

**TURKISH SUSPENDED AFFIXATION IS  
LEXICAL SHARING**

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## Abstract

Turkish displays a phenomenon known as *suspended affixation*, in which an affix takes scope over two or more preceding words. This phenomenon raises problems for lexical integrity, as it is usually understood. However, the lexical sharing approach of Wescoat (2002) allows us to give a satisfying account of suspended affixation within LFG.

### 1 What is suspended affixation?

*Suspended affixation* is the term used Lewis (1967) to describe instances in Turkish morphology where an affix takes scope over two more preceding words:

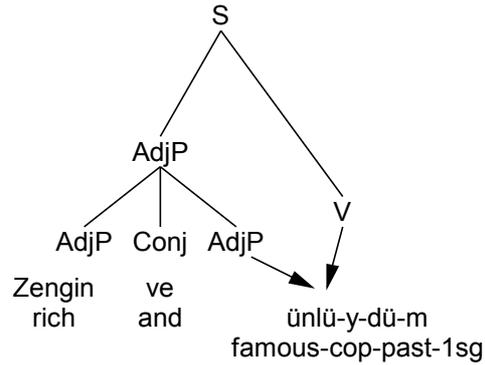
- (1) a. [Zengin ve ünlü]-y-dü-m.  
rich and famous-cop-past-1sg  
'I was rich and famous.'
- b. [Zengin ve mesut]-tu-m.  
rich and happy-past-1sg  
'I was rich and happy.'

Examples like this raise problems for lexical integrity, as it is usually understood (Bresnan and Mchombo 1995, Bresnan 2001).

The problem is that some affixes seem to take scope over phrases and not simply over words. This paper addresses the issue of how such issues are best addressed within LFG.

### 2 Lexical sharing

Wescoat (2002), uses a slightly relaxed version of lexical integrity which allows a single word to *costantiate* more than one adjacent c-structure node. This lexical sharing model can provide a natural LFG account of the Turkish facts. I will argue that the best representation of (1a) is the tree shown in Figure 1:



**Figure 1 Lexical sharing**

In a diagram like this, the arrow represents the relationship *instantiate*, which is the relationship between terminal nodes in a tree and the lexical items that they correspond to. While a syntactic node must be dominated by only one other node, this restriction does not apply to the relationship between terminal nodes and lexical items. A lexical item may instantiate more than one terminal node, subject to a number of restrictions.<sup>1</sup>

In Wescoat's (2002, 2007) approach, words can only co-instantiate multiple c-structure nodes under a few special conditions:

- a.) Special lexical items (such as Prep+Det contractions) are listed in the lexicon as co-instantiators (Wescoat 2007).
- b.) Lexical rules may create co-instantiating lexical items
- c.) Co-instantiated nodes must be adjacent in the tree

### **3 Copulas in Turkish**

#### **3.1 The contracted copula**

With this framework in mind, let us try to formulate the lexical rule that creates copular contraction in Turkish. The Turkish copula is *-y* after a vowel;  $\emptyset$  after a consonant, and the copula plus any suffixes of the copula are affixed to the end of the preceding phrase.

We thus need a rule like the following:

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<sup>1</sup> Bresnan and Mugane (2006)'s approach to mixed categories shares a number of similarities to the lexical sharing approach of Wescoat (2002, 2007), since their approach also allows a single word to instantiate more than one c-structure node. However, Bresnan and Mugane (2006) posit such a solution only in the case of agentive nominalizations where the derivational morphology creates a word that simultaneously belongs to two categories. It is possible that such a solution could be extended to generalize to the cases of inflectional morphology and contraction discussed here.



## 4 Suspended affixation and noun phrases

### 4.1 Case endings

Suspended affixation is also found with the case endings, as in the following example:

- (4) [Can'-ın divan-ı ve  
 John-gen couch-3sg and  
 Orhan'-ın yatağ-ın]-da uyu-du-m.  
 Orhan-gen bed-3sg-loc sleep-past-1sg

‘I slept on John’s couch and Orhan’s bed.’

