.3 Cliticization

A clitic is a prosodically dependent, but syntactically free unit. "Prosodically dependent" means that a unit cannot project its own prosodic word structure, and is therefore integrated into the prosodic word structure of another unit. Free morphs are, generally, syntactically free, and project their prosodic word structure. In compounds, compound parts relinquish these features. Affixes are never prosodically or syntactically independent. Clitics may be part of a prosodic word, and yet not maintain any kind of dependency relationship with any of the other units within this prosodic word. The introduction is necessary because the Hebrew complementizer

---

with serial order, rather than with dominance order. It turns out, though, that dominance, rather than precedence, is the critical dimension.

[30] The notation *ti-…-i* is the convention of referencing catenae within the text. This particular example means that the prefix *ti-* and the suffix *-i* form a catena that is interrupted by other material in the horizontal dimension.

še= is a clitic. It will be kept brief, though, since the issue of clitics has already been addressed within the current framework (Groß 2011b, 2014).[31] An English example is used here to first show that clitics posit problems for constituent-based grammars:

(21) a. *the Queen of England's hat*

   b. [*the*] [*Queen*] [*of*] [*England's*] [*hat*]   prosodic word structure

   c. [[[[*the*] Queen [*of* [*England*]]]*'s*] *hat*]   syntactic constituent structure

Example (21a) contains the English possessive, which is a clitic (in bold script). (21b) shows the prosodic word structure of (21a). The possessive is clearly part of the word structure projected by *England*. (21c) shows the constituent structure of (21a). Here, the clitic is not part of *England*, but rather of *the Queen of England*. The reason for this is that even though as (21b) shows, it is part of the prosodic word structure of *England*, the clitic does not entertain an immediate syntactic relationship with its host. In other words, the clitic does not establish a relationship between *England* and *hat*, but rather between *Queen* and *hat*. Since *Queen* is the projecting node of the NP *the Queen of England*, this entire NP must be the constituent with which the clitic has a structural relationship.[32]

   The structures (21b) and (21c) are at odds because they cannot be both true at the same time. The underlying cause for this paradox is the notion of the constituent because this notion references the horizontal dimension and the vertical dimension simultaneously. This means that constituent-based grammars are forced to make a stronger claim than necessary: the possessive clitic must dominate the NP *the Queen of England*, but also be part of the most subordinated unit in this NP, namely *England*. The attempt to view the phenomenon through the lens of constituent structure makes cliticization look more difficult than it really is.

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[31] For reasons of brevity, the examples in this section are kept simple. There is, however, more to cliticization. See Groß (2011b, 2014) for a detailed discussion of various languages, including Kʷakʷʼala (Anderson 2005: 16), Wackernagel clitics, clitic climbing, clitic doubling, etc.
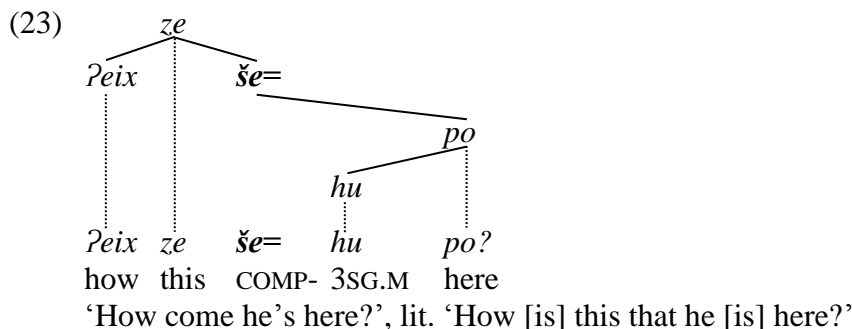
[32] Word-grammatical dependency grammars are not immune to the challenges posited by clitics. Cliticization challenges, in particular, the widely acknowledged assumption that a node may not be immediately dominated by two or more nodes (Mel'čuk 1988: 23). For (21a), this means that the word node *England's* would have to be a dependent of the nodes *of* and *hat* simultaneously.

In a catena-based approach, the necessity to conflate the horizontal (= prosodic) dimension and the vertical (= dominance) dimension is absent, and hence one can avoid overly strong claims. The claim about prosodic structure (horizontal dimension) is identical to (21b): the clitic is integrated into the prosodic word structure of *England*. This shown below as a hyphen on the clitic directed toward the prosodic host, and through the absence of a projection edge on the clitic. The claim about dominance only identifies the two nodes to which the clitic connects in the vertical dimension. The next representation shows the example (21) as a dependency structure:

(22)
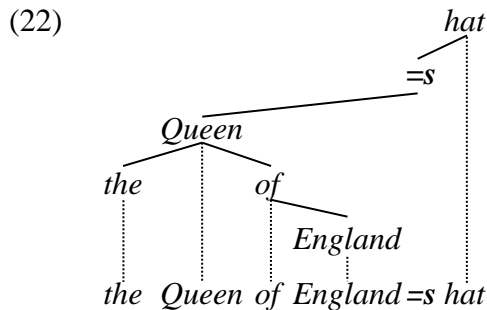
Example (22) shows the dependency structure of (21a). In the horizontal dimension, the clitic is integrated into the prosodic word structure of the word immediately to its left, i.e. *England*. It need not also entertain an immediate dominance relationship (vertical dimension) with this word. Rather, in the vertical dimension, the clitic is immediately dominated by *hat*, and it immediately dominates *Queen*. This makes sense because the clitic establishes a possessive relationship between these two nodes. Cliticization is, thus, a phenomenon in which the two dimensions are split, and fulfill two entirely different roles.

