Resolving conflicts with violable constraints:
On the cross-modular parallelism of repairs

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Abstract

When grammatical constraints impose conflicting requirements on a linguistic expression, this conflict is often resolved by employing a repair operation. This repair can take various forms, for example insertion, deletion or modification of linguistic material. In this paper, I provide a number of case studies in morpho-syntax, showing how there are striking parallels between the repairs employed in phonology and morpho-syntax with regard to the context, type and shape of the repair. Ultimately, it is argued that, given clear similarities between these distinct domains of grammar, repairs should be governed by the same basic principles, namely a system of violable constraints.

1   Introduction

The notion of 'repair' is found across many domains of natural language, including syntax, morphology and phonology. Broadly speaking, a repair can be characterized as a particular (often generally unavailable) structural change licensed to avoid an illicit output configuration. Phonology, in particular, often views processes such as epenthesis and deletion as repairs. For example, many languages do not allow for consonant clusters in the coda position of a syllable. If such a sequence arises, then this ill-formed structure is often 'repaired' in some way. In Korean, one of the two consonants in a complex coda is deleted (1a). In Lebanese Arabic, on the other hand, an epenthetic vowel *i* is inserted to break up the offending cluster (1b). Each of these processes repairs the unwanted complex coda that would otherwise arise.

(1)   a.   *Consonant deletion in Korean* (Iverson & Lee 1995):
           /nəks/   →   [nək]   *[nəks]   'soul'
           /čəlm-ta/   →   [čəm.ta]   *[čəlm.ta]   'young'

        b.   *Vowel epenthesis in Lebanese Arabic* (Abdul-Karim 1980):
           /kibʃ/   →   [ki.b**i**ʃ]   *[kibʃ]   'ram'
           /ʔibn/   →   [ʔi.b**i**n]   *[ʔibn]   'son'

Morphosyntax is no stranger to repairs, either. A few representative examples of repairs in syntax involve *do*-support conditioned by VP topicalization or VP ellipsis (2a), where *do* is inserted to avoid unpronounced inflectional features, as well as the insertion of a resumptive pronoun in positions from which movement is not possible (e.g. islands) (2b).

(2)   a.   do-*support* (Grimshaw 1997*b*):
             [$_{VP}$ Read a book] he *did* ___$_{VP}$
             I read a book and he did [$_{VP}$ ___] too

       b.   *Intrusive resumption in islands* (Sells 1984):
             This is the man who$_1$ I don't believe [$_{DP}$ the claim [$_{CP}$ that anyone saw *him*$_1$]]

Repairs that are distinctly more morphological in nature are also frequently found. For example, there are numerous instances of haplology repair, involving dissimilation of sequences of adjacent homophonous morphemes (e.g. Menn & MacWhinney 1984; Yip 1998; Nevins 2012). A textbook example of this involves banned sequences of impersonal and reflexive *si* in Italian (3a). This particular configuration is repaired by transforming the first *si* into the form *ci* (3b).

(3)   *Haplology repair in Italian* (Bonet 1995):

       a.   *Si   si   lava
             IMP REFL washes
             'One washes oneself'

       b.   **Ci** si   lava
             CI REFL washes
             'One washes oneself'

Another morphological repair is the so-called *Ersatzinfinitiv* (lit.'substitute infinitive') in German. While modal verbs normally take the participial form in perfective contexts (4a), when they co-occur with a lexical verb, the participle *gekonnt* is blocked and the infinitival form *können* must be used (4b).

(4)   *Ersatzinfinitiv* (Schmid 2005:2):

       a.   Er hat das gekonnt / *können
             he has that can.PART   can.INF
             'He was able to do that.'

       b.   Er hat das Buch lesen   *gekonnt / können
             he has the book read.INF can.PART   can.INF
             'He was able to read the book.'

The question that this paper will address is whether it is possible to arrive at a general theory of repairs across domains. From a descriptive perspective, this seems to be a desirable goal, since repairs across domains share similar abstract properties, i.e. different repairs apply to the same marked output configuration, repairs have a 'last resort' character and there is even intra-linguistic variation with regard to the exact repair employed in a given context. In what follows, it will be argued that adopting violable constraints in phonology, morphology and syntax allows for a unified theory of repairs across domains that is able capture these cross-modular similarities. Furthermore, this lends support to the hypothesis of *Cross-modular Structural Parallelism* in (5).

(5)   *Cross-modular Structural Parallelism* (Nevins 2008, 2010; Arregi & Nevins 2012:133):
       Operations across distinct modules of grammar employ identical computational mechanisms.

The central idea here is that modules of grammar should not differ in the abstract mechanisms

they employ, but only in the alphabets that these operate on (e.g. morpho-syntactic vs. morpho-phonological features/structure). In addition, it will be shown that the assumption of violable constraints (as in Optimality Theory) allows us to be explicit about the following properties of repairs: (i) the context for repair, i.e. when a repair applies, (ii) type of repair, i.e. whether it involves addition, deletion or manipulation of a structure, (iii) the shape of the repair, i.e. what the repair actually looks like. As will be discussed, the few current conceptions of repair (such as 'Last Resort') remain undesirably vague and offer no principled account of any of the aforementioned properties. Theories with violable constraints, such as Optimality Theory, offer an explicit answer to all of these questions. While this has been previously been noted at several points in the literature (e.g. Grimshaw 1997*b*; Tesar et al. 1999; Legendre 2001; Trommer 2002), this paper aims to offer some new arguments for this position.

Section 1.1 provides a brief introduction to violable constraints in Optimality Theory and Section 1.2 presents an example of the 'Last Resort' conception of morpho-syntactic repairs and how this implicitly requires constraint violability. The following sections go on to illustrate how some of the core properties of repairs in phonology and morpho-syntax can be understood from an OT-perspective, namely their context (Section 2), type (Section 3) and shape (Section 4).

1.1 Repairs in OT

In Optimality Theory (OT) (Prince & Smolensky 1993/2004; McCarthy & Prince 1995), a grammar consists of a set of ranked, violable constraints. Consequently, there are no 'rules' or operations such as the ones in (6) that delete a coda consonant or insert a vowel in the same context.

(6)   a.   *Coda deletion rule*:

       $C \rightarrow \emptyset \, / \underline{\quad} \,]_\sigma$

       b.   *Vowel epenthesis rule*:

       $\emptyset \rightarrow V \, / \, C]_\sigma \underline{\quad}$

In OT, the effect of such rules is achieved by competition between potential output candidates, determined by the relative constraint profile of each candidate. There are two fundamental types of constraints in OT: *faithfulness* constraints and *markedness* constraints. Markedness constraints impose some requirement on a given output form. For example, NoCoda in (7a) requires that an output candidate does not contain a syllable with a coda. Faithfulness constraints, on the other hand, require that an output does not differ from the corresponding input in a particular regard, for example by inserting something not present in the input (7b) or deleting an element present in the input (7c).

(7)   a.   NoCoda:

       Syllables do not have codas.

       b.   Dep:

       Do not insert.

       c.   Max:

       Do not delete.

Competition between possible output candidates is represented in the form of a *tableau* such as

(8). As illustrated by the following a toy phonology example, the input is the form /tak/ and the possible outputs are given in (8a) and (8b), respectively. The faithful candidate (identical to the input) in (8a) violates NoCoda due to the presence of the coda consonant /k/ in the output. The alternative candidate (8b) has applied to deletion to remove this coda consonant, and thereby violates Max. Thus, there is a conflict between these two constraints – NoCoda prevents inputs containing codas from having them in the output, and Max militates against such deletion of codas. This conflict is resolved by ranking. In (8), NoCoda is ranked higher than Max (NoCoda ≫ Max) and therefore the violation of NoCoda incurred by (8a) is more costly than the violation incurred by (8b). As a result, (8b) is chosen as the optimal output with deletion. A different grammar in (9) containing the faithfulness constraint Dep against deletion (7b), where NoCoda ≫ Dep, will lead to epenthesis (9b).

(8)

/tak/	NoCoda	Max
a. tak	*!	
☞ b. ta		*

(9)

/tak/	NoCoda	Dep
a. tak	*!	
☞ b. ta.ka		*

In each of these cases, a 'repair' such as deletion or insertion comes at the cost of violating a faithfulness constraint. However, the repair in question is licensed if this faithfulness constraint is deemed less important than the relevant markedness constraint (e.g. NoCoda). In general, if faithfulness outranks markedness (i.e. Max ≫ NoCoda), then no repair will take place. This then gives us a way of being explicit about why a particular repair operation applies in some languages, but not in others – it reduces the tension between conflicting markedness and faithfulness constraints and how a language chooses to resolve this by ranking.

OT differs from most other linguistic theories in that competition is at the centre of all explanation. The determination of a well-formed expression is evaluated relative to other possible output forms, as prescribed by a set of ranked constraints. As such, OT is not a theory of phonology or syntax since it says nothing about the constraints themselves, only how they interact. This then opens the door to a general theory of repairs across domains – in each case, the challenge lies in identifying the relevant markedness and faithfulness constraints involved.

1.2 Repairs in (morpho-)syntax: Last Resort

The spirit of violable constraints, although often not made explicit, can be identified in non-constraint-based approaches to repairs. By far the most widespread conception of a 'repair' in morpho-syntax bears the moniker 'Last Resort'. A definition of Last Resort is given in (10).

(10)   *Last Resort* (Chomsky 1995:28):
        Operations must be driven by some condition on representations, as a 'last resort' to overcome a failure to meet such a condition.

In practice, however, the notion of Last Resort, when made explicit, is difficult to distinguish from a violable constraints approach to repairs. In fact, this was noticed early on by Prince & Smolensky (1993/2004:27): 'In syntax, the notion *Do Something Only When Necessary* appears

under the heading of 'movement as a last resort' or, more generally, 'Economy of Derivation'. The connection between Last Resort and Optimality Theory has also been discussed at various other points in the literature (e.g. Samek-Lodovici 2006; Broekhuis & Klooster 2007; Broekhuis 2008, 2013; Broekhuis & Woolford 2013; Grimshaw 2013; Salzmann 2013). The 'condition on representations' in (10) clearly corresponds to markedness constraints in OT, i.e. some illicit output configuration. What is often less clear in this approach is the type of repair that is chosen by a grammar, an aspect that will be elaborated further below.[1] Nevertheless, these repairs are often generally unavailable grammatical operations that are restricted to a narrow set of contexts. This is a property that is typical of markedness/faithfulness trade-offs in OT.

In order to illustrate how the widely-adopted concept of Last Resort often tacitly involves OT-like concepts such as competition and constraint violability, let us consider the following Last Resort analysis from Bošković (2006). In Serbo-Croatian, the verb *ovladati* ('conquer') selects a DP complement bearing instrumental case (11a). As (11b) shows, it does not ordinarily take a PP complement.

(11)   *No PP complement of* ovladati (Bošković 2006:525):

   a.   On je ovladao   [$_{NP}$ zemlj-om   ]
        he is conquered   country-INST.SG

   b.   *On je ovladao   [$_{PP}$ *s(a)* [$_{NP}$ zemlj-om   ]]
        he is conquered   with   country-INST.SG
        'He conquered that country.'

Interestingly, if the complement of *ovladati* contains a 'five-and-up' numeral that assigns the so-called genitive of quantification to its complement (12a), then the structure is ungrammatical without the preposition *s(a)* (12b).

(12)   *PP complement possible if object bears genitive of quantification* (Bošković 2006:525):

   a.   *On je ovladao   [$_{QP}$ pet zemalj-a   ]
        he is conquered   five country-GEN.PL

   b.   On je ovladao   [$_{PP}$ *s(a)* [$_{QP}$ pet zemalj-a   ]]
        he is conquered   with   five country-GEN.PL
        'He conquered five countries.'

Since (11b) shows that *ovladati* does not subcategorize for a PP, the occurrence of a preposition in (12b) is best viewed as a repair operation. Bošković (2006:525) describes his analysis as follows: 'we are dealing here with a last resort *sa*-insertion that takes place so that *ovladati* can check its instrumental Case against its object argument'. Ordinarily, the case probe [∗INSTR∗] on the verb needs to be checked by undergoing Agree with a relevant goal. Simple cases such as (11a) correspond to the derivation in (13a). However, when the noun bears the genitive of quantification, the instrumental case probe on V cannot be checked by the DP (13b). At this point, a preposition

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[1] Rezac (2011) suggests that repairs are generally rather limited, and can involve only enrichment of a numeration with an unvalued or interpretable feature if a derivation crashes. In particular, he states that 'Optimality Theory makes repair universal, and that seems wrong for syntax' (Rezac 2011:200). Of course, this ultimately depends on what is classed as a repair. The view of the present paper is that morpho-syntactic repair is rather ubiquitous. Finally, Rezac's own economy-based approach may ultimately not be that different from OT approaches in that it is implicitly transderivational in nature, or can at least easily be reformulated in such terms (see Graf 2013).

bearing instrumental case features is inserted to provide a goal for case checking (13c).

(13) a. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} \text{DP}_{[\text{INSTR}]}]$

    b. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} [_{\text{QP}} \text{Q DP}_{[\text{GEN}]}]]$

    b'. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} [_{\text{PP}} \text{P}_{[\text{INSTR}]} [_{\text{QP}} \text{Q DP}_{[\text{GEN}]}]]]$

This fits the profile of a repair in OT. Preposition insertion is not generally available, but can be used if the alternative would be even worse (i.e. unchecked case features). Bošković's analysis can therefore be straightfowardly translated into an optimality-theoretic approach. Let us assume two basic constraints, the first is a markedness constraint FULLINTERPRETATION (14a), which is violated by representations containing unchecked probe features ([*F*]). The second is DEP(P) (14b), a faithfulness constraint against the insertion of prepositions not present in the input (see Nunes 2008; Woolford 2013 for independent motivation for this constraint).

