Dissimilation in Reduplication:
The case of emphatic reduplication in Turkish

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Abstract:

A case of dissimilation in reduplication with fixed segmentism in Turkish reveals that neither the Emergence of the Unmarked nor Melodic Overwriting introduced in Alderete et al. 1997 can accurately depict the observed phenomenon. Theoretical consequences are developed in two main areas: (a) allomorphy and (b) dissimilation in reduplication, arguing (1) most, if not all, morphological fixed segmentism, previously claimed to be the result of Melodic Overwriting, can be better understood in terms of Constructional Prespecification, a novel mechanism which improves upon Melodic Overwriting by treating the morphologically fixed segment to be a morpheme separate from the reduplicant itself while functioning as a crucial part of the reduplication construction and (2) OCP effects are both phonological and morphological.
0. INTRODUCTION

The proper treatment of the reduplication with fixed segmentism has fuelled the time-honoured debate on whether to treat fixed segmentism as prespecification (Marantz 1982), epenthesis (Steriade 1988; Alderete et al. 1999), melodic over-writing (McCarthy and Prince 1995; Alderete et al. 1999) or dissimilation (Yip 1995, 1998).

Alderete et al. (1999) contend that there are two types of fixed segment: phonological and morphological. They propose that phonological fixed segments in reduplication can be accounted for by the Emergence of the Unmarked (TETU), a mechanism in phonology first proposed in McCarthy and Prince (1994). TETU claims that the non-copying of a base segment with substitution of some fixed, default segments decreases phonological markedness. Examples of such cases include the [i] in Yoruba (3a) (Pulleyblank 1988, Alderete et al. 1997, 1998) and the ? in Tübatulabal (3b) (Alderete et al. 1997).

(3) Phonological fixed segmentism in reduplication
   a. Yoruba
      dâra  di-dâra  ‘be good’/‘goodness’
      mu  mi-mu  ‘drink’/‘drinking’
   b. Tübatulabal Telic Reduplication
      pi:bi:win  ?i:-bi:bi:win  ‘to play Jew’s harp’
      tsama  ?an-dzama  ‘it’s burning’

Morphological fixed segmentism, on the other hand, is accounted for by the mechanism called Melodic Overwriting (MO). These morphological fixed segments ‘behave’ like affixes, for their alignment properties and relative segmental markedness are akin to those of the affixes in the language as a whole. MO cases include the English ‘table-schmable’ construction and the echo-word pattern in Marathi (e.g. kholi ‘room’ → kholi-bili ‘room or some such dwelling’: Apte 1968).

An apparent problem for this theory is dissimilation in reduplication, as documented in Yip (1995, 1998). She cites examples such as the habitual repetitive formation in Javanese and the secret language in Cantonese and other Chinese dialects, arguing that fixed segmentism in reduplication should be viewed as identity avoidance. The reduplicant strives to be dissimilar from the base by either altering the reduplicants or inserting extra segments onto the reduplicant. Yet Alderete et al. claim that this type of fixed segmentism is an expected result of TETU since dissimilation occurs in ordinary phonology, a topic which will be explored indepth later in the discussion.

In this paper we examine a complicated case of dissimilation in reduplication in Turkish, revealing that neither TETU nor MO can accurately depict the observed phenomenon. Consequently the empirical adequacy of Alderete et al.’s prediction with respect to the universality of these two approaches is brought into question. From this, theoretical consequences are developed in two main areas: (a) allomorphy and (b) dissimilation in reduplication. A reexamination of the classic ‘table-schmable’ construction in English suggests that most, if not all, morphological fixed segmentism, previously claimed to be the result of MO, can be better understood in terms of
Constructional Prespecification, a novel mechanism motivated by the current analysis which improves upon MO by treating the morphologically fixed segment to be a morpheme separate from the reduplicant itself while functioning as a crucial part of the reduplication construction.

In conjunction with the allomorphy discussion, Turkish emphatic reduplication also provides an opportunity for discussion of another long-debated problem in phonological theory: the Obligatory Contour Principle. A close examination of the dissimilation process in this Turkish case suggests that OCP effects are both phonological and morphological.

This work begins with a description of the Turkish emphatic reduplication construction. A detailed corpus analysis follows in §1.2. §2 presents an overview of past analyses of the Turkish reduplication. A novel Optimality Theoretic analysis is then advanced. Finally, §3 summarises the issues discussed in this paper.

1 TURKISH EMPHATIC REDUPLICATION
1.1 A description
In Turkish, an Altaic language spoken mainly in Turkey, the copying of the first mora of the base adjective intensifies certain adjectives. One of the following closing consonants (tentatively called the linker, however more will be said about this linker morph later on): -p, -m, -s, -r, must follow the reduplicant (4) (Lewis 1967, Underhill 1976). The linker surfaces as a coda if the base is C-initial, otherwise as an onset, as in (4f).

(4) | Base | Gloss | RED-LINKER-BASE | Gloss |
---|---|---|---|---|
 a. | la'dživert | ‘blue’ | la-p-la'dživert | ‘deep blue’ |
 b. | jalnuz | ‘alone’ | ja-p-jalnuz | ‘completely lonely’ |
 zor | ‘difficult’ | zo-p-zor | ‘very difficult’ |
 de'in | ‘profound’ | de-p-derin | ‘extremely profound’ |
 gyn'dz | ‘daylight’ | gy-p-gyn'dz | ‘very bright’ |
c. | bejaz | ‘white’ | be-m-bejaz | ‘snow white’ |
bru'fuk | ‘wrinkled’ | bu-m-bru'fuk | ‘very wrinkled’ |
dʒu'lk | ‘rotten’ | dʒu-m-dʒu'lk | ‘extremely rotten’ |
dazlak | ‘bald’ | da-m-dazlak | ‘very bald’ |
d. | bell | ‘obvious’ | be-s-bell | ‘unmistakably obvious’ |
berrak | ‘clear’ | be-s-berrak | ‘extremely clear’ |
dʒavlak | ‘naked’ | dʒa-s-dʒavlak | ‘totally naked’ |
tamam | ‘complete’ | ta-s-tamam | ‘perfectly complete’ |
e. | temiz | ‘clean’ | te-r-temiz | ‘spotlessly clean’ |
sef | ‘miserable’ | se-r-sef | ‘very miserable’ |
su'klam | ‘lament’ | su'-r-su'klam | ‘very sorrowful’ |
sebil | ‘lavish’ | se-ı-sebil | ‘squanderous’ |
f. | atʃuk | ‘open’ | a-p-atʃuk | ‘very open’ |
eski | ‘ancient’ | e-p-eski | ‘very ancient’ |
indʒe | ‘slender’ | i-p-indʒe | ‘very thin’
ujuz ‘scabby’ u-p-ujuz very scabby’

(4a) illustrates that the reduplicative template is a mora since the long vowel [a:] in the base is copied as a short [a] in the reduplicant. As Demircan (1987) observes, the majority of the attested consonant-initial forms reduplicate with the linker -p (4b). An approximately equal number reduplicate with -m (4c) and -s (4d). There are near-minimal pairs, such as [basbajat] ‘very stale’ and [bembejaz] ‘very white’, which suggest that -s and -m are not in systematic complementary distribution. There are some tokens that reduplicate with -r (4e). Vowel initial adjectives always reduplicate with -p (4f). Since the vowel-initial ones invariably reduplicate with the linker -p, the following discussion will focus on the consonant-initial forms.

Many grammarians (Lewis 1967, Underhill 1976, Dobrovolsky 1987) have claimed that the selection of the linker is random and must be learned lexically. Demircan (1989), however, insightfully observes that the selection of the linker is subject to various dissimilation constraints. She makes the following observations:

(a) The linker cannot be identical with the final consonant of the base.
(b) No gemination: the linker should not be identical to the initial consonant (C₁) of the base.
(c) Featural identity avoidance: the features of the linker should not be identical to those of the second segment of the base.
(d) Feature distributional balance: if all else is equal, the linker should only contribute features that can help establish a balance and optimise the featural contrast of the base.

Demircan provides statistics regarding the co-occurrences between the distinctive features of the linker and the features in base from the list of attested emphatic adjectives reported in Hatiboğlu (1973) with which she confirms the validity of generalisations (a-d). With respect to generalisation (c), she points out that the features [labial] and [nasal] are found to be the most faithful to the featural identity avoidance generalisation. She also conducts a survey with approximately 100 Turkish university students, asking the participants to reduplicate both meaningful adjectives and nonsense words. Her findings reveal that her generalisations essentially account for the preference of the participants. However, she concludes that a certain degree of variation among speakers is found in less common emphatic formations.

1.2 An extended corpus
An extended corpus consists of 152 attested emphatic adjectives collected from three sources: those listed in Hatiboğlu (1973); TELL (Turkish Electronic Living Lexicon: Oxford Turkish-English Dictionary II & III editions); and three native Turkish consultants, was amassed. 123 forms were taken from Hatiboğlu (1973). Twenty-nine other forms were collected and elicited from TELL and the three consultants. The corpus is divided into two parts: emphatic forms of vowel-initial stems and consonant-initial stems---thirty-one and 121 forms respectively. The following analysis, however, will only focus on the consonant-initial forms.
1.2.1 The validity of Demircan’s generalisation.