Cliticization occurs with the Hebrew complementizer *še=*, appearing in the desiderative construction. Consider the next Hebrew example:

(23)

ʔeix	ze	še=	hu	po?
how	this	COMP-	3SG.M	here

'How come he's here?', lit. 'How [is] this that he [is] here?'

Since Hebrew does not know copulae (in the present tense), *ze* 'this' is seen as the main clause root, and *po* 'here' as the predicate of the subordinated clause. The complementizer clitic *še=* (bold) is part of the prosodic word structure of the subject *hu* 'he' of the subordinated clause. However the clitic does not entertain an immediate dependency relationship with its host, rather it immediately dominates *po*, the predicate of the subordinated clause. Using the notions established in section 2.1, *še=hu* is a string, but not a catena. On the other hand, *še=...po* is a catena.

4.   The Hebrew desiderative construction

This section is, finally, concerned with the Hebrew desiderative. In the previous section, it has been shown how transfixes are represented in this account. A sketch of the Hebrew future tense has also been provided. Finally, cliticization was briefly addressed. All these issues are important in the description of the Hebrew desiderative.

First, the construction to be discussed below is confined to a specific desiderative meaning, namely that of the main clause subject wishing others to do something.[33] This kind of construction is transclausal in the sense that a verb of volition dominates an obligatory complementizer. German, too, expresses desideratives using a complementizer (in boldface):

(24) *Ich   will,   **dass**   er   kommt.*
     1SG   VOL   COMP   3SG.M   come.3SG.NPST
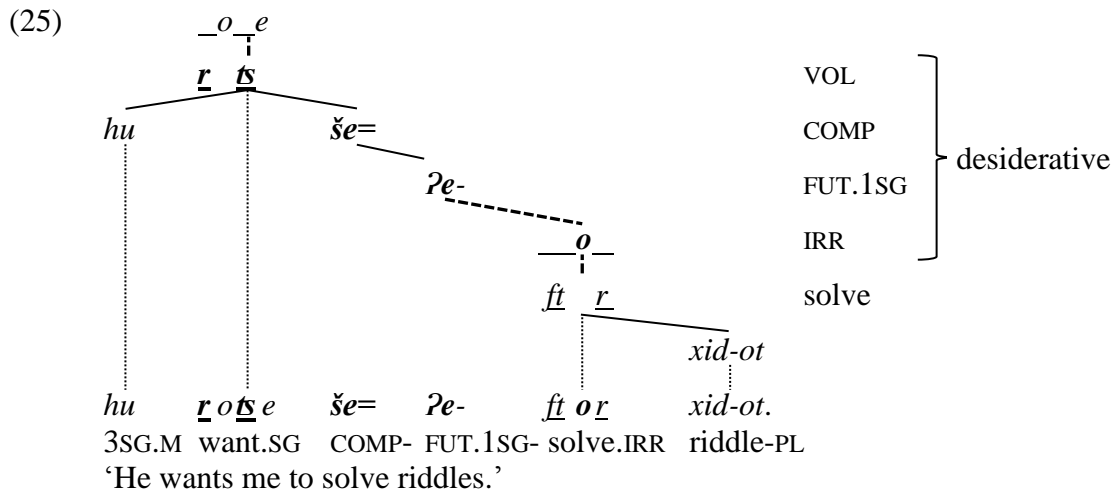   'I want him to come.'

Within the subordinated clause, certain grammatical meanings, namely future tense, and person, number, and possibly genus must be expressed. The desiderative meaning in the strict sense is restricted to the following verbs: *ratsa* 'want', *bikeʃ* 'wish', *ixel* 'wish well', *kiva* 'hope', as well as several others.[34] In their desiderative meaning, these verbs require that four conditions be met: 1. a subordinate clause headed by the clitic *še=* 'that' must be present. 2. The future tense must be present in the subordinate clause. 3. Future tense prefixes have cumulative exponence. The one exception is the prefix *ti-*, which can, in the absence of a genus or number

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[33] In Palmer (2001: 131–135), the notion of desiderative includes all expressions of desiring.