Note here that the locative case takes scope over both preceding NPs. The lexical sharing approach yields a natural analysis of such examples:

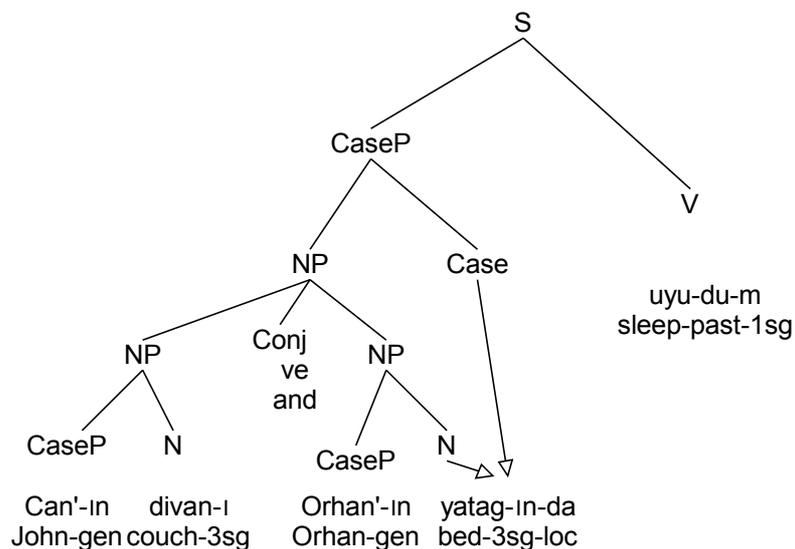


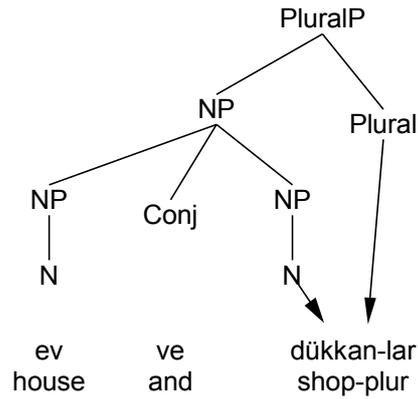
Figure 3 Lexical sharing analysis of case

### 4.2 The plural

Suspended affixation is also found with the plural (Kabak 2007:335):

- (5) [ev ve dükkan]-lar  
 house and shop-plur  
 ‘houses and shops’

This implies that Turkish also has PluralP, as shown in Figure 4.



**Figure 4 Lexical sharing analysis of plural**

### 4.3 Rules for lexical sharing of case and number

The rules that inflect a Turkish noun for case can be written in the following way:

$$(6) \quad / \Phi / \leftarrow [\text{POS N}] \quad \rightarrow \quad / \Phi\text{-dE} / \leftarrow [\text{POS N + Case}]$$

[CASE LOC]

Note that the output of the lexical rule changes the POS value of the word so that it now co-instantiates N and Case. A similar rule inflects a noun for plurality:

$$(7) \quad / \Phi / \leftarrow [\text{POS N}] \quad \rightarrow \quad / \Phi\text{-lEr} / \leftarrow [\text{POS N + Plur}]$$

[NUM PL]

## 5 Some alternatives to lexical sharing

Though the treatment of lexical sharing that I have proposed is not yet the standard account within LFG, I argue that it is the least problematic approach. In particular, it has distinct advantages over three possible alternatives:

- a.) Treating the morphemes which participate in suspended affixation as clitics
- b.) Allowing conjunction in the lexicon
- c.) Adding a special annotation to the final conjunct

### 5.1 Alternative 1: Cliticization

Turkish phonology gives us good argument against any account that treats suspended affixation as a form of cliticization.

The rules of vowel harmony and voicing assimilation are only found within the word in Turkish. Note that in the following examples of copula contraction, the

vowel of the past tense suffix /-dI/ shows vowel harmony with the last vowel of the adjective that precedes it.

- (8) a. [Zengin ve ünlü]-y-dü-m.  
 rich and famous-cop-past-1sg  
 ‘I was rich and famous.’
- b. [Zengin ve mesut]-tu-m.  
 rich and happy-past-1sg  
 ‘I was rich and happy.’

Another phonological rule which is restricted to words changes the initial /d/ of many suffixes to /t/ when the preceding sound is voiceless. Thus in (8b), the allomorph of the past tense is /-tu/ because of the preceding /t/.

The phonological properties of the past tense morpheme /-dI/ are the same when it is uncontroversially an affix on a verb:

- (9) Git-ti-m ‘I went’  
 Oku-du-m ‘I read’

However, the past tense does not license suspended affixation when it attaches to a verb:

- (10) \*Git ve oku-du-m.  
 go and read-past-1sg  
 (I went and read.)