The distribution of each linker in the corpus of emphatic forms in the new corpus echoes the preference hierarchy, namely \(-p > -m > -s > -r\), that Demircan proposed with one revision. About 46% of the forms reduplicate with \(-p\), 18% with \(-m\), 29% with \(-s\), and 7% with \(-r\) (5).

\[
\begin{array}{ccccc}
\text{Number of samples} & p & m & s & r & \text{Total} \\
55 & 22 & 35 & 9 & 121 \\
\end{array}
\]

The percentage suggests that \(-s\) is preferred over \(-m\). \(-r\) is unquestionably the least utilised of the four candidate linkers. No segment in the base identical to the selected linker is found in any form in the corpus. This confirms the most robust generalisation that the linker must not be identical to any segment in the base. In addition to segmental distribution, Demircan also found three important featural conditioning factors: labial, coronal and nasal. (6) gives the distribution of linkers with respect to labial segments in the base found in the extended corpus. Labial initial stems never select \(-p\) as the linker, \(-m\), however, does appear with stems with one type of labial initial segment, namely \(b\). \(-m\) never serve as the linker when the second segment in the base (C\(_2\)) is a labial while \(-p\) unexpectedly surfaces as the linker for \([\text{t}\text{ep}\text{t}\text{e}v\text{e}]\) ‘all around’ and \([\text{sipsivai}]\) ‘very sharp’.

\[
\begin{array}{ccccc}
\text{Labial C\(_1\)} & 0 & 6 & 11 & 0 & 17 \\
\text{Labial C\(_2\)} & 2 & 0 & 14 & 6 & 22 \\
\text{Labial C\(_3\)} & 2 & 0 & 5 & 1 & 8 \\
\text{Labial C\(_1\) & C\(_2\)} & 0 & 0 & 2 & 0 & 2 \\
\end{array}
\]

It is true that when both C\(_1\) and C\(_2\) are coronals, only \(-p\) or \(-m\) is selected as linker. Next I tested the interaction between coronals in C\(_1\), C\(_2\), or C\(_3\) with the linkers \(-s\) and \(-r\). I found that coronal segments, in either C\(_1\) or C\(_2\) but not both, do not necessarily disfavour the selection of the coronal linkers \(-s\) and \(-r\). As (7) indicates, there are seventy-one samples in the extended corpus that have an initial coronal segment, twenty-three of them select either \(-s\) or \(-r\) as linker.

\[
\begin{array}{ccccc}
\text{Coronal C\(_1\)} & 35 & 13 & 16 & 7 & 71 \\
\text{Coronal C\(_2\)} & 50 & 15 & 17 & 0 & 82 \\
\text{Coronal C\(_3\)} & 23 & 7 & 21 & 6 & 57 \\
\text{Coronal C\(_1\) & C\(_2\)} & 30 & 8 & 0 & 0 & 38 \\
\end{array}
\]

Demircan also claims that any base with nasal segment(s) never selects the nasal linker \(-m\). I found thirty-five forms in the extended corpus containing one or more nasal segments in the base. None of these forms ever takes \(-m\) as its linker.
1.2.2 Some new findings.

Demircan claims that the features of the linker should not be identical to those of the second consonant of the base, generalisation (c), yet she only finds significant featural interaction with the features [labial] and [nasal]. This suggests that her generalisation (c) must be relaxed or limited reference to above only certain features. As pointed out in the previous section, her observations for the two features are confirmed. The present study, however, also reveals that stridency and approximancy plays a role in the interaction of segments. Thirty-two percent of the emphatic forms reduplicates with -s, yet none of the bases contain strident segment (8), revealing that when a base contains any strident segment, -s will never serve as the linker.²

<table>
<thead>
<tr>
<th>(8)</th>
<th>Strident in C₁</th>
<th>Strident in C₂</th>
<th>Strident in C₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>p</td>
<td>17</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>m</td>
<td>6</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>s</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>r</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

This featural avoidance does not only limit C₁ and C₂ in scope but also extends to any segment in the base. Approximants, such as [ɹ, ʃ, ɻ], in C₂ position also avoid selecting another approximant as linker. Ten percent of the emphatic forms contains an approximant in C₁ and 38% contains an approximant in C₂ position, yet none of these select -r as the linker (9).

<table>
<thead>
<tr>
<th>(9)</th>
<th>p</th>
<th>m</th>
<th>s</th>
<th>r</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximant C₁</td>
<td>6</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Approximant C₂</td>
<td>31</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>45</td>
</tr>
</tbody>
</table>

Vowel features do not assert influence on the selection of the linker since the distribution of linkers with respect to vowel features mimics the general distribution of the linkers in the corpus.

<table>
<thead>
<tr>
<th>(10)</th>
<th>p</th>
<th>m</th>
<th>s</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td>+round</td>
<td>17</td>
<td>6</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>+back</td>
<td>30</td>
<td>14</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>+high</td>
<td>26</td>
<td>11</td>
<td>12</td>
<td>2</td>
</tr>
</tbody>
</table>

In sum, distributional statistical results support Demircan’s generalisation. However, some of these generalisations, as demonstrated above, should be restricted to particular features and segments. It should be noted that the co-occurrence statistics of segments or features with respect to segments beyond C₃ is largely omitted since no significant results emerge. This may be because there are relatively few adjectives and adverbs in the corpus that are larger than two syllables.
2. ANALYSIS
The present section deals with the theoretical significance of the data within OT. Thus far, the generalisations of the data have been presented in detail, yet no explicit proposal is put forth to account for the pattern discussed. Different analyses have been proposed in the past both informally and formally. Each of the analyses addresses either one or both of two central problems that the Turkish emphatic reduplication poses for morphological and phonological theory: allomorphy in reduplication with fixed segmentism and dissimilation. In the remainder of this paper, both of these problems are addressed with some reviews of past proposals. A novel analysis will emerge from the discussion.

2.1. Against prespecification by lexical association
Dobrovolsky (1987) presents an autosegmental analysis of this reduplicative construction and concludes that the emphatic adjective reduplication is actually a case of compounding rather than a prefixing reduplication construction. He argues that this construction would be the only case of ‘prefixation’ found in Turkish, which is otherwise exclusively a suffixing language, and that the stress pattern found in these emphatic adjectives patterns with that of the compounds in Turkish—namely, stress falls on the first member of the compound. He advances an analysis of the closing consonants of the reduplicant, suggesting that these segments must be associated lexically with each consonant-initial adjective stem. As a result, he does not offer any phonological analysis of the observed dissimilation effects since there is no derivation; the closing consonant is already pre-associated to each potential emphatic form. Nevertheless, in order to account for neologism and unfamiliar forms, he allows the possibility of selectional restriction of the linker in some cases. Unfortunately, he does not specify what those selectional restrictions are and how they might be implemented.

As argued above, linker selection is not arbitrary. Thus rejecting a dissimilation analysis based on that reason alone would be premature. Dobrovolsky’s prespecification account, albeit plausible, misses the larger generalisations, namely those suggested in Demircan (1987), that are still to be accounted for in formal terms. Further argument against prespecification comes from the productivity of the construction. Yu (1998) provides results from productivity tests with speakers of modern Turkish, demonstrating that native speakers maintain strong judgements on the well-formedness of possible emphatic forms. As Dobrovolsky admits, eventually, linkers in neologisms and unfamiliar forms are subjected to selectional restrictions. Thus his lexical association account lacks any predictive power. It is also redundant since the selectional restriction presumably should be able to extend to the familiar forms in addition to the novel ones.

2.2. The challenge: Allomorphy in reduplication with fixed segmentism
A prototypical case of reduplication with fixed segmentism involves only one single fixed unit, e.g. the fixed [i] in Yoruba (Pulleyblank 1988; Alderete et al. 1999) and the fixed initial [m] in English (Alderete et al. 1999).

As mentioned earlier, Alderete et al. propose two mechanisms to handle fixed segments in reduplication: the Emergence of the Unmarked (TETU) and Melodic Overwriting (MO). TETU is usually characterised in terms of the ranking schema in (11).
(11) Ranking Schema for Reduplicative TETU (McCarthy & Prince 1994a)

\text{Faith}_{IO} >> \text{M} >> \text{Faith}_{BR}

This schema illustrates that input-output faithfulness constraints are crucially dominating the markedness constraints (M). The markedness constraints in turn dominate the base-reduplicant faithfulness constraints. This constraint ranking compels the satisfaction of the markedness constraints in the B-R mappings but not in the I-O one. Hence the unmarked properties, which are not usually apparent in I-O mappings, EMERGE in the B-R mappings. Some fixed segments in reduplication, as Alderete et al. claim, can be treated in term of TETU in that the fixed segments are claimed to be unmarked in the particular language.

MO, on the other hand, treats fixed segments in reduplication as morphemes. As a result, fixed segments under MO must display the general alignment properties of affixes. For example, the ‘table-schmable’ construction in English is analysed as having three strings in the input: /table, Sm, RED/ according to Alderete et al. The alignment of /Sm/ with respect to the RED and /table/ is handled by alignment constraints. /Sm/ is claimed to OVERWRITE certain portion of the reduplicant, in this case, the initial [t] of [table]. Overwriting segments are subjected to evaluation by both BR and IO correspondence (Alderete et al. 1997:53).

The Turkish emphatic reduplication, however, poses a special challenge for this type of approach. Unlike Yoruba or English, this reduplication pattern has four ‘fixed’ segments, each surfacing in only certain contexts. Allomorphy in generative phonology typically involves an underlying morpheme surfacing differently in some given environments, e.g. the different surface allomorphs of the English plural /z/, or suppletion. Since the allomorphs in the Turkish reduplication do not form a natural class, there is no underlying representation from which purely phonotactic constraints could derive the surface form.

Without an underlying representation, a straightforward MO account will not be appropriate without some serious modification. Without evidence from other parts of the Turkish phonology to support the idea that /p, m, s, r/ are unmarked segments in Turkish, it will also be equally inappropriate to argue for a direct TETU treatment. To tackle these problems, I will now turn to one approach that attempts to handle the allomorphy observed above.

2.2.1 Yip (1995): Allomorphy and prespecification in OT

Following Dobrovolsky (1987), Yip (1995) argues that deriving all four surface linkers---p, m, r, s--from a single underlying phoneme is unappealing given the constraints that would be needed to select, say [r] as an optimal output for /p/. Instead, she suggests to assume a single abstract input, which has among its outputs the p, m, -s, and r forms. Yip’s analysis can be schematised as follow (13):

(13) Phonotactic Constraints >> Morphotactic Constraints

The morphotactic constraints stipulate that the possible linkers are p, m, s, and r. The phonotactic constraints choose the best linker for any given stem. The morphotactic constraints are essentially templatic constraints, which specify what the morphological
content of the reduplicant should be. This set of morphotactic constraints for the output allomorph prefers -p over the other linkers (since this is always used before vowel-initial roots and the majority of the emphatic forms reduplicate with -p), then m, s, or r, then any other consonant. A set of phonotactic constraints overrides the preference for [p].