[34] The verbs are given here in the past tense 3SG.M form, because that is used as the lemma form in dictionaries.
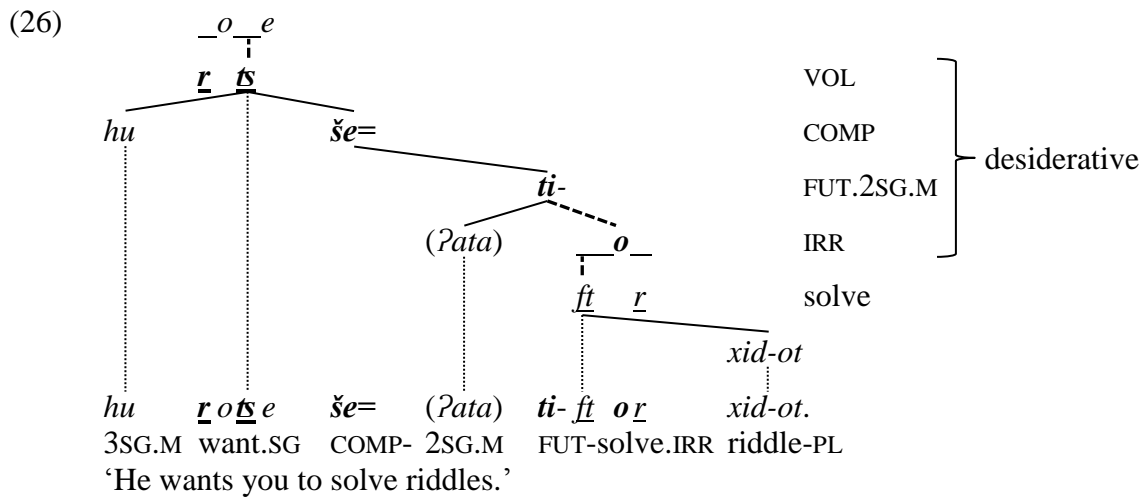
suffix, express the second person singular masculine, or the third person singular feminine. This prefix is underspecified with respect to person, genus, and number. In the second person, the optionality of the subject is licensed by the context, but in the third person, a subject (pronoun) is usually not omitted. If the subject is a pronoun, then this pronoun is deemed part of the desiderative construction because it serves to fully specify the grammatical information in the subordinated clause. 4. The units of form that contribute to the constructional meaning of the desiderative must qualify as a catena.

In the examples below, the verb _ratsa_ 'want' will be used as the verb of volition. The verb in the subordinated clause remains _ftr_ 'solve'. Consider the next sentence:

(25)

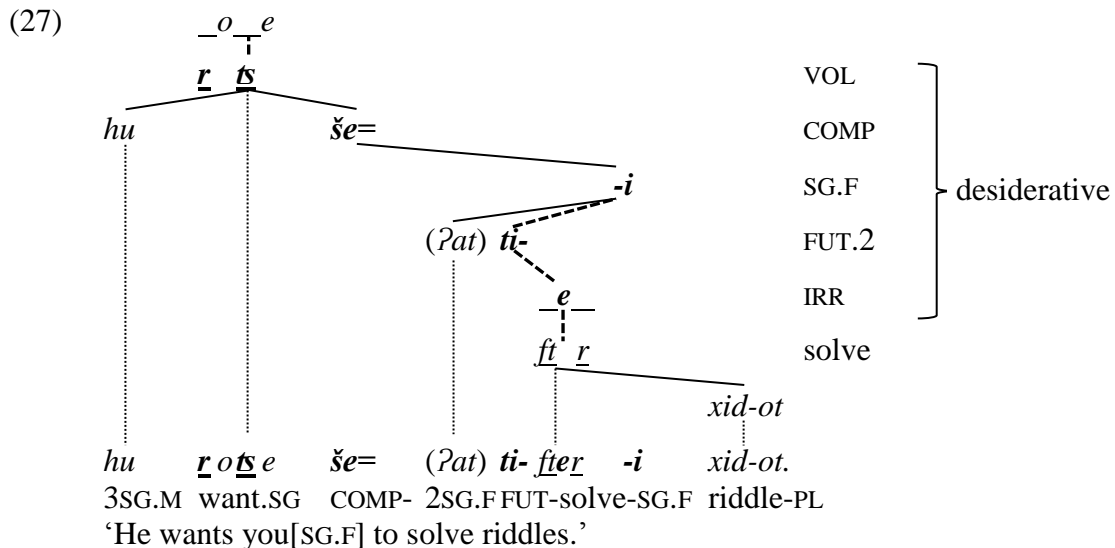| hu	_r_ o _ts_ e	_še_=	_ʔe-_	_ft_ o _r_	_xid-ot._
3SG.M	want.SG	COMP-	FUT.1SG-	solve.IRR	riddle-PL

'He wants me to solve riddles.'

The units in boldface are those involved in the desiderative construction. As before, root consonants are underlined. All four conditions are satisfied: 1. A subclause headed by _še=_ is present. 2. Future tense is present (_ʔe-_). 3. Associated person and number properties are specified (_ʔe-_ = 1SG); genus properties are not specified in the first person. 4. The units involved qualify as a catena.

With the verb in the subordinate clause in the second person, a pronoun is optional, if the subject is masculine. Optionality is expressed by round brackets:

(26)

```
        _o_e
        r  ts                        VOL
  hu           še=                   COMP           ┐
                    ti-              FUT.2SG.M       ├ desiderative
                (Ɂata)   _o_         IRR            ┘
                         ft  r       solve
                             xid-ot
```

hu	r o ts e	še=	(Ɂata)	ti- ft o r	xid-ot.
3SG.M	want.SG	COMP-	2SG.M	FUT-solve.IRR	riddle-PL

'He wants you to solve riddles.'

The bracketed expression *Ɂata* '2SG.M' is facultative.[35] If the pronoun is viewed as part of the desiderative construction, even though it is facultative, the fourth condition is still satisfied: the units involved qualify as a catena. If the pronoun is present, it forms the host for the clitic *še=*. If it is absent, the verb *ti-ftor* becomes the host.