(14) a. FULLINTERPRETATION:
       Probe features ([*F*]) must be checked
    b. DEP(P):
       Do not insert prepositions

To capture the fact that preposition insertion is not freely available, it should outrank most markedness constraints so that it will lack a trigger. However, in the case at hand, FULLINT is more important than DEP(P) and should be ranked higher accordingly. This means that it will only be possible to insert a preposition if this is the best available option. In simple cases without genitive of quantification (11a), the faithful candidate in (15a) incurs a costly violation of FULLINT. Candidate (15b) removes this violation by agreeing with the DP to check its instrumental case feature. The alternative option of inserting a preposition (15c) also checks its instrumental case feature, and avoids a violation of FULLINT, but it does so at the cost of an additional violation of DEP(P). This latter option is gratuitously unfaithful and therefore ruled out.

(15)

$[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} [_{\text{QP}} \text{Q NP}_{[\text{GEN}]}]]$	FULLINT	DEP(P)
a. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} \text{NP}_{[\text{INSTR}]}]$	*!	
☞ b. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} \text{NP}_{[\text{INSTR}]}]$		
c. $[_{\text{VP}} \text{V}_{[\text{*INSTR*}]} [_{\text{PP}} \text{P}_{[\text{INSTR}]} \text{NP}_{[\text{INSTR}]}]]$		*!

However, in contexts where the NP bears genitive as the result of a particular numeral quantifier (12a), the option of agreeing with the NP in (16b) does not result in checking of the case probe on V and the fatal FULLINT violation pertains. Thus, in contexts where instrumental case can no longer be checked on the NP directly, insertion of a PP shell bearing the relevant features becomes the optimal solution (16c).

(16)

$[_{\text{VP}} \text{V}_{[*\text{INSTR}*]} [_{\text{QP}} \text{Q NP}_{[\text{GEN}]}]]$	FULLINT	DEP(P)
a. $[_{\text{VP}} \text{V}_{[*\text{INSTR}*]} [_{\text{QP}} \text{Q NP}_{[\text{GEN}]}]]$	*!	
b. $[_{\text{VP}} \text{V}_{[*\text{INSTR}*]} [_{\text{QP}} \text{Q NP}_{[\text{GEN}]}]]$	*!	
☞ c. $[_{\text{VP}} \text{V}_{[*\text{INSTR}*]} [_{\text{PP}} \text{P}_{[\text{INSTR}]} [_{\text{QP}} \text{Q NP}_{[\text{GEN}]}]]]$		*
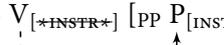
Importantly, the violable constraints conception of this 'Last Resort' repair is explicit about why this particular repair emerges and why its application is restricted to this context. In its simplest form, the logic is as follows: if a faithfulness constraint such as DEP(P) is ranked lower than a markedness constraint such as FULLINT, then a candidate violating DEP(P) can only be chosen as optimal if all the alternatives violate the higher-ranked markedness constraint.

An important detail about Bošković's analysis is that the prepositional phrase must bear an instrumental case feature [INSTR] that can be checked against the [*INSTR*] probe on V. This may seem somewhat counter-intuitive, as we might expect P to actually check instrumental case against its complement and therefore bear its own probe, rather than goal feature for instrumental case.[2] One potential argument for *s(a)* bearing a goal feature, discussed by Bošković (2006), comes from caseless NPs such as the proper name *Mari*, which also do not provide a checker for the case probe on V (17a). In addition to the familiar insertion *s(a)* (17b), it is possible to insert a possessor or adjective inflected for instrumental case (17c). The latter, perhaps more plausibly, bears the relevant case feature just like we are forced to assume for *s(a)*.

(17)   *Caseless NPs saved by* (s)a- *and adjective insertion* (Bošković 2006:529):

   a. *Džokej je ovladao   Meri
       jockey is conquered Meri

   b. Džokej je ovladao   *s(a)* Meri
       jockey is conequered with Meri
       'The jockey conquered Meri.'

   c. Džokej je pokušao ovladati   *našom*   / *neukrotivom*   Meri
       jockey is tried   conquer.INF our.INSTR.SG untamable.INSTR.SG Meri
       'The jockey wanted to conquer our/untamable Meri.'

Translating the Last Resort analysis of Bošković into OT reveals some potentially problematic aspects of it. For example, there is presumably also a case probe for accusative on *v* when V does not assign lexical case. Consequently, even if (16c) contains a *v* with an accusative case probe,

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[2] A remaining challenge for this analysis is to explain why *s(a)* can normally only combine with an instrumental-marked NP in its prepositional usage (Bošković 2006:525). If were to assume that it also bears a [*INSTR*] probe feature in addition to its [INSTR] feature, then this would create a problem for the analysis in (16), since (16c) would actually have the structure in (i) insertion of the preposition introduces a new FULLINT violation in place of the one it is trying to avoid. The result would be that this candidate is harmonically-bounded by (16b) due to violating both FULLINT and DEP(P) (as noticed by a reviewer).

(i) $[_{\text{VP}} \text{V}_{[\cancel{*\text{INSTR}*}]} [_{\text{PP}} \text{P}_{[\text{INSTR}, *\text{INSTR}*]} [_{\text{QP}} \text{Q}_{[*\text{GEN}*]} \text{NP}_{[\text{GEN}]}]]]$

Consequently, it seems that the fact that *s(a)* requires an instrumental complement must be encoded in its selectional requirements, rather than as part of the case checking mechanism. While this move may not be innocuous, implementing Last Resort in OT does not create this problem, but rather makes it explicit.

then this will trigger a violation of FULLINT. The same would hold in simple cases with genitive of quantification without inherent case on V. The consequence of this, noticed by a reviewer, is that FULLINT must be violable, since the various case probes we must assume cannot all be satisfied simultaneously. While this is of course not a problem for this OT-based account, it only becomes apparent in an optimality-theoretic implementation of Last Resort. While there are still some open questions, it is not the aim of this paper to defend this particular analysis of *s(a)*-insertion. Instead, it should suffice to show that the basic logic of this Last Resort analysis, and indeed virtually all such analyses, is deeply optimality-theoretic in nature.[3]

1.3 The nature of repairs

In OT, repairs exist as competing derivational options that are almost always suboptimal in the unmarked case. However, in the few instances where this candidate is blocked by a higher constraint, lower-ranked constraints can have an effect in shaping the optimal grammatical output. In what follows, it will be shown that a general theory of repairs as the result of the fundamental OT tension between markedness and faithfulness allows us to have an explicit theory of repairs that encompasses the context, the type and the shape of repair operations in question. In particular, the role that violable markedness and faithfulness constraints play in driving and shaping repairs is summarized in (18).

(18) *Repairs in a theory of violable constraints*:

    a.   The context for repairs is determined by output-oriented markedness constraints

    b.   The type of repair is determined by lower-ranked (faithfulness) constraints

    c.   The shape of repairs is determined by even lower-ranked markedness constraints

The following sections are devoted to a discussion of each of these aspects of repairs and how they can capture the striking similarities in repairs that we observe across the domains of phonology, morphology and syntax.

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[3]A reviewer mentions another domain in which a similar analysis is possible, namely nominalizations. An ordinary verbal predicate such as *destroy* selects a DP rather than a PP argument (ia). However, this internal argument must surface as a PP with the preposition *of* in nominalizations (ib). The same is true for nominalizations of raising-to-object verbs (ic–d) (Bruening 2017).

(i)   a.   They destroyed (*of) the city
       b.   Their destruction *(of) the city
       c.   God declared (*of) them to be wrong
       d.   God's declaration *(of) them to be wrong

While this *of*-marking is sometimes assumed to be an instantiation of genitive case (see e.g. Harley 2009), this seems *ad hoc* and there is already the genitive form *their*, which would expect in (id). An alternative explanation similar to the *s(a)*-insertion analysis is possible: A DP argument must be case-licensed, which is presumably handled by *v* in cases such as (ia,c). In nominalizations (ib,d), *v* could be either defective or absent, meaning that a case-assigning preposition must be inserted to license the argument of the nominalized verb. While this of course requires different assumptions about case assignment than with *s(a)*-insertion (i.e. a valuation rather than a checking approach), the overall Last Resort spirit on the analysis, and its implementation in OT would be very much the same.

2   The context of repairs

The first aspect of repairs to be discussed involves the context for repairs; in particular, the question of how the context for a repair operation is determined. We will see that the fact that repair operations converge on the same context lends support to the role of output-oriented markedness constraints.

2.1   Conspiracies

An important argument for markedness constraints as the driving force for grammatical operations comes from what are known as *conspiracies* (cf. Kisseberth 1970, 2011; Pater 1999; McCarthy 2002:54ff.; McCarthy 2008:2ff.). A conspiracy refers to a situation where two seemingly independent grammatical processes serve to avoid one and the same output configuration. The classic example of a conspiracy in phonology comes from Yawelmani Yokuts. Kisseberth (1970) first shows that Yawelmani has a process of vowel epenthesis to break up clusters of three consonants created by affixation of a consonant initial suffix (19a).

(19)   *Vowel epenthesis in Yawelmani* (Kisseberth 1970:296):
   a.   /ʔilk-hin/   →   [ʔi.l⟦i⟧k.hin]   'sing (aorist)'
         /lihm-hin/   →   [li.h⟦i⟧m.hin]   'run (aorist)'
   b.   /lihm-al/   →   [lih.mal]   'run (dubitative)'
         /ʔilk-al/   →   [ʔil.kal]   'sing (dubitative)'

Yawelmani also has a general process of word-final vowel deletion (20a). However, deletion is blocked if it would result in a complex coda, i.e. with affixation to a consonant-final base (20b).

(20)   *Final vowel deletion in Yawelmani* (Kenstowicz & Kisseberth 1979:98):
   a.   /taxaː-kʔa/   →   [ta.xakʔ⟦ ⟧]   'bring!'
         /taxaː-mi/   →   [ta.xam⟦ ⟧]   'having brought'
   b.   /xat-kʔa/   →   [xat.kʔa]   'eat!'
         /xat-mi/   →   [xat.mi]   'having eaten'

Now, while it is possible to formulate two distinct phonological rules such as those in (21), this fails to capture the *functional unity* (Kisseberth 1970) of these processes. Namely, these processes both conspire to avoid the creation of complex syllable margins.

(21)   a.   *Vowel epenthesis*:
             Ø → i /C___CC
   b.   *Vowel deletion*:
             V → Ø /VC___#

Epenthesis is *required* if attaching an affix would create a triconsonantal sequence (CCC), since this must be syllabified as VC.CCV or CCV.CV (i.e. as a complex onset or coda). Final vowel deletion, on the other hand, is *blocked* if its application would result in a complex coda.

While rules such as those (22) fail to capture this, a reformulation in OT utilizing a markedness constraint such as *Complex in (22) does.

(22)   *COMPLEX (Prince & Smolensky 1993/2004:108):
        No complex syllable margins (*[$_\sigma$CC, *CC]$_\sigma$)

In accounting for epenthesis, we only require a corresponding faithfulness constraint DEP, which militates against insertion (the other constraints are not relevant here). Ranking DEP below *COMPLEX will mean that epenthesis becomes preferable to tolerating a complex coda (23c). However, in contexts in which a complex coda is avoidable, insertion is blocked (23d).

(23)   *Vowel epenthesis in Yawelmani:*

/ʔilk-hin/	*COMPL	DEP	*V#	MAX(V)
a. ʔilk.hin	*!			
b. ʔil.khin	*!			
☞ c. ʔi.lik.hin		*		
/ʔilk-al/	*COMPL	DEP	*V#	MAX(V)
☞ d. ʔil.kal				
e. ʔi.lik.al		*!		

The same set of the constraints also accounts for the fact that final deletion is blocked when it would result in a complex coda (20). In this analysis, final vowel deletion is driven by the markedness constraint *V# against word-final vowels. Since this constraint outranks the constraint against vowel epenthesis (MAX(V)), output forms with word-final vowels (24a) will incur a more costly violation than those deleting them (24b). However, if the same suffix -*k*^{ʔ}*a* attaches to a consonant-final base (24d), then while deletion removes the violation of *V#, it results in a complex coda and thereby incurs an even more costly violation of *COMPLEX. The same holds for applying a secondary repair to break up the complex coda, as in (24e). However, this results in a fatal violation of DEP. Finally, simply inserting a final consonant to avoid the violation of *V# is also suboptimal, since the constraint against the repair outranks its trigger (24f). Thus, it is preferable to tolerate the candidate that violates *V# (24c), since all the other alternatives are worse.

(24) *Vowel deletion in Yawelmani*:

/taxaː-kʔa/	*Compl	Dep	*V#	Max(V)
a. ta.xa.kʔa			*!	
☞ b. ta.xakʔ				*

/xat-kʔa/	*Compl	Dep	*V#	Max(V)
☞ c. xat.kʔa			*	
d. xatkʔ	*!			*
e. xa.tikʔ		*!		*
f. xat.kʔaʔ		*!		

What is important here is that the constraint *Complex plays a role in both the triggering of epenthesis and the blocking of deletion. The ranking *Compl ≫ Dep allows epenthesis to avoid consonant clusters, whereas the ranking *Compl ≫ *V# blocks vowel deletion when it would create such a configuration. Positing output-oriented markedness constraints allows us to directly capture the conspiratorial nature of these processes, and thereby provides a strong argument for the markedness vs. faithfulness approach to repairs. If this is the case, finding analogous conspiracies in other domains of grammar would then lend support to the existence of markedness constraints across modules. The following sections provide two such examples from syntax.

2.1.1 Syntactic conspiracy #1: The embedded COMP domain in German

The first conspiracy involves the embedded CP domain in German. It is well-known that German is a V2 language requiring T-to-C movement if Spec-CP is overtly filled (den Besten 1983). However in verb-final embedded clauses from which extraction has taken place (24a), T-to-C movement is still required if C is not already lexically-contentful (25b,c) (see Thiersch 1978; Staudacher 1990; Haider 1993; and Torrego 1984 for Spanish).