(15) illustrates the constraints proposed at work. The constraints given in the tableau are taken from Yip (1995). Since no formal definition of these particular constraints is actually supplied, I presume the following definitions (14):

(14) P The intensive prefix should end in [p] M The intensive prefix should end in [m] S The intensive prefix should end in [s] R The intensive prefix should end in [r]

(15) /RED, buuʃuk/ ‘very wrinkled’ P-TACTIC P M S R

<table>
<thead>
<tr>
<th>a. bum-buuʃuk</th>
<th>*</th>
<th>*</th>
<th>*</th>
<th>*</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. bus-buuʃuk</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. buu-buuʃuk</td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. bup-buuʃuk</td>
<td>*!</td>
<td>*</td>
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</tbody>
</table>

(15b, c, and d) each independently violate the high ranked phonotactic constraints. Thus, candidate (15a) wins even though it violates the dominating allomorphy preference constraint, P.

Assuming that the phonotactic constraints are right--an issue I shall return later--Yip’s analysis appears to account for the data. However, there are two serious problems.

The first problem is the form of the morphotactic constraints. In her attempt to account for the fixed segment in the reduplicants, Yip adopts an essentially prespecification approach, positing constraints such as P demanding the reduplicant to end in p. Since Yip does not offer any formal representation of such a constraint, one might posit a representation as the following (16):

(16) RED = σ
          p

Despite the intuitive nature of such a constraint and representation, it is extremely difficult to conjure a holistic analysis to complement this representation. A representation of the emphatic form of a vowel-initial adjective illustrates the difficulty. Vowel-initial forms invariably reduplicate with -p. Thus a typical emphatic form looks like the following (17):

(17) σ σ σ
     a p ac t
As the syllabification indicates, the closing -p is no longer in the same syllable as the reduplicant (segments underlined), yet the constraint mandates that -p be the coda of the reduplicant syllable. As a result, the RED constraint will not be satisfied. McCarthy and Prince (1995) suggest a possible solution for such cases, i.e. making the relevant consonant ambisyllabic. These cases of ambisyllability can be accounted for by ranking ONSET, the constraint that demands an onset for all syllables, above the reduplicative template constraint. As a result, the optimal output would satisfy the onset constraint even though it violates the reduplicative template constraint. However, there is no evidence that the consonant is ambisyllabic in Turkish, a language in which geminate consonants contrast with singleton ones.

Another possible solution is to require the prespecified segment to be in a coda position of the reduplicant and not elsewhere. This approach faces, however, a similar problem regarding syllabicity. A coda position requirement will license a moraic status to the linker. When the linker concatenates with a V-initial adjective, the linker will have to serve as both the coda of the first syllable and the onset of the second syllable. Yet the linker is realised phonetically as single segment, not a geminate as would otherwise be predicted.

A prespecification approach would also have trouble preventing over-copying such as *[adʒp-adʒu]* where the consonant following the initial vowel of the base is copied in the reduplicant. Since the reduplicative template under the prespecification approach is a syllable with a prespecified coda. Thus technically speaking, there is nothing to prevent the reduplication from copying as much material from the base as it can, provided that the final consonant of the syllable is the licensed coda (18b). As a result, a straightforward prespecification account creates more problems than it resolves.

The second problem for Yip is the violable nature of her morphotactic constraints. Recall the ranking schema that Yip is assuming:

(13) Phonotactic Constraints >> Morphotactic Constraints

Unfortunately, it is precisely this ranking schema that renders Yip’s analysis inadequate. Her ranking schema is designed to ‘sieve’ out candidates that incur any identity violation. The allomorphy preference constraint ranking would supposedly select -p as the default linker in the case where all four candidates violate some REPEAT constraints, since the allomorphy preference constraint, P, crucially dominates the other three preference constraints. This ranking would work fine if the output candidate set consisted only of the candidates with one of the four linkers. However, GEN is supposed to produce all possible output candidates and the grammar is required to consider all possible strings allowed in the given language. Consequently, the constraint ranking in (19) actually fail to yield the actual attested output and, instead, licenses false optimal outputs with linkers other than -p, -m, -s, or -r. This is illustrated in following evaluation of the input
/kuumuuzu/ ‘red’ (19). For the sake of illustrating the argument, I posit a additional constraint *REPEAT- [+labial] which forbids outputs with two segments with identical labial features.  

<table>
<thead>
<tr>
<th></th>
<th>/RED, kuumuuzu/</th>
<th>*REPEAT -C₁</th>
<th>*REPEAT -C₂</th>
<th>*REPEAT [+LABIAL]</th>
<th>*REPEAT [-SON]₁</th>
<th>P</th>
<th>M</th>
<th>S</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>kµp-kuumuuzu</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>b</td>
<td>kum-kuumuuzu</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
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<tr>
<td>c</td>
<td>kus-kuumuuzu</td>
<td></td>
<td>*!</td>
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<td>3</td>
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<tr>
<td>d</td>
<td>kuu-kuumuuzu</td>
<td>*!</td>
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<td>3</td>
<td>2</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>e</td>
<td>kut-kuumuuzu</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Despite the fact that -t is not a licensed linker in this construction, the evaluation finds (19e) more optimal than the rest of the other candidates with licensed linkers.

In sum, it is shown that Yip’s prespecification encounters two major problems:

- The nature of her morphotactic constraints; the difficulty in implementing prespecification in Prosodic Morphology using Optimality Theory
- The violable nature of all the morphotactic constraints; the constraint schema Yip is assuming is intrinsically flaw.

Given these dramatic defects in Yip’s proposed constraint schema, a new analysis is called for. The next section provides a novel analysis. This analysis resonates with a standard Melodic Overwriting approach. Yet, arguments against viewing the proposed analysis in terms of MO will be presented later in §2.4.

2.2.2  A new strategy

In light of the problems for Yip’s prespecification approach to the allomorphy aspect of the Turkish emphatic reduplication, I propose a new morphological analysis of the reduplication construction in which the set of possible closing consonants is treated as individual lexically listed allomorphs of a ‘linker’ morpheme which is required by the emphatic reduplication. This approach solves the problem of requiring one of {p, m, s, r} to be present in every reduplicated form. An illustration of the Turkish reduplication construction under the new conception is given below (20).

(20)  Input: RED, LINKER, BASE (e.g. /RED, LINKER, temiz/ ‘clean’)

Output: RED-LINKER-BASE ([te-r-temiz] ‘spotlessly clean’)

By positing that the linker is a separate morpheme from the reduplicant, the emphatic construction in Turkish is analysed as involving the realisation of three morphological elements: RED(uplicant), LINKER and the BASE (see Blevins & Inkelas 1997 for a similar analysis for Umpila). The realisation of the LINKER depends on the satisfaction of output constraints. Output constraints posited for the set of closing consonants are LINKER=p, LINKER=m, LINKER=s, LINKER=r. These constraints are freely ranked with respect to each other. They are ranked high only to guarantee that one of p, m, s, r be the linker and no others. The evaluation of the output of an emphatic reduplication is
given in (22) demonstrating how each input morpheme is realised in the output. (23) illustrates how the grammar predicts the proper alignment of each input morpheme in the output. The definition of each of the constraints involved is given in (21): \(^8\)

(21) **Alignment Constraints:**

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANCHOR</strong>&lt;sub&gt;BR&lt;/sub&gt;</td>
<td>The segments at the left edge of the root and the reduplicant must be in correspondence.</td>
</tr>
<tr>
<td><strong>ALIGN</strong>&lt;sub&gt;BR&lt;/sub&gt;</td>
<td>Align the left edge of the reduplicant with the left edge of the stem.</td>
</tr>
<tr>
<td><strong>ALIGN</strong>&lt;sub&gt;Linker&lt;/sub&gt;</td>
<td>Align the left edge of the Linker to the right edge of the reduplicant.</td>
</tr>
</tbody>
</table>

**Faithfulness Constraints:**

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAX</strong>&lt;sub&gt;BR&lt;/sub&gt;</td>
<td>Every segment in the base must have a correspondent in the reduplicant.</td>
</tr>
<tr>
<td><strong>DEP</strong>&lt;sub&gt;BR&lt;/sub&gt;</td>
<td>Every segment in the reduplicant must have a correspondent in the base.</td>
</tr>
<tr>
<td><strong>MAX</strong>&lt;sub&gt;IO&lt;/sub&gt;</td>
<td>Every segment in the input must have a correspondent in the output.</td>
</tr>
<tr>
<td><strong>DEP</strong>&lt;sub&gt;IO&lt;/sub&gt;</td>
<td>Every segment in the output must have a correspondent in the input</td>
</tr>
</tbody>
</table>

**Templatic Constraint:**

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>RED=µ</strong></td>
<td>The reduplicant is equal to a mora.</td>
</tr>
</tbody>
</table>

The relative ranking among and between the faithfulness constraints and the alignment constraints is inconsequential as long as the templatic constraint, RED=µ, is ranked the highest. These faithfulness and alignment constraints must also crucially dominate all morphotactic constraints.