When the prefix *ti-* appears together with the suffix *-i* then the third condition is still met:

(27)

```
        _o_e
        r  ts                        VOL
  hu           še=                   COMP
                        -i           SG.F         ┐
                (Ɂat) ti-            FUT.2        ├ desiderative
                      _e_            IRR          ┘
                      ft r           solve
                          xid-ot
```

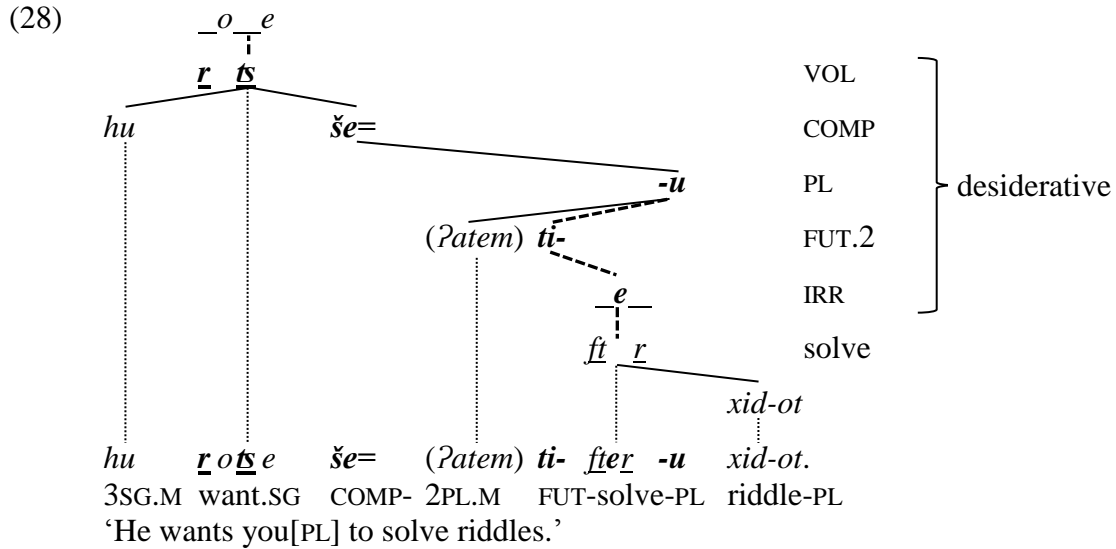| hu	r o ts e	še=	(Ɂat) ti- fte r	-i	xid-ot.
3SG.M	want.SG	COMP-	2SG.F FUT-solve	SG.F	riddle-PL

'He wants you[SG.F] to solve riddles.'

In the second person singular feminine, the suffix *-i* must be present. Hence the appearance of a subject pronoun is optional. Note that this analysis
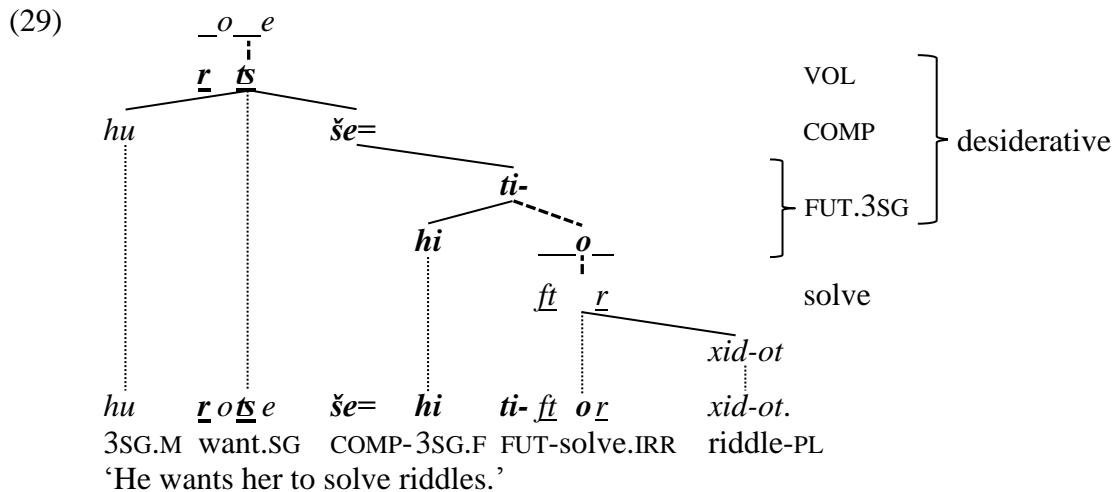
---

[35] The subject pronoun is seen here as a dependent of the tense prefix. Doing so corresponds to the assumption of a TP in, e.g. minimalist grammars.

continues to capture the constructional units as a catena, i.e. the fourth condition is met.

A similar constellation appears in the plural:

(28)

hu	**r** o **ts** e	**še=**	(ʔatem)	**ti-**	**fter**	**-u**	xid-ot.
3SG.M	want.SG	COMP-	2PL.M	FUT-solve-PL			riddle-PL

'He wants you[PL] to solve riddles.'