This difference can be captured naturally in the lexical sharing account by saying that the rule which adds a past tense ending to a verb does not involve coinstantiation:

- (11) /Φ /← [POSV] → /Φ-dI/ ← [POS V]  
 [TENSE PAST]

If we try to treat suspended affixation as a type of cliticization, then we encounter the difficulty that /-dI/ ‘past’ must be treated as an affix when attached to verbs, but as a clitic when attached to other parts of speech. Nevertheless, the phonology is identical in the two cases.

Another difficulty for accounts that involve cliticization comes from the very different behavior of true clitics in Turkish. The true clitics like ‘relative’ *ki* do not show vowel harmony:

- (12) Ankara-da=ki yeni bina-lar  
 Ankara-loc=rel new building-pl  
 ‘the new buildings in Ankara’
- Bilecik-te=ki yeni bina-lar  
 Bilecik-loc-rel new building-pl  
 ‘the new buildings in Bilecik’

Note that here the locative case ending shows vowel harmony and voicing assimilation; while the clitic does not. Thus case endings like /-da~-de~-te~-ta/ ‘locative’ are affixes and not clitics.

Finally, let me argue that a clitic analysis is to some degree a mere label for the phenomenon, since there is no uniform LFG treatment for the various items called clitics. To the extent that any such analysis posits separate syntactic nodes for number, case, and the copula, it is similar to the lexical sharing approach. The virtue of the lexical sharing approach is that it presents an explicit account of how multiple syntactic nodes may correspond to a single phonological word.

## 5.2 Alternative 2: Coordination in the lexicon

Could we instead allow coordination in the lexicon, and attach the affix to the coordinate? There are two problems with this approach. The first is that most affixes cannot take scope over coordination. The second problem is that the material in the conjuncts may be phrasal.

### 5.2.1 Affixes which do not allow suspended affixation

Suspended affixation is impossible with any of the derivational morphemes of the language.<sup>2</sup> For example, there is a suffix /-cɪ/ which attaches to a noun N and gives the meaning ‘one who sells/makes N’

- |      |       |          |          |                   |
|------|-------|----------|----------|-------------------|
| (13) | halı  | ‘carpet’ | halı-cɪ  | ‘carpet salesman’ |
|      | havlu | ‘towel’  | havlu-cu | ‘towel salesman’  |

It is impossible, however, to suspend this affix:

- |      |                                      |    |          |  |
|------|--------------------------------------|----|----------|--|
| (14) | halı-cɪ                              | ve | havlu-cu |  |
|      | ‘carpet salesman and towel salesman’ |    |          |  |
|      | *[halı ve havlu]-cu                  |    |          |  |

We also find that none of the verbal derivational morphemes (e.g. passive, causative) license suspended affixation:

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<sup>2</sup> However Kabak (2007:336) notes that there are a small number of lexicalized examples of a derivational morpheme with scope over a conjunct:

badana	ve	boya-cɪ
whitewash	and	paint-der
‘painter’		

These cases are unproductive and don’t generalize to the lexicon as a whole, so they must be listed. In contrast, regular suspension of case, number, and copular morphology is completely productive.

- (15) a. Can küçük düş-ür-ül-dü                      ve  
 John small fall-cause-pass-past                      and
- aşağıla-n-dı.  
 insult-pass-past
- ‘John was humiliated and insulted.’
- b. \* Can [küçük düş-ür      ve    aşağıla]-n-dı.  
 John small fall-cause and insult-pass-past

Many verbal inflectional morphemes also fail to license suspended affixation. The affix -meli ‘necessitative’, for example, cannot scope over coordination:

- (16) Can    ye-meli              ve      iç-meli.  
 John    eat-necess              and      drink-necess
- ‘John must eat and drink’
- \*Can [ye ve iç]-meli.  
 John eat and drink-must

These problems seem to make coordination as an input to lexical morphology problematic, since it is difficult to see how one could account for difference between morphemes. Some morphemes may be attached to coordinates, but others may not, and there is no apparent motivation for this difference in an entirely lexical approach.