(22) 

<table>
<thead>
<tr>
<th>/RED, LINKER, derin/</th>
<th>ANCHOR&lt;sub&gt;BR&lt;/sub&gt;</th>
<th>ALIGN&lt;sub&gt;Linker&lt;/sub&gt;</th>
<th>ALIGN&lt;sub&gt;BR&lt;/sub&gt;</th>
<th>LINKER=p</th>
</tr>
</thead>
<tbody>
<tr>
<td>‘profound’</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. de-p-derin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. derin-de-p</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. p-de-derin</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. derin-p-de</td>
<td></td>
<td>*!</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>e. ri-p-derin</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

As the evaluation indicates, the linear ordering of the three elements of the emphatic construction is determined by the satisfaction of the alignment constraints. Aligning the reduplicant anywhere other than the left edge of the stem would render the candidates sub-optimal (22b c & d). Copying the reduplicant starting from anywhere other than from the left edge of the base violates the high ranking ANCHOR<sub>BR</sub> (22e). Finally, the linker must align to the right of the reduplicant or else the candidate would be penalised (22c & d).
Although inserting extra materials to the reduplicant does not violate the reduplicative template constraint, it does violate the \( \text{DEP}_{BR} \) constraint which forbids epenthesis in the reduplicant (23b). If the linker were not present in the output, the candidate (23d) would fatally violate \( \text{MAX}_{IO} \). Overcopying from the base would result in a fatal violation of the reduplicative template constraint (23e). Finally, epenthesis any material between the linker and the base (23c), although it might render a better syllable sequence, fatally violates the dominating \( \text{DEP}_{IO} \). The relative ranking between the \( \text{MAX} \), \( \text{DEP} \), \( \text{ALIGN} \), and \( \text{ANCHOR} \) constraints is inconsequential as long as they are crucially ranked above the morphotactic constraints.

The morphotactic constraints of the \( \text{LINKERs} \) are freely ranked with respect to each other, in which case, pure satisfaction of any of these constraints cannot determine the actual optimal candidate. Instead, other phonotactic and markedness constraints are recruited to account for the dissimilation observed in the data. In contrast to Yip’s constraint ranking schema in (13), the current morpheme realisation constraints (morphotactic constraints) crucially dominate a set of dissimilation phonotactic constraints. In turns, the phonotactic constraints dominate a set of markedness constraints. The constraint interaction is schematised as follow (24):

\[
\text{(24) Morphotactic Constraints >> Phonotactic Constraints >> Markedness Constraints}
\]

\[
\text{(25) Morphotactic Constraints}
\]

\[
\begin{align*}
\text{RED} &= \mu \quad &\text{The reduplicant is equal to a mora.} \\
\text{LINKER} &= \text{p (LKR=p)} \quad &\text{The Linker is the segment -p} \\
\text{LINKER} &= \text{m (LKR=m)} \quad &\text{The Linker is the segment -m} \\
\text{LINKER} &= \text{s (LKR=s)} \quad &\text{The Linker is the segment -s} \\
\text{LINKER} &= \text{r (LKR=r)} \quad &\text{The Linker is the segment -r} \\
\text{General Markedness Constraints} \\
* \text{p} &\quad \text{Penalised any occurrence of [p]} \\
* \text{m} &\quad \text{Penalised any occurrence of [m]} \\
* \text{s} &\quad \text{Penalised any occurrence of [s]} \\
* \text{r} &\quad \text{Penalised any occurrence of [r]}
\end{align*}
\]

The morphotactic constraints are not crucially ranked with respect to each other. Their main function is to limit the relevant candidate set to candidates with the four licensed linkers only. Tableau (26) shows candidate (26e) with an unlicensed linker -t fatally violates all four of the morphotactic constraints, whereas the other four candidates each satisfy one of the morpheme constraints.
This new constraint-ranking schema improves on the one proposed by Yip as reviewed above. In the case where none of the candidates violates any of the dissimilation constraints, the candidate with -p as the linker prevails while candidates with other linkers are ruled out by the segmental markedness constraints. (26f) again illustrates that the reduplicant is limited to just one mora, thus copying extra materials from the base would incur a fatal violation of the dominating reduplicative template constraint.

In sum, the allomorphy of the Turkish emphatic reduplication is handled by positing a general underlying morpheme, LINKER, presumably similar to the canonical RED morpheme for reduplicant in the underlying representation. The treatment of allomorphy presented here is very much in line with approach to morphology adopted by Yip (1995). The main difference is that Yip posits a constraint ranking schema that ranks these morphotactic constraints lower than the phono tactic ones. In so doing, she fails to restrict the possibility of linkers other than those licensed by the construction, to be the optimal output.\footnote{11}

This present proposal also differs from Yip in that the fixed segments in the reduplication are not pre-specified in the reduplicative template per se. The fixed segment is treated, instead, as an individual morpheme that is an integral part of the emphatic construction. This treatment of reduplication with fixed segmentism is very reminiscent of the MO approach proposed by McCarthy and Prince (1995) and developed further in OT in Alderete et al. 1999. However, phonological evidence of this reduplication construction, to be presented in the next section, provides evidence that treating this emphatic construction solely in a MO framework is inadequate.

### 2.3. Dissimilation in reduplication with fixed segmentism?

The Turkish emphatic reduplication, as noted above, poses two problems for any morphological and phonological theory. §2.1 explores the morphological end of the problems, resolving the allomorphy and fixed segmentism problems by positing an independent underlying morpheme, called the LINKER. The realisation of this empty morpheme depends on the satisfaction of output morpheme realisational constraints such as LINKER=p. Still, since there are four of these morphotactic constraints competing to be satisfied in the optimal candidate, other constraints must be recruited to assist the decision making. These decision-making constraints, namely the dissimilation phonotactic contraints and the general segmental markedness constraints, are the focus of the section.
2.3.1 Demircan (1987): The filter model

Demircan, in the conclusion of her 1987 paper, informally proposes a filter operation, which she believes would yield the attested emphatic forms. She assumes that the underlying linker is -p while each of the other linker replaces -p in a prioritised order. Then, the following filtering operations apply:

i. Avoid linkers identical with any of the base consonants.
ii. Select the linker bearing features in contrast with the second consonant of the base.
iii. Balance and optimise the distribution of features across the emphatic form.\textsuperscript{12}

This proposed mechanism lays the foundation for subsequent OT analyses. Though informally stated, most of the filters could be implemented in OT straightforwardly. The analysis to be proposed in §2.2.3, naturally draws from the insights put forth by this model.

2.3.2 Yip (1995): Identity avoidance in OT

Yip (1995) proposes that the dissimilation aspect of the emphatic reduplication in Turkish can be treated as a case of avoidance of homophonous elements. Formulating her analysis in OT, she proposes to model this identity avoidance effect in terms of a new constraint, *REPEAT.\textsuperscript{13} The definition is given below (27):

(27) \(*REPEAT: \text{The output must not contain two identical elements}\)

(29) illustrates the constraints proposed at work. The constraints given in the tableau are taken from Yip (1995). Since no formal definitions of these particular constraints are supplied, I presume the following definitions (28):

\begin{align*}
(28)\quad *\text{REPEAT-C1} & \quad \text{The output must not contain another segment that is identical to the first consonant of the output.} \\
*\text{REPEAT-C2} & \quad \text{The output must not contain another segment that is identical to the second consonant of the output.} \\
*\text{REPEAT-[SON] Coda} & \quad \text{Output must not contain two non-sonorant codas.} \textsuperscript{14} \\
p & \quad \text{The intensive prefix should end in [p]} \\
M & \quad \text{The intensive prefix should end in [m]} \\
S & \quad \text{The intensive prefix should end in [s]} \\
R & \quad \text{The intensive prefix should end in [r]} 
\end{align*}

Tableau (29) illustrates these constraints at work in the reduplication of consonant-initial base.

\begin{table}[h]
\begin{tabular}{|c|c|c|c|c|c|c|}
\hline
& /RED, buzufuk/ & *\text{REPEAT-C1} & *\text{REPEAT-C2} & *\text{REPEAT-[SON] CODAS} & P & M & S & R \\
\hline
a. bum-buzufuk & * &  &  & * & * & * \\
b. bus-buzufuk & * &  & *! & * & * & * \\
c. buz-buzufuk & * & *! &  & * & * & * \\
\hline
\end{tabular}
\end{table}
(29b, c, and d) each independently violates the high ranked *REPEAT constraints. Thus, candidate (29a) wins even though it violates the dominating allomorphy preference constraint.

Note that *REPEAT-C\(_1\) refers to the first consonant of the reduplicant, which is initial in the output, and *REPEAT-C\(_2\) refers to the second output, i.e. (here) the linker of the reduplicant. This use of numerical indices raises two interesting problems, one empirical and one theoretical. The first problem for numerical indices is that the number of segments and the location of the first segments might differ as in the case of vowel-initial stem, yielding the wrong result. For example, a vowel-initial adjective [ansµz] where the C\(_1\) would be the consonant following the initial vowel while C\(_1\) in consonant initial stem, such as [duµgün], would be the consonant before the first vowel of the base. The second problem is a more general one, namely that (following McCarthy and Prince 1986) it has been assumed that phonology and morphology cannot ‘count’, i.e. refer to linear positions by number.

In addition to the problems by numerical indices, a third type of problem for the class of *REPEAT constraints involve the classes of segments they refer to. In Yip’s analysis, *REPEAT is violated even by similar, but non-identical, consonants like [p] and [b], as illustrated above, where *[bup-buµfuk] was ruled out because the [p] of the linker was similar to the [b] of the base. Thus it might appear that *REPEAT is a constraint not on identical segments but on identical features, in this case [labial]. A constraint against repetition of [labial] would also correctly predict the following instance of allomorphy, where losing candidate [teµ-temiz] in the evaluation of /RED, temiz/ ‘absolutely clean’ is ruled out because the linker p has the same labial place of articulation as the [m] in the base.

(30) | /RED, temiz/ | *REPEAT-C\(_1\) | *REPEAT-C\(_2\) | *REPEAT-[SON] CODAS | P | M | S | R |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. teµ-temiz</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. tep-temiz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c. tem-temiz</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. tes-temiz</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

(31) is another illustration of the apparent need for a *REPEAT-[labial]. Such a constraint is needed in order to rule out recalcitrant candidates such as (31b and c).