Here, the pronoun *ʔatem* 'you.PL' is facultative. The plural suffix is sufficient in specifying number.[36] If the subject in the subordinated clause is in the third person, a pronoun tends to appear. In case of the feminine third person singular, the presence of a pronoun results in full specification:

(29)

hu	**r** o **ts** e	**še=**	**hi**	**ti-**	**ft** o **r**	xid-ot.
3SG.M	want.SG	COMP-	3SG.F	FUT-solve.IRR		riddle-PL

'He wants her to solve riddles.'

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[36] Note, though, that *ʔatem* can express the unmarked second person plural, or the second person plural masculine. The feminine version is *ʔaten.*
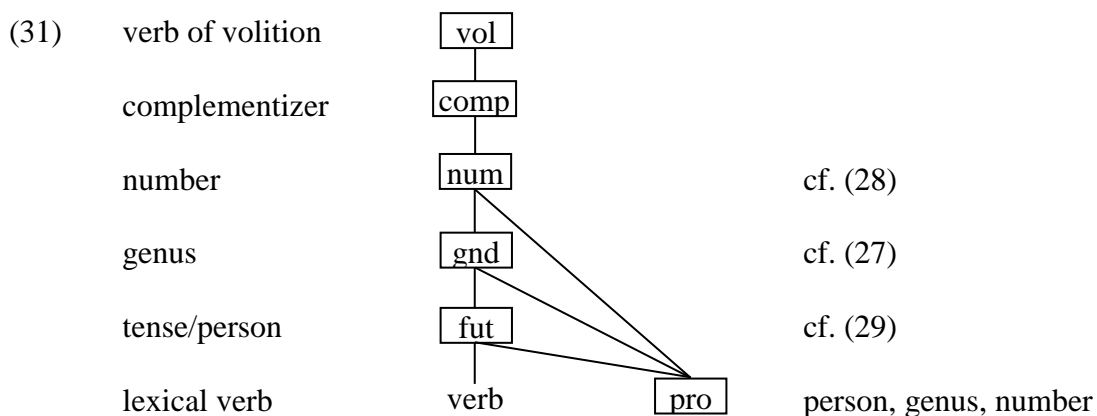
The feminine pronoun in (29) is in boldface (as part of the construction). Note that all four conditions are satisfied. A third person singular masculine pronoun tends to appear as the subject in the subordinate clause, even though full specification is accomplished by the prefix.

The third person plural forms of verbs function as impersonal verb forms, but do then appear without the third person plural pronoun *hem* 'they'. In this case the absence of this specific pronoun is the indication that the verb is impersonal:

(30) a. *ʔani roʦe   še=   **hem** ye-dʔ-u.*
         1SG   want.NPST COMP- 3PL   FUT.3-know-PL
         'I want them to know.'

    b. *ʔani roʦe   še=   ye-dʔ-u.*
         1SG   want.NPST COMP- FUT.3-know-PL
         'I want it to be known.'

In (30a), the boldface pronoun *hem* appears in the subordinate clause. Hence the sentence is understood as referencing a personal subject of the verb *ye-dʔ-u*. On the other hand, (30b) lacks a pronoun, and since the verb in the subordinate clause is in the third person plural, the interpretation of an impersonal verb is warranted.[37]

In summary, the desiderative construction can be captured in a purely vertical and abstract fashion:

(31)   verb of volition   [vol]

        complementizer   [comp]

        number   [num]   cf. (28)

        genus   [gnd]   cf. (27)

        tense/person   [fut]   cf. (29)

        lexical verb   verb   [pro]   person, genus, number

The verb of volition, here <u>ratsa</u> 'want', is the top node of the construction. Clearly, this verb may be marked by any grammatical form that does not overrule its valency potential, and still be able to participate in the

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[37] I am grateful to an anonymous reviewer for bringing this issue to my attention.

construction. It immediately dominates the complementizer. The complementizer dominates material that appears at the top of clauses, namely units that express tense, mood, number, genus, etc. The highest units below the complementizer are the pure number suffixes (cf. ex 28). If such a suffix is present, a co-occurring pronoun must depend on it. The number/genus suffix is also possible (cf. ex 27). If it is present, the pronoun must depend on it. Next are tense/number/person prefixes (cf. ex 25 and 26). The person features are usually expressed together with tense, i.e. as a prefix. When a pronoun appears, it must depend on the prefix. Whenever third person subject pronouns appear, they are considered as part of the construction.

5. Summary

This paper has attempted to capture the Hebrew desiderative, a transclausal periphrastic construction within catena-based dependency morphology. Section 2 briefly informed the reader on dependency grammatical notions and terms. Section 2.1 introduced the central term of this account, namely the catena. Section 2.2 included a brief history of dependency morphology. Section 2.3 introduced central notions of catena-based morphology, and it showed how the catena is used in morphology and morphosyntax. In section 2.4 principal reservations against other approaches to morphology were voiced.

The individual units involved in the desiderative construction posit certain challenges to theories of morphology. In order to develop an understanding of catena-based dependency morphology, section 3 touched on three issues: section 3.1 addressed transfixes and radicals, section 3.2 introduced the future tense paradigm, and section 3.3 briefly addressed cliticization. This was necessary because certain transfixes must be viewed as residing outside of the construction, for instance tense or other markers on the construction root, the verb of volition. On the other hand, certain other trans-, pre-, and suffixes must be viewed as constructional units. Further, the verb within the subordinated clause must be marked with future tense prefixes. Finally, the complementizer is a clitic, which necessitated a brief layout how cliticization works in dependency morphology.