(25) *Inversion under extraction from V2 clauses* (Thiersch 1978):

a. Wen₁ meinst du [CP t₁ [C′ [C⁰ dass] [TP die Maria [vP t₁ getroffen] hat]]] ?
   who think you   has   the Mary   met

b. *Wen₁ meinst du [CP t₁ [C′ [C⁰ Ø] [TP die Maria [vP t₁ getroffen] hat]]] ?
   who think you   the Mary   met   has

c. Wen₁ meinst du [CP t₁ [C′ [C⁰ hat₂] [TP die Maria [vP t₁ getroffen] t₂]]] ?
   who think you   has   the Mary   met
   'Who do you think (that) Maria met?'

Furthermore, German is known to have a construction in which extracted wh-phrases seem to be pronounced in multiple positions, sometimes referred to as *wh-copying* (26) (see e.g. McDaniel 1986; Felser 2004; Pankau 2013).

(26) *Wh-copying in German* (Höhle 2000:257):

    a. Wer$_1$ glaubst du [$_{CP}$ wer$_1$ [$_{C'}$ [$_{C^0}$ Ø] [$_{TP}$ t$_1$ [$_{vP}$ Recht] hat]]] ?
       who believe you   who   right   has
       'Who do you think is right?'

    b. Wen$_1$ meint Karl [$_{CP}$ wen$_1$ [$_{C'}$ [$_{C^0}$ Ø] [$_{TP}$ wir [$_{vP}$ t$_1$ gewählt] haben]] ?
       who said Karl   who   we   elected have
       'Who does Karl say we have elected?'

While these two syntactic processes may seem unrelated, Fanselow & Mahajan (2000:221) suggest that they share a common goal; they are both strategies to avoid a phonologically empty COMP domain. On this view, there is a conspiracy between T-to-C movement and wh-copying with regard to something like the following markedness constraint:

(27) *Ø$_{COMP}$:
    Do not have a phonologically empty COMP domain (where both Spec-CP or C^0 are empty).

Thus, these operations are best viewed as repairs to the illicit representation in (28a). In this case, either the C head must be filled lexically (28b), the verb moved to C (28c), or the copy of the wh-phrase in Spec-CP must be pronounced (28d).

(28) *Repair strategies for *Ø$_{COMP}$ in German*:

    a. *Wen$_1$ glaubst du [$_{CP}$ t$_1$ [$_{C^0}$ Ø] [$_{TP}$ Maria [$_{vP}$ t$_1$ gesehen] hat]] ?
       who believe you   Maria   seen   has

    b. Wen$_1$ glaubst du [$_{CP}$ t$_1$ [$_{C^0}$ dass] [$_{TP}$ Maria [$_{vP}$ t$_1$ gesehen] hat]] ?
       who believe you   that   Maria   seen   has

    c. Wen$_1$ glaubst du [$_{CP}$ t$_1$ [$_{C^0}$ hat$_2$] [$_{TP}$ Maria [$_{vP}$ t$_1$ gesehen] t$_2$]] ?
       who believe you   has   Maria   seen

    d. Wen$_1$ glaubst du [$_{CP}$ wen$_1$ [$_{C^0}$ Ø] [$_{TP}$ Maria [$_{vP}$ t$_1$ gesehen] hat]] ?
       who believe you   who   Maria   seen   has
       'Who do you think Mary has seen?'

To phrase this in OT terms, we can postulate the following faithfulness constraints against head movement (29a) and copy deletion (29b), respectively.

(29) a. Stay(Hd):
       Do not move heads

    b. ChainReduction (Nunes 2004):
       Lower copies in a movement chain are not realized

Given an input containing an empty COMP domain (as in embedded clauses from which extraction has taken place), the faithful candidate in (30a) fatally violates the high-ranked markedness constraint *Ø$_{COMP}$. Assuming that each of the faithfulness constraints in (29) have the same ranking (indicated by no vertical line between them), then both violating ChainReduction by spelling out an intermediate copy (30b) and applying T-to-C movement (30c) are equally possible repairs.[4]

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    [4] I am assuming that tied optima results in optionality between the relevant outputs. As an anonymous reviewer

(30)

[CP wh … [CP t_wh [C′ [C Ø] [TP … t_wh … hat]]]]	$*Ø_{COMP}$	STAY(HD)	CH-RED
a. [CP wh … [CP t_wh [C′ [C Ø] [TP … t_wh … hat]]]]	*!		
☞ b. [CP wh … [CP wh [C′ [C Ø] [TP … t_wh … hat]]]]			*
☞ c. [CP wh … [CP t_wh [C′ [C hat] [TP … t_wh … t_hat]]]]		*	
d. [CP wh … [CP wh [C′ [C hat] [TP … t_wh … t_hat]]]]		*	*!

Interestingly, the option in (30d) of applying both T-to-C movement *and* intermediate copy Spell-Out (31) is ruled out because of the additional violation of CH-RED is unnecessary from the point of view of reparing the null COMP configuration.

(31)   *Wen₁ glaubst du   [CP wen₁ [C⁰ hat₂] [TP Maria [vP t₁ gesehen] t₂]] ?
        who believe you   who   has   Maria   seen
        'Who do you think Mary has seen?'

This supports the idea that these are actually repairs, since violable constraints require that repairs be as *minimal* as possible (what Prince & Smolensky (1993/2004:32) call the *Economy Property of Optimality Theory*). Furthermore, this view also gives us an indication of how best to treat (28b). There are essentially two options: Either the choice between Ø and *dass* is simply a lexical one, or *dass* can be inserted as a repair to $*Ø_{COMP}$, in violation of a constraint such as (32).

(32)   TELEGRAPH (Pesetsky 1998):
        Function words are not pronounced (e.g. complementizers)

However, some speakers of German, who do not have Doubly-Filled COMP effects in embedded clauses (Bayer 1984), permit both *dass* and Spell-Out of an intermediate copy (33), whilst still not allowing (31) (Fanselow & Mahajan 2000:221):

(33)   Wen₁ denkst du   [CP wen₁ [C⁰ (dass)] [TP sie t₁ liebt]] ?
        who think you   who   that   she   loves
        'Who do you think she loves?'

This suggests (at the very least) that the lexical realization of the complementizer should not be treated as a syntactic repair. As for why (31) is possible and (33) is not, one possible account could be that lexical realization (i.e. Vocabulary Insertion) happens after optimization and the repairs. On this view, (33) would be a case of overapplication of intermediate Spell-Out applying after the intermediate Spell-Out repair has applied (i.e. counter-bleeding; Kiparsky 1976).

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correctly remarks, this is not necessarily an innocuous assumption. The treatment of ties in OT is discussed at length in Müller (2002), however the major point is that, in theories with strict domination, having a genuine tie involves there being no lower-ranked constraint that distinguishes between the two candidates. In many cases, this may be implausible given the size of the (presumably universal) constraint set CON. A possible way out of this problem could be to assume that constraints actually bear weights, as in Harmonic Grammar (Legendre et al. 1990) or Linear Optimality Theory (Keller 2006). In such an approach, one could say that two candidates are tied if the relevant harmony scores are 'close enough'. In theory, they may not have identical harmony scores, but in practice the difference would be too small to lead to a perceivable discrepancy in acceptability.

2.1.2 Syntactic conspiracy #2: The Anaphor-Agreement Effect

Another example of a conspiracy in syntax involves the *Anaphor Agreement Effect* (AAE) (cf. Rizzi 1990; Woolford 1999; Haegeman 2004; Deal 2010; Sundaresan 2012, 2016).[5] This refers to the fact that anaphors are often illegitimate targets for agreement, and was originally motivated by the following data from Italian. In (34a), *importare* takes a PP object and dative subject, resulting in default 3SG agreement on the verb. The verb *interessare*, on the other hand, has a nominative object *loro* ('they') and this results in plural agreement (34b).

(34) a. A me   importa   solo [PP di loro]
          to me.DAT matter.3SG only   of they.GEN
          'All that matters to me is them.'

      b. A me   interessano solo loro
          to me.DAT interest.3PL only they.NOM
          'I am only interested in them.'   (Rizzi 1990:32)

The dative experiencer can also function as the antecedent for an object anaphor in each of these constructions. In (35a), the genitive object of the preposition now becomes the plural anaphor *se stessi*, again triggering default agreement. The interesting observation is that it is not possible to have the anaphor *se stessi* as a nominative object in (35b), since the verb would be forced to agree with it in φ-features, as in (35b).

(35) a. A loro   importa   solo [PP di se stessi]
          to them.DAT matter.3SG only   of themselves.GEN
          'All that matters to them is themselves.'

      b. *A loro   interessano solo se stessi
          to them.DAT interest.3PL only themselves.NOM
          'They are only interested in themselves.'   (Rizzi 1990:33)

This led Rizzi (1990:28) to suggest that 'there is a fundamental incompatability between the property of being an anaphor and the property of being construed with agreement'.

As Woolford (1999) shows, the AAE holds in a many other languages, and there are often multiple ways in which a language avoids AAE-violating configurations. Based on data from Bok-Bennema (1991), Woolford (1999:265) discusses the following conspiracy of processes to avoid AAE configurations that arises in Inuit. In ordinary transitive sentences (36a), verb agreement tracks both the subject and the object. However, examples such as (36b) show that such agreement is not possible if the object is anaphor.

(36) a. Angutip arnaq   taku-vaa
          man.ERG woman.ABS see-IND.3SG.3SG
          'The man sees the woman.'

      b. *Hansiup   immi   asap-puq
          Hansi.ERG himself.ABS wash-IND.3SG.3SG
          'Hansi washed himself.'   (Bok-Bennema 1991:28,51)

Inuit has two distinct ways of circumventing the AAE violation in (36b). The first is detransitiv-

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[5] I would like to thank Sandhya Sundaresan for pointing out the following data as an example of a conspiracy.

ization of the verb, where the internal object is syntactically absent (37a).[6] The other option is to demote the absolutive direct object to oblique dative case (37b). Since obliques generally do not count as potential targets for Agree, the anaphor is now 'shielded' from agreement, and an AAE violation is avoided.

(37)   a.   Asap-puq
            wash-IND.3SG
            'He washed himself.'

        b.   Angut immi-nut   taku-vuq
            man   himself-DAT see-IND.3SG
            'The man sees himself.'   (Bok-Bennema 1991:50)

Thus, we see that Inuit has two strategies that conspire to avoid agreement with an anaphor: either the anaphor is removed from the structure entirely, or it is assigned a case that makes agreement impossible. We can model this in OT as follows. Assume that there is a high-ranked markedness constraint against agreement with anaphors, i.e. the AAE (38a).[7] Additionally, there is another markedness constraint AGREE, responsible driving agreement by militating against unvalued probe features on a given head (38b). Furthermore, let us propose faithfulness constraints against insertion of Kase head (K) that corresponds to oblique case (cf. Bittner & Hale 1996) and MAX(DP) against deletion of nominal arguments.

(38)   a.   ANAPHORAGREEMENTEFFECT (AAE):

           An anaphor may not control agreement.

        b.   AGREE:

           A head bearing a probe feature [F:□] agrees with a phase-local goal.

        c.   DEP(K):

           Do not insert K heads.

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[6] It is important to mention that this is not an instance of anti-passivization. This is a distinct construction in which an antipassive morpheme *-si-* is added (i) (Bok-Bennema 1991:49). However, this strategy presumably also suffices in circumventing the AAE. An anonymous reviewer also wonders whether omission of the object is restricted to verbs such as 'wash' and 'shave' that have a natural reflexive usage. This does not seem to have to be the case. Bok-Bennema (1991:50) claims that this strategy is available for both such 'ambiguous' verbs, but also with *bona fide* transitives. The following example in (ii) with 'hide' seems to be an instance of the latter.

(i)   a.   Tuqut-**si**-vuq   b.   Tuqqur-puq
           kill-APASS-IND.3SG   hide-IND.3SG
           'He killed'   'He hid himself.'

[7] Two anonymous reviewers point out that postulating AAE as a violable constraint would predict that there should be languages with the ranking AGREE ≫ AAE, which permit genuine anaphoric agreement. This would seem to run counter to the widely-held view that the AAE is universal (e.g. Woolford 1999). However, Gurujegan Murugesan (p.c.) informs me that there are in fact languages in which the AAE does not seem to hold. Among them are Gujarati (Mistry 2000:344), Ingush (Nichols 2011:641) and Archi (Bond & Chumakina 2016:70). For example, in Gujarati, there is independent evidence that the ergative subject cannot control agreement on the verb (it normally triggers default agreement), and therefore the verb in the following examples from Mistry (2000:344) must be showing genuine agreement with the reflexive object:

(i)   a.   Raaj-e   potaa-ne sandov-**yo**   b.   Sudhaa-e   potaa-ne sando-**vi**
           Raj.M-ERG self-ACC involved-M.SG   Sudhaa.F-ERG self-ACC involved-F.SG
           'Raj involved himself.'   'Sudha involved herself.'

     d.   Max(DP):

        Do not delete DPs.

Let us adopt a cyclic approach to optimization in which each step of the derivation is subject to optimization (see e.g. Heck & Müller 2003, 2013, 2016). Furthermore, I propose that object agreement involves a φ-probe ($[\varphi{:}\square]$) on the v head (subject agreement is the result of the corresponding probe on T). At the point of the derivation where v is merged, we have the options in (39a–d) as possible next steps. Failing to agree with the locally available anaphor in (39a) violates Agree and is ruled out. However, agreement with the anaphor leads to an even more severe AAE violation (39b). At this point, the lower-ranked faithfulness constraints provide possible repairs. Deleting the anaphor removes the potential goal for agreement and avoids the costly violation of Agree at the expense of a violation of Max(DP) (39c). The other option is to insert a KP shell (corresponding to dative case) to the anaphor (39d). Since agreement with an oblique-marked argument is not possible, due to K being a phase head and introducing a new locality domain for Agree, the anaphor no longer counts as a locally-available goal for agreement and Agree is not violated.