### 5.2.2 The potentially phrasal nature of the conjuncts

Another problem for an entirely lexicalist approach to suspended affixation is that each of the conjuncts in suspended affixation is potentially complex and phrasal:

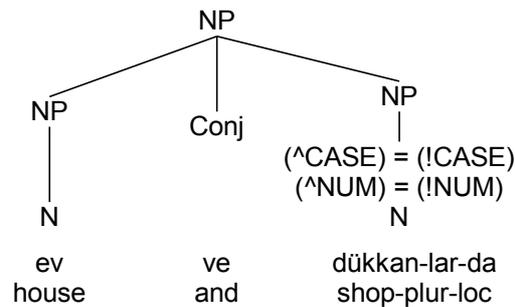
- (17) [[Can'-ın divan-ı]                      ve [Orhan'-ın  
 John-gen couch-3sg                      and Orhan-gen
- yatağ-ın]]-da uyu-du-m.  
 bed-3sg-loc sleep-past-1sg
- ‘I slept on John’s couch and Orhan’s bed.’
- (18) Meyva-lar [[ Can'-ın uzun ağac-ı] ve  
 fruit-pl      John-gen tall tree-3sg and
- [Orhan'-ın kısa bağ-ın]]-dan                      gel-ir.  
 Orhan-gen short vine-3sg-abl                      come-aor
- ‘The fruits come from John’s tall tree and Orhan’s short vine.’

Thus if we try to allow coordination before attachment of the case affix, we have to

incorporate all the rules for constructing a NP in the lexicon. That is an obviously unattractive duplication of PS-rules in the syntax

### 5.3 Special annotation for the final conjunct

A third possibility is that the final conjunct has some annotation that specifies that its value for tense, mood, number, case, etc. is shared with the preceding conjuncts. Thus we might add an annotation like  $(\uparrow\text{CASE}) = (\downarrow\text{CASE})$  and  $(\uparrow\text{NUM}) = (\downarrow\text{NUM})$  to the following tree:



**Figure 5 Special annotation alternative analysis**

This will correctly insure that the case and number features of the second conjunct are shared with all the members of the coordination.

However, this analysis fails to capture an essential fact about suspended affixation, which is that the affixes with scope over the coordination are always peripheral to the coordination. In an approach with special annotation, nothing in principle prevents adding this annotation to the initial conjunct instead of the final conjunct.

In contrast, the lexical sharing account of suspended affixation does not have this flaw. Case and Plural are separate functional heads that follow NP. The principles of lexical sharing only allow coinstantiation of adjacent terminal nodes, and the Case and Plural nodes can only be adjacent to the final member of the coordinate structure.

## 6 Objections to functional categories

LFG avoids the use of empty categories, thus LFG analyses of English do not posit categories like PluralP or CaseP, since there are no words that head such phrases. On the other hand, there are languages for which such analyses are clearly appropriate.

### 6.1 Case Phrases

A number of languages have case markers which are independent words or clitics, as in Modern Hebrew and Copala Triqui (Oto-Manguan, Mexico):

- (19) Ra'iti et Moshe v-Shimon. (Hebrew)  
I:saw acc Moshe and-Shimon

'I saw Moshe and Shimon.'

- (20) Que-ne'e<sup>3</sup> Juan<sup>4</sup> mää<sup>3</sup> xnii<sup>3</sup> xco<sup>4</sup> ve<sup>3</sup>. (Triqui)  
com-see Juan acc boy behind house

'Juan sees the boy behind the house.'

The Triqui example is a particularly clear case of an independent word which is a case marker. Triqui words may only have nasal vowels in a final syllable (Hollenbach 1984). So *mää<sup>3</sup> xnii<sup>3</sup>* 'boy (acc)' cannot be a single word.

*Mää<sup>3</sup>* cannot be some other part of speech like preposition because it fails to undergo pied-piping, which is otherwise found with all prepositions

- (21) [<sub>PP</sub> Xco<sup>4</sup> ve<sup>3</sup>] que-ne'e<sup>3</sup> Juan<sup>4</sup> mää<sup>3</sup> xnii<sup>3</sup>.  
behind house com-see Juan acc boy

'Juan saw the boy *behind the house*.'

\*? [<sub>CaseP</sub> Mää<sup>3</sup> xnii<sup>3</sup>] que-ne'e<sup>3</sup> Juan<sup>4</sup> xco<sup>4</sup> ve<sup>3</sup>.  
acc boy com-see Juan behind house

(Juan saw *the boy* behind the house.)