Section 4 illustrated with several examples how the construction can be represented within the proposed framework, and that the units of the desiderative construction always qualify as a catena. Further, it showed that

the desiderative construction is neither word-based, nor constituent-based. Rather the construction cuts into words, namely it reaches into the verb of volition, of which only the radical participates in the construction. At the lower end of the construction, the morphs that together express future tense, i.e. the prefix, and the transfix must be part of the construction, while the lexical verb which they dominate is excluded. Thus, the current account makes the case for an entirely surface-based analysis of periphrastic constructions, taking the Hebrew desiderative as its concrete example.

References

Ágel, Vilmos; Eichinger, Ludwig; Eroms, Hans-Werner; Hellwig, Peter; Heringer, Hans Jürgen & Lobin, Henning (2003) *Handbücher zur Sprach- und Kommunikationswissenschaft: Dependenz und Valenz*, Vol.1. Berlin/New York: Walter de Gruyter.

—— (2006) *Handbücher zur Sprach- und Kommunikationswissenschaft: Dependenz und Valenz*, Vol.2. Berlin/New York: Walter de Gruyter.

Ágel, Vilmos & Fischer, Klaus (2010) 50 Jahre Valenztheorie und Dependenzgrammatik. *Zeitschrift für germanistische Linguistik 16*: 249–290.

Anderson, John (1980) Towards dependency morphology: The structure of the Basque verb. In John Anderson & Colin J. Ewen (eds.), *Studies in Dependency Phonology*, pp. 221–271. Ludwigsburg: R.O.U. Strauch.

Anderson, Stephen R. (1992) *A-Morphous Morphology*. Cambridge: Cambridge University Press.

—— (2005) *Aspects of the Theory of Clitics*. Oxford: Oxford University Press.

Aronoff, Mark (1976) *Word Formation in Generative Grammar*. Cambridge, Massachusetts: MIT Press.

—— (1992) Stems in Latin verbal morphology. In Mark Aronoff (ed.), *Morphology Now*, pp. 5–32. Albany: State University of New York Press.

Bat-El, Outi (1994) Stem classification and cluster transfer in Modern Hebrew. *Natural Language and Linguistic Theory* 12: 571–596.

—— (2001) In search for the roots of the C-root: The essence of Semitic morphology. Workshop on Root and Template Morphology, USC: Los Angeles. May 6, 2001. <http://www.outibatel.com/wp-content/uploads/2010/12/Bat-El-2001-C-root.pdf> (25 July 2014)

—— (2002) True truncation in colloquial Hebrew imperatives. *Language* 78 (4): 651–683.

Bloomfield, Leonard (1933) *Language*. New York: Holt.

Booij, Geert (2010) *Construction Morphology*. Oxford/New York: Oxford University Press.

Bybee, Joan L. (1985) *Morphology: A Study of the Relation Between Meaning and Form*. Amsterdam: John Benjamins Publishing Company.

—— (2003) *Phonology and Language Use.* Revised edition. Cambridge: Cambridge University Press.

—— (2010) *Language, Usage and Cognition.* Cambridge: Cambridge University Press.

Coffin, Edna Amir & Bolozky, Shmuel (2005) *A Reference Grammar of Modern Hebrew*. Cambridge: Cambridge University Press.

Creider, Chet & Hudson, Richard (1999) Inflectional morphology in Word Grammar. *Lingua* 107: 163–187.

Di Sciullo, Anna Maria (2005) *Asymmetry in Morphology*. Cambridge: MIT Press.

Embick, David (2003) Linearization and local dislocation: Derivational mechanics and interactions. *Linguistic Analysis* 33 (3–4): 303–336.

Embick, David & Noyer, Rolf (2001) Movement operations after syntax. *Linguistic Inquiry* 32 (4): 555–595.

—— (2007) Distributed Morphology and the syntax/morphology interface. In Gillian Ramchand & Charles Reiss (eds.), *The Oxford Handbook of Linguistic Interfaces*, pp. 289–324. Oxford: Oxford University Press.

Engel, Ulrich (1994) *Syntax der deutschen Gegenwartssprache*. 3rd edition. Berlin: Erich Schmidt.

Eroms, Hans-Werner (1985) Eine reine Dependenzgrammatik für das Deutsche. *Deutsche Sprache* 13: 306–326.

—— (2000) *Syntax der deutschen Sprache*. Berlin: Walter de Gruyter.

Gesenius, Friedrich Heinrich Wilhelm (1909) *Gesenius' Hebrew Grammar, as Edited and Enlarged by the Late E. Kautzsch. Second English Edition, Revised in Accordance with the Twenty-Eighth German Edition.* Translated by A.E. Cowley. Unabridged Republication. 2006. Mineola, NY: Dover Publications Inc.

Goldsmith, John (1976) *Autosegmental Phonology*. Doctoral dissertation. MIT.

—— (1990) *Autosegmental and Metrical Phonology*. Oxford: Basil Blackwell.

Groß, Thomas (1999) *Theoretical Foundations of Dependency Syntax*. München: iudicium.

—— (2010) Chains in syntax and morphology. In Otoguro Ryo, Kiyoshi Ishikawa, Hiroshi Uemoto, Kei Yoshimoto & Yasunari Harada (eds.), *Proceedings of the 24th Pacific Asia Conference on Language, Information and Computation at Tohoku University*, pp. 143–152. Tokyo: Waseda University.