(39)

$[_{vP}\ v_{[\varphi{:}\square]} \dots \text{ANAPH}_{[\varphi{:}F]}\ ]$	AAE	Agree	Dep(K)	Max(DP)
a. $[_{vP}\ v_{[\varphi{:}\square]} \dots \text{ANAPH}_{[\varphi{:}F]}\ ]$		*!		
b. $[_{vP}\ v_{[\varphi{:}F]} \dots \text{ANAPH}_{[\varphi{:}F]}\ ]$	*!			
☞ c. $[_{vP}\ v_{[\varphi{:}\square]} \dots\ ]$				*
☞ d. $[_{vP}\ v_{[\varphi{:}\square]} \dots [_{KP}\ \text{K ANAPH}_{[\varphi{:}F]}\ ]]$			*	
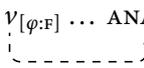
Since both Max(DP) and Dep(K) are unranked with respect to each other in (39), we can assume that they are both equally available repairs in AAE-violating contexts.[8]

The examples previously discussed serve to show that conspiracies exist both in phonology and syntax (also see Dawson 2017; Foley 2017; Rolle to appear for examples of conspiracies in morphology). The convergence of two repairs on a single context within one language provides good evidence for an independent markedness constraint against that context. It is only when this constraint (e.g. *Complex, *Ø$_{\text{COMP}}$, AAE) is violated that the option of violating these lower-ranked faithfulness constraints becomes available. The type of the repair in question (i.e. deletion, insertion or modification) depends on the particular faithfulness constraints ranked below this markedness constraint. In the syntactic conspiracies discussed here, more than one repair is available simultaneously, thereby suggesting that the repairs are equally costly (i.e. unranked relative to each other). This is not always necessarily the case, however, as the following section will discuss.

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[8] This does not seem to exhaust the possible repairs to the AAE cross-linguistically, there is also 'agreement switch', in which an object probe targets the subject just in case object agreement would violate the AAE (i.e. in Kutchi-Gujarati; Patel-Grosz 2014; Murugesan & Raynaud to appear), as well as insertion of default agreement (e.g. in Italian, Georgian or Albanian; Woolford 1999:260 fn.5,270ff.) or a dedicated form of agreement for anaphora (Woolford 1999; but see Deal 2010:115ff. for different view of the latter in Nez Perce). Whether or not we find further conspiracies including these repairs is left to future research.

3 The type of repair

This section addresses the second major aspect of repairs in a theory of violable constraints, namely how one can account for which repair is chosen for a given context. It will be shown that the relative ranking of low-ranked faithfulness constraints that become active upon violation of a high-ranked markedness constraint determine the type of repair that a grammar opts for in a particular context. We will see this varies, as languages choose different repairs for the very same context. This will be illustrated by a comparison of hiatus repairs in phonology and PCC repairs in morpho-syntax.

3.1 Heterogeneity of Target/Homogeneity of Process

When the repair for a particular configuration differs across languages, this is sometimes referred to as *Homogeneity of Target/Heterogeneity of Process* (HoT/HoP) (McCarthy 2002:25f.,93ff.). This is then essentially a cross-linguistic conspiracy of the kind discussed in the previous section. An illustrative example of this from phonology involves repairs to hiatus, i.e. sequences of adjacent vowels in separate syllables (V.V) (see Casali 1996, 2011). While some languages such as Hawaiian are reported to tolerate hiatus (Senturia 1998:26), many languages do not. In response to this, languages employ a diverse range of repair operations in hiatus contexts. An overview of repairs for the sequence /ia/ across various languages is given in (40).[9]

(40)   *Hiatus repair for /ia/ across languages* (*V.V):

a.	Vowel elision:	/ndi-akha/	→	[ndakha]	'I build'	(Xhosa)	(Casali 1996:93)
		/ti-a-bwela/	→	[tabwela]	'We have come'	(Chichewa)	(Casali 1996:32)
b.	Glide formation:	/li-ato/	→	[lja:to]	'boats'	(Luganda)	(Casali 2011:1435)
		/a-ri-a/	→	[arja]	'is eating'	(Okpe)	(Casali 1997:515)
c.	Diphthongization:	/opi-aji/	→	[o.pia.ji]	'Lendu woman'	(Ngiti)	(Casali 2011:1435)
d.	Glide insertion:	/dangli-an/	→	[danglijan]	'to bevel'	(Kalinga)	(Rosenthall 1994:237)
		/mi:-ar/	→	[mi:jar]	'middle-FEM.PL'	(Faroese)	(Staroverov 2014:20)
e.	ʔ-epenthesis:	/di-aŋkat/	→	[diʔaŋkat]	'to lift (PASS)'	(Malay)	(Casali 2011:1437)
f.	Coalescence:	/a-bi-a/	→	[abe:]	'seeds'	(Foodo)	(Casali 2011:1440)
		/mili-ani/	→	[mileni]	'it is red, they say'	(Tunica)	(de Haas 1988:196)

What is striking here is that the very same configuration can lead to a wide range of repairs. As well as providing further evidence for some universal markedness constraint determining the context of the repair (as with conspiracies), HoT/HoP effects such as this should inform the theory of repairs.

In general, this variation follows from two aspects of Optimality Theory: (i) violable faithfulness constraints, (ii) the assumption of a universal constraint set (CON). As shown above, repairs emerge with conflicts between markedness constraints (M) and faithfulness constraints (F), where M ≫ F. In this case, the violation of the lower-ranked faithfulness constraint (e.g. MAX or DEP) incurred by the repair candidate is tolerated. This is where the second property of OT is important, namely the fundamental assumption that the set of constraints is 'maxim-

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[9] Of course, a single language can also have multiple ways of resolving hiatus (i.e. a conspiracy), see Baković (2006:63) for Chicano Spanish, Sibanda (2009:38ff.) for Nguni and Casali (2011:1443) for Xhosa.

ally universal' (Prince & Smolensky 1993/2004:6; but cf. Ellison 2000). Simplifying somewhat, we can assume that each type of a repair corresponds to some lower-ranked constraint. For hiatus, Casali (1997) suggests the following constraints against possible repairs (not all of which are faithfulness constraints).

(41)   *Constraints against hiatus repairs* (Casali 1997:499):

Vowel elision	Max
Glide formation	*CG
Diphthongization	NoDiph
Glide insertion/epenthesis	Dep
Coalescence	Uniformity

Assuming that the grammar of every language contains these in their constraint set, then the various repairs we find in (40) is determined by *lowest-ranked* of these faithfulness constraints in the language. For example, a language that employs epenthesis as a hiatus repair (40e) could have the following ranking:

(42)   *Possible ranking for a language with epenthesis*:
         *V.V ≫ NoDiph ≫ *CG ≫ Max ≫ Uniformity ≫ Dep

This is the most revealing case in which all relevant faithfulness constraints are ranked below the trigger anti-hiatus constraint *V.V. In this case then, it is the candidate that violates the least costly (i.e. lowest-ranked) constraint, which will be selected as the optimal repair. Given the ranking in (42), this will be the insertion candidate (43d).

(43)

/i-a/	*V.V	NoDiph	*CG	Max	Uniformity	Dep
a. i.a	*!					
b. ia		*!				
c. ja			*!			
☞ d. i.ʔa						*
e. a				*!		
f. ɛ					*!	

The role of violable constraints is particularly important here. A repair always violates some constraint, however it is the lowest-ranked of these violations that ultimately determines the repair. Assuming universality of these constraints as well as re-ranking between languages allows us to capture both HoT/HoP effects and also conspiracies if these constraints are tied. The following section will show that similar arguments can be made on the basis of PCC effects in morpho-syntax.

3.2   HoT/HoP in morpho-syntax: The PCC

There is a morpho-syntactic phenomenon with a strikingly similar HoT/HoP profile to hiatus contexts in phonology. This is what is known as the *Person Case Constraint* (PCC) (44).[10]

(44)   *Person Case Constraint* (see Bonet 1991:181f.):

a.   *Strong PCC* (*IO-DO$_{1/2}$):

In a combination of IO$_{DAT}$ and DO$_{ACC}$, the DO must be 3rd person.

b.   *Weak PCC* (*IO$_3$-DO$_{1/2}$):

In a combination of IO$_{DAT}$ and DO$_{ACC}$, if one is 3rd person, then it has to be the DO.

The PCC is designed to capture restrictions on the combination of certain 'weak' elements (such as clitics, agreement affixes and pronouns) bearing certain person and case specifications. The original motivation for it comes from contrasts due to Perlmutter (1968), where IO-DO clitic combinations involving a non-3rd person indirect object are acceptable, but those with a non-3rd person direct object are not. This is illustrated by the following examples from Greek:

(45)   *PCC in Greek* (Anagnostopoulou 2005:202):

a.   Tha **su**   **to**   stilune
     FUT CL.GEN.2SG CL.ACC.3SG send.3PL
     'They will send him to you.'

b.   *Tha **tu**   **se**   stilune
     FUT CL.GEN.3SG CL.ACC.2SG send.3PL
     'They will send you to him.'

As with hiatus, languages show a high degree of variability in the repairs they employ in PCC-violating contexts. A survey of some PCC repairs reported in the literature is given in (46).

(46)   *PCC repairs across languages* (*IO$_{(3)}$ DO$_{1/2}$):

a.	Substitution	IO$_3$	DO$_{1/2}$	→	LOC	DO$_{1/2}$	(French)	(Rezac 2011:96)
		IO$_3$	DO$_{1/2}$	→	INANIM	DO$_{1/2}$	(Catalan)	(Bonet 2008:106)
b.	Deletion:	IO$_{1.DAT}$	DO$_{2.ABS}$	→	Ø	DO$_{2.ABS}$	(Ondarru Basque)	(Arregi & Nevins 2012:78)
		IO$_{2.DAT}$	DO$_{1.ABS}$	→	IO$_{2.DAT}$	Ø	(Ondarru Basque)	(Arregi & Nevins 2012:78)
c.	Reflexivization:	IO$_3$	DO$_{1/2}$	→	IO$_3$	REFL$_{1/2}$	(Georgian)	(Harris 1981:92)
d.	Case change:	DAT$_3$	ABS$_{ABS.1/2}$	→	DAT$_3$	ERG$_{1/2}$	(Ondarru Basque)	(Arregi & Nevins 2012:69ff.)
		IO$_{GEN}$	DO$_{NOM.1/2}$	→	IO$_{GEN}$	DO$_{ACC.1/2}$	(Finnish)	(Rezac 2011:237)
e.	Preposition insertion:	IO$_3$	DO$_{1/2}$	→	[$_{PP}$ P IO$_3$]	DO$_{1/2}$	(Kiowa)	(Adger & Harbour 2007:5)
		IO$_{CL.3}$	DO$_{1/2}$	→	[$_{PP}$ A IO$_{PRN.3}$]	DO$_{1/2}$	(French)	(Rezac 2011:93)
		IO$_{CL.3}$	DO$_{1/2}$	→	[$_{PP}$ A IO$_{PRN.3}$]	DO$_{1/2}$	(Catalan)	(Bonet 2008:105f.)
f.	Metathesis:	IO$_3$	DO$_{1/2}$	→	DO$_{1/2}$	IO$_3$	(Slovenian)	(Stegovec to appear)

Here, we see that languages opt for differing repair strategies for the same target context, and

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[10] It is important to note that there other kinds of PCC have been proposed since Bonet (1991), for example the 'me-first'-PCC (Nevins 2007), Super-Strong-PCC (Haspelmath 2004; Doliana 2013), Strictly-Descending PCC (Sturgeon et al. 2012), the ultrastrong PCC (Nevins 2007) and potentially many more. I will not focus on these here, but instead on the traditional strong/weak PCC, however we would ultimately expect what is claimed here to also hold for these other PCC types. An anonymous reviewer correctly points out that the schematic constraints in (44) should also be made flexible enough to account for PCC effects involving subject vs. object clitics or particular case combinations (e.g. dative and absolutive in Ondarru Basque).

this is therefore a clear instance of HoT/HoP. Given the hypothesis of *Cross-modular Structural Parallelism* (5), the basic operations available for repairs in phonology and in morpho-syntax should be as similar as possible. Indeed, the undeniable parallelism here would also seem to advocate the pursuit of a unified approach. In a violable constraints model, such a unification is possible. Although space considerations preclude a full discussion of each of the cases in (46), the repairs we find can generally be characterized as either insertion, deletion or modification of material involved in the PCC violation, similar to the hiatus examples.[11] Given a high-ranked markedness constraint such as *IO-DO$_{1/2}$, which captures the PCC, the repairs in (46) will correspond to competing, possibly low-ranked faithfulness constraints such as Max, Dep and Ident. While additional refinements will have to be made to determine the exact form of the repair, i.e. what is inserted or deleted (see Section 4), the basic explanation for variation in repairs will be fundamentally the same as with hiatus: the type of repair is determined by the lowest-ranked faithfulness constraint in the grammar of the language in question.

Another interesting observation emerging from (46) is that, in PCC-violating contexts, the repair often affects the indirect rather than the direct object. This is a potentially surprising finding because, at least descriptively, the (strong) PCC imposes a restriction on the DO and not the IO, i.e. that it cannot be a local person.[12] At least intuitively, the PCC seems to care more about the DO than the IO and one could expect this to be reflected in the distribution of repairs, with the DO targeted more often. However, this does not appear to be borne out and the choice of the target of a repair is actually often not that obvious, nor is it arbitrary. Casali (1997) shows that with deletion in certain hiatus contexts, it is more often than not the first vowel that is lost, rather than the second. This shows us that an adequate theory of repairs must also be equipped with a principled way of accounting for this variation, too. The following section will discuss OT's answer to this problem.

4   The shape of repairs

The final aspect of repairs to be discussed here involves what I will call the *shape* of repairs. So far, we have seen that languages vary as to whether they employ operations such as deletion or insertion to repair a given a context. However, there is still the question of how one determines what material should deleted or inserted. Since this choice also varies across and within languages, Optimality Theory offers a principled way of accounting for this by appealing to low-ranked markedness hierarchies.

4.1   What is targeted?

If a language chooses deletion or modification as a repair, how is the target of this operation determined? To start with a morpho-syntactic example, numerous Romance languages do not

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[11]Note that this range of variation seems difficult to capture in the repair system suggested by Rezac (2011:179) where repairs can only involve 'add[ing] uninterpretable features [to the numeration] to drive syntactic operations'.

[12]In Cyclic Agree theories such as Béjar & Rezac (2003), the PCC arises from failure to license a 1st or 2nd person direct object, due to the fact that agreement with the IO took place at a previous cycle. Thus, from a local perspective, the 'problem' does not arise until Agree targets the DO. This makes the fact that 'shielding' repairs such as those in (46e) seem to target IO even more puzzling.

allow for sequences of adjacent 3rd person clitics, sometimes called '3-3 effects' (Nevins 2007; Pescarini 2010; Walkow 2013). A classic example of this is 'spurious *se*' in Spanish (47), where a sequence of two third person clitics (*le lo*) is not permitted (47a) and the first clitic is replaced with the reflexive *se* by means of repair (47b).

(47)   *Spurious* se *in Spanish* (Perlmutter 1968:134):

    a.   *A ella, **le**   **lo**   recomendé
        to her her.3SG.DAT 3SG.ACC recommend.1SG

    b.   A ella, **se lo**   recomendé
        to her SE 3SG.ACC recommend.1SG
        'I recommended it to her.'

The traditional way of capturing this is by positing a special rule such as (48).

(48)   *Spurious* se *rule* (Nevins 2007:275):
    Delete/alter the features corresponding to 3rd person on a dative when it precedes another 3rd person.

However, such an approach does not tell us anything about why the indirect object is the target of this impoverishment rule, rather than the direct object. In her OT analysis of the *se-lo*-effect, Grimshaw (1997a) suggests that this is because of the effect of low-ranked markedness constraints against case *DAT and *ACC (cf. Bonet 1994). I will replicate the spirit of her analysis as follows. 3-3 phenomena like the *se-lo*-effect can be viewed as violations of a morphological Obligatory Contour Principle (OCP) (Pescarini 2005, 2010; Nevins 2007; also see Martinović 2017:236). In order for a repair to be possible, there must be a lower-ranked faithfulness constraint corresponding to altering the feature values of a clitic to derive *se*. Following standard practice, I simply refer to this constraint as IDENT, which prohibits changes to features in the input. In (49), we see that replacing either the direct object (49a) or the indirect object clitic (49b) are equally good solutions for avoiding the costly violation of OCP since both violate IDENT. Thus, in order to adjudicate between these repairs, we can follow Grimshaw's (1997a) approach and appeal to low-ranked, context-free markedness constraints such as *DAT and *ACC, meaning 'Do not be dative' and 'Do not be accusative', respectively. Since *DAT outranks *ACC in (49), it is preferable to delete the more marked values (i.e. dative), as in (49c).

(49)

le$_{3SG.DAT}$ lo$_{3SG.ACC}$	OCP	IDENT	*DAT	*ACC
a. le$_{3SG.DAT}$ lo$_{3SG.ACC}$	*!			
b. le$_{3SG.DAT}$ se		*	*!	
☞ c. se lo$_{3SG.ACC}$		*		*

On this view, the seemingly arbitrary choice of which element a repair targets in an OCP-like configuration is resolved by context-free markedness constraints. Since these markedness constraints are often ranked below faithfulness constraints, they generally do not have any influence output forms. However, in 'default' contexts such as repairs, they exert their influence on the

'shape' of a repair. Nevertheless, the target of repairs in 3-3 contexts could also be viewed as positional effect, that is, in a 3-3 sequence of clitics the rightmost one is protected from deletion or modification.[13] There does seem to be some evidence for this positional view. As Pescarini (2010:430f.) observes, in a variety of banned 3-3 clitic sequences in Italian, the repair uniformly affects the leftmost clitic (50) (also see Walkow 2012 on the preference for the rightmost clitic in dialects of Catalan).

(50) *Repairs to clitic clusters in Italian* (Pescarini 2010:431):

le → gli / ___ lo, la, li, le, ne
gli/le → ci / ___ mi, ti, vi
si → ci / ___ si
ne → ci / ___ ne

As such, there is a potential ambiguity in the explanation of what determines the target of repairs to clitic sequences. Teasing apart these two options seems a worthwhile endeavour, but one that I leave to future research.

There are clear parallels to this in phonology. Recall from Section 3.1 that a possible repair in hiatus (V.V) contexts is deletion. However, there is the question of which vowel is deleted. Casali (1997) shows that, in particular morpho-syntactic contexts, it is very often the first vowel that is deleted, regardless of its quality. The examples from Etsako in (51) illustrate this.

(51) *Hiatus resolution in Etsako* (Elimelech 1976; Casali 1997:493):

/dɛ akpa/ → [dakpa] 'buy a cup'
/ukpo ɛnodɛ/ → [ukpɛnodɛ] 'yesterday's cloth'
/owa ɔda/ → [owɔda] 'a different house'
/umhele ɔtsomhi/ → [umhelɔtsomhi] 'some salt'

Thus, it is the position of the vowel that determines deletion (see Casali 1997; Beckman 1997 on *positional faithfulness*). This is not to say that this is always the case, however. There are examples of hiatus in which deletion appears to be markedness-driven and cares about the features of the vowel in question. As the data in (52) show, Modern Greek is such a language. For a given pairing of vowels, one is consistently preferred over another (e.g. /a/ over /e/), regardless of its position in the sequence.

(52) *Hiatus resolution in Modern Greek* (Kaisse 1977; Casali 1996:67):

/ta éxo/ → [táxo] 'I have them'
/me aɣapái/ → [maɣapái] 'He loves me'
/to urliázi/ → [torliázi] 'He howls it'
/tu oðiɣó/ → [toðiɣó] 'I lead to him'

Casali (1996) analyzes these facts in a similar way to Grimshaw's analysis of the *se-lo* effect, with lower-ranked constraints expressing a preference for which vowel to preserve.[14]

There are also cases of markedness-driven deletion in morpho-syntax. In the Ondarru dialect

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[13] Thanks to Andrew Nevins for making me aware of this point.

[14] There is a technical difference, however, where Casali (1996) uses the Parse/Fill model of Prince & Smolensky (1993/2004) and therefore expresses context-free markedness constraints such as *[−low] as Parse([+low]). For the purposes of this analysis, the two approaches are equivalent in expressing a preference for [+low] vowels.

of Basque, the combination of clitics on the verb respects the PCC. In ditransitive configurations, the direct object can be third person (53a), but not first person (53b).

(53)   *PCC effect in Ondarru Basque* (Arregi & Nevins 2012:64f.):

    a.   Eur-ak   su-ri   *Jon-Ø*   presenta [d-**o**   **-tzu**   -Ø
        they-ERG.PL you.SG-DAT Jon-ABS introduce L-PRS.3SG -CL.DAT.2SG -CL.ERG.3
        -e]   (>tzue)
        -CL.ERG.PL
        'They introduced Jon to you (sg.)'

    b.   *Eur-ak   su-ri   *neu-Ø*   presenta [**n**   -a   **-tzu**
        they-ERG.PL you.SG-DAT me-ABS introduce CL.ABS.1SG -PRS.1SG -CL.DAT.2SG
        -Ø   -e]
        -CL.ERG.3 -CL.ERG.PL
        'They introduced me to you (sg.)'

In contexts such as (53b), some speakers repair this structure by omitting the absolutive clitic (54a). This results in the default linker morpheme *d-* and 3rd singular default agreement *-o*. Interestingly, the dative clitic can also be deleted, if it is first person (54b).

(54)   *Clitic deletion targets 1st person* (Arregi & Nevins 2012:78):

    a.   Eur-ak   su-ri   *neu-Ø*   presenta [**d** -**o**   **-tzu**   -Ø
        they-ERG.PL you.SG-DAT me-ABS introduce L -PRS.3SG -CL.DAT.2SG -CL.ERG.3
        -e]   (>tzue)
        -CL.ERG.PL
        'They introduced me to you (sg.)'

    b.   Eur-ak   ni-ri   *seu-Ø*   presenta [**s**   aitu   ___   -Ø
        they-ERG.PL me-DAT you-ABS introduce CL.ABS.2SG -PRS.2SG   -CL.ERG.3
        -e]   (>satxue)
        -CL.ERG.PL
        'They introduced you to me (sg.)'

As Arregi & Nevins (2012:79) put it, 'When one of the clitics is first person and the other second, our Ondarru informant prefers to keep the second person clitic'. Thus, deletion (or *Obliteration* to use Arregi & Nevins' terminology) as a PCC repair seems to be a case of markedness-driven deletion in this idiolect of Basque, just as we saw with hiatus in Modern Greek. Given the choice of deleting a dative or absolutive clitic, it is preferential to delete first person over second person, regardless of case (55).

(55)   a.   ABS.1SG-DAT.2SG ⇒ Ø-DAT.2SG   (cf. (55a))
    b.   ABS.2SG-DAT.1SG ⇒ ABS.2SG-Ø   (cf. (55b))

This preference can be explained by positing two hierarchies of low-ranked markedness constraints for both person (56a) and case (56b), respectively.

(56)   a.   *1 ≫ *2 ≫ *3
    b.   … ≫ *DAT ≫ *ABS ≫ …

Given the hierachies in (56), let us assume that these are ranked lower than the faithfulness constraint against deleted MAX, which is in turn ranked below the PCC markedness constraint *IO-

DO$_{1/2}$. As (57) shows, if the input contains a 1st singular absolutive and and a 2nd singular dative, deleting either one of these removes the PCC effect (57b,c). As with the analysis of the *se-lo*-effect in (49), it is then up to low-ranked markedness constraints such as those in (56) to determine which clitic should be preserved. Assuming that the person hierarchy (56a) outranks the case hierarchy (56b), then the dative clitic is retained (57b), due to first person being the most marked value. If we flip the φ-feature specifications, as in the second optimization in (57), the preference for avoidance of 1st person values leads to deletion of the dative clitic (57g).

(57)   *Markedness-driven Obliteration of Basque clitics*:

ABS$_{1SG}$-DAT$_{2SG}$	*IO-DO$_{1/2}$	Max	*1	*2	*3	*Dat	*Abs
a. ABS$_{1SG}$-DAT$_{2SG}$	*!		*	*		*	*
☞ b. ___-DAT$_{2SG}$		*		*		*	
c. ABS$_{1SG}$-___		*	*!				*
d. ___-___		**!					

ABS$_{2SG}$-DAT$_{1SG}$	*IO-DO$_{1/2}$	Max	*1	*2	*3	*Dat	*Abs
e. ABS$_{2SG}$-DAT$_{1SG}$	*!		*	*		*	*
f. ___-DAT$_{1SG}$		*	*!			*	
☞ g. ABS$_{2SG}$-___		*		*			*
h. ___-___		**!					

These case studies serve to show that low-ranked markedness constraints can be evoked to explain the preference in the target for a deletion repair.

4.2   What is inserted?

As well as deletion, material can also be inserted as a repair. We previously saw examples in (1b) from phonology where epenthesis applies to break up cononsant cluster. To give another example, Kager (1999) shows that in Lenakel, the chosen segment for insertion in (58) is schwa.

(58)   *Vowel epenthesis in Lenakel* (Lynch 1974; Kager 1999:126):
        /to-rm-n/   →   [tɔr.mən]   'to his father'
        /apn-apn/   →   [ab.na.bən]   'free'

At this point, we face a similar question: How do we know which vowel to insert? In principle, there is a whole host of vowels that one could insert. As with deletion, this is determined by low-ranked, context-free markedness constraints.[15] Each potential vowel that could be inserted

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[15] Kager (1999:126f.) shows that the situation in Lenakel is more involved. After coronal segments, a different epenthetic vowel /ɨ/ is chosen for insertion (i).

(i)   *Epenthesis after coronals in Lenakel*:
        /t-n-ak-ol/   →   [tɨ.na.gɔl]   'you will do it'
        /ark-ark/   →   [ar.ga.rɨkʰ]   'to growl'

is assumed to consist of differing values for a set of binary phonological features (59).

(59)   *Distinctive features of vowels*:
    a.   [ə]   [−low, −round, +back, −high]
    b.   [a]   [+low, −round, +back, −high]
    c.   [ɨ]   [−low, −round, +back, +high]
    d.   [i]   [−low, −round, −back, +high]
    e.   [u]   [−low, +round, +back, +high]

Broadly following Kager (1999), let us then assume that there is a low-ranked markedness hierarchy below the faithfulness constraint Dep. Since all competing candidates for insertion violate Dep, it is up to these constraints to determine which is the ideal vowel to epenthesize. Since ə qualifies as the least-marked segment, it is chosen for insertion (60b).[16]

(60)   *Markedness determines epenthetic segment* (/to-rm-n/ → [tɔr.mən]):

/to-rm-n/	*Compl	Dep	*[+low]	*[+round]	*[−back]	*[+high]
a. [tɔ-rm-n]	*!					
☞ b. [tɔr.mən]		*				
c. [tɔr.mɨn]		*				*!
d. [tɔr.min]		*			*!	*
e. [tɔr.mun]		*		*!		*
f. [tɔr.man]		*	*!			

In general, such constraints will be ranked below faithfulness constraints, so as not to have an effect on outcome.[17] As a result of this, the target for insertion will be least-marked segment in the language. This is often referred to as *The Emergence of the Unmarked* (TETU) (McCarthy & Prince 1994; Becker & Flack Potts 2011).

Again, we find cross-modular parallels of this in the domain of morpho-syntax. A pertinent example involves the phenomenon of 'default agreement'.[18] To see this, consider the following data from Serbo-Croatian, which shows subject agreement on the participle *kupil-a* (61).

(61)   Marija je   kupil-a   knjigu
     Marija be.3sg buy-f.3sg book
     'Marija bought a book.'

While this agreement tracks the φ-features of the subject (person, number, gender), there are also

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Kager (1999:128) argues that this motivates the addition of a context-sensitive markedness constraint Cor-[high] ('Coronals are followed by high vowels').

[16] For the sake of exposition, only the markedness violations pertaining to the epenthetic segment have been included.

[17] This is why not all inputs are neutralized to the most unmarked form, e.g. [ba], as is sometimes asserted (e.g. Chomsky 1995:380,fn.4; see McCarthy 2002:243f. for discussion).

[18] Another empirical domain that can be analyzed in this way is 'default case' (e.g. Schütze 2001), i.e. accusative pronouns in examples such as *Me, I like beans* (see Müller 2015:888ff. for discussion and analysis).

contexts lacking an overt, accessible subject (62). In these cases, we see that participle agreement uniformly takes the 'default' 3rd singular neuter form *-o*.

(62) *Default agreement in Serbo-Croatian* (Franks 1995):

  a. Hladn-o je
    cold-N.3SG is.3SG
    '(It) is cold'

  b. Trebal-o je da…
    needed-N.3SG is.3SG that
    '(It) was necessary that…'

  c. Činil-o   mi se da…
    seemed-N.3SG me.DAT REFL that
    '(It) seemed to me that…'

We can interpret this as insertion of feature values not present in the structure, similar to epenthesis.[19] The analysis requires constraints that we are already familiar with: AGREE from (38b), repeated as (63a), and a faithfulness constraint DEP(F) against insertion of feature values (63b).

(63) a. AGREE:

    T agrees with a locally-available goal.

  b. DEP(F):

    Do not insert feature values not present in the input

As with epenthesis, all insertion candidates will violate DEP(F) equally, and the choice of what to insert will be down to low-ranked markedness hierarchies. Let us assume the following context-free markedness constraints for each φ-feature value (Bresnan 2001:23ff.):

(64) a. *1 ≫ *2 ≫ *3

  b. *FEMININE ≫ *MASCULINE ≫ *NEUTER

  c. *PLURAL ≫ *SINGULAR

In the analysis, the values inserted are those contributing the least marked values given (64). This is the 3rd singular neuter form in (65b).

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[19] An alternative approach such as Preminger (2014) would treat default values as the realization of the lack of feature-geometric φ-structure (Harley & Ritter 2002). While languages do not seem to vary with regard to default person and number (which may have some universal explanation), there is variation in the expression of default gender, e.g. masculine/neuter in Indo-Aryan (Deo & Sharma 2006), feminine in Romanian (Kramer 2014:176f.). Re-ranking of constraints is well-equipped to handle this.

(65) *Default agreement determined by markedness*:

	AGREE	DEP	*1	*2	*3	*PL	*SG	*MASC	*FEM	*NEUT
a. [PartP Part[φ:□] [vP …]]	*!									
☞ b. [PartP Part[φ:3SG.N] [vP …]]		*			*		*			*
c. [PartP Part[φ:3SG.F] [vP …]]		*			*		*		*!	
d. [PartP Part[φ:1PL.M] [vP …]]		*	*!			*		*		
e. [PartP Part[φ:2SG.F] [vP …]]		*		*!			*		*	
f. [PartP Part[φ:3PL.N] [vP …]]		*			*	*!				*

Since the choice of what material an insertion repair uses seems to relate to 'unmarked' material, and can show some variance, appealing to low-ranked markedness hierarchies allows us to capture the parallelism between phonology and morpho-syntax.

4.3 Gradient repairs

A final example of how markedness constraints can shape repairs comes from what I will refer to as *gradient repairs*. This refers to a phenomenon involving a constraint evaluated in a gradient fashion, i.e. with multiple violations. The most famous example of this involves infixation in Tagalog. As (66) shows, the position of the affix *-um-* in Taglog varies depending on the base to which it attaches. While it can surface as a prefix, it also appears as an infix one or even two segments to the left of the base.

(66) *Infixation in Tagalog* (French 1988:32f.; McCarthy 2003:91):

Base	*-um-*	
/aral/	um-aral	'to teach'
/akyat/	um-akyat	'to climb'
/bagsak/	b-um-agsak	'to fail'
/sulat/	s-um-ulat	'to write'
/gradwet/	gr-um-adwet	'to graduate'
/preno/	pr-um-eno	'to brake'

The classic analysis of the phenomenon treats the infix *-um-* as a 'failed prefix' (Prince & Smolensky 1993/2004:40ff.).[20] The basic intuition is that there is an alignment requirement that *-um-* be as close as possible to the left-edge of the word. This is expressed by the constraint in (67a), which assigns multiple violations depending on the distance from the left-edge. However, there is also a competing pressure, namely the desire to minimize the creation of syllable codas (67b).

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[20] It should be noted, however, that the use of gradient alignment constraints has proven controversial, including for the Tagalog case presented here (McCarthy 2003). For reasons of space, I will not go into this issue here and simply represent Prince & Smolensky's (1993/2004) analysis faithfully.

(67) a. ALIGN(-*um*-,Wd,L):

The affix -*um*- appears at the left-edge of a word.

(Assign a violation mark for each segment between -*um*- and the left edge of the word)

b. NOCODA:

Syllables do not have codas.

(Assign a violation mark for each syllable with a coda)

It is the conflicting requirements of these constraints that lead to repairs that find the best compromise for these two constraints. To see this, consider what happens when -*um*- attaches to a vowel-initial base (68). Infixation in (68b) violates the highest-ranked constraint NOCODA and is immediately ruled out. The other options (68a,c–e) all have a single violation of NOCODA and so it is up to the lower-ranked alignment constraint to determine the optimal placement of -*um*-. This favours candidate (68a) which is directly at the left-edge of the word.

(68) *Vowel-initial base*:

/aral/ + -*um*-	NOCODA	ALIGN(-*um*-,Wd,L)
☞ a. *u.m*a.ral	*	
b. a.*um*.ral	**!	*
c. a.r*u.m*al	*	**!
d. a.ra.*um*l	*	**!*
e. a.ra.l*um*	*	**!*

Things are more interesting if the base is consonant-initial. In (69a), placing -*um*- at the left edge creates three closed syllables, and therefore leads to three costly violations of NOCODA. As (69c) shows, one of these can avoided by moving the affix further into the base. This forms the optimal solution, given the constraints involved. Moving the affix further to the right as in (69d,e) satisfies NOCODA as well (69c), but violates ALIGN to a higher degree.

(69) *Consonant-initial base*:

/gradwet/ + -*um*-	NOCODA	ALIGN(-*um*-,Wd,L)
a. *um*.grad.wet	***!	
b. g*um*.rad.wet	***!	*
☞ c. gr*u.m*ad.wet	**	**
d. gra.d*um*.wet	**	***!
e. grad.w*u.m*et	**	***!*

The intuition of this analysis is therefore that we try to place -*um*- as close to left-edge of the

word as possible while minimizing the number of codas created. It is important that the result involves maximal satisfaction of neither constraint, but finding the best compromise between the two. This kind of repair is therefore only possible if constraints are generally violable.

The question now is whether we can find parallel examples in syntax. I will argue that multiple wh-movement in Romanian presents us with such a case. Consider first that Romanian is a multiple wh-fronting languages in which all wh-phrases are moved to the left-periphery (70).

(70) [$_{CP}$ Cine$_1$ cui$_3$ ce$_2$ [$_{TP}$ ziceai [$_{CP}$ că t$_1$ i-a   promis   t$_2$ t$_3$]] ?
        who to.whom what   say.2SG   that to-him promised
        'Who did you say promised what to whom?'   (Comorovski 1986:171)

Furthermore, if a wh-phrase is embedded inside a Complex NP Island, movement to Spec-CP of the matrix clause is blocked:

(71) *[$_{CP}$ Cine$_1$ *ce*$_2$ [$_{TP}$ t$_1$ o   cunoaşte [$_{DP}$ pe studenta [$_{CP}$ căreia   i
         who   what   CL.3.FS know   PE student   which.DAT CL.DAT.3SG
       s-a   dedicat t$_2$ ieri   ]]]] ?
       EXPL-AUX dedicated   yesterday
       'Who knows the student to whom *what* was dedicated yesterday?'

                                                        (Cheng & Demirdache 2010:474)

What is more, Cheng & Demirdache (2010:474) also show that it is also ungrammatical to leave the embedded wh-object *in situ* in such examples (72).

(72) *[$_{CP}$ Cine$_1$ [$_{TP}$ t$_1$ o   cunoaşte [$_{DP}$ pe studenta [$_{CP}$ căreia   i   s-a
         who   CL.3.FS know   PE student   which.DAT CL.DAT.3SG EXPL-AUX
       dedicat *ce* ieri   ]]]] ?
       dedicated what yesterday
       'Who knows the student to whom *what* was dedicated yesterday?'

A surprising fact, however, is that moving the wh-object *ce* ('what') to the edge of the island renders the example in (72) grammatical:

(73) [$_{CP}$ Cine$_1$ [$_{TP}$ t$_1$ o   cunoaşte [$_{DP}$ pe studenta [$_{CP}$ căreia   *ce*$_2$ i
        who   CL.3.FS know   PE student   which.DAT what CL.DAT.3SG
       s-a   dedicat t$_2$ ieri   ]]]] ?
       EXPL-AUX dedicated   yesterday
       'Who knows the student to whom *what* was dedicated yesterday?'

                                                        (Cheng & Demirdache 2010:474)

The puzzling question at this point is why moving to the edge of an island is grammatical, but remaining *in situ* is not. From the point of view of standard approaches to wh-movement, neither of these options results in checking of the feature-driving wh-movement (even in so-called 'Greed'-based approaches; e.g. Bošković 2007, 2008). We can make sense of this, however, if we view this as a gradient repair in parallel way to infixation in Tagalog. Let us assume that the driver of wh-movement is the WH-CRITERION in (74) (cf. Rizzi 1996). This constraint is interpreted in a gradient fashion, however, such that a violation is incurred for each unused landing site (e.g. phase edge) between the wh-phrase and its final landing site. For present purposes, let us adopt

a general constraint Island, prohibiting movement out of an island (e.g. Complex NP).[21]

(74) a. Wh-Crit *(gradient version)*:

[wh]-marked items must be in the specifier of a licensing head ($C_{[wh]}$).

(Assign a violation unused landing site between a wh-phrase and (including) its final landing site in Spec-$C_{[wh]}$)

b. Island:

Movement out of an island is prohibited

In the analysis, we see a strikingly parallel to the Tagalog example (75). Moving to Spec-CP as in (75a) fully satisfies Wh-Crit, but incurs a fatal violation of Island. Partial movement to matrix Spec-vP still violates Island, but now also Wh-Crit since the wh-phrase is not in its desired landing site. Candidates (75c–d) all avoid a violation of Island by remaning within the Complex NP Island. The choice between them is now determined by the gradient constraint Wh-Crit that assigns additional violations for each potential unused landing site (Spec-vP and Spec-CP) between the wh-phrase and its criterial position. Thus, the optimal comprise for both these conflicting pressures it move as close as possible to the ideal landing site, without moving out of the island (75c).

(75) *Movement to edge of Complex NP island in Romanian*:

$[_{CP} C_{[wh]} \dots [_{vP} \dots [_{DP} [_{CP} \dots [_{vP} \dots wh \dots]]] \dots]]$	Island	Wh-Crit
a. $[_{CP} wh_1 C_{[wh]} \dots [_{vP} \dots [_{DP} [_{CP} \dots [_{vP} \dots t_1 \dots]]] \dots]]$	*!	
b. $[_{CP} C_{[wh]} \dots [_{vP} wh_1 \dots [_{DP} [_{CP} \dots [_{vP} \dots t_1 \dots]]] \dots]]$	*!	*
☞ c. $[_{CP} C_{[wh]} \dots [_{vP} \dots [_{DP} [_{CP} wh_1 \dots [_{vP} \dots t_1 \dots]]] \dots]]$		**
d. $[_{CP} C_{[wh]} \dots [_{vP} \dots [_{DP} [_{CP} \dots [_{vP} wh_1 \dots t_1 \dots]]] \dots]]$		***!
e. $[_{CP} C_{[wh]} \dots [_{vP} \dots [_{DP} [_{CP} \dots [_{vP} \dots wh \dots]]] \dots]]$		***!*

This derives what Kotek (2016:11) refers to as the 'move-as-much-as-possible' approach to partial movement. Viewing this a gradient repair not only reveals another cross-modular parallel with regard to alignment effects in syntax (cf. Bruening 2016), it shows the necessity of violable constraints for repairs of this kind. A final point here is that this analysis does seem to require comparison of entire derivations. This differs from other analyses discussed (e.g. AAE), where it was possible derivational steps that were compared. An OT-based approach can be used both for evaluating competing derivations (*transderivational economy*), as well as competing continu-

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[21] This is, of course, requires further refinement and potential decomposition into further, more specific constraints. Note that I assume that Ross-type islands such as the CNPC are representational islands that hold at PF. Evidence for this comes from the fact that violations of representational islands seem to be repaired by operations that alter the offending representation, e.g. ellipsis (e.g. Ross 1969; Lasnik 2001; Merchant 2001, 2008) and (intrusive) resumption (Ross 1967; Sells 1984). To a certain extent, this then justifies their status as markedness constraints in the present account.

ations of a given derivation (*translocal economy*; see Müller & Sternefeld 2001; Müller 2011; Graf 2013). Both types of constraints seem useful and necessary.

5   Conclusion

This paper has shown that the way in which conflicts are resolved within a grammar, that is with various kinds of repairs, exhibits a striking convergence across domains. It was argued that the assumption of violable constraints (both in the form of markedness and faithfulness constraints) allows us to account for cross-modular parallels in the context, type and shape of repair operations. It was shown that linking the context of repairs to high-ranked markedness constraints can account for why, even when repairs may vary, they often converge on the same banned output context both within and across languages, as was demonstrated on the basis of conspiracies and HoT/HoP in both syntax and phonology. Furthermore, the OT conception of repairs results from a fundamental tension between markedness and faithfulness constraints. If some relevant faithfulness constraint is ranked below the relevant markedness constraint, then a candidate violating that constraint (e.g. deletion) emerges as a potential repair. If there are numerous constraints ranked below the relevant markedness constraint, it is the lowest-ranked of these that ultimately determines the repair. Variation in this regard can lead to HoT/HoP effects. Finally, the exact choice of what to delete, insert or modify is guided by even lower-ranked constraints. These effects tend to lead to preservation or insertion of the least-marked material possible.

This overall picture can, in a somewhat idealized form, be summarized in (76). A markedness constraint M_1 determines the context of the repair, the lowest-ranked faithfulness constraint F_3 determines the type of the repair and the shape of the repair comes from the lowest-ranked markedness constraint M_4.

(76)   *Properties of repairs in Optimality Theory*:

$$\underbrace{M_1}_{\substack{\text{context}\\\text{for repair}}} \gg \underbrace{F_1 \gg F_2 \gg F_3}_{\substack{\text{type}\\\text{of repair}}} \gg \underbrace{M_2 \gg M_3 \gg M_4}_{\substack{\text{shape}\\\text{of repair}}}$$

As we have already seen, things are often more complicated than this in practice. Markedness constraints can also help to determine the type of a repairs (e.g. NoDiph in hiatus) and positional faithfulness may also play a role in determining the shape (i.e. target) of a repair. Furthermore, low-ranked markedness and faithfulness constraints may well be interleaved to varying degrees, but (76) is the simplest way of visualizing it. The main point here is that both high and low-ranked constraints work together to derive the various properties of repairs we find. Thus, a theory of grammar with violable constraints such as OT leads to a substantive theory of repairs. Against the backdrop of the hypothesis of *Cross-modular Structural Parallelism* (5), ranked violable constraints are the common denominator between the domains of phonology and morpho-syntax.[22]

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[22] There is still the question of whether one can find arguments for Cross-modular Parallelism from semantics/pragmatics. It certainly seems to be the case that aspects of semantics/pragmatics are optimality-theoretic in nature, as has been pointed out (e.g. de Swart 2010; Krifka 2013). As with Last Resort in syntax, there are various economy approaches in semantics with an OT-like character, for example *Rule I* (Grodzinsky & Reinhart 1993:79), *Rule H* (Fox 2000:111) and even *Maximize Presupposition!* (Heim 1991). Furthermore, the creation of structural alternatives proposed by Fox & Katzir (2011) requires a mechanism virtually indistinguishable from the GEN com-

A reviewer raises the question of whether it is not equally possible to account for the various aspects of repairs discussed here in a rule-based theory. For example, given the basic rule schema in (77), we could talk about the target (A), change (B) and context/environment (C) in which repairs take place.

(77) $\underbrace{A}_{\text{target}}$ → $\underbrace{B}_{\text{change}}$ / ___ $\underbrace{C}_{\text{context}}$

While I do not have sufficient space to devote a detailed discussion to this point, it seems apparent that this approach would seem to lack explanatory power with regard to the shape of repair. As we saw, this is very often driven by markedness considerations, whose place is less clear in a rule-based theory without markedness/faithfulness constraints. Furthermore, rule-based approaches still suffer from the perennial problem of capturing the *functional unity* of processes involved in conspiracies both in and across languages (HoT/HoP) (however, see Vaux 2008:55ff. for a different view).

This paper has argued that an optimality-theoretic approach to repairs allows for a more explicit theory of repairs encompassing the context, target and shape of repairs. While the OT view of repairs ultimately does not tell us *why* a particular kind of repair exists for some context in a given language (and this often seems to be arbitrary), it provides an explicit theory of the conditions under which a repair can take place. With such a theory in place, it becomes possible to account for the sheer extent of cross-linguistic variation we find with repairs, an endeavor greatly supported by the inherently typological nature of the theory.[23] In general, the undeniable semblance of various aspects of repair phenomena in phonology and morpho-syntax point to the conclusion that these domains may not be as different as is often assumed, and therefore ultimately governed by similar underlying principles.

References

Abdul-Karim, Kamal (1980). *Aspects of the Phonology of Lebanese Arabic.* PhD thesis, University of Illinois at Urbana-Champaign.

Adger, David & Daniel Harbour (2007). Syntax and Syncretisms of the Person Case Constraint. *Syntax* 10(1). 2–37.

Anagnostopoulou, Elena (2005). Strong and Weak Person Restrictions: A Feature Checking Analysis. In L. Heggie & F. Ordónez (eds). *Clitic and Affix Combinations: Theoretical Perspectives*. John Benjamins: Amsterdam. 199–235.

Arregi, Karlos & Andrew Nevins (2012). *Morphotactics: Basque Auxiliaries and the Structure of Spellout*. Springer: Dordrecht.

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ponent in OT. A reviewer also mentions that the loss of literal meaning with metaphors such as *Mary is a sunny person* could be viewed as a kind of repair to a high-ranked constraint such as NoNonsense.

[23]Of course, the fact that OT is possibly the only theory that makes explicit predictions about the extent of typological variation leads to an overgeneration issue sometimes referred to as the *Too Many Solutions* problem. As McCarthy (2008:277) puts it, 'Factorial typologies that offer too many solutions are sometimes described as 'a problem for OT', but that's just a case of blaming the messenger for some bad news. Any linguistic theory needs to account for the ways in which inputs and outputs can and cannot differ from another; this isn't some peculiar burden that only OT must bear.'

Baković, Eric (2006). Hiatus resolution and incomplete identity. In F. Martínez-Gil & S. Colina (eds). *Optimality-Theoretic Studies in Spanish Phonology*. John Benjamins: Amsterdam. 62–73.

Bayer, Josef (1984). COMP in Bavarian Syntax. *The Linguistic Review* 3. 209–274.

Becker, Michael & Kathryn Flack Potts (2011). The Emergence of the Unmarked. In M. van Oostendorp, C. J. Ewen, E. Hume & K. Rice (eds). *The Blackwell Companion to Phonology*. Vol. 3. Blackwell: London. 1363–1379.

Beckman, Jill (1997). Positional Faithfulness, Positional Neutralization and Shona Vowel Harmony. *Phonology* 14(1). 1–46.

Béjar, Susana & Milan Rezac (2003). Person Licensing and the Derivation of PCC Effects. In A. T. Pérez-Leroux & Y. Roberge (eds). *Romance Linguistics: Theory and Acquisition*. John Benjamins: Amsterdam. 49–62.

Bittner, Maria & Ken Hale (1996). The Structural Determination of Case and Agreement. *Linguistic Inquiry* 27(1). 1–68.

Bok-Bennema, Reineke (1991). *Case and Agreement in Inuit*. Foris: Dordrecht.

Bond, Oliver & Marina Chumakina (2016). Agreement Domains and Targets. In O. Bond, G. G. Corbett & M. Chumakina (eds). *Archi: Complexities of Agreement in Cross-Theoretical Perspective*. Oxford University Press: Oxford. 43–76.

Bonet, Eulàlia (1991). *Morphology after Syntax: Pronominal Clitics in Romance.* PhD thesis, MIT.

Bonet, Eulàlia (1994). The Person Case Constraint: A Morphological Approach. In H. Harley & C. Phillips (eds). *The Morphology-Syntax Connection*. MITWPL: Cambridge, MA. 33–52.

Bonet, Eulàlia (1995). Feature Structure of Romance Clitics. *Natural Language and Linguistic Theory* 13(4). 607–647.

Bonet, Eulàlia (2008). The Person-Case Constraint and Repair Strategies. In R. D'Alessandro, S. Fischer & G. H. Hrafnbjargarson (eds). *Agreement Restrictions*. John Benjamins: Amsterdam. 103–128.

Bošković, Željko (2006). Case Checking versus Case Assignment and the Case of Adverbial NPs. *Linguistic Inquiry* 37(3). 522–533.

Bošković, Željko (2007). On the Locality and Motivation of Move and Agree: An Even More Minimal Theory. *Linguistic Inquiry* 38(4). 589–644.

Bošković, Željko (2008). On Successive-Cyclic Movement and the Freezing Effect of Feature Checking. In J. Hartmann, V. Hegedus & H. van Riemsdijk (eds). *Sounds of Silence: Empty Elements in Syntax and Phonology*. Elsevier: Amsterdam. 195–233.

Bresnan, Joan (2001). Explaining Morphosyntactic Competition. In M. Baltin & C. Collins (eds). *The Handbook of Contemporary Syntactic Theory*. Blackwell: Oxford. 11–44.

Broekhuis, Hans (2008). *Derivations and Evaluations: Object Shift in Germanic Languages*. de Gruyter: Berlin.

Broekhuis, Hans (2013). Derivations and Evaluations. In R. Vogel & H. Broekhuis (eds). *Linguistic Derivations and Filtering: Minimalism and Optimality Theory*. Equinox: Sheffield. 30–53.

Broekhuis, Hans & Ellen Woolford (2013). Minimalism and Optimality Theory. In M. den Dikken (ed.). *The Cambridge Handbook of Generative Syntax*. Cambridge University Press: Cambridge. 122–161.

Broekhuis, Hans & Wim Klooster (2007). Merge and Move as Costly Operations. *Groninger*

Arbeiten zur germanistischen Linguistik 45. 17–37.

Bruening, Benjamin (2016). Alignment in Syntax: Quotative Inversion in English. *Syntax* 19(2). 111–155.

Bruening, Benjamin (2017). Word Formation is Syntactic: Raising in Nominalizations. Ms. University of Delaware.

Casali, Roderic F. (1996). *Resolving Hiatus.* PhD thesis, UCLA.

Casali, Roderic F. (1997). Vowel Elision in Hiatus Contexts: Which Vowel Goes?. *Language* 73(3). 493–533.

Casali, Roderic F. (2011). Hiatus Resolution. In M. van Oostendorp, C. J. Ewen, E. Hume & K. Rice (eds). *The Blackwell Companion to Phonology*. Vol. 3. Wiley-Blackwell: Oxford. 1434–1460.

Cheng, Lisa L.-S. & Hamida Demirdache (2010). Trapped at the Edge: On Long-Distance Pair-List Readings. *Lingua* 120. 463–484.

Chomsky, Noam (1995). *The Minimalist Program*. MIT Press: Cambridge, MA.

Comorovski, Ileana (1986). Multiple Wh Movement in Romanian. *Linguistic Inquiry* 17(1). 171–177.

Dawson, Virginia (2017). Optimal Clitic Placement in Tiwa. In A. Lamont & K. A. Tetzloff (eds). *Proceedings of NELS 47*. Vol. 1. GLSA: Amherst, MA. 234–256.

de Haas, Wim (1988). *A Formal Theory of Vowel Coalescence*. Foris: Dordrecht.

de Swart, Henriëtte (2010). *Expression and Interpretation of Negation: An OT Typology*. Springer: Dordrecht.

Deal, Amy Rose (2010). Ergative Case and the Transitive Subject: A View from Nez Perce. *Natural Language and Linguistic Theory* 28(1). 73–120.

den Besten, Hans (1983). On the Interaction of Root Transformations and Lexical Deletive Rules. In W. Abraham (ed.). *On the Formal Syntax of Westgermania*. John Benjamins: Amsterdam. 47–131.

Deo, Ashwini & Devyani Sharma (2006). Typological Variation in the Ergative Morphology of Indo-Aryan Languages. *Linguistic Typology* 10(3). 369–418.

Doliana, Aaron (2013). The Super-Strong Person Case Constraint: Scarcity of Resources by Scale-Driven Impoverishment. In F. Heck & A. Assmann (eds). *Rule Interaction in Grammar (Linguistische ArbeitsBerichte 90)*. Universität Leipzig: Leipzig. 177–202.

Elimelech, Baruch (1976). *A Tonal Grammar of Etsako*. UCLA Working Papers in Phonetics: Los Angeles, CA.

Ellison, T. Mark (2000). The Universal Constraint Set: Convention Not Fact. In J. Dekkers, P. van der Leeuw & J. van der Weijer (eds). *Optimality Theory: Phonology, Syntax and Acquisition*. Oxford University Press: Oxford. 524–553.

Fanselow, Gisbert & Anoop Mahajan (2000). Towards a Minimalist Theory of Wh-Expletives, Wh-Copying and Successive-Cyclicity. In U. Lutz, G. Müller & A. von Stechow (eds). *Wh-Scope Marking*. John Benjamins: Amsterdam. 195–230.

Felser, Claudia (2004). Wh-Copying, Phases, and Successive Cyclicity. *Lingua* 114. 543–574.

Foley, Steven (2017). Morphological Conspiracies in Georgian and Optimal Vocabulary Insertion. In J. Kantarovic, T. Truong & O. Xherija (eds). *Proceedings of CLS 52*. Chicago Linguistic Society: Chicago, IL.

Fox, Danny (2000). *Economy and Semantic Interpretation*. MIT Press: Cambridge, MA.

Fox, Danny & Roni Katzir (2011). On the Characterization of Alternatives. *Natural Language Semantics* 19(1). 87–107.

Franks, Steven (1995). *Parameters of Slavic Morphosyntax*. Oxford University Press: Oxford.

French, Koleen Matsuda (1988). *Insights into Tagalog: Reduplication, Infixation, and Stress from Nonlinear Phonology*. Summer Institute of Linguistics and the University of Texas at Arlington: Dallas, TX.

Graf, Thomas (2013). *Local and Transderivational Constraints in Syntax and Semantics*. PhD thesis, UCLA.

Grimshaw, Jane (1997*a*). The Best Clitic: Constraint Conflict in Morphosyntax. In L. Haegeman (ed.). *Elements of Grammar*. Kluwer: Dordrecht. 169–196.

Grimshaw, Jane (1997*b*). Projection, Heads, and Optimality. *Linguistic Inquiry* 28(3). 373–422.

Grimshaw, Jane (2013). Last Resorts: A Typology of *do*-Support. In H. Broekhuis & R. Vogel (eds). *Linguistic Derivations and Filtering*. Equinox: Sheffield. 267–295.

Grodzinsky, Yosef & Tanya Reinhart (1993). The Innateness of Binding and Coreference. *Linguistic Inquiry* 24(1). 69–101.

Haegeman, Liliane (2004). A DP-Internal Anaphor Agreement Effect. *Linguistic Inquiry* 35(4). 704–712.

Haider, Hubert (1993). ECP-Etüden: Anmerkungen zur Extraktion aus eingebetteten V-2-Sätzen. *Linguistische Berichte* 145. 185–203.

Harley, Heidi (2009). The Morphology of Nominalizations and the Syntax of *v*P. In A. Giannakidou & M. Rathert (eds). *Quantification, Definiteness and Nominalization*. Oxford University Press: Oxford. 321–343.

Harley, Heidi & Elizabeth Ritter (2002). Person and Number in Pronouns: A Feature-Geometric Analysis. *Language* 78(3). 482–526.

Harris, Alice C. (1981). *Georgian Syntax: A Study in Relational Grammar*. Cambridge University Press: Cambridge.

Haspelmath, Martin (2004). Explaining the Ditransitive Person-Role Constraint: A usage-based approach. *Constructions* 2. 1–71.

Heck, Fabian & Gereon Müller (2003). Derivational Optimization of Wh-Movement. *Linguistic Analysis* 33(1–2). 97–148.

Heck, Fabian & Gereon Müller (2013). Extremely Local Optimization. In H. Broekhuis & R. Vogel (eds). *Linguistic Derivations and Filtering: Minimalism and Optimality Theory*. Equinox: Sheffield. 136–165.

Heck, Fabian & Gereon Müller (2016). On Accelerating and Decelerating Movement: From Minimalist Preference Principles to Harmonic Serialism. In G. Legendre, M. T. Putnam, H. de Swart & E. Zaroukian (eds). *Optimality-Theoretic Syntax, Semantics and Pragmatics: From Uni- to Bidirectional Optimization*. Oxford University Press: Oxford. 78–110.

Heim, Irene (1991). Artikel und Definitheit. In A. von Stechow & D. Wunderlich (eds). *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*. de Gruyter: Berlin. 487–535.

Höhle, Tilman N. (2000). The W-…W-Construction: Appositive or Scope Indicating?. In U. Lutz, G. Müller & A. von Stechow (eds). *Wh-Scope Marking*. John Benjamins: Amsterdam.

249–270.

Iverson, Gregory & Shinsook Lee (1995). Variation As Optimality in Korean Consonant Cluster Reduction. In J. Fuller, H. Han & D. Parkinson (eds). *Proceedings of the Eleventh States Conference on Linguistics*. Cornell University: Ithaca, NY. 174–185.

Kager, René (1999). *Optimality Theory*. Cambridge University Press: Cambridge.

Kaisse, Ellen M. (1977). *Hiatus in Modern Greek*. PhD thesis, Harvard University.

Keller, Frank (2006). Linear Optimality Theory as a Model of Gradience in Grammar. In G. Fanselow, C. Féry, R. Vogel & M. Schlesewsky (eds). *Gradience in Grammar*. Oxford University Press: Oxford. 270–287.

Kenstowicz, Michael & Charles Kisseberth (1979). *Generative Phonology*. Academic Press: San Diego, CA.

Kiparsky, Paul (1976). Abstractness, Opacity and Global Rules. In A. Koutsoudas (ed.). *The Application and Ordering of Grammatical Rules*. The Hague: de Gruyter. 160–186.

Kisseberth, Charles W. (1970). On the Functional Unity of Phonological Rules. *Linguistic Inquiry* 1(3). 291–306.

Kisseberth, Charles W. (2011). Conspiracies. In M. van Oostendorp, C. J. Ewen, E. Hume & K. Rice (eds). *The Blackwell Companion to Phonology*. Blackwell: Oxford. 1644–1665.

Kotek, Hadas (2016). Covert Partial Wh-Movement and the Nature of Derivations. *Glossa* 1(1). 25. 1–19.

Kramer, Ruth (2014). *The Morphosyntax of Gender*. Oxford University Press: Oxford.

Krifka, Manfred (2013). Response Particles as Propositional Anaphors. In T. Snider (ed.). *Proceedings of SALT 23*. LSA: Washington, DC. 1–18.

Lasnik, Howard (2001). When Can You Save A Structure By Destroying It?. In M. Kim & U. Strauss (eds). *Proceedings of NELS 31*. GLSA: Amherst, MA. 301–320.

Legendre, Géraldine (2001). An Introduction to Optimality Theory in Syntax. In G. Legendre, J. Grimshaw & S. Vikner (eds). *Optimality-Theoretic Syntax*. MIT Press: Cambridge, MA. 1–27.

Legendre, Géraldine, Yoshiro Miyata & Paul Smolensky (1990). Can Connectionism Contribute to Syntax? Harmonic Grammar, with an Application. Report CU-CS-485-90, Computer Science Department, University of Colorado at Boulder.

Lynch, John D. (1974). *Lenakel Phonology*. PhD thesis, University of Hawaii.

Martinović, Martina (2017). Wolof Wh-Movement and the Syntax-Morphology Interface. *Natural Language and Linguistic Theory* 35(1). 205–256.

McCarthy, John J. (2002). *A Thematic Guide to Optimality Theory*. Cambridge University Press: Cambridge.

McCarthy, John J. (2003). OT Constraints are Categorical. *Phonology* 20(1). 75–138.

McCarthy, John J. (2008). *Doing Optimality Theory: Applying Theory to Data*. Blackwell: Malden, MA.

McCarthy, John J. & Alan Prince (1994). The Emergence of the Unmarked: Optimality in Prosodic Morphology. In M. González (ed.). *Papers from the Annual Meeting of the North East Linguistic Society 24*. GLSA: Amherst, MA. 333–379.

McCarthy, John J. & Alan Prince (1995). Faithfulness and Reduplicative Identity. In J. Beckman, L. W. Dickey & S. Urbanczyk (eds). *Papers in Optimality Theory. University of Massachusetts*

Occasional Papers. Vol. 18. GLSA: Amherst, MA. 249–384.

McDaniel, Dana (1986). *Conditions on Wh-Chains*. PhD thesis, City University of New York.

Menn, Lise & Brian MacWhinney (1984). The Repeated Morph Constraint: Toward an Explanation. *Language* 60(3). 519–541.

Merchant, Jason (2001). *The Syntax of Silence: Sluicing, Islands and the Theory of Ellipsis*. Oxford University Press: Oxford.

Merchant, Jason (2008). Variable Island Repair under Ellipsis. In K. Johnson (ed.). *Topics in Ellipsis*. Cambridge University Press: Cambridge. 132–153.

Mistry, P. J. (2000). Lexical Anaphors and Pronouns in Gujarati. In B. C. Lust, K. Wali, J. W. Gair & K. V. Subbarao (eds). *Lexical Anaphors and Pronouns in Selected South Asian Languages: A Principled Typology*. de Gruyter: Berlin. 397–470.

Müller, Gereon (2002). Optionality in Optimality-Theoretic Syntax. In L. Cheng & R. Sybesma (eds). *The Second GLOT International State-of-the-Article Book: The Latest in Linguistics*. de Gruyter: Berlin. 289–32.

Müller, Gereon (2011). *Constraints on Displacement: A Phase-Based Approach*. John Benjamins: Amsterdam.

Müller, Gereon (2015). Optimality-Theoretic Syntax. In T. Kiss & A. Alexiadou (eds). *Syntax – Theory and Analysis. An International Handbook*. de Gruyter: Berlin. 875–936.

Müller, Gereon & Wolfgang Sternefeld (eds) (2001). *Competition in Syntax*. de Gruyter: Berlin.

Murugesan, Gurujegan & Louise Raynaud (to appear). Anaphor-Agreement Effect and Agreement Switch in Kutchi-Gujarati. In S. Bhatia & D. Chacon (eds). *Proceedings of FASAL 7*. Universität Konstanz: Konstanz.

Nevins, Andrew (2007). The Representation of Third Person and its Consequences for Person-Case Effects. *Natural Language and Linguistic Theory* 25(2). 273–313.

Nevins, Andrew (2008). Cross-Modular Parallels in the Study of Phon and Phi. In D. Harbour, D. Adger & S. Béjar (eds). *Phi Theory: Phi-Features across Modules and Interfaces*. Oxford University Press: Oxford. 329–367.

Nevins, Andrew (2010). *Locality in Vowel Harmony*. MIT Press: Cambridge, MA.

Nevins, Andrew (2012). Haplological Dissimilation at Distinct Stages of Exponence. In J. Trommer (ed.). *The Morphology and Phonology of Exponence*. Oxford University Press: Oxford. 84–120.

Nichols, Johanna (2011). *Ingush Grammar*. University of California Press: Berkeley and Los Angeles, CA.

Nunes, Jairo (2004). *Linearization of Chains and Sideward Movement*. MIT Press: Cambridge.

Nunes, Jairo (2008). Preposition Insertion in the Mapping from Spell-Out to PF. In H. Broekhuis & R. Vogel (eds). *Optimality Theory and Minimalism: Interface Theories*. Universität Potsdam: Potsdam. 133–156.

Pankau, Andreas (2013). *Replacing Copies: The Syntax of Wh-Copying in German*. PhD thesis, University of Utrecht.

Patel-Grosz, Pritty (2014). First Conjunct Agreement as Agreement Displacement. In R. Baglini, T. Grinsell, J. Keane, A. R. Singerman & J. Thomas (eds). *Proceedings of CLS 46*. Chicago Linguistic Society: Chicago, IL. 269–283.

Pater, Joe (1999). Austronesian nasal substitution and other *NC̥ effects. In R. Kager, H. van der Hulst & W. Zonneveld (eds). *The Prosody-Morphology Interface*. Cambridge University Press: Cambridge. 310–343.

Perlmutter, David M. (1968). *Deep and Surface Structure Constraints in Syntax*. PhD thesis, MIT.

Pescarini, Diego (2005). Clitic Clusters and Morphological Repairs: Evidence from Italian, Spanish and Barceloni. *Studi linguistici e filologici online* 3. 239–264.

Pescarini, Diego (2010). Elsewhere in Romance: Evidence from Clitic Clusters. *Linguistic Inquiry* 41(3). 427–444.

Pesetsky, David (1998). Some Optimality Principles of Sentence Pronunciation. In P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis & D. Pesetsky (eds). *Is the Best Good Enough? Optimality and Competition in Syntax*. MIT Press: Cambridge, MA. 337–383.

Preminger, Omer (2014). *Agreement and its Failures*. MIT Press: Cambridge, MA.

Prince, Alan & Paul Smolensky (1993/2004). *Optimality Theory: Constraint Interaction in Generative Grammar*. Wiley-Blackwell: Oxford.

Rezac, Milan (2011). *Phi-Features and the Modular Architecture of Language*. Springer: Dordrecht.

Rizzi, Luigi (1990). On the Anaphor-Agreement Effect. *Rivista di Linguistica* 2. 27–42.

Rizzi, Luigi (1996). Residual verb second and the *Wh*-Criterion. In A. Belletti & L. Rizzi (eds). *Parameters and Functional Heads: Essays in Comparative Syntax*. Vol. 2. Oxford University Press: Oxford. 63–90.

Rolle, Nicholas (to appear). In support of an OT-DM model: Evidence from a morphological conspiracy in Degema. *Natural Language and Linguistic Theory*

Rosenthall, Samuel (1994). *Vowel/Glide Alternation in a Theory of Constraint Interaction*. PhD thesis, University of Massachusetts Amherst.

Ross, John R. (1967). *Constraints on Variables in Syntax*. PhD thesis, MIT.

Ross, John R. (1969). Guess Who?. In R. Binnick, A. Davison, G. Green & J. Morgan (eds). *Papers from the 5th Regional Meeting of Chicago Linguistic Society*. Chicago Linguistic Society: Chicago. 252–286.

Salzmann, Martin (2013). On Three Types of Variation in Resumption: Evidence in Favor of Violable and Ranked Constraints. In H. Broekhuis & R. Vogel (eds). *Linguistic Derivations and Filtering: Minimalism and Optimality Theory*. Equinox: Sheffield. 76–108.

Samek-Lodovici, Vieri (2006). Optimality Theory and the Minimalist Program. In R. Vogel & H. Broekhuis (eds). *Optimality Theory and Minimalism: A Possible Convergence?*. Universität Potsdam: Potsdam. 77–97.

Schmid, Tanja (2005). *Infinitival Syntax: Infinitivus Pro Participio as a Repair Strategy*. John Benjamins: Amsterdam.

Schütze, Carson T. (2001). On the Nature of Default Case. *Syntax* 4(3). 205–238.

Sells, Peter (1984). *Syntax and Semantics of Resumptive Pronouns*. PhD thesis, University of Massachusetts Amherst.

Senturia, Martha B. (1998). *A Prosodic Theory of Hiatus Resolution*. PhD thesis, University of California San Diego.

Sibanda, Galen (2009). Vowel Processes in Nguni: Resolving the Problem of Unacceptable VV Sequences. In M. Matondo (ed.). *Selected Proceedings of the 38th Annual Conference on African*

Linguistics. Cascadilla Proceedings Project: Somerville, MA. 38–55.

Staroverov, Peter (2014). *Splitting Theory and Consonant Epenthesis.* PhD thesis, Rutgers, The State University of New Jersey.

Staudacher, Peter (1990). Long Movement from Verb-Second Complements in German. In G. Grewendorf & W. Sternefeld (eds). *Scrambling and Barriers.* John Benjamins: Amsterdam. 319–339.

Stegovec, Adrian (to appear). Taking Case Out of the Person-Case Constraint. *Natural Language and Linguistic Theory.*

Sturgeon, Anne, Boris Harizanov, Maria Polinsky & Ekaterina Kravtchenko (2012). Revisiting the Person Case Constraint in Czech. