Morphophonological Dissimilation, Morphosyntactic Dissimilation, and the Architecture of Exponence

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1 Introduction

Morphological dissimilation, also called repetition avoidance, haplology, anti-homophony, or the OCP (terms I will all use interchangeably below), is found across many languages, operating on both form and content of morphemes, banning adjacent identity within a circumscribed domain.

The aim of the chapter will thus be to demonstrate, through a broad range of typologically-diverse case studies affecting a number of different levels of phonological and morphological representation, that dissimilatory processes include only two types of operations: deletion under identity and allomorph selection.

Other imaginable repair operations (e.g. metathesis to avoid adjacent identity) are simply not available, and no repair is possible, generation of adjacent identity simply leads to a "crash", or ungrammatical output.

This paper will explore two distinct types of morphological dissimilation within a typology of their effects on exponence, raising the possibility that dissimilation may be a generalized process within the morphological component that has the option of applying to different data structures. The theoretical questions of interest relate to (a) communication between linguistic modules (lookahead / peeking / phonology-free syntax) (b) defining domains of dissimilation (c) nongeneration vs. nonrealization and (d) repair strategies, (e) derivational vs. inflectional morphology, and 'productivity' of the haplological restrictions.

Perhaps the overarching issue of most relevance to the current volume is the architectural consequences of haplology effects. The view of syntax in the 1970s, as exemplified in the work of Perlmutter (1971) and Radford (1977), was that it was responsible for everything related to exponence: which allomorph of a morpheme was chosen, whether the lower copy of a moved element was pronounced or not, and whether deletion occurred. In this view of syntax as a monolithic module responsible for deriving all aspects of morphosyntactic exponence, the architectural consequences of haplology had very different consequences than they do under current models in which syntactic assemblage may precede exponence procedures such as allomorphic determination, node- or feature- deletion, and non-pronunciation of structure. In fact, Radford 1977's entire discussion of "counter-filtering rules" (such as insertion of *se* instead of *le* in the Spanish 'spurious *se*' case) views such rules as contingency rules that apply in a derivation early enough to *prevent* later filters from ruling out a structure. Bonet 1991 approach to the spurious *se* phenomenon entirely reversed this chain of events, and in doing so also seriously altered the causal structure of the derivation in ways that rendered obsolete Radford's notion of derivational "peeking".[1] Radford's 'counter-filtering rules', intended to prophylactically apply in order to prevent subsequent grammaticality crashes, consisted of a rather limited set of operations, many of which can now be understood precisely in terms of the limitations of a realizational morphology. For example, coordinate structure constraint violations cannot be saved by any amount of 'peeking': insertion of a resumptive pronoun simply does not help in cases such as **Who did Mary and him left?*. With the shift in architectural perspective whereby syntax is no longer responsible for all aspects of exponence, rules that apply in order to deal with haplological or dissimilatory pressures are viewed as *repair* operations instead of prescient lookahead.

While the preceding discussion focused on the fact that a realizational morphology that succeeds, rather than precedes, evaluation of morphological OCP constraints avoids many of the derivational lookahead concerns raised by Radford, a similar, though distinct concern relates to the consequences of haplological repair for fully parallel models. Golston (1995), in a fully parallel model of exponence in which syntactic, morphological, and prosodic constraints are all vying for optimal realization in tandem, concludes that a meta-ranking holds whereby 'syntax outranks phonology', meaning that phonology can only delete adjacent-identical elements when the syntax has been otherwise generated fully correctly – in other words, phonology's ability to exert pressures on the realization of morphosyntactic form is limited by a meta-priority of syntactic generation over phonological pressures. Crucially, Golston goes on to claim that prosodic phrasing concerns can also trump and/or dictate how morphological exponence should proceed, and ends up with the fully parallel metaranking SYNTAX >> PROSODY >> MORPHOLOGY. Strikingly, this ordering "in space" exactly mirrors the order in derivational sequencing of modular computation proposed in articulated models of realizational morphology such as Henderson (2009), in which syntactic assemblage precedes prosodic structure-building which in turn precedes Vocabulary Insertion. As globalized meta-rankings of whole modules of the form SYNTAX >> PROSODY >> MORPHOLOGY within a parallelist architecture coincidentally converge with research into cascaded serial architectures, our discussion of haplology in what follows will discuss the phenomena below with respect to the support they provide and challenges they pose for the latter.

[1]The theoretical foundations of "peeking" itself, based on Hill 1970's treatment of Cupeño foot templates, are themselves rather obsolete given current approaches to prosodic morphology. Specifically, Hill assumes a derivational rule of reduplication that keeps applying in order to fill a bisyllabic template associated with habilitative morphology, much the same as the Simpsons-formations in Elfner and Kimper (2008) such as *wel-diddly-elcome* require reduplication to fill a trochaic template after the infix (cf. *fan-diddly-tastic* . Prosodic morphology approaches that assume that a morphological category provides a prosodic template which must subsequently be filled require no "peeking" ahead to the target: the target ontologically precedes the operations that satisfy it.

2 Theoretical Issues

2.1 Nongeneration vs. Nonrealization

The most interesting architectural question when facing haplology is, is the relevant OCP-violating sequence *generated but not realized* (e.g. due to deletion, coalescence, or allomorphy), or are such sequences simply *never generated in the first place*? To a large extent this depends on whether one is looking at derivation or inflection; with derivation one might be dealing with lexical gaps or fossilized fixes to haplology (e.g. *feminize, *femininize*), whereas with inflection, the syntax, if it is really phonology-free, has no way to know to avoid a particular output, and so the non-pronunciation of haplological structures really must be an instance of non-realization.

Radford (1977, p.43) and many later authors point out that what is most relevant in understanding haplological restrictions is their *accidental* nature as the product of syntactic assemblage. Clearly reduplication, found all over natural language, is not banned by haplological constraints, because it is an *intentional* exponence target.

2.2 Domain of Dissimilatory Visibility

Related to the architectural emphasis of this discussion, one issue that must be foregrounded before turning to any examples is the question of where and when morphosyntactic OCP constraints are evaluated. For example, are such constraints evaluated cyclically, with each application of a morpheme or stage of computation? Do they apply within particular domains that have independent motivation as grammatical structures? We turn to an overview of various existing proposals.

One set of researchers focuses on OCP constraints operative within the same M-Word (morphological word). This implicitly includes most research on clitic co-occurrence restrictions; see especially Arregi and Nevins (2007) for a proposal that the 'g-/z- constraint' in Basque is specifically a morphosyntactic dissimilation rule operative within the M-Word. Arregi and Nevins (2007) propose that dissimilation constraints within the domain of the M-Word have a basis in morphotactic markedness, and that they are sensitive to occurrences of multiple identity of morphosyntactic features, independent of the phonological exponents for these features. Given this line of research, one strong hypothesis to uphold and investigate further would be that feature-level (e.g. blind-to-form) dissimilation constraints cannot see 'outside' the M-word, or perhaps the prosodic phrase, if that is indeed the domain of Vocabulary Insertion, a possibility to which we turn immediately.

A separate line of research has specifically raised the hypothesis that the domain for dissimilatory or identity-based zero spellout is within the same prosodic phrase (see especially Ackema and Neeleman (2003). One advantage of this approach is its potential applicability to a range of syntactically defined cases that might have a more natural explanation in prosodic terms. For example, same-prosodic phrase can replace the formulation for conditions on dissimilation stated earlier in terms of 'under same S node' (Radford, 1977) such as (1-a-b), arguably with more unification with other cases, as well as helping us understand the role of pauses in improving many of the examples throughout this chapter (e.g. **that that*). Notice that in (1), ironically, (1-b) is grammatical under linear adjacency but (1-a) is out, demonstrating that structural, not linear factors crucially delimit the domain for this case.

(1) Two instances of Spanish *se* not tolerated within same clause:

a. *No se puede lavarse aqui
not one can wash-self here
'One cannot wash oneself here'

b. El hombre que quiere lavarse se fue
the man who wants wash-self self went
'The man who wants to wash himself went away'

A third strand of research posits that an important domain of identity constraints are evaluated within the same syntactic phase (see especially Richards (2006)). Richards' focus is largely on same-category OCP,

so perhaps in the best of all possible worlds each of these different larger domains will correlate with the granularity of structure over which dissimilation is enforced (e.g. phasemates cannot be of the same syntactic category, wordmates cannot be of the same featural category, and prosodymates cannot have the same phonological subsequences).

Clearly, none of these domains are mutually exclusive. As the construction of M-Words, the construction of prosodic phrases, and the syntax/linearization computation are arguably all distinct modules in many models (see Henderson 2009), a whole range of dissimilatory phenomena are arguably best understood by assigning them to distinct components of well-formedness. In the discussion that follows, we will organize the phenomena in terms of dissimilation of *phonological form* (e.g. referring specifically to phonological content) versus dissimilation of *morphosyntactic feature and/or category*.

This division of phenomena partly reflects the intuition that there are distinct formal (and perhaps functional) mechanisms at work underlying morphophonological dissimilation and a morphosyntactic OCP. Nonetheless, a number of narrowly divergent cases fall on different sides of this divide, and the reader may find it instructive to compare the double-*ko* constraint in Hindi (Section 3.1.2), clearly phonologically-based, with the double-*o* constraint in Japanese (Section 4.3.1), which is morphosyntactic in nature, and arguably can be stated phonology-free. Similarly, it is useful to compare the haplology operative among Pashto clitics (Section 3.1.3), where pure identity of form is at stake, with that of Catalan clitics (Section 4.1.3), where clitic combinations involve dissimilation across a wide range of phonologically diverse environments and are clearly better stated in morphosyntactic terms.

3 Dissimilation under Morphophonological Identity

Although the focus of this section is on cases of dissimilation which refer specifically to phonological form, the phenomena below will be organized by morphosyntactic category, in order to help interested readers cross-reference the discussion with the relevance of syntactic and prosodic domains. For example, we organize the discussion in terms of dissimilation among nominal projections, which may be relevant to research that sees the NP/DP as a cycle for prosodic construction. We turn immediately to this domain.

3.1 Dissimilation Among Nominal Projections

We provide an overview in the following subsections of dissimilatory phenomena among determiners, case-endings, pronouns, and nominal morphology. Adjacent identity leads to either allomorphy, deletion, or outright impossibility.

3.1.1 Determiners

Golston (1995) contrasts the possibility of adjacent identical determiner morphs in German (2)-(3) with the fact that Ancient Greek does not allow such sequences.

(2) Adjacent identical determiners tolerated in German:

a. die, die die Blumen gekauft haben
those, who the flowers bought have
'those who have bought the flowers'

b. dass das das Problem ist
that this the problem is
'that this is the problem'

In order to understand the relevant constructions in Ancient Greek, we must first introduce the fact that it allowed center-embedding, like 'the the face's nature':

(3) Center-embedding of DPs leads to adjacent determiners in Ancient Greek:

a. teèn tóu prosoópou phúsin
the.f the.gen.m face.gen.m nature.f

'the nature of the face'

b. tées tóon himatíoon ergasías
the.gen.f the.gen.pl clothing.gen.pl. production.gen.f.
'of the production of the clothing'

But of nine possible combinations of *tées*, *tóu*, *tóon*, all of the ones involving identity are completely unattested "in all of Ancient Greek literature from Homer (mid-8th century BC) to Chares (3rd to 2nd century BC)" (Golston, 1995, 352).

(4) Adjacent identical determiners unattested in Ancient Greek:
**tées tées*, **tóu tóu*, **tóon tóon*

Golston suggests that this constraint is not due to a processing effect, as center-embedding itself in Ancient Greek is fine, only not when it involves formally identical morphs. Golston notes that lexical content words that are adjacent cause no such problem, citing examples such as

(5) Identical lexical items tolerated in Ancient Greek:

ho éroos éroos estìn oudenòs eè tinós?
the.m Desire.m desire.m is nothing.gen.n or something.gen.n

'Is Desire desire or nothing or of something'

Rather than ascribing this specifically to a function-word versus content word difference, Golston argues that they differ in prosody: adjacent function words are bundled together into ω, the phonological word, while adjacent content words are not.

While Golston argues that the non-occurrence of (4) is due to morphophonological identity based on the fact that the determiner *tóu* is syncretic between masculine and neuter, but the constraint holds for any such combinations involving identical phonology, it is worth mentioning that could clearly appeal to underspecification in order to block the relevant exponence, in which case, this phenomenon might not be irrefutably phonological. However, its reliance on prosodic phrasing would then suggest that prosodic phrasing (or at least a scaffolding) precedes Vocabulary Insertion.

A case involving a determiner fused with a preposition may be found in Italian, where *de* 'of' + *gli* 'def.masc.pl' yields the contracted form *degli*. Similarly, for the allomorph *i*, chosen before consonant-initial nouns in Italian, the contracted form is *dei*. Interestingly enough, the plural of the noun 'god' is also *dei*. In this case, an inappropriate / unexpected allomorph for the definite article is chosen (Brentari, 1998)

(6) Italian definite article allomorphy and prepositional+article contraction:
a. gli amici 'the friends'
b. degli amici 'of the friends'
c. i cani 'the dogs'
d. dei cani 'of the dogs'

(7) Italian chooses 'incorrect' allomorphy before plural noun *dei*"
a. i dei 'the gods'
b. degli dei (*dei dei) 'of the gods'

This case looks clearly phonological in nature, and its repair, choice of an allomorph usually chosen entirely on a phonologically-determined basis, supports this classification.

3.1.2 Case Endings

For syntactic reasons, many clauses simply do not have sources for more than one instance of the same case; for example, if there is only one dative case assigner within the VP, then the absence of two dative-case marked NPs follows from non-generation, rather than a specifically haplological constraint. However,

there are languages in which the syntax should be able to generate multiple instances of a given case, but in which the output is blocked.

Among the most well-known of these Japanese double-*o* constraint (Poser, 2002), to which we will return in Section 4.3.1, where is it demonstrated that this is neither a surface nor a phonological constraint. A more convincing phonologically-sensitive case (with also some syntactic sensitivity) can be found in the Hindi double-*ko* constraint (Yip, 1998), which bans instances of the dative/accusative case marker *-ko* under adjacency and identical phonological form, under the condition that both elements are true syntactic arguments.

(8) Hindi does not tolerate adjacent *ko*-marked arguments:

a. *Raam-ko baccõ-ko samhaalna paḍaa
R-Dat children-acc take.care.inf fall.perf

b. Ham-e baccõ-ko samhaalna paḍaa
We-Dat children-acc take.care.inf fall.perf

c. Raam-ko kal baccõ-ko samhaalna paḍaa
R-Dat yesterday children-acc take.care.inf fall.perf

d. Raam-ko raat-ko Ravii milaa
R-Dat night-at Ravii met

Richards (2006) would include a notion of syntactic category in which each case might constitute its own category, hence adjacent *ko*Ps cannot be linearized within a syntactic phase. But examples such (8-b)[b] would seem to be a problem for this theory, as both *-ko* and *-e* are allomorphs of the dative case but incur no OCP violation, unless the fact that the *-e* allomorph is only possible with pronouns could be appealed to somehow.

3.1.3 Pronouns and Clitics

Pashto has the following clitics, also used as possessive clitics (Tegey, 1975), where *-am/-mo* are two allomorphs, whose distribution will become immediately apparent.

(9) Pashto argumental/possessive clitics:

me	1sg
de	2sg
ye	3sg,pl
am/mo	1,2pl (henceforth part.pl)

In Western/literary Pashto, *mo* is the preferred form of the [+participant, +pl] clitic:

(10) Preferred allomorph in Western Pashto is *mo*

motar mo/*am rAwostə
car part.pl bought

'We/y'all brought the car'

Possessive and argumental clitics can be combined, leading to ambiguity:

(11) Ambiguous interpretation of Pashto clitic clusters:

wror me de wahi
brother 1sg 2sg hits

'my brother is hitting you / your brother is hitting me'

However, when two instances of *mo* would be adjacent, the first one assumes the special form *am* (12). Similar restrictions hold in the singular, but there is no specialized allomorph, and so here a strong pronoun is used for the object (12-c):

(12) Dispreferred allomorph / strong pronoun chosen to avoid haplology in Pashto:

a. motar *mo/am mo rAwostə
car part.pl part.pl bought
we/y'all brought our/y'alls car

b. *wror me me wahi
brother my me hits
'my brother hits me'

c. wror me mA wahi
brother my me.strong.pronoun hits
'my brother hits me'

Given that *mo* and *am* share the same features, this case of morphological dissimilation seems irreducibly phonological.

A more intricate case comes from the multipurpose Dutch pronoun *er* (Neeleman and van de Koot, 2007), which has four functions: locative (L), expletive (X), argument of preposition (P), and noun associated with quantified modifier (Q). These four uses are shown in turn:

(13) The four functions of Dutch *er*:

a. dat Jan er al jaren woont
that Jan there.L already years lives
that John has lived there for years

b. dat er iemand in het bos loopt
that there.X someone in the forest walks
that there walks someone in the forest

c. dat Jan er gisteren pas weer [aan *e*] dacht
that John there.P yesterday only again [on *e*] thought
that John only thought about it again yesterday

d. dat Jan er [vijf *e*] heeft
that John there.Q [five *e*] has
that John has five of them

When more than one *er* would be syntactically expected, nonetheless, instances of coalescence occur, as indicated by glosses such as 'XQ' below, which indicate that, for example, one *er* corresponds to two syntactic functions.

(14) Fusion of two Dutch *er*s into one:

a. Kwamen er slechts twee?
came there.XQ only two?

b. Hij heeft er slechts twee over gelezen
he has there.QP only two about read
He has read only two (articles) about it

c. Hij kocht er slechts twee
He bought there.QL only two
He bought only two books there

As we will discuss below, the phenomenon of coalescence raises the possibility that one instance of the identical morphs is deleted, but is also compatible with a technical implementation in which a single exponent is doing 'double duty' and realizing both feature bundles from the input.

3.1.4 Nominal Morphology

There are a few cases in which overt plural formation is not possible when it would create phonologically identical sequences. For example, Hooper and Terrell (1976) discuss the fact that in Spanish, both the singular and the plural of 'Monday' is *lunes* because this noun contains the plural morpheme even in the singular. They argue that this accounts for the difference in stress between *lúnes* and other phonologically similar nouns such as *ciprés, cipréses* 'cypress, cypresses'. According to Hooper and Terrell (1976), plural *-es* never attracts stress, and hence *lúnes*, even in the singular, can be understood as inherently bearing the plural morpheme.

Similar considerations between heteromorphemic sibilants arise in the interaction between the English plural and possessive. As (15-a) shows, choosing *'s* is ungrammatical with a pluralized head noun in *-s*, though not with other plural forms (15-b). As (15-c) shows, this is the result of a dissimilatory pressure between two affixes with identical segmental content: when both are [-s] (or more likely, when both are [-z]), one of them – in this case, the outermost – has to go unexpressed.

(15) English plural + possessive haplology avoided:
- a. the cats' feet are dirty (kæts, *kætsɪz)
- b. the pigs' hooves are clean (pɪgz, *pɪgzɪz)
- c. the oxen's hooves are dirty
- d. Katz's deli

(Stemberger, 1981) cites other impossible plurals, such as Swedish *kemiker* 'chemist', which cannot take the plural *-er*, and hence is compatible with both singular and plural readings. In this case, the agentive affix *-er* is identical to the plural suffix. We revisit similar cases of accidentally identical suffixes in Section 3.3.

3.2 Dissimilation Between Verbal Projections

In these subsections, we examine dissimilatory forces at work among adjacent identical complementizers, negations, and aspectual markers, arguably in cases where phonological identity is a sufficient condition for dissimilation.

3.2.1 Complementizers

Complementizers are notoriously allergic to each other, as Ackema (2001) shows for Dutch, where the expected sequence *of of* becomes *of dat*. The reason that this case is included here (in the section of this paper on morphophonological dissimilation) is because it is beyond my current grasp of clause-level features to see whether the two *of*s (meaning something like 'either' and 'whether') can be reduced to a single underspecified lexical item that differs in some superset relation with *dat*. I think precisely such research should be done, as our goal as a field should be to see how many of the examples here in the morphophonology section can be moved into the morphosyntactic section instead.

(16) Dutch *of-of* avoided:
- a. *Vroeg je nou of die plaats vrij is of of-ie bezet is?
  asked you now if the seat free is or if-it taken is?
- b. Vroeg je nou of die plaats vrij is of dat-ie bezet is?
  asked you now if the seat free is or if-it taken is?

Radford (1977) musters similar examples for German – if we treat comparative *als* and temporal *als* as essentially complementizers. This sequence is realized as *denn als*. Replacement of *als* by *denn* is not otherwise possible.

(17) Avoidance of German *als-als*:
- a. Goethe ist bekannter als Schriftsteller denn als Naturwissenschaftler
  G is better.known as writer as as scientist

b. Berlin ist grösser als/*denn München
Berlin is bigger als/*denn Munich

Both the Dutch and German strategies above, therefore, involve recruiting a morphosyntactically inappropriate complementizer – which might be viewed as an impoverishment operation specifically designed to remove the OCP-offending feature. Very similar facts can be found with the two types of French *que* (Radford, 1977), one of which is a subordinating complementizer and the other of which is a comparative head:

(18) French also bans double *que* in comparatives:

Je préfère que tu restes, plutôt que (*que) tu t'en ailles
I prefer that you remain, rather than (*that) you cl go.away

Staying within the domain of complementizers, an interesting question is whether their adjacency can be interrupted by an "epenthetic" morpheme that insulates the two identical morphemes from each other, which in principle is a logically reasonable strategy for avoiding OCP violations, as Neeleman and van de Koot (2007) point out, given the following example from Spanish:[2]

(19) Spanish allows 'epenthetic' *no* to block haplology

Más vale que te vayas que *(no) que te quedes
More helps that you go that no that you remain

'It is much better that you go than that you stay'

Similar enough to be considered in this subsection are comparative morphemes, which as we have seen above are honorary complementizers for the duration of this subsection. Radford (1977) notes the ungrammaticality of double comparatives, which should of course be semantically perfect. While (20-a) is out, interestingly so is (20-b), which uses the synthetic rather than analytic form of the comparative:

(20) English disallows adjacent double comparatives:
a. *John is more more intelligent than Bill than you are
b. *John is more taller than Bill than you are

While this might make one rush to judgement that the English comparative examples should be squarely moved into the morphosyntactic section, given that *more* and *-er* appear to be separate exponents, in the account proposed by Nevins (2009), there are good reasons to think that *more* ought to be decomposed as *-er* plus *mo*-support, in which case we are dealing with morphophonological *-er* dissimilation in both (19) and (20).

In summary, many of the cases involving deletion, allomorphy, or impossibility of adjacent complementizers in the cases above may in fact be reducible to dissimilation under morphosyntactic, rather than morphophonological form, but at present a feature typology for complementizers is not well-enough developed to pursue this option.

3.2.2 Negation

A second type of anti-homophony found in Ancient Greek involves the phonologically identical morphs *meé* 'not-irrealis' (21) and *meé* 'lest' (22), which Golston (1995) views as separate and morphosyntactically distinct lexical entries.

(21) Ancient Greek *meè* used for both irrealis negation and negative complemetizer:

[2] It may be tempting to relate this semantically empty negation in the comparative to the expletive negation in French comparatives; see Rich (2010).

a. meè phóo-men
not say.1pl sbjnct
shall we not say?

b. dé-doi-ka meè. . . epilathoó-metha tées oíkade hodóu
redup-fear-1perf lest lost.1pl-sbjnct the.gen.f. homeward road.gen.f
'I fear we may forget the way home'

In order to compare what follows, we note that the indicative negation is *ou(k)*.

(22) Indicative negation in Ancient Greek:

ouk en-no-óo
not in-mind-1ind

'I don't recall'

Sequences of adjacent 'lest' and irrealis negation involve replacement of the latter by the realis negation, a form which is morphosyntactically inappropriate for the context (and thus a good candidate for a rule of impoverishment):

(23) Ancient Greek replaces irrealis negation with indicative to avoid haplology:

dé-di-men meé ou bébai-oi ée-te
redup-fear-1pl lest not steady.masc.pl be.2pl.sbjnct

'We fear you are not to be depended on'

Thus while both instances of *meé* involve 'negativity', the replacement of irrealis negation with indicative negation seems to be a good case of adjacent phonological identity causing allomorphy. It depends what morphosyntactic features we assign to 'lest' in order to know whether the rule can be formulated 'phonology-free'.

3.2.3 Aspectual Markers

The next case to be considered involves Mandarin Chinese, which has two *le*s Yip (1998): one which is perfect aspect (24-a), and another which is a discourse-related morpheme describing a 'currently relevant state' (CRS) (24-b).

(24) Chinese perfect and CRS *le*:

a. Wo wang le ta-de dizhi
I forgot perf 3sg-gen address

b. Xia-ge yue wo jiu zai Riben le
Next-CL month I then at Japan CRS

While these two *le*s can occur within the same sentence, when the verb is final (25), they would end up next to each other, leading to the impossible sequence **le le*, which instead yield a single *le* (26):

(25) Chinese does not allow both *le*s to be adjacent:

a. Wo he le san bei kafei le
I drank perf three cups coffee CRS

b. Bing dou hua le (*le)
Ice all melted perf/CRS

As mentioned earlier, the technical implementation of (25) may involve either deletion or coalescence, and for this particular case, no evidence arbitrates in favor of one or the other.

Perhaps one of the most well-known cases of aspectual markers undergoing an OCP involves the double-*ing* filter (Berman, 1973; Milsark, 1988; Ross, 1972). What has puzzled researchers is why some instances of adjacent *ing* are tolerated (e.g. *enjoying reading*) while others are decidedly awkward (such as *starting reading*).

Much like the fact that *wanna*-contraction being blocked by an intervening trace, the double-*ing* filter is blocked by intervening PRO (Milsark, 1988); as the examples in (26-b) and (27-b) show, when a pronominal possessor of the gerund is possible, PRO is by hypothesis, also possible, and it is precisely in these environments that two verbs suffixed with *ing* can be phonologically adjacent:

(26) English double *ing* tolerated when PRO blocks:
  a. John was enjoying PRO reading the book
  b. John was enjoying his reading the book

(27) English double *ing* not tolerated in non-gerunds:
  a. *John was starting reading the book
  b. *John was starting his reading the book

While it may be unusual to think that a phonologically silent PRO could serve as a buffer to block a phonologically-dependent dissimilation rule, in reality it is probably not the phonology of PRO, but the fact that it introduces more syntactic structure, thereby potentially placing the two instances of *ing* into separate domains, that is relevant.

3.3 Dissimilation Between Accidentally Identical Morphemes

While the preceding sections have witnessed a clear organization of dissimilation into adjacent identical projections, sometimes it really is the case that two exponents that have absolutely no morphosyntactic overlap end up accidentally next to each other, leading to the need for allomorphic repair.

For example, in Serbo-Croatian, both the object clitic and the auxiliary happen to be *je*. According to (Radford, 1977), when they occur next to each other, the repair involves a wholly new allomorph *ju* for the object, regardless of whether it precedes or follows the auxiliary.

(28) Serbo-Croatian object clitic *je* becomes *ju* next to auxiliary *je*:
  a. On je čita
     He it.f reads
  b. On je čitao knjigu
     He has read book
  c. On ju je čitao
     He it.f has read
  d. Nije ju čitao
     Not.has it read

A similar case is found in Arabic, where the feminine and imperfect prefix are both *ta* (de Lacy, 1999). In this case, expected *ta* + *ta* + *kassaru* → *takassaru* 'it (fem.sg) breaks'.

3.3.1 Stem-Internal Morphology

In this section we examine cases in which the morphophonological identity is not between two adjacent functional morphemes, but actually between an affix and (a part of) the open-class stem.

These cases actually form the core of much of the traditional research on 'haplology', and include work such as de Lacy (1999) in an Optimality-Theoretic framework, the intuition of which is similar in spirit to researchers such as Menn and MacWhinney (1984); Russell (1997); Stemberger (1981); Yip (1998).[3]Taking

[3]Dressler (1977) attributes the idea of "syllabic superposition" – that the single output syllable can be seen as a representative of both morphemes – to (Grammont, 1895, 111ff).

(28) as a representative example, these authors propose that a single *ta* is a representative coalescence in the output that corresponds to both input *ta*s. The implementation of this idea is that an "affix-checker" on the output involves direct statement of constraints like "feminine forms must begin with *ta*" and "imperfect forms must begin with *ta*". Both of these constraints can be satisfied with the two-for-one single morph in the output.

One of the most well-known cases in which the stem ends in a phonological sequence that happens to overlap with the phonology of a concatenated suffix is the one Bloomfield (1933, 391) cites from Latin: *nu:tri-trix* 'nourish+agentive.fem > *nu:trix* 'nurse' . Such cases raise the question of whether the stem's *tri* is deleted in the presence of the affix, or whether some more sophisticated mechanism *tricks* – if the pun may be allowed – the affix-checker (e.g. 'does the phonology of the stem include *nu:* followed by *tri*? does the feminine agentive form include *trix*?').

The overwhelming majority of stem+suffix haplology cases involve either straight deletion (or coalesence), or ineffability. Alternative allomorph selection, as seen above for Ancient Greek negation, Dutch complementizers, and so forth, is rarely an option in these cases, perhaps precisely because it is the stem itself, rather than an affix, that is being targeted.

As alluded to at many points in the preceding sections, the immediate question that arises given a coalescence analysis – in which a single output *ta* is able to satisfy both the requirement that feminine forms begin with *ta* and that imperfect forms begin with *ta* – is how to distinguish coalescence of two inputs into one output from straightforward deletion of one output. de Lacy (1999) brings suggestive evidence to the table that coalescence is an empirical possibility, at least for some cases.

In Japanese, the predicative morpheme *-si* does not appear after stems whose phonology includes *si* (in fact [ʃi]). Thus for example, the predicative form of *kanasi* 'sad' is identical to the stem itself, save for a change in accent, to which we turn immediately.

The predicative suffix *-si* causes a pitch accent to appear on a preceding syllable, e.g. *aká⁺si* 'red+pred'. As the stem *kanasi* is unaccented (as is *aka*), wholesale deletion of the suffix would lead to *kanasi*. However, as the predicative form is actually *kanasí*, it looks like what happened is *kanasi+si*, with the preaccenting property of *si* preserved before deletion/coalescence occurs.

The example above, of course, is thus far compatible with both deletion of the stem's phonology, or with coalescence, though not with wholesale deletion of the affix. Interestingly, however, haplology occurs even when the stem ends in the sequence *zi*. The result of haplology is [imiʒí] 'extreme+pred'. As the root sibilant's voicing is preserved, Delacy argues that this case cannot be handled with root-syllable deletion, and, coupled with the preaccenting facts, call for a coalescence analysis.[4]

Additional cases involving suffixes whose phonology overlaps with part of the stem can be found in French *-iste* formation. de Lacy (1999) discusses the fact that even partial overlap can lead to coalescence, such as *deixis+iste*, which leads to [deiksist], where one instance of the input sequence *is* does not make it into the output.

Some of the stem-internal cases seem to target identical syllabic sequences when they are already 'weak'; witness for example the case of the ban on adjacent *-er*s and instances of unaccompanied *-s* in Section 3.1.4. In this vein, Plag (1998), discussing *-ize* formation with nouns and adjectives that end in C_iVC_i sequences, contrasts *feminine, *femininize, feminize* with *strychnine, strychninize*. The difference is that **fémininíze* would have two adjacent identical unstressed VC sequences, while *strýchninízе* would not.

Cardona (1968, 48) identifies the major context for haplology as VCVC sequences with identical Cs,[5] such as **fish-ish* or German **honig-ig* 'honey-y'. Dressler (1977) contrasts German *Zauber-er* 'sorcerer' with *Zauberin, *Zauber-er-in* 'sorceress', specifically because the final /r/ will delete in the coda in the masculine forms, but would be in an onset in the feminine form, and hence lead to the illicit sequence [ərər].

Dressler (1977) also points out that haplology is rarer in disyllabic words, and virtually unattested across prefix-stem boundaries, because in all of these cases, the repeated syllables are more salient. These formula-

[4]It is not always the root's voicing that survives; Lawrence (1998) argues that it is the specified/marked feature that must be preserved under coalescence.

[5]I do not deal with suprasegmental haplology in this paper, e.g. affixes with polar tone, opposite from the stem. See Trommer (2005), among others, for an analysis of such phenomena.

tions emphasize the syllabic 'weakness' of many of the cases in which stem-internal sequences are accidentally identical with suffixes. A wide range of stem-internal + suffix haplology cases may be found in Menn and MacWhinney (1984); Stemberger (1981), and further research may uncover that a larger-than-accidental number of these cases fall into the classification of involving phonologically weak sequences.

3.3.2 Reduplicative Haplology

Virtually all authors working on haplology, including especially Dressler (1977), emphasize that it is a constraint against accidental, rather than intentional repetition, and thus stands in stark contrast to reduplication, where there is a deliberate instruction to repeat a (morpho)phonological sequence, including even cases such as double diminutives for intensification. Of great interest to the discussion, therefore, are cases where haplology *does* step in during reduplication. One set of cases where this occurs involves stems that themselves look 'already reduplicated' (perhaps in the sense of Zuraw (2002)).

Samoan reduplication involves a prefixal reduplicant that is usually two syllables (more precisely, a foot) (de Lacy, 1999). Thus, examples (29-a-b) illustrate the usual pattern of reduplication. However, when the stem already contains two identical syllables, the result of reduplication is a single (lengthened) syllable, rather than a full copy of the stem.

(29) Samoan disyllabic reduplication blocked with pseudo-reduplicated stems:
- a. fiti-fiti 'flick-pl.'
- b. maʔa-maʔai 'sharp-pl.'
- c. le:-lele 'fly-freq.'
- d. ni:-nini 'apply-freq.'

The result of doing 'normal' reduplication here would be four wholly identical syllables in a row. The alternative, lengthened single-syllable reduplication, leaves the stem intact with no fully identical copies preceding it.[6]

In Tagalog, the morpheme *pa-* is a causative marker, and the morpheme *pag-* is a transitivity marker. These two can occur in combination, in forms such as *makapagpahintay* 'I am able to be the one to make another wait for me'. The future tense in Tagalog is accomplished by optional CV reduplication of any noninitial or nonfinal syllable (Samuels, 2006). Thus, (30-a) could in principle involve the CV reduplications in (30-b-d):

(30) Tagalog CV reduplication avoids *papag* sequence:
- a. magsipagtrabahoh 'some people work together'
- b. mag**si**sipagtrabahoh 'some people work together (fut.)'
- c. magsipag**ta**trabahoh 'some people work together (fut.)'
- d. *magsi**pa**pagtrabahoh 'some people work together (fut.)'

Despite the optionality of which syllable can be reduplicated, Samuels (2006) argues that the CV reduplication in (30-d) is out because it creates a form ambiguous between reduplication and addition of the *pa-* affix. In this instance, therefore, an optional process of reduplication is blocked in case it would 'accidentally' result in an existing but unintended morphological sequence.

3.4 Long-Distance Dissimilation in Echo Formation

Falling again within the realm of reduplication that 'accidentally' creates an exact copy without intending to are cases of consonantal fixed-segmentism and spontaneous 'avoidance' that occur with echo word formation and related phenomena. For example, English *shm-* reduplication results in a reduplicant whose onset is *shm-*, e.g. *flowers, shmowers*. Nonetheless, as a large-scale survey by Nevins and Vaux (2003) shows,

[6] A similar case, albeit suffixing, and without vowel lengthening, can be found in Manam cases such as *ragogo-go, *ragogo-gogo* 'be warm'. The analysis in Fitzpatrick and Nevins (2004) of this case involves a 'nucleus-counter' that, somewhat like the 'affix-checker', is fooled by the structure of the representation.

speakers do not tolerate such reduplication when the base itself begins with this sequence. Thus, the name *schmidt* must undergo alternate attempts, such as *schmidt-shpidt, schmidt-flidt*, etc. Surprisingly, this phenomenon extends to practically every case of echo reduplication that exists: in Turkish *m-* reduplication, **masa-masa* is simply impossible; in Hindi *v-* reduplication, *v*-initial bases take a special allomorph, [ʃ-], and many other cases can be found in the relevant languages. Fitzpatrick and Nevins (2002) present a formal account of this long-distance dissimilation in terms of the multiple precedence representations of Raimy (2000).

One of the more intricate cases can be found in Halh Mongolian (Svantesson et al., 2005), Nouns can form echo reduplication, with an associative plural semantics (X and such things, X and people like him/her, with a slightly pejorative flavor). This is formed by an *m-* prefix that appears in the onset of the reduplicant (31-a), unless the base begins with *m*, in which case it is /ʦ/ (31-b). However, this process cannot be treated as complete overwriting of the onset in the reduplicant, because of the interesting fact that palatalization is transferred from the corresponding consonant in the base when *m-* is chosen, resulting in m^j (31-c). However, as /ʦ/ has no palatalized counterpart, no transfer occurs when m^j is the base (31-d).

(31) Halh Mongolian Echo Reduplication:

a. aɮx maɮx bread and such'
ɢɔiməŋ mɔiməŋ 'noodles and such'
ontəg montəg 'egg and such'

b. maɮtsaɮ 'cattle and such'
miɮxi tsiɮxi 'frog and such'

c. p^jasɮəg m^jasɮəg 'cheese and such'
x^jaam m^jaam 'sausage and such'

d. m^jaɢmər tsaɢmər 'Tuesday and such'
m^jaŋɢ tsaŋɢ 'thousand and such'

Such cases demonstrate that the anti-identity effect of the echo word formation actually seeks to preserve the subsegmental feature of secondary articulation, and raise important questions about the exact dimensions of the dissimilatory nature of echo word formation. It clearly cannot be an instruction to "create a word that echoes / rhymes, but is not identical", as preservation of palatalization complicates such a statement. Moreover, patterns of reduplicative overwriting involving the *vowels* suggest that, instead, what is at stake is broader non-identity within some limits:

(32) Javanese Hab-Rep prefixation (Yip, 1998):

a. elaŋ-eliŋ 'remember'
b. tuka-tuku 'buy'
c. udan-uden 'rain'
d. tak-tek 'tap'
e. lola-lali 'forget'

As virtually every language that has echo reduplication also has some form of total reduplication (Moravscik, 1978), even if only of the canonicalizing type (e.g. SALAD-salad, described by Ghomeshi et al. (2004), the avoidance of "accidentally" identical reduplicants can be grouped under the umbrella with the Tagalog cases above: what is avoided is an output that would be ambiguous between the intended morphosyntactic exponence and an alternate, accidentally identical but unrelated construction. This is in fact the explanation of Mayerthaler (1975): haplological deletion is a way of avoiding the appearance of opaque "overapplication" of a reduplicative rule where it should not apply. The identity-avoidance in overwriting reduplication is so pervasive across languages, and so easily found in spontaneous judgements of naive native speakers, it really seems to hit upon a deep dispreference in linguistic structure: accidental, unintended repetition. We return to this issue in Section 5.

4 Dissimilation under Morphosyntactic Identity

In this section we examine three kinds of dissimilation not dependent on phonological form. Section 4.1 examines dissimilation among identical morphosyntactic features within the same M-word, section 4.2 within a very close syntactic domain, perhaps a prosodic phrase, and section 4.3, within a spell-out domain.

4.1 Featural Dissimilation

4.1.1 The g-/z- Constraint in Bizkaian Basque Dialects

We begin with morphological dissimilation in the configuration [+Part] [+Part] in Basque (Arregi and Nevins, 2007). The basic idea is that it is a dissimilation rule triggered by adjacent [+Participant] features. As we will see, there is significant dialectal variation in the application of this rule. We provide a unified analysis for all varieties involved by separating the structural description (triggering context) of the dissimilation rule from the structural change (repair) it effects. Dialectal variation can be witnessed in both parts of the rule. We begin with the structural description, of which there are two types: (i) 2 ergative and 1Pl dative/absolutive (**you-us*), and (ii) 1Pl ergative and 2 dative/absolutive (**we-you*). In terms of the features involved, this can be schematized as follows:

(33) Dissimilatory Context for Bizkaian Basque *g-/z-* constraint:

	Erg	Dat/Abs
	[+Participant]	[+Participant]
<u>and either</u>		
	[−Author]	[+Author, −Singular]
<u>or</u>		
	[+Author, −Singular]	[−Author]

What is common to all dialects is that the structural description contains two adjacent [+Participant] features, which is what triggers dissimilatory repair. The structural change triggered by this structural description is also of two different kinds. It can be either impoverishment or obliteration:

(34) The *repair* to the g-/z- constraint involves *deleting* either:

a. [+Participant] *feature* on one of these terminals (impoverishment),
b. *or* one of these *terminals* entirely (obliteration).

Which specific terminal is affected by it is also subject to dialectal variation. For instance, the context 2 Erg – 1Pl Abs (**you-us*) triggers impoverishment of 2 Erg in Maruri, but impoverishment of 1Pl Abs in Ondarru:

(35) Impoverishment of 2Erg in Maruri Basque *g-/z-* constraint:

(Suk gu ikusi) g- aittu- **su** → g- aittu- ∅.
(You us seen) 1P.A- TR- **2S.E** → 1P.A- TR- **3S.E**

"You saw us." (Maruri, de Yrizar (1992, vol.1: 651))

(36) Impoverishment of 1Abs in Ondarru Basque *g-/z-* constraint:

(Suk gu ikusi) **g-** aitxu- su → **d-** o- su.
(You us saw) **1P.A-** TR- 2S.E → **3S.A-** TR- 2S.E

"You saw us." (Ondarru)

Across all Bizkaian dialects, we have found three different implementations of **you-us*, which applies whenever the auxiliary contains a 1Pl Dat/Abs and a 2 Erg terminal: obliteration of 1Pl Dat, impoverishment of 1Pl Abs, and impoverishment of 2 Erg in the context of 1Pl Abs.

The constraint **we-you* (1Pl Erg with 2 Abs/Dat) triggers two different types of repair across Bizkaian dialects: in the context of 2 Abs, 1Pl Erg is impoverished in Gallartu, and is obliterated in Zamudio.[7] and Zamudio:[8]

(37) Impoverishment of 1Erg in Gallartu Basque *g-/z-* constraint:
(Guk suek ikusi) s- **aittu-** e- **gu** → s- **ara-** e.
(We you saw) 2P.A- **TR-** P.A- **1P.E** → 2P.A- **INT-** P.A
"We saw y'all." (Gallartu, de Yrizar (1992, vol.2: 127))

(38) Obliteration of 1Erg in Zamudio Basque *g-/z-* constraint:
(Guk su ikusi) s- **aitu- u** → s- **ara**.
(We you seen) 2S.A- **TR-** **1P.E** → 2S.A- **INT**
"We saw you." (Zamudio, Gaminde (2000:373))

(39) Obliterate the Erg node containing [+Author, −Singular].

Even though the triggering context and the terminal affected are the same as in many other dialectal cases, the changes in the auxiliary are clearly more radical. In particular, the auxiliary root changes from the expected transitive *aitu* to intransitive *ara*. This shows that the ergative terminal is completely deleted, since a transitive form of the auxiliary is only possible if this terminal is present. In other words, the ergative terminal is obliterated, not simply impoverished. In the case of impoverishment, the ergative terminal is still present (even though it is realized as ∅), which triggers the insertion of the transitive auxiliary form.

In Zamudio, 1Pl Erg is also obliterated in the context of 2Dat:

(40) *(Guk hiri emon)* d- **o-** tzu- **u** → d- **a-** tzu.
(We you gave) 3S.A- **TR-** 2S.D- **1P.E** → 3S.A- **INT-** 2S.D
"We gave it to you." (Zamudio, Gaminde (2000))

(41) *(Guk hiri emon)* d- **o-** tzue- **u** → d- **a-** tzue.
(We y'all gave) 3S.A- **TR-** 2P.D- **1P.E** → 3S.A- **INT-** 2P.D
"We gave it to y'all." (Zamudio, Gaminde (2000))

(42) Obliterate the Erg node containing [+Author, −Singular].

As in the previous case, the main cue that the ergative terminal is completely gone is the change in the auxiliary root, which takes the intransitive form *a* instead of the expected transitive form *o*.) If the absence of an overt exponent for 1Pl Erg where analyzed as impoverishment followed by insertion of elsewhere ∅, we would not be able to explain the change in the form of the auxiliary. This is thus a "spurious unaccusative".

4.1.2 1-2 Dissimilation and Participant Portmanteaux

An alternative to deletion of one of the participating morphemes in an OCP-violating configuration is to fuse them into one – essentially the morphosyntactic equivalent of coalescence at the phonological level. Such cases are found as alternative repair strategies to deletion. In Huastec (Edmonson, 1987), there is a set of pronouns used for objects and unaccusative subjects (43), and a set of pronouns used for ergative agents (44). Third person objects are typically zero.

(43) Huastec 1obj and 2agent pronouns:
a. ʔin k'alel
1.abs go.thematic.incompletive
'I go'
b. ʔa hapiyal
2pl.erg open.thematic.incompletive
'You open (it)'

[7] The Gallartu data are from Gaminde 1983, as reported in de Yrizar 1992.
[8] The form *s-ara-e* in Gallartu surfaces as *sarie* due to readjustment rules

However, the combination of two [+participant] pronouns would be expected, instead, a specialized portmanteau pronoun, expressing the features of both agent and object, is found:

(44) Huastec portmanteau pronoun:

tin kʷaθaʔ
2plerg/1abs hit.thematic.completive

'You hit me'

This is arguably a repair strategy for avoiding adjacent pronominal morphemes. The use of portmanteaux in such cases is well-documented in Heath (1998), who provides a similar example from Caddo, whereby *yah-ku* expresses is 2ag > 1obj, 1st person agents are usually *ci*, and 2nd person objects usually *si*. However, 1ag > 2obj, rather than expected *ci si*, is instead the fused portmanteau *t'a*.

4.1.3 3-3 Dissimilation

In the previous sections we have considered dissimilation among adjacent identical instances of [+participant] arguments, and in this section we review cases of dissimilation among M-word-internal instances of multiple [−participant] arguments.

As is known from Perlmutter (1971) on Spanish, combinations of indirect object and direct object clitics are finicky when it comes to two 3rd persons:

(45) Spanish expected 3-3 combination *le lo* appears as *se lo*:

a. El premio, lo dieron a Pedro ayer
the prize, 3rd-acc gave-pl to Pedro yesterday
'The prize, they gave to Pedro yesterday.'

b. A Pedro, le dieron el premio ayer
to Pedro, 3rd-dat gave-pl the prize yesterday
'To Pedro, they gave the prize yesterday.'

c. *A Pedro, el premio, le lo dieron ayer
to Pedro, the prize, 3rd-dat 3rd-acc gave-pl yesterday

d. A Pedro, el premio, se lo dieron ayer
to Pedro, the prize, se 3rd-acc gave-pl yesterday

In Nevins (2007), I analyzed this restriction as the result of a person-complementarity constraint, stating that two 3rd person clitics cannot co-occur. While in Spanish, this constraint is resolved by changing the form of the first clitic to a reflexive, it is important to separate the constraint and the repair.

In Italian, the feminine dative clitic *le* cannot precede other third person accusative clitics. It is instead replaced by masculine dative *glie*:

(46) Italian feminine dative *le* before masc sg / fem sg / masc pl / fem pl accusative clitics loses gender:

a. *le lo, *le la, *le li, *le le
b. glielo, gliela, glieli, gliele

In Romanian, the dative plural *li* cannot precede third person accusative feminine plural *le*, and is replaced by singular dative

(47) Romanian 3rd plural before feminine 3rd plural loses number:

a. *li le
b. i le

Radford (1977) appeals to a sort of faithfulness hierarchy, preferring to change features lowest-ranked on REFLEXIVITY >> NUMBER >> GENDER. Thus Italian goes for switching the lowest ranked, while Romanian

cannot, as *li* is gender-neutral, so switches number. Finally Spanish *le(s)* is gender-neutral, and its plural form still violates the constraint, so it switches reflexivity.

Subsequent research (e.g. Bonet (1995)) has cast doubt on the idea that *se* is an exclusively 'reflexive' clitic (being used also for impersonal contexts). For this reason, the fact that the Italian sequence of reflexive *si* and impersonal *si* cannot co-occur, yielding instead *ci si* (Wanner, 1977), may in fact be due to dissimilation under morphosyntactic identity between two instances of identically underspecified argumental clitics. Nonetheless, the idea of a faithfulness hierarchy governing possible repair operations is an intriguing one.

In the Italian dialect of Tavullia, similar restrictions hold, though between subject and object clitic (Manzini and Savoia, 2007).

(48) Tavullia 3-3 subject & object clitic banned:

a. El / la / i / le te cEma
3ms / 3fs / 3mp / 3fp you call.3sg
(S)he/they call you

b. t El / la / i / le cE:m
2sg 3ms / 3fs / 3mp / 3fp call.2sg
"You call him / her / them"

c. *El la cema
3ms 3fs calls.3sg

d. ∅ El / la / i / le cEma
(S)he calls him / her / them / them

Much like the restriction seen in Spanish between IO and DO clitics, in Tavullia, 3rd subject clitics delete in the presence of 3rd object clitics. Given a system of person features in which [± participant] groups 1st and 2nd person together on the one hand in opposition to 3rd person, the Spanish and Tavullia cases can be seen as restrictions on the co-occurence of two [−participant] clitics.

Finally, we turn to the most intricate cases of 3-3 dissimilation, found in Catalan (Bonet, 1995). The ablative clitic *en* (49-a) and the neuter clitic *ho* [u] (49-b) undergo impoverishment when preceding other third-person forms. Thus (49-c) shows the locative clitic *hi* [i] in isolation, and (49-d) shows that the ablative clitic surfaces as locative [i] when in combination with a third-person accusative.

(49) Catalan ablative clitic undergoes impoverishment:

a. De l'armari en trauré això després
from the.closet abl will.take.out this later
'I will take this out from the closet later'

b. Això, ho trauré de l'armari després
this, neut will.take.out from the.closet later
'I will take this out from the closet later'

c. A Sabadell, hi portaré això demà
to Sabadell, neut will.bring this tomorrow
'I will bring this to Sabadell tomorrow'

d. El jersei, del calaix, li trauré després (l+**i**, *l+**en**)
the sweater, from.the drawer, acc+ablt will.take.out later
'I will take the sweater out from the drawer later'

Following Bonet, we can understand this as loss of the [+genitive] features on the [−part, +obl] clitic when it precedes another [−part] clitic, with the result that the expected ablative shows up as the underspecified oblique locative *hi* [i].

A second impoverishment rule affects the neuter clitic. Thus, when preceding the locative, it shows up as plain third-person accusative *l*, instead of neuter *ho*:

(50) Catalan neuter clitic impoverished:

Això, a Sabadell, li portaré demà (**l**+i, ***ho**+i)
this, to Sabadell, neut+loc will.bring tomorrow

'I will bring this to Sabadell tomorrow'

The two impoverishment rules, one affecting the ablative and one affecting the neuter can be combined and mutually feed each other, by combining an ablative with a neuter:

(51) Catalan ablative and neuter clitic condition each other's impoverishment:

Això, de l'armari, li trauré després (**l**+**i**, ***ho**+**en**)
this, from the.closet, abl+neut will.take.out later

'I will take this out from the closet later'

In Catalan, ablative, neuter, locative, and accusative clitics are all [−participant], and thus any of them is sufficient to provide a dissimilatory *trigger* for 3-3 dissimilation. Only the first two, however, are potential *targets* of the feature-deletion rules.

4.1.4 Number Dissimilation

In the previous sections, we have seen dissimilation of person features. Adjacent instances of identical number specification within the same M-word can also trigger dissimilation. Let us consider the impoverishment of the dual in Western Warlpiri described by Hale (1973). Warlpiri has clitics on the second-position auxiliary that agree with subject and object. Warlpiri has distinct clitics for 1st person dual subjects and 1st person plural subjects: 1st person dual is realized by a single fused clitic while 1st person plural is realized by distinct 1st person and plural number morphemes. (52-a) and (52-b) show the ordinary distinct marking of dual and plural.[9]

(52) Warlpiri dual and plural marking:

a. ngaju manu yali ka-rlijarra purla-mi
I and that pres.impf.aux-1EXCL.SUBJ.**DL** shout-nonpast
"I and that one are shouting" Hale (1973, p.320)

b. nganimpa-rlu ka-rna-ngku-lu nyuntu nya-nyi
We.plural-erg pres.impf.AUX-**1EXCL.SUBJ**-2OBJ-**PL.SUBJ** you see-nonpast
"We (plural) see you (singular) Hale (1973, p.328)

In Western Warlpiri, dual behaves as a marked category that undergoes impoverishment in a specific context. In this case the context is a syntagmatic rule of dissimilation. Thus, just as the marked nature of [+voice] in Japanese obstruents is best detected when there are *two* instances of it in an adjacent context (Ito and Mester, 2003), in Western Warlpiri the marked nature of [−augmented] in [−singular] referents is best detected by observing the effects when two duals are adjacent. Hale (1973) observes that whenever there is a dual clitic on the same auxiliary node as another nonsingular clitic, the dual is neutralized and assumes the form of the plural. Thus in (53) although the pronouns remain dual, verbal agreement does not.

(53) Warlpiri impoverishes both dual clitics in presence of each other:

ngajarra-rlu ka-rna-lu-nyarra nyumpala nya-nyi
1**DL**-ERG PRES.IMPF.AUX-1SUBJ-**PL.SUBJ-2PL**.OBJ 2**DL** see-nonpast

"We two see you two" Hale (1973, p.330)

We have seen in (52-b) that when a dual argument is the only non-singular clitic, it is realized by a specialized dual clitic form. However, when there are two dual arguments, the doubly-marked presence of both is

[9]Examples have been updated from Hale's transcription to the standard Warlpiri orthography.

enough to trigger an impoverishment rule that renders the realization of dual arguments as identical to that of corresponding plural arguments (see Noyer (2001, 769), "Evidently, the combination of two such [dual] features in Warlpiri surpasses a language-specific limit on informational richness"). Thus, in (53), while a 1st-subject dual clitic and a 2nd-object dual clitic would be expected and would be able to surface independently of each other, two duals cannot be realized together, due to the markedness-based dissimilatory impoverishment rule in (54):[10]

(54) Warlpiri: Delete [−augmented] on a [−singular] clitic when adjacent to a [−singular clitic]

This impoverishment rule deletes the contextually marked [−augmented] in the presence of another [−singular] clitic. The environment for the [−augmented] deletion rule is either a dual or a plural co-argument.

4.2 Feature-Suppression under Adjacent Identity

The proposal shared by Ackema and Neeleman (2003) and Benmamoun and Lorimor (2006)when inflection and agreement are adjacent (i.e. VS contexts), the latter is 'redundant' and hence not spelled out. Classic SV vs. VS asymmetries of this sort can be found in Dutch and Arabic, which Ackema and Neeleman (2003) argue involve prosodic co-phrasing. Thus, in (55), if the verb and the subject are phrased together, they constitute a domain in which the two 2nd person features need not, and in fact must not, both be spelled out:[11]

(55) Dutch verb-subject adjacency blocks 2sg agreement:

dagelijks loop(*t) jij met een hondje over straat
daily walk.(*2sg) you with a doggy in.the street

'Daily you walk with a doggy in the street'

Similarly, in Arabic (56), postverbal contexts allow a phrasing of the verb together with the subject that renders plural inflection impossible, in contrast to (57).

(56) Arabic verb-subject agreement blocks plural agreement:

a. Daxal-at n-nisaa?-u makaatib-a-huuna
entered-fem the-women-nom office.pl-acc-their.fem

b. N-nisaa?-u daxal-na makaatib-a-huuna
the-women-nom entered-fem.pl office.pl-acc-their.fem

Benmamoun and Lorimor (2006) raise certain concerns about whether the domain of inflectional weakening can be construed as prosodic based on the fact that more complex cases would involve recursive prosodic domains and some non-adjacency, but admit that neither set of factors would necessarily be fatal for a prosodic account.

A similar configuration, though not between verb inflection and pronoun but rather between nominal inflection and a pronominal case assigner, can be found in Romanian (Ortmann and Popescu, 2000). The possessive marker / case assigner *al* in the following examples shares features with the nominal suffix *ul*.

(57) Romanian possessive marker lost under adjacency with definite article:

a. un prieten al băiat-ul-ui
a friend poss.m.sg boy-def-dat
'a friend of the boy'

b. prieten-ul (*al) băiat-ul-ui
friend-the.m poss.m boy-def-dat

[10]The formulation in (54) correctly captures the fact that both dual clitics in (53) undergo impoverishment to become realized by plural.

[11]See Zonneveld (2007), however, for a discussion of certain complications to this basic picture.

'the friend of the boy'

As these two morphemes are not phonologically identical, this cannot be considered a case of phonologically-sensitive haplology, but it rather related to spell-out of linearly adjacent feature bundles, where the second one is suppressed under adjacency (58), and survives when there is an intervening adjective (59).

(58) Adjacency required for Romanian haplology rule to apply:

prieten-ul nebun al băiat-ul-ui
friend-the crazy poss.m boy-def-dat

'the crazy friend of the boy'

To summarize this section, there are cases, particularly involving inflection and an adjacent nominal element, in which morphosyntactically identical but phonologically distinct elements cannot be spelled out next to each other. While the jury may still be out on whether this involves prosodic phrasing or not, it is clear that neither within-same M-Word or within same syntactic ph(r)ase are correct statements of the domain, and that linear adjacency between words is playing a key role.

4.3 Whole-Category Dissimilation

In the preceding sections we have observed cases of dissimilation based on morphosyntactic features, either in the same M-word or under close syntactic adjacency. In this section we review cases in which whole syntactic categories, e.g. D and D, or *v* and *v*, cannot occur within the same domain.

Richards (2006, 2010) develops a Distinctness principle, based on the Linear Correspondence Axiom of Kayne (1994). Two categories, e.g. <DP, DP>, which are phonology-free before linearization, cannot be linearized with respect to each other, and hence cause a crash.[12] This is when they are in the same Spell Out Domain, which is the complement of a Phase Head, which include CP, vP, PP, and KP. Copies that will not be pronounced (because they are the residue of movement) do not enter into this problem. Richards also mentions that this generally applies to functional categories, and adopting the ordering whereby Lexical Roots undergo Early Insertion, followed by syntax, followed by Linearization, followed by Late Insertion of functional morphemes, we expect this to be the pattern.

For example, if ellipsis remnants and material that is postverbal in residual V2 constructions are in the same spell-out domain, then the ban on multiple adjacent DPs in English in the relevant cases follows (Richards, 2010):

(59) English bans adjacent DPs within same domain:

a. *Sluicing*: *I know someone insulted everyone, but I don't know who whom
b. *Exceptives*: *Every man admired every woman, except John Mary.
c. *Quotative Inversion*: *"It's raining," told John sadly Mary.
d. *Locative Inversion*: *Into the room kicked a man a ball

Lest these examples should cause one to think that all instances of adjacent DPs should be banned, recall that what matters is the syntactic, not linear distance between these elements. This distance can be diagnosed by certain means, and reveal that, for example, the goal and theme in English double object constructions are in fact separated by a relevant boundary. In double object constructions in English, verb particle constructions allow one to diagnose the fact that the goal argument is further away from the theme than in an NP-PP construction (Richards, 2010):

(60) English double object constructions have goal and theme further apart:

a. The secretary sent the stockholders out a schedule
b. *The secretary sent out the stockholders a schedule

[12] Moro (2000) also develops a theory in which grammatical operations, such as movement, are motivated by considerations of linearization, though not specifically distinctness of identical syntactic categories.

c. The secretary sent (out) a schedule (out) to the stockholders

Secondly, in certain languages where two DPs in a row might be potentially unlinearizable given what we know about English, it turns out that Case morphology is sufficient to render them distinct, as in Greek (Richards, 2010):[13]

(61) Greek morphological case allows multiple sluicing:

Kapjos idhe kapjon, alla dhen ksero pjos pjon
Someone.nom saw someone.acc, but not know.1sg who.nom whom.acc

Somewhat similar to multiple wh- remnants in sluicing is multiple- wh- fronting, in Serbo-Croatian multiple wh- movement (62) is blocked when it would result in both wh- phrases in the same domain (63) that have the same case.

(62) Serbo-Croatian multiple wh- fronting blocked under haplology:

a. Ko koga vidi
who whom sees

b. Šta uslovljava šta?
What conditions what?

In fact, when two wh- phrases are the same case but different gender, the ban still holds (Richards, 2010), demonstrating that case is what is relevant at the level of category-level linearizability, and not gender.

(63) Gender does not save same-case haplology in Serbo-Croatian wh- movement:

*Kojem je čovjeku kojoj ženi mrsko pomogati
which.dat aux man.dat which.dat woman.dat. boring help.inf

'Which man doesn't feel like helping which woman'?

We turn to the role of case in (dis)allowing linearization in the next section.

4.3.1 Accusative Case NPs

In this subsection we look at the Japanese ban on multiple accusative NPs within the same *v*P in more detail. This discussion follows the arguments in Poser (2002) that the double-*o* constraint in Japanese is syntactic in nature. Given the facts, a Distinctness account, like that of Richards (2006, 2010), above, would explain the impossibility of two identically-cased NPs within a spell-out domain (in this case, *v*P).

Japanese causative verbs allow either an accusative or dative causee, where the dative variant involves more of a semantics of non-coercive causation or permission.