—— (2011a) Catenae in morphology. In Kim Gerdes, Eva Hajičová & Leo Wanner (eds.), *Depling 2011*, pp. 47–57, Barcelona: Pompeu Fabra University. <http://depling.org/proceedingsDepling2011/papers/gross1.pdf> (24 August 2014).

—— (2011b) Clitics in dependency morphology. In Kim Gerdes, Eva Hajičová & Leo Wanner (eds.), *Depling 2011*, pp. 58–68. Barcelona: Pompeu Fabra University. <http://depling.org/proceedingsDepling2011/papers/gross2.pdf> (24 August 2014).

—— (2011c) Transformational grammarians and other paradoxes. In Igor Boguslavsky & Leo Wanner (eds.), *MTT 2011*: 88–97. Barcelona: Pompeu Fabra University. <http://meaningtext.net/mtt2011/proceedings/papers/Gross.pdf> (24 August 2014).

—— (2014) Clitics in dependency morphology. In: Kim Gerdes, Eva Hajičová & Leo Wanner (eds.), *Dependency Linguistics: Recent Advances in Linguistic Theory*

Using Dependency Structures, pp. 229–252, Amsterdam/New York: John Benjamins.

Groß, Thomas & Osborne, Timothy (2009) Toward a practical dependency grammar theory of discontinuities. *SKY Journal of Linguistics* 22: 43–90.

—— (2013) Katena und Konstruktion: Ein Vorschlag zu einer dependenziellen Konstruktionsgrammatik. *Zeitschrift für Sprachwissenschaft* 32 (1): 41–73.

Halle, Morris & Marantz, Alec (1993) Distributed Morphology and the pieces of inflection. In Kenneth Hale & S. Jay Keyser (eds.), *The View from Building 20*, pp. 111–176. Cambridge: MIT Press.

Harley, Heidi & Noyer, Rolf (2003) Distributed Morphology. In *The Second GLOT International State of-the-Article Book*, pp. 463–496. Berlin: Mouton de Gruyter.

Harnisch, Rüdiger (2003) Verbabhängige Morphologie und Valenzmorphologie der Subjekt-Verb-Kongruenz. In Vilmos Ágel, Ludwig Eichinger, Hans-Werner Eroms, Peter Hellwig, Hans Jürgen Heringer & Henning Lobin (eds.), *Handbücher zur Sprach- und Kommunikationswissenschaft: Dependenz und Valenz*, Vol. 1, pp. 411–421. Berlin: Walter de Gruyter.

Harris, Zellig (1942) Morpheme alternants in linguistics analysis. *Language* 18: 169–180.

Hays, David (1964) Dependency theory: A formalism and some observations. *Language* 40: 511–525.

Heringer, Hans-Jürgen (1970) Einige Ergebnisse und Probleme der Dependenzgrammatik. *Der Deutschunterricht* 4: 42–98.

—— (1973) *Theorie der deutschen Syntax*. Second edition. München: Hueber.

—— (1996) *Deutsche Syntax Dependentiell*. Tübingen: Staufenberg.

Hockett, Charles F. (1947) Problems of morphemic analysis. *Language* 23: 321–343.

—— (1954) Two models of grammatical description. *Word* 10: 210–234.

Hudson, Richard (1984) *Word Grammar*. New York: Basil Blackwell.

—— (1990) *An English Word Grammar*. Oxford: Basil Blackwell.

—— (2003) Word Grammar. In Vilmos Ágel, Ludwig Eichinger, Hans-Werner Eroms, Peter Hellwig, Hans Jürgen Heringer & Henning Lobin (eds.), *Handbücher zur Sprach- und Kommunikationswissenschaft: Dependenz und Valenz*, Vol. 1, pp. 508–526. Berlin: Walter de Gruyter.

—— (2007) *Language Networks: The New Word Grammar*. New York: Oxford University Press.

—— (2010) *An Introduction to Word Grammar*. Cambridge: Cambridge University Press.

Jung, Wha-Young (1995) *Syntaktische Relationen im Rahmen der Dependenzgrammatik*. Hamburg: Buske.

Kahane, Sylvain (ed.) (2000) *Les Grammaires de Dependence*. Paris: Hermes.

Kunze, Jürgen (1975) *Abhängigkeitsgrammatik*. Berlin: Akademie Verlag.

Lehmann, Christian (2004) Interlinear morphemic glossing. In Geert Booij, Christian Lehmann, Joachim Mugdan & Stavros Skopeteas (eds.), Morphologie. Ein internationales Handbuch zur Flexion und Wortbildung. 2. Halbband (Handbücher der Sprach- und Kommunikationswissenschaft, 17.2), pp. 1834-1857. Berlin: Walter de Gruyter.

Lieber, Rochelle (1987) *An Integrated Theory of Autosegmental Processes*. Albany, NY: State University of New York Press.