## 6.2 Plural Phrases

Copala Triqui also shows clear examples of dual and plural markers as separate words:

- |      |                          |                          |                        |
|------|--------------------------|--------------------------|------------------------|
| (22) | roj <sup>1</sup><br>dual | xnii <sup>3</sup><br>boy | 'boys (dual)'          |
|      | nij <sup>3</sup><br>plur | xnii <sup>3</sup><br>boy | 'boys (three or more)' |

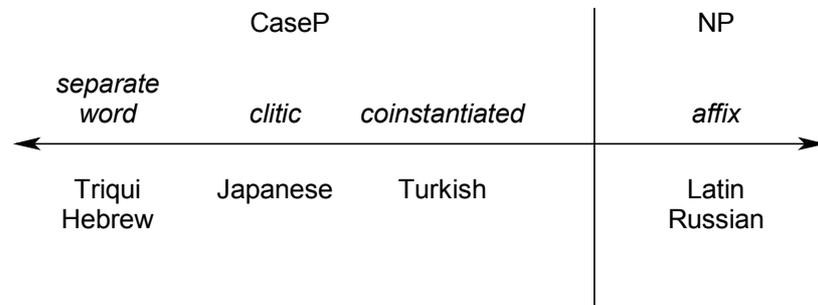
The phonology again shows us that these are separate words, since /h/ (<j>) may only occur as a coda consonant in word-final position (Hollenbach 1984). More generally, Dryer (1989, 1992) has shown that plural words constitute a small separate part of speech category in a number of languages.

## 6.3 Variation in existence of functional categories

The architecture of LFG is flexible enough to allow separate functional projections in c-structure for some languages but not others. Variation in the syntactic status of Infl and Det is well-known crosslinguistically, since some language realize categories like Tense, Mood, and Definite analytically --- through separate words ---

and other realize these categories synthetically -- through affixation.

In LFG with lexical sharing, we may posit a syntactic status for a functional morpheme when some syntactic phenomenon (like coordination) makes that status clear. The co-instantiation cases show us, however, that phonological status as an affix does not preclude a separate syntactic node. The realization possibilities for Case can be schematized as in the following chart:



**Figure 6 Possible realizations of case**

## 7 Verb-internal suspended affixation

Turkish also has more complex cases where the non-final conjunct has some suffixes:

- (23) [Çalış-acak ve            başar-acak]-tı-k  
 work-fut    and            succeed-fut-past-1pl

‘We were going to work and succeed.’

My analysis follows the insight of Kornfilt (1996), which claims that such structures involve a null copula internal to the verb suffixes.

Kornfilt argues that the correct analysis of such examples is as follows:

- (24) Çalış-acak ve            başar-acak-Ø-tı-k  
 work-fut    and            succeed-fut-COP-past-1pl

‘We were going to work and succeed.’

The copular analysis is well-motivated in Turkish morphology. Note the multiple appearance of tense markers in the verbal suffix string and an overt /y/ in some environments:

- (25) Gör-dü-y-dü-m  
see-past-cop-past-1sg

‘I had seen’

Adopting such a copular analysis of verb-internal suspended affixation allows us to extend our lexical sharing account to these forms as well, and they will have a treatment like that of the other copular contraction examples.

## 8 Morphological restrictions on suspended affixation

Kabak (2007) demonstrates the importance of the notion *morphological word*. An important constraint is that any non-final conjunct must be a legitimate morphological word. Legitimate morphological words need to end in an agreement marker or one of a small number of aspect/modality markers.

Thus there are some cases where the null copula might be expected to license suspended affixation, but the result is not good:

- (26) \*[Avşa-ya git-ti ve deniz-e gir-di]-y-dik  
Avsha-dat go-past and sea-dat enter-past-cop-past-1pl

‘We went to Avsha and swam in the sea.’ (Kabak 2007:318)

The problem with this example is that *gitti* is not a valid morphological verb in Turkish since it lacks (appropriate) agreement.<sup>3</sup>

While Kabak (2007) is a thorough account of how morphology limits suspended affixation, his approach says nothing about the syntactic status of suspended affixation. The potentially phrasal nature of the conjuncts renders any account to deal with suspended affixation exclusively in the morphology problematic.

I believe that the most likely way to make Kabak’s (2007) results compatible with a syntactic representation is to specify that syntax creates suspended affixation structures, but the structures must also satisfy a morphological filter.

## 9 Choices in syntactic representation

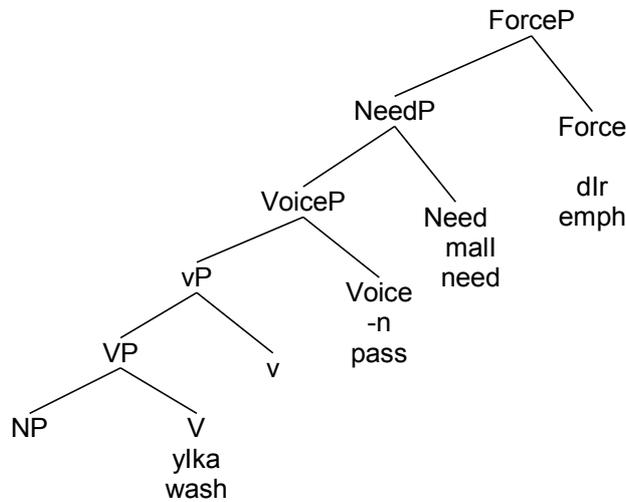
### 9.1 Minimalist approaches

If we accept the idea that morphology acts as a filter on suspended affixation, we are still left with the question of the most appropriate syntactic representation. In a Minimalist approach to Turkish, nearly every morpheme will head a separate XP – including inflectional morphemes like the passive and necessitative. Consider a sentence like

- (27) Araba yıka-n-malı-dır  
car wash-pass-necess-emph  
‘The car needs to be washed.’

<sup>3</sup> According to Kabak (2007), a finite verb needs to contain an agreement marker. *Gitti* is a possible word, but can only be interpreted as containing a 3<sup>rd</sup> singular agreement marker -Ø. In the context of this example, however the 3<sup>rd</sup> singular clashes with the features of the following verb in the coordination.

This will yield a tree like the following:



**Figure 7 Possible minimalist analysis**

However, if the rule of coordination allows all phrases and heads to coordinate, then the problem is that a tree of this sort predicts that all morphemes should license suspended affixation. In fact, only a few morphemes have this special property, so the Minimalist tree massively overgenerates. Though it is possible to allow the syntax to generate suspended affixation structures for every morpheme, this result essentially eliminates a syntactic explanation in favor of some morphological stipulation about possible words.

The utility of a morphological filter for languages other than Turkish also seems questionable. If we consider an English example like the following, it is not clear what principle rules this out.

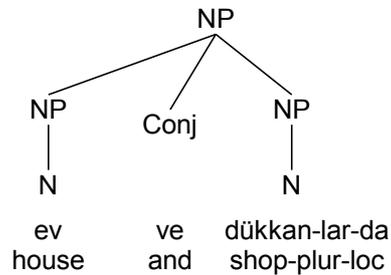
(28) \*John was [insult & humiliat]-ed

*Insult* is certainly a possible morphological word of English, so the ungrammaticality does not seem to be the result of a morphological filter like the one that Kabak (2007) proposes. Instead, a lexical sharing approach can explain this simply by saying that there is no separate Tense head in English with *is* coinstantiated with the verb. Instead tense is simply an affix on the verb with no syntactic realization.

## 9.2 Problems for a standard LFG approach

While the Minimalist representation makes the incorrect prediction that all affixes should occur with suspended affixation, the classical LFG approach, which doesn't allow any morphology to be represented in the tree, also makes incorrect predictions. The ordinary LFG approach, if not supplemented by special annotation or lexical sharing, does not predict wide scope for the final affixes in an example like the following:

- (29) [ev ve dükkan]-lar-da  
house and shop-plur-loc  
‘in houses and shops’



**Figure 8 Classical LFG analysis**

LFG + lexical sharing can give syntactic representation to some morphology when the facts motivate this treatment. Thus it is able to provide a simple account of suspended affixation. In contrast, the Minimalist approach provides too much syntactic representation to morphology and predicts many cases of suspended affixation that do not occur. Classical LFG does not provide enough syntactic structure to account for the Turkish facts. The addition of lexical sharing to the LFG toolbox provides us with a natural account of these otherwise problematic facts.

### **Acknowledgments and Bibliography**

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