(31) | /RED, sefil/ | ‘very miserable’ | *REPEAT-C\(_1\) | *REPEAT-C\(_2\) | *REPEAT-[SON] CODAS | P | M | S | R |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. seµ-sefil</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. sep-sefil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. sem-sefil</td>
<td></td>
<td></td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>d. ses-sefil</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>
Positing a labial dissimilation constraint, however, does pose other problems. Recall that the winning candidate in (29) is [bum-buʃuk], which now violates *REPEAT[labial]! Clearly more work is needed here. The relevant constraint must not be the highest ranked one, since it is obviously violable, and it must be strategically placed so that it will not unexpectedly rule out otherwise winning candidates.

Consequently it is not clear to what extent similarity is characterised and how similarity is evaluated by the *REPEAT constraints family. A division of ‘labor’, i.e. family of separable constraints, seems to be needed in order to avoid ambiguity and confusion.

To summarise then, I have reviewed Yip's identity avoidance analysis and demonstrated that the proposed constraint *REPEAT functions in a multi-dimensional fashion, covering both segmental and featural OCP effects. Citing evidence from inaccurate constraint evaluation, I conclude that the *REPEAT constraint must be reformulated and should limit its scope to a restricted set of parameters.

I propose that this new dissimilation constraint should be broken down into the constraints pertaining to only the segmental or only the featural level (at least in the case of Turkish emphatic reduplication). In the next section, a new analysis of the dissimilation aspect of the emphatic reduplication construction is proposed. The analysis is built partly upon ideas advanced in Yip (1995, 1998).

2.3.3 Dissimilation in Optimality Theory.
Recall the schema motivated earlier in §2.1.2.

(24) Morphotactic Constraints >> Phonotactic Constraints >> Markedness Constraints

The schema relies on the phonotactic constraints and, if all else fails, the markedness constraints, to rule out sub-optimal candidates among the four allowed by the morphotactic constraints. The present section fleshes out the phonotactic end of the schema.

The proposed phonotactic constraints are formulated in accordance with the generalisation based on the extended corpus reported in §1. The generalisations are reproduced below:

- Avoid full reduplication
- No gemination between the linker and the initial consonant of the base.
- Avoid a linker that is identical to any consonant in the base.
- Avoid a linker that shares similar features, such as [labial], [strident] & [approximant], with any segment in the base.

In order to avoid the problems encountered by Yip’s analysis, which conflated featural and segmental dissimilation in the same constraints, I propose to use two types of constraints, one novel and one familiar. These are the *SUBSTRING and OCP constraints.

The first type of constraint to be posited is *SUBSTRING, inspired partly by Yip’s *REPEAT, but crucially different. *SUBSTRING is a family of constraints that operates
on two strings by comparing segments of one string to the other, mandating that the materials one string must not be a substring of another. The evaluation of *SUBSTRING is schematised in (32):

(32) The evaluation of *SUBSTRING\textsubscript{Linker-Base} for [te-r-temiz] ‘spotlessly clean’.

\[
\text{RED} \quad \text{-LINKER} \quad \text{-BASE}
\]

\[
\begin{array}{cccc}
\text{t e} & \text{-r} & \text{- t emi z} \\
\end{array}
\]

*SUBSTRING\textsubscript{Linker-Base} (*SUB\textsubscript{LB} ) mandates that the linker must not be a substring of the base. The comparison goes from the domain of the LINKER to the domain of the BASE (as signified by the arrowheads). This constraint allows for comparisons between two unrelated strings. No notion of correspondence is required, and it eliminates the need of indexing segments with numbers, which was seen to be problematic to Yip’s analysis. Tableau (33) demonstrates how *SUB\textsubscript{LB} rules out potential competing candidates. Directionality plays a crucial role in the outcome of the evaluation. For example, the linker can be a substring of the base since the linker is smaller than the base. The base, however, can never be the substring of the linker since the linker can never properly contain all materials in the base. *SUB can be multiply violated. The more segments a linker is identical to, the more violations a candidate incurs. (33b) and (33c) both violate *SUB\textsubscript{LB} because the linkers are identical to the initial and the second consonants of the base respectively. (33a) prevails since the only other competing candidate violates the higher ranked *r constraint, which penalises any instance of the marked segment [r].

<table>
<thead>
<tr>
<th>(33)</th>
<th>/RED, LINKER, pembe/</th>
<th>Morphotactics\textsuperscript{15}</th>
<th>*SUB\textsubscript{LB}</th>
<th>*r</th>
<th>*m</th>
<th>*s</th>
<th>*p</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{a. pe-s-pembe})</td>
<td></td>
<td></td>
<td>*</td>
<td>*</td>
<td>***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. pe-p-pembe</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td>****</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. pe-m-pembe</td>
<td></td>
<td>*!</td>
<td></td>
<td>**</td>
<td></td>
<td>**</td>
<td></td>
</tr>
<tr>
<td>d. pe-r-pembe</td>
<td></td>
<td>*!</td>
<td></td>
<td>*</td>
<td></td>
<td>*</td>
<td>**</td>
</tr>
</tbody>
</table>

Presumably, if the co-occurrence restriction were limited to adjacent identical segments, an ‘old-fashioned’ OCP constraint, which is restricted to apply to only immediately adjacent segments, would account for the pattern. Yet the LINKER is also affected by the properties of nonadjacent segments. One might also attempt to handle dissimilation between the linker and the second consonant of the base with some anti-correspondence constraint (e.g. Kelepirir 1998). The problem with this sort of approach is that there is no reason to think that the LINKER is in a correspondence relation with any of the consonants in the base (see §2.4 for further discussion against anti-correspondence analyses). *SUB surmounts the obstacles faced by a standard OCP account and a correspondence account in dealing with
the dissimilation between identical segments that are in a long distance relation. The following evaluation (34) illustrates this.

(34) /RED, LINKER, kötyüym/ ‘very fresh’ | *SUB_{LB} | *r | *m | *s | *p  
---|---|---|---|---|---  
a. kô-s-kötyüym  | * | * | * |  
b. kô-p-kötyüym  | * | * | * |  
c. kô-m-kötyüym  | *! | * | ** |  
d. kô-r-kötyüym  | *! | ** | * |  

Candidates (34c & d) fatally violate the *SUB_{LB} even though the segments the linkers are identical to are not the first consonant or the second consonant of the base.

Despite the fact that *SUB rules out two competing candidates in (34), however, the present constraint ranking still incorrectly predicts (34b) as the optimal output while the attested one is actually (34a). This puzzle lays the ground for the next discussion of featural dissimilation.

2.3.4 Featural dissimilation and the OCP

The second type of constraint to be utilised is OCP, invoked for cases of potentially long distance featural dissimilation. Following Smolensky (1993), Alderete (1997), and Ito and Mester (1997, 1998), I implement the OCP as the self-conjunction of markedness constraints. A more general long-distance featural dissimilation constraint is also motivated here since dissimilation does not happen only at the segmental level, but at the featural level as well.

One such featural dissimilation constraint that will be of use in the Turkish reduplication analysis is *Labial^2. This constraint penalises a candidate when two labial segments are contained in the candidate simultaneously. The constraint does not limit its scope of application to adjacent segments but is applied freely to two segments anywhere in the output string. A re-evaluation of (35) with *Labial^2 can illustrate this constraint at work. (35b) would triumph over (35a) were it not for the non-restricted locality condition of the *Labial^2 constraints.

(35) RED, LINKER, kötyüym | *SUB_{LB} | *Labial^2 | *r | *m | *s | *p  
---|---|---|---|---|---|---  
a. kô-s-kötyüym  |  | *! | * | * |  
b. kô-p-kötyüym  |  | * | * | * |  
c. kô-m-kötyüym  | *! | * | * | ** |  
d. kô-r-kötyüym  | *! | ** | * |  

The current constraint ranking, unfortunately, still cannot account for many other canonical cases of this reduplication. One such case is [te-r-temiz]. The present grammar predicts that the optimal output to be (36d) *te-s-temiz.
Another featural anti-co-occurrence constraint is therefore required. This constraint is *Strident$^2$. This constraint penalises candidates with two strident segments anywhere in the string. In tableau (37), the two featural dissimilation constraints *Strident$^2$ and *Labial$^2$ rule out competing candidates with linkers -s, -p and -m. As a result, the candidate with linker -r wins, despite the fact that -r is the most marked of the four possible linkers.

A summary of all the phonotactic constraints proposed above is given in (38):

To summarise so far, the new set of phonotactic constraints presented above improves upon those introduced by Yip. The *SUB constraints eliminates the need for counting segments and numbering them in any fashion for ease of reference. *SUB constraints also have scope over any segments within the two strings that are under comparison and are not restricted to only corresponding segments. Constraint self-conjunction (the OCP) also penalises any multiple occurrences of marked segments and features.\textsuperscript{16}
2.3.5 The Great Mystery of mb
As noted in §2.1.3, there is one systematic exception to labial dissimilation. Words with initial \(b\) sometimes unexpectedly prefer \(-m\) as the linker rather than the otherwise attested and predicted \(-s\). For example, \(bok\) ‘worthless’ intensifies as \(bo-m-bok\) not \(*bo-s-bok\) while \(beter\) ‘bad’ intensifies as \(be-s-beter\), not \(*be-m-beter\). This suggests that some assimilation process is counteracting the dissimilation force.

It would seem to be no accident that a \(mb\) sequence should be preferred to a \(sb\) one, as the sharing of place and voice features is common across the world’s languages. However, implementing this insight is difficult, as OT is ill-equipped to give positive preference to a particular form. Constraints are usually stated negatively.

Tableau (39) illustrates the evaluation /RED, LINKER, bejaz/ ‘white’. The attested optimal output is (39a) bembejaz, yet with the constraints we developed so far, the evaluation falsely predicts (39d). The independently motivated \(*Strident^2\) rules out (39c) while leaving (39a, b, & d) to competing with each other. Still, a mechanism is needed to rule out (39d), the candidate with \(-r\) as the linker. As a result, a constraint, \(*Approximat^2\), seems to be required to rule out (39d) since it has two approximants in the output.

<table>
<thead>
<tr>
<th>(39)</th>
<th>RED, LINKER, bejaz</th>
<th>*SUB_LB</th>
<th>*Strident$^2$</th>
<th>*Labial$^2$</th>
<th>*r</th>
<th>*s</th>
<th>*m</th>
<th>*p</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>be-m-bejaz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$!*$</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>be-p-bejaz</td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$!*$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>be-s-bejaz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$!$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>be-j-bejaz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td>$!$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Like other \(*SUB\) constraints, the two resembling segments need not be adjacent to one another. This approximant dissimilation constraint must crucially rank above the labial dissimilation one, otherwise (39d) would be the optimal candidate since both (39a & b) violate the \(*Labial^2\) constraint more times than (39d). Yet, a free-standing \(*Approximat^2\) would wrongly rule out such attested output forms as \[se¨sefil\] ‘very miserable’ since there are also two approximants in the output, as illustrated in (40).

<table>
<thead>
<tr>
<th>(40)</th>
<th>RED, LINKER, sefil</th>
<th>*SUB_LB</th>
<th>*Strident$^2$</th>
<th>*Approx$^2$</th>
<th>*Labial$^2$</th>
<th>*r</th>
<th>*m</th>
<th>*s</th>
<th>*p</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>se-j-sefil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$!$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>se-p-sefil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>$!$</td>
<td></td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>se-m-sefil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$!$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>se-s-sefil</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$!$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$*$</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Consequently, in order to restrict the application of \(*Approx^2\) to certain circumstances, I propose that \(*Approx^2\) is conjoined with \(*Labial^2\). This conjoined constraint \(*Labial^2\&*Approx^2\) will only penalise output candidates that contain two labial segments while at the same time violate \(*Approx^2\). Violating \(*Approx^2\) or \(*Labial^2\) independently will not incur a violation of this conjoined constraint.
Going back to tableau (39), now that (39d) is out of the running, (39a & b) are still competing to be the optimal candidate. The candidate with the linker -p would win the competition since the *m constraint is ranked about *p. Yet, (39a) is the expected optimal output. The constraint that prefers candidate with -m to -p is *PB which demands that two adjacent consonants that agree in continuancy and place of articulation must also agree in voicing. For the reason of notation convenience, *PB is used to denote what actually should be the following (41):

\[
(41) \quad *PB = \left[ \begin{array}{c}
\text{[place]} \\
C
\end{array} \right] \quad \text{and} \quad \left[ \begin{array}{c}
\text{[cont]} \\
C
\end{array} \right] \quad \text{and} \quad \left[ \begin{array}{c}
\text{[voice]} \\
C
\end{array} \right] \quad \text{and} \quad \left[ \begin{array}{c}
\text{[voice]} \\
C
\end{array} \right]
\]

This constraint, therefore, eliminates (40b) since the [pb] sequence, albeit agreeing in place of articulation and continuancy, disagree in voicing. The final evaluation is illustrated below (42). A summary of the constraints developed in this section is given in (43).

\[
(42) \quad \begin{array}{|c|c|c|c|c|c|c|c|}
\hline
\text{RED, LINKER, bejaz} & *\text{SUB}_{LB} & *\text{Strident}^2 & *\text{Labial}^2 & *\text{Labial}^2 & *\text{PB} & *r & *m & *s & *p \\
\hline
\text{a. be-m-bejaz} & & & ** & & & & & & * \\
\text{b. be-p-bejaz} & & & & ** & * & & & & * \\
\text{c. be-s-bejaz} & *! & & & * & & & & & \\
\text{d. be-x-bejaz} & *! & & & * & & & & & \\
\hline
\end{array}
\]

\[
(43) \quad *\text{Labial}^2 & *\text{Approx}^2
\]

i. \( \neg(\exists x \exists y((\text{Labial}(x) \land \text{Labial}(y)) \land (\text{Approximant}(x) \land \text{Approximant}(y)))) \)

ii. Assess only one mark for all values of x which (i) is false

‘No two labial segments and no two approximant are allowed.’

*\text{PB}

i. \( \forall x \forall y((\text{Adjacent}(x,y) \land \text{Cont}(x)=\text{Cont}(y) \land \text{Place}(x)=\text{Place}(y) \land \text{Voice}(x) \neq \text{Voice}(y)) \)

ii. Assess one mark each time when (i) is false.

‘Two adjacent segments agreeing in continuancy and place of articulation must also agree in voicing.’

In sum, this section has dealt with the problem posed by [b]-initial forms. The preference of a nasal plus an obstruent consonant sharing place cannot be easily handled with respect to this Turkish reduplication. An analysis has been proposed in the course of the discussion. Admittedly, this analysis is ultimately ad hoc and opportunistic. Further
investigation into the historical sources of reduplication construction might reveal fruitful insights into the mystery of the [mb]s.

2.3.6 Vowel-initial adjectives
We now turn to vowel-initial forms, a topic which we have avoided thus far. Presumably, they are also subjected to the same constraint ranking as consonant-initial ones, an assumption which would wrongly predict the same variety of linkers as is found with C-initial forms. (44) illustrates the evaluation of the emphatic construction of the vowel-initial adjective /erken/ ‘early’.

(44) RED, LINKER, erken *SUB_LB *Strident^2 *Labial^2 *r *m *s *p
a. e-p-erken
b. e-m-erken
|
| * | *!
| |
| |
| |

However, as mentioned before, native speakers of Turkish feel strongly that V-initial emphatic forms invariably select -p as the linker, as shown in (44). This is consistent with the data (see §1). Ultimately one would desire a constraint ranking that would account for both consonant-initial and vowel-initial forms uniformly without compromising generalisations drawn from native speaker intuition. The proposed constraint ranking per se, regrettably and unfortunately, does not predict the invariability of vowel-initial forms selecting -p as the linker.

An obvious problem for the present analysis is *Labial^2, which often ‘knocks out’ candidates that violate it from being the optimal output. A careful examination of the corpus reveals that one instance of labial consonant within any of the vowel-initial attested emphatic forms is found. The following tableau (45) illustrates how the current constraint ranking would wrongly predict that the optimal output has a linker other than -p in V-initial forms even though speaker judgement informed us otherwise. The predicted output is (45d) while the categorical judgement of native Turkish speakers is that the optimal output would be (45a).

(45) /RED, LINKER, ibiʃ/ ‘very silly’ *SUB_LB *Strident^2 *Labial^2 *r *m *s *p
a. i-p-ibiʃ
b. i-m-ibiʃ
c. i-s-ibiʃ
d. i-r-ibiʃ

Given the apparent counterexample, the invariability must still be captured somehow. Dissimilation does not seem to play a role in the construction of the emphatic forms of vowel-initial stems, since -p is always selected as the linker for all vowel initial forms. Hence the current constraint-ranking schema must be modified in order to prevent dissimilation from applying. Yet, dissimilation is a crucial part of the reduplication
construction in consonant-initial forms; thus, the relative ranking of dissimilation must remain as proposed.

In order to account for the dichotomy then, two approaches seem to be feasible. Since the judgement of \(-p\) being the linker of vowel-initial forms is so absolute, a possibility would be to sever the connection between the reduplication construction of the V-initial forms from the C-initial ones. The emphatic reduplication for V-initial adjectives will then be treated as a genuine case of Melodic Overwriting, with \(-p\) as the only possible linker in the construction. Consequently dissimilation will not be required at all. Thus the input to the reduplication construction of V-initial forms becomes /RED, p, V-BASE/ rather than the /RED, LINKER, BASE/ of the C-initial forms.

Another logical possibility is to exploit the fact that the linker in V-initial forms predictably becomes the onset of a syllable, such as [a.pu:nu] ‘stubble’ (see §2.2.1 for relevant discussion). The dissimilation phonotactic constraints can be parameterised to evaluate only linkers that are in coda position, namely only linkers in the emphatic construction of C-initial forms. Such restricted-application constraints can be constructed in terms of Local Constraint Conjunction. Each of the phonotactic constraints will conjoin with the constraint, NoCoda\(_{\text{LINKER}}\). This NoCoda constraint specifies that the linker must not be in coda position. By doing so, no dissimilation constraint can apply to V-initial candidates. The markedness constraint invariably prefers \(-p\) as the linker since the markedness constraint against \(-p\) is ranked the lowest. A sample evaluation of this parameterised approach is given in (46).

\[
\begin{array}{|c|c|c|c|c|c|c|}
\hline
\text{RED, LINKER, ibij} & \text{NoCoda\(_{\text{LINKER}}\)} & \text{NoCoda\(_{\text{LINKER}}\)} & \text{NoCoda\(_{\text{LINKER}}\)} & \ast r & \ast m & \ast s & \ast p \\
\hline
a. i-p-ibij & & & & & & & \\
\hline
b. i-m-ibij & & & & & & \ast ! & \\
\hline
c. i-s-ibij & & & & & \ast ! & & \\
\hline
d. i-\_p-ibij & & & & \ast ! & & & \\
\hline
\end{array}
\]

Both approaches are equally possible. In the end, the choice ultimately depends on the individual phonologist’s preference on how much information a constraint might encode when a dichotomy between seemingly similar processes becomes preferable.

This section has presented analyses for the Turkish emphatic reduplication and introduces new constraints wherever needed to account for the data. Yet, the impacts of each of these newly introduced constraints and the formal justification have been largely unattended to. In the next section, therefore, the implications of some of the constraints proposed and investigation on their formal status in linguistic theory in general are explored in detail.

### 2.4. Implications for theories of fixed segmentism in reduplication

#### 2.4.1 Melodic overwriting or the emergence of the unmarked?

As point out in the introduction, Alderete et al. (1999) argue that reduplication with fixed segmentism never requires prespecification of any kind, rather, most cases can be characterised by two general approaches: Phonological analysis based on TETU and morphological analysis based on MO. They contend that any system that does not
reconcile with either the MO or TETU is impossible (Alderete et al. 1999: 358). The case presently under investigation precisely refutes such a prediction.

As presented in §2.2.2, the portion of the ’reduplicant’ that undergoes dissimilation, namely the LINKER, is treated as a distinct formative under the present analysis. This LINKER displays the alignment properties of an affix, for it is aligned peripherally with respect to the stem and also with respect to the reduplicant. Thus this suggests characteristics of MO. Yet, typical melodic overwriting involves the affixation of a fixed string (Alderete et al. 1999: §3.1). Allomorphy in MO, if not in reduplication in general, is seldom discussed (but see Yip 1992, 1995, 1998). If the Turkish emphatic reduplication should be viewed as a case of MO, then the question of allomorphy must be addressed. §2.1 and §2.2 explore this question and conclude that the surface allomorphy can be accounted by the satisfaction of a set of dissimilation phonotactic constraints that are ranked below the morphotactic ones.

Nonetheless, despite its characteristics of resembling a case of MO, this is also a case of fixed segmentism showing distinctly phonological pattern of emergent context sensitivity: the dissimilation process is only attested in this particular morphological construction. These phonotactic constraints have no inventory-defining power in the language as a whole, however, they do have influence on the linker, which is part of the reduplicative construction. Hence, one might expect that the selection of the linker should also be analysed in terms of TETU. However, based on the criteria posited by Alderete et al. (1999: §3.2) for TETU, the Turkish emphatic reduplication defies TETU since p, m, s, r are hardly the default segments in Turkish. More important is the fact that none of the four segments serving as linkers can be categorised as unmarked in any universal markedness hierarchy.

The Turkish case also violates TETU in that in a canonical scenario of TETU, the emergent constraints are ranked above the BR-faithfulness constraints but below the IO-faithfulness ones. The Turkish case makes no claim on where the BR-faithfulness constraints should rank since the dissimilation does not actually pertains to the reduplicant per se but only to the linker. Nothing in the reduplicant string is altered. As a result, this emphatic reduplication in Turkish fails to fall into either rubric of a Melodic Overwriting analysis or TETU straightforwardly.

Is the emphatic reduplication in Turkish a hybrid of Melodic Overwriting and TETU or is it a new ‘species’ altogether? In answering this question, a revision of the fundamental conception of reduplication with fixed segmentism is required. The ‘overwriting’ segment is not exactly a part of the reduplicant in that it is not a copy of any portion of the base. Nevertheless, the overwriting morpheme is part of the reduplication construction. Alderete et al. claims that in cases of MO, the fixed segment overwrites part of the reduplicant. For example, the ‘table-schmable’ construction in English where [Sm] replaces the initial [t] of the reduplicant [teibɬ]. In this Turkish reduplication, however, the reduplicant is a mora and the ‘fixed’ string merely affixes after the reduplicant. The linker never overwrites any part of the reduplicant in any obvious way. The linker is essentially an infix between the reduplicant and the base and participates only in this emphatic reduplication construction. Thus the non-overwriting nature of this linker sets itself apart from Alderete et al.’s conception of MO.

The dissimilation requirement in the selection of the linker does not echo any canonical case of TETU either since no unmarked segment is emerging from the
evaluation per se. Rather the emergent property is the dissimilation process, through which the optimal linker emerges. Thus referring to this emphatic reduplication in Turkish as a hybrid case of MO and TETU might be misleading to phonologists. It is best to view this construction as a new ‘species’ of reduplication with fixed segmentism, one that involves the realisation of more than two elements in the construction with the selection of one of these elements based on some emerging phonological processes. This new ‘species’ shall be referred to as **Constructional Prespecification**.

Alderete et al.’s analysis of canonical MO effects cannot extend to the Turkish case described here. However, Constructional Prespecification CAN extend to canonical MO effects, such as the English ‘table-schmable’ construction, as illustrated below. This new theoretical mechanism improves upon MO by virtue of not stipulating that the fixed string must overwrite some portion of the reduplicant. The fixed string is treated in morphological terms; the placement of this fixed string is a result of the satisfaction of alignment constraints. The evaluation of ‘table-schmable’ in terms of Constructional Prespecification (48) illustrates how this theoretical mechanism can be extended to cases other than the Turkish emphatic reduplication. (47) gives some of the specific constraints crucial to the evaluation in (48).

(47)

<table>
<thead>
<tr>
<th>ALIGN_BR</th>
<th>Align the right edge of the reduplicant with the right edge of the output stem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALIGN__m</td>
<td>Align the left edge of _m to the right edge of the base.</td>
</tr>
<tr>
<td>SON_ORITY</td>
<td>Segmental sequencing must follow the sonority hierarchy.</td>
</tr>
<tr>
<td>RED=BASE</td>
<td>The reduplicant is equal to the base.</td>
</tr>
</tbody>
</table>

(48)

<table>
<thead>
<tr>
<th>RED, _m, table</th>
<th>ALIGN__m</th>
<th>ALIGN_BR</th>
<th>MAX_IO</th>
<th>DEP_IO</th>
<th>SON</th>
<th>RED=BASE</th>
<th>MAX_BR</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. table-_m-able</td>
<td></td>
<td>*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. table-_m-table</td>
<td></td>
<td></td>
<td>**!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. table-_m-able</td>
<td></td>
<td></td>
<td>**!</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. table-table</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. table-to-_mable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Form (48b) faithfully copies the base onto the reduplicant and all input elements are present in the output. However, the complex onset sequence [\_\_m] fatally violates the well-formedness of the onset. (48c) improves upon (48b) by breaking the complex onset by inserting the unmarked schwa, but it ultimately fatally violates the DEP\_IO. (48d) avoids the complex onset by eliminating [\_\_m] in the output, which violates another dominating constraint, MAX\_IO. (48e) retains [\_\_m] but tries to avoid complex onset by putting the cluster [\_\_m] inside the reduplicant. This candidate, however, violates the alignment constraint on the placement of [\_\_m] which requires the fixed string to surface right after the base. The winning candidate (48a) violates reduplicative template
requirement and the faithful copying of the base onto the reduplicant, but it crucially satisfies all the other high ranked alignment and well-formedness constraints.

In sum, it is shown that Constructional Prespecification is superior to MO. MO unnecessarily forces fixed strings in the reduplication to overwrite the reduplicant. It also forces the overwriting string to correspond to the base when the overwriting string is not a copy of any substring of the base.

2.4.2 *SUBSTRING vs. constraint self-conjunction

A Melodic Overwriting morpheme in reduplication with fixed segmentism, as conceived by Alderete et al. (1997: 53-54), stands in correspondence with materials in the base. As a result, the morpheme is subjected to evaluation for both BR and IO correspondence. Unfortunately, such interpretation of the overwriting string raises question as to what portion of the base does such overwriting material corresponds with. Since the overwriting morpheme behaves like an affix in that the placement of it is governed by alignment constraint, its location with respect to the actual copying reduplicant is a matter of alignment, not correspondence. Likewise the overwriting material is prespecified instead of a copy of some part of the base, so no output-output correspondence, as in the case of reduplicant-base correspondence, can logically be established. Without correspondence, any notion of anti-faithfulness in the output-output relation between the overwriting material and the base is vacuous. Yet, some mechanism to compare two independent strings is required to account for the dissimilation phenomenon observed. Two such mechanisms are *SUBSTRING and the self-conjunction of markedness constraints.

Local constraint conjunction and self-conjunction of markedness constraints are two mechanism of forming constraints, proposed originally by Smolensky (1993, 1995) and later developed in detail independently by Alderete (1997) and Itô and Mester (1998). The operation involves the conjunction between two different markedness constraints and the self-conjunction of a single markedness constraint. With the notion of local constraint conjunction, these authors argue that the former OCP constraint (e.g. McCarthy 1986) can be restated as a constraint against the multiple presence of a marked type of structure within the same local domain, thus a construction of a markedness constraint with itself (e.g. *VOICE_{ij}^{2}). Such self-conjoined markedness constraints penalise forms containing two instances of the marked strings or features.

The two families of OCP constraints, *SUBSTRING and Constraint Self-conjunction, both capture the dissimilation phenomenon in the Turkish reduplication construction equally well since both allow for the possibility for the prohibition of the co-occurrence between two features/segments in a long distance relation. At first glance, *SUB might seem redundant since its function appears to overlap with that of Constraint Self-Conjunction. However, *SUB is independently needed to account for segmental dissimilation, a problem that Constraint Self-Conjunction cannot adequately account for. As shown in the above discussion, the LINKER cannot be identical to any segment in the base. To express such a constraint on segmental occurrence, Constraint Self-Conjunction must resort to co-indexation or subscription in formulating the constraint, *C_{i}C_{i}. Such co-indexation is ad hoc and unrestrictive since a grammar with such mechanism will be just as easy to posit a constraint that ban the co-occurrence of two totally unrelated
segments, *Ci&Cii. *SUBSTRING, on the other hand, does not require co-indexation of any sort.

It should be noted that OCP, as conceived prior to the introduction of OT, has always been applied to identical segments or features that are adjacent with each other on some phonological tiers. This stipulation has long been referred to as the Locality Condition. Under the new conception of OCP, phonological and morphological alike, the locality condition becomes an epiphenomenon, emerging out of the restriction of the domain of application of these dissimilation constraints. In the case of self-conjunction of markedness constraints, each of these conjoined constraints is specified with the domain of its evaluation. Some are only relevant to co-occurrence within a syllable and others within a word. *SUBSTRING, as mentioned above, explicitly specifies the two strings that are subjected to its evaluation. As a result of these application-domain prespecifications, the features or morphemes incurring these OCP violations might appear to be adjacent to each other, even though they need not necessarily be so.

*SUBSTRING also has the advantage of allowing the string participating in the dissimilation to be larger than a segment or a feature, such as a morpheme. Thus this constraint can extend to other cases of haplology. To illustrate this, an evaluation of the haplology between the English plural and possessive suffixes is given in (50). The relevant constraints are defined in (49).

(49)  
<table>
<thead>
<tr>
<th>Constraint</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plural=s</td>
<td>The plural feature must be realised as [s].</td>
</tr>
<tr>
<td>Poss(essive)=s</td>
<td>The possessive feature must be realised as [s].</td>
</tr>
<tr>
<td>*SUB(STRING)PL-Poss</td>
<td>The plural morpheme cannot be a substring of the possessive morpheme.</td>
</tr>
<tr>
<td>DEPIO</td>
<td>Every segment in the output must have a correspondent in the input.</td>
</tr>
<tr>
<td>MORPHDIS</td>
<td>Distinct instances of morphemes have distinct contents, tokenwise (McCarthy &amp; Prince 1995:67)</td>
</tr>
</tbody>
</table>

(50)  
<table>
<thead>
<tr>
<th>Input</th>
<th>Output</th>
<th>Plural=s</th>
<th>Poss=s</th>
<th>DEPIO</th>
<th>*SUB PL-Poss</th>
<th>MORPHDIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. ( \text{\textbeta}t{-}\text{s}[+\text{PL}, +\text{Poss}] )</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. ( \text{\textbeta}t{-}\text{s}[+\text{PL}]^{-}\text{s}[+\text{Poss}] )</td>
<td>*!</td>
<td>*</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. ( \text{\textbeta}t[-\text{PL}, -\text{Poss}] )</td>
<td>*!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. ( \text{\textbeta}t{-}\text{s}[+\text{PL}]{-}\text{s}[+\text{Poss}] )</td>
<td>*!</td>
<td>*</td>
<td></td>
<td>*!</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is well-known that English does not allow the co-occurrence of the plural /s/ and the possessive /s/. (50b) demonstrates how *SUBSTRING PL-Poss, which requires that the morphological realisation of the plural feature not be a proper substring of the possessive morpheme, is invoked to account for the co-occurrence restriction. When either of the morpho-syntactic features, i.e. Plural and Poss, is not realised in the output, as in (50c), the morphotactic constraints, i.e. Plural=s and Poss=s, would render such a candidate sub-optimal. An epenthetic vowel could be inserted between the plural and possessive morphemes to ameliorate the ill-formed sequence, but the epenthesis violates the high ranked DEPIO which requires that every segment in the output to have a correspondent in
the input. As a result, (50a) prevails as the winner even though it violates the MORPHDIS, which demands that distinct instances of morphemes to have distinct contents token-wise.

Constraint Self-conjunction, on the other hand, can only account for featural dissimilation since the conjoined constraints are limited to markedness constraints. No current theory of markedness would claim that certain morphemes are more marked than others.

A further difference is that Constraint Self-Conjunction can account for dissimilation irrespective of the morphological domain in which the two violating strings might reside. *SUBSTRING can only account for cases of dissimilation across morpheme boundaries. This is important in haplology, which typically doesn’t apply morpheme-internally but does apply across morpheme boundaries.

Both *SUBSTRING and self-conjoined markedness constraints are needed in phonological theory, since each of these mechanisms account for only certain subset of dissimilation processes. The complementary nature of these two families of constraints is both interesting and desirable.

2.4.3 Functional motivation
Hypercorrection has generally been claimed to be the cause of many dissimilation cases (Ohala 1981, 1993; Myers 1997). The present case of dissimilation in the construction of the emphatic form of adjectives and adverbs in Turkish might have similar cognitive motivation. The presence of the linker, in addition to the copying of the first mora of the base, signals the intensification, just as ‘schm’ in English is a ‘marker’, in Hockett (1954)’s sense, of that construction. If the linker was identical or similar to some substring of the base, the listener could confuse the linker with a copy of some substring of the base. The dissimilation aids the listener to avoid such possible confusion. The more distinct the linker is from the base, the more likely the intensification is perceived.

Despite the apparent advantage of dissimilation, however, V-initial forms invariably reduplicate with -p. Since the reduplicated portion of the base is merely the initial vowel, listener might not have enough signals from the reduplication itself to realise that a given form is intensified and not a regular adjective root in the Turkish lexicon. If the linker dissimilates as found in the C-initial forms, then the possibility of such mis-perception will be even greater. As a result of the desire to ensure listeners’ realising the emphatic derivative when used, the linker fails to undergo dissimilation. Thus, V-initial forms invariably reduplicates with the most common linker, -p.

3. CONCLUSION
In the course of the examination of the questions of allomorphy, prespecification and dissimilation in fixed segmentism in reduplication in OT, using specifically on emphatic reduplication in Turkish, I have argued that: (1) allomorphy in Turkish reduplication, if not in general, can be accounted for by positing morphotactic constraints, which spellout the form of each of the allomorphs that dominate some phonotactic constraints. The ultimate selection of the proper allomorph depends on the harmonic satisfaction of the lower-ranked phonotactic constraints; (2) neither of the two theoretical mechanisms proposed in Alderete et al. (i.e. TETU and MO) can adequately account for the phenomenon observed in Turkish. I propose to revise the notion of MO, advancing a novel mechanism to account for fixed segmentism in reduplication--Constructional
Prespecification; (3) two types of constraints are introduced to account for the dichotomy between the phonological and morphological cases of the OCP. The phonological cases of OCP can be accounted for by the self-conjunction of featural markedness constraints (Ito & Mester 1998, Alderete 1997, Smolensky 1993, 1995, 1997 cited in Ito & Mester 1998) which treat OCP as an aversion to multiple presence of a marked segment in a certain domain. Morphological cases of OCP is accounted for by *SUBSTRING which mandates that a morphological string must not be a substring of another. Alternative analyses have either been rejected (Dobrovolsky 1987) or considered less desirable on empirical and theoretical grounds (Yip 1995, 1998, Alderete et al. 1997, 1999).
FOOTNOTES

1. My deepest gratitude goes to Sharon Inkelas for the numerous discussions we had and her comments on the countless earlier versions of this paper. I would also like to thank Larry Hyman, Laura Downing, Jeff Good and the audience at TREND 1999 for their comments and suggestions. This study is partly supported by the National Science Foundation Graduate Research Fellowship. Any errors and shortcomings are of course my own.

2. As I infer from her paper, she is claiming that if one looks at all features in the emphatic form, the linker that is selected would balance the number of all possible features in the output form. The best linker would be the linker that allows the output form to have the number of each possible feature balanced such that no one feature type might have an excessive presence in the overall feature inventory of the form.

3. This generalisation holds only when affricates, i.e. [tʃ], [dʒ], are excluded. This suggests that, in this language, affricates function as stops.

4. It will be apparent in later discussion that these types of preference constraints are at odds with Yip's realisation approach to morphology. However, since it is not the purpose of this paper to argue for or against a particular type of morphological framework, I shall limit the discussion to part only relevant to her analysis of the Turkish emphatic reduplication.

5. Since it is impossible to introduce individual phonotactic constraints without bringing the present discussion too far afield, the phonotactic constraints are represented by a cover constraint P-TACTIC. A detailed discussion of each of the phonotactic constraints is presented in §2.2.
6. In the following evaluation, $\varnothing$ is used to indicate the attested output while $\Diamond$ for the falsely predicted optimal candidate.

7. Such labial dissimilation constraint is warranted by the generalisations revealed in §1.2.1. However, whether such constraint is needed in Yip's grammar is orthogonal to the point being raised here, namely that the general ranking schema proposed by Yip is inherently flawed.

8. The historical development of this reduplication construction interestingly resonates with this morphological analysis. That is, the linker was historically the converbial suffix -p in Proto-Turkic (Yu 1998).

9. Other morphotactic constraints are left out from this evaluation since the purpose of this tableau is to illustrate how the emphatic reduplication construction operates. The selection of the linker among the four allomorphs will be illustrated later in the discussion.

10. An alternative to free ranking of constraints is using constraints disjunction such as RED=$p, m, s, r$. However, this constraint would incorrectly predict that a simultaneous realisation of two or more of the linkers is possible.

11. Again, since it is impossible to introduce individual phonotactic constraints without bringing the present discussion too far afield, I will employ a cover constraint P-TACTIC to represent the phonotactic constraints. A detailed discussion of each of the phonotactic constraints is presented in §2.2.

12. It should be noted that the phonotactic constraints given in Yip (1995) could prevent the possibility of all four candidates with licensed linkers being ruled out in a
single evaluation. However, when the constraint set is expanded, as it must be in order to account for the data introduced here, her current constraint set will fail to do the "trick".

13. This filter, as I infer from the paper since he does explain it in full detail, supposedly looks at all features in the four possible candidates' surface forms and determines how each linker might contribute to the overall feature inventory of the word. The best linker would be the linker that allows the output form to have a balanced number of each possible feature so that no one feature type might have an excessive presence in the overall feature inventory of the form.

14. Yip (1995, 1998) actually attempts to account for two distinct phenomena, namely reduplication and dissimilation. In her novel approach to reduplication, she proposes to abandon all input affixes. Instead, she proposes that morpheme realisation results from attempts to arrive at output targets by satisfying output constraints that supply the affixal information, such as PLURAL=s, and REPEAT.

Since the purpose of this paper is not to directly addressing any particular morphological theory, I shall restrict my discussion to her dissimilation constraints and only bring up issues regarding to her morphological framework when necessary.

15. It is unclear how this constraint should be evaluated since not every corresponding identical relevant segment in the base is in coda position. It is clear from Yip's tableau evaluation that she intends for the relevant [-son] segment in the base, regardless its location, to be subject to this constraint. For example: *busbu.luʃuk where this constraint is violated since the linker and [ʃ] in the base are both [-son] despite the fact that [ʃ] is not in the coda position.
16. For the subsequent tableau evaluations, only phonotactic and markedness constraints are presented in the tableaux. The morphotactic constraints will not be represented since it is assumed that any competing candidates that are subjected to the phonotactic portion of the evaluation must have already satisfied the morphotactic ones.

17. Although the distributional facts reported in §1 suggest that there might also be nasal and approximant dissimilation, such constraints are not crucially needed so far.
REFERENCES


Phonology 5, 73-155.