Lieber, Rochelle & Scalise, Sergio (2007) The Lexical Integrity Hypothesis in a new theoretical universe. In Geert Booij, Luca Ducceschi, Bernard Fradin, Emiliano Guevara, Angela Ralli & Sergio Scalise (eds.), *On-line Proceedings of the Fifth Mediterranean Morphology Meeting (MMM5)*, pp. 1–24. Bologna: University of Bologna. <http://www3.lingue.unibo.it/mmm2/wp-content/uploads/2012/09/001-024-Lieber-Scalise.pdf> (25 August 2014)

Lobin, Henning (1993) *Koordinationssyntax als prozedurales Phänomen*. Tübingen: Narr.

Matthews, Peter Hugoe (1972) *Inflectional Morphology: A Theoretical Study Based on Aspects of Latin Verb Conjugation*. Cambridge: Cambridge University Press.

—— (1981) *Syntax*. Cambridge: Cambridge University Press.

—— (1991) *Morphology: Second Edition*. Cambridge: Cambridge University Press.

Maxwell, Dan (2003) The concept of dependency in morphology. In Vilmos Ágel, Ludwig Eichinger, Hans-Werner Eroms, Peter Hellwig, Hans Jürgen Heringer & Henning Lobin (eds.), *Handbücher zur Sprach- und Kommunikationswissenschaft: Dependenz und Valenz*, Vol. 1, pp. 678–684. Berlin: Walter de Gruyter.

McCarthy, John (1981) A prosodic theory of nonconcatenative morphology. *Linguistic Inquiry* 12: 373–418.

Mel'čuk, Igor (1988) *Dependency Syntax: Theory and Practice*. Albany, NY: State University of New York Press.

—— (2003) Levels of dependency in linguistic description: Concepts and problems. In Vilmos Ágel, Ludwig Eichinger, Hans-Werner Eroms, Peter Hellwig, Hans Jürgen Heringer & Henning Lobin (eds.), *Handbücher zur Sprach- und Kommunikations-wissenschaft: Dependenz und Valenz*, Vol.1, pp. 188–229. Berlin: Walter de Gruyter.

Nida, Eugene A. (1948) The identification of morphemes. *Language* 24: 414–441.

Nivre, Joakim (2006) *Inductive Dependency Parsing*. Berlin/New York: Springer.

O'Grady, William (1998) The syntax of idioms. *Natural Language and Linguistic Theory* 16: 79–312.

Osborne, Timothy (2005) Beyond the constituent: A DG analysis of chains. *Folia Linguistica* 39 (3– 4): 251–297.

Osborne, Timothy & Groß, Thomas (2012a) Constructions are catenae: Construction Grammar meets dependency grammar. *Cognitive Linguistics* 23 (1): 163–214.

—— (2012b) Antecedent containment: A dependency grammar solution in terms of catenae. *Studia Linguistica* 66 (2): 94–127.

Osborne, Timothy; Putnam, Michael & Groß, Thomas (2011) Bare phrase structure, label-less trees, and specifier-less syntax: Is Minimalism becoming a dependency grammar? *The Linguistic Review* 28: 315–364.

—— (2012) Catenae: Introducing a novel unit of syntactic analysis. *Syntax* 15 (4): 354–396.

Palmer, Frank R. (2001) *Mood and Modality: Second Edition*. Cambridge: Cambridge University Press

Pickering, Martin & Barry, Guy (1993) Dependency categorial grammar and coordination. *Linguistics* 31: 855–902.

Robins, Robert H. (1959) In defense of WP. *Transactions of the Royal Philological Society*: 116–144.

Robinson, Jane (1970) Dependency structures and transformational rules. *Language* 46: 259–285.

Sadock, Jerrold M. (1991) *Autolexical Syntax: A Theory of Parallel Grammatical Relations*. Chicago/London: Chicago University Press.

Schubert, Klaus (1988) *Metataxis: Contrastive Dependency Syntax for Machine Translation*. Dordrecht: Foris.

Sgall, Petr; Hajičová, Eva & Panevová, Jarmila (1986) *The Meaning of the Sentence in its Semantic and Pragmatic Aspects*. Dordrecht: D. Reidel.

Spencer, Andrew (1991) *Morphological Theory*. Oxford: Blackwell.

Starke, Michal (2009) Nanosyntax: A short primer to a new approach of language. *Nordlyd* 36.1, pp. 1–6. <http://www.ub.uit.no/baser/nordlyd/> (26 July 2014)

Starosta, Stanley (1988) *The Case for Lexicase: An Outline of Lexicase Grammatical Theory*. New York: Pinter Publishers.

Stump, Gregory T. (2001) *Inflectional Morphology*: *A Theory of Paradigm Structure*. Cambridge: Cambridge University Press.

Stump, Gregory T. & Finkel, Raphael A. (2013) *Morphological Typology: From Word to Paradigm*. Cambridge: Cambridge University Press.

Tarvainen, Kalevi (2000) *Einführung in die Dependenzgrammatik*. Tübingen: Niemeyer.

Tesnière, Lucièn (1959) *Éléments de Syntaxe Structurale*. Paris: Klincksieck.

Williams, Edwin (1981) On the notions 'lexically related' and 'head of a word'. *Linguistic Inquiry* 12: 245–274.

—— (2011) *Regimes of Derivation in Syntax and Morphology*. New York: Routledge.

Abbreviations

Category abbreviations follow the Leipzig Glossing Rules. Additional abbreviations:

PSS   possibility
VOL   volitional, volitive (following Lehmann 2004)

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