(64) Japanese causatives allow accusative or dative causee:

a. Taroo-wa Hanako-o ikaseta
Taro-topic Hanako-acc caused-to-go
'Taro made Hanako go'

b. Taroo-wa Hanako-ni ikaseta
Taro-topic Hanako-dat caused-to-go
'Taro had/let Hanako go'

When the embedded verb is transitive and takes an accusative object, only the dative option is allowed, and the non-coercive semantic contrast goes away:

[13]This would mean that English *whom* in (59)[a] does not count as having enough case morphology somehow, perhaps a welcome conclusion given the discussion in Lasnik and Sobin (2000).

(65) Japanese double accusative not permitted in causatives:

Taroo-wa Hanako-ni/*Hanako-o kusuri-o nomaseta
Taro-topic Hanako-dat/Hanako-acc medicine-acc caused-to-drink

'Taro had/made/let Hanako drink the medicine'

This effect is different from Hindi in that it really seems to refer to argument structure (at the deep structure level) and not to phonological adjacency:

(66) Japanese double-o constraint is not improved by scrambling or separation by an adverb:

a. *Kusuri-wa Taroo-ga Hanako-o nomaseta
Medicine-topic Taro-nom Hanako-acc caused-to-drink
'As for the medicine, Taro made Hanako drink it'

b. *Taroo-wa Hanako-o tikarazukude kusuri-o nomaseta
Taro-topic Hanako-dat forcibly medicine-acc caused-to-drink
'Taro forcibly made Hanako drink the medicine'

Presumably accusative KPs cannot be linearized within the same domain, regardless of intervening material or their later movement attempts.

4.3.2 Additional unlinearizable cases

We briefly review two more cases of identical functional categories within a phase that contravene distinctness: two Ds and two *v*s.

Richards (2010) argues that (67-a) is out because it contains two Ds within the same spell-out domain. Insertion of a preposition (67-b) creates a new spellout domain in its complement.

(67) Distinctness requirement for Linearization bans D within D:

a. [*the destruction the city]
b. [the destruction [of the city]]

In the case of *v*, assuming that passive little *v*s do not head a strong phase, the (68-b) examples include two *v*s in a spell-out domain, leading to a Distinctness violation.[14]

(68) Distinctness Requirement for Linearization bans *v* within weak *v*:

a. We saw John leave / we made John leave
b. *John was seen leave / *John was made leave

In conclusion, the wide range of cases that Richards (2010) collects in support of category-level distinctness suggest that it is indeed, a higher-level haplological constraint, perhaps with a wholly different formal basis.

5 Grounded Morphology: Foundations of the Haplological Instinct?

A basic conclusion of this chapter is the fact that there are indeed haplology phenomena may be considered along various dimensions: phonologically-sensitive vs. phonologically insensitive, feature-level vs. category-level, and adjacency-requiring vs. less restrictive domain formulations.

It is an open question whether these should all receive a unified formal and or functional account, and in fact, since few authors have considered them all at once, none of the functional explanations have been devised to encompass them all. Many more of the functional explanations have been developed for the phonologically-sensitive (i.e. less abstract) cases of haplology.

[14] In *John was seen to leave*, the claim is that the preposition *to* introduces a new spell-out domain.

At the morphophonological level, accounts range from a generalized ban against excess structure, which can be cleverly avoided through a two-for-one use of the same string as a double-exponent (alternatively called ambimorphemicity, coalescence, or superposition). The motivation proposed for why excess structure, in particular, repetition of structure, should be avoided, ranges across a host of explanations. Among the ones discussed already is a generalized *STRUC constraint in the OT literature and an avoidance of accidentally appearing to be reduplication (Mayerthaler, 1975).

Dressler (1977) argues that morphophonological haplology is an attempt to improve the perceptual separability of morphemes, a kind of parsing-oriented pressure. It avoids the misalignment of morphological and syllable boundaries and aims for correct identification of the underlying morphosyntactic structure. In a way, Dressler (1977) is saying there is a sometimes faulty system of performance, and that exponence is best 'undone', or reversed, by the listener when there is a clear separation of exponents into phonologically distinct syllables.

Stemberger (1981) develops an account in terms of performance, whereby the affix-checker's faulty performance is linked to 'memory masking', which describes the fact that memory may be obscured by adjacent identity. Walter (1997) cites Kanwisher (1987) and Soto-Faraco and Spence (2001), among others, as describing instances of psychophysical parallels of 'repetition blindness' and 'repetition deafness' across broad cognitive domains.

Menn and MacWhinney (1984) explicitly develop the notion of an affix-checker in production that, as we have mentioned above, contrains statements like 'If this is a pluralized form, it should end with a -*z*. If this is a possessive form, it should end with a *z*'. This checker can be 'fooled' by forms like [pɪgz], where a single segment does double-duty. In terms OT implementations that capture the intuition of an 'affix checker', the most straightforward way to do this is to have exponence constraints requiring statements such as REALIZE THE POSSESSIVE WITH AN -S. Russell (1995) uses alignment constraints combined with segmental underspecification to analyze some thorny problems in Nisgha haplology, which involves 'deletion' (or coalescence) under partial identity. In this language, 3sg -*t* does not appear before or after other coronal obstruents, even if they are part of the stem:

(69) Nisgha 3sg agreement blocked after coronal obstruents:
  a. limx-t 's/he sings'
  b. naks 's/he marries'

Russell's analysis is that morphemes are constraints, and thus that the 3sg is actually exponed by a constraint saying 'Align the 3sg exponent with a coronal obstruent' and 'Align the 3sg's righthand boundary with the stem's righthand boundary', which accomplishes perfect alignment if the *s* in *naks* manages to satisfy the exponence constraint that a 3sg should be realized by a coronal obstruent.

A more spectacular example from Nisgha involves the following four coronal obstruents coalescing into one:

(70) Nisgha haplology coalesces four distinct morphemes:

ɬa naks -(*t) =(*s) =(*t) Peter
now marry -3sg =erg =det

'Peter is married now'

We have thus reviewed three types of performance-based accounts of haplology so far: perceptually-oriented, aiming to deliver well-differentiated morphemes (Dressler); memory-oriented, essentially repetition-blindness feeding into acquisition (Stemberger), and production-oriented, whereby an affix-checker is fooled by output forms that satisfy exponence constraints. All of these proposals would be compatible with a vision of 'grounded' morphology, whereby performance pressures ultimately become morphologized into formal constraints, much like the view of Hawkins (2004), in which parsing pressures shape formal grammars over time.[15]

[15] A proposal that is highly performance-oriented in nature, in a way that perhaps could never make its way into clear morphol-

Morphophonological haplology may very well involve a combination of all of these functional factors, and, truth be told, pursuit of these may be independent of its formal expression in the grammar, for which the coalescence account of Yip, Russell, and Delacy seems most promising as a way of cashing out "double exponence", via constraints that check for particular morphophonological expression in the output, and not more than is necessary or tolerated. Echo reduplication haplology would seem to involve a different formal means, however, for which the more abstract representations of Fitzpatrick and Nevins (2002) seem best suited at present.

Morphosyntactic dissimilation may be implemented through a variety of feature-deleting rules, such as impoverishment, rules of referral, context-sensitive spell-out, etc. Its guiding functional basis is best summarized as quoted above, Noyer (2001, 769), "Evidently, the combination of two such [dual] features in Warlpiri surpasses a language-specific limit on informational richness").

Finally, whole-category haplology is arguably formally implemented, as with many cases of syntactic ungrammaticality, as non-generation. No coalescence or impoverishment is possible, and the relevant structures simply must not be generated.

From the general perspective of a theory of exponence, these three distinct types of repair operations arguably shed light on the distinct nature of three components of the grammar: the purely syntactic, the purely morphotactic, and the morpho-phonotactic. The first of these is concerned with phase-level domains and has no repair operations available: what contravenes Distinctness will never be exponed. The second of these is concerned with word-level domains and has feature-deletion available: what contravenes an abstract-feature level OCP will be deleted and will never be exponed, instead leading to allomorphy. Finally, the third of these is concerned with syllable and segment level domains, and adjacent segmental sequences, if they can be combined into one sequence, allow 'double exponence' via coalescence. The architecture of haplology is thus best understood in terms of modular components, with distinct well-formedness requirements and repair operations, and arguably attempts to conflate all three levels into a generalized ban on repetition will obscure their independent natures.

ogization, is Wurzel (1976), who sees haplology precisely as sporadic and inconsistent. Wurzel argues that the sporadic nature of morphophonological haplology is evidence for hypercorrection – known to be sporadic – against self-aware childlike sounding of repetition. Wurzel (1976) essentially argues that children's template-filling productions with gratuitous reduplication, such as *lokomotitive* instead of *lokomotive* and *papapagei* instead of *papagei* 'parrot' gradually involve suppression of repeated syllables. This self-censoring pressure eventually fossilizes into an overzealous anti-repetition pressure in the adult grammar that rules out too many otherwise morphologically transparent combinations, such as *honig-ig* 'honey-y'.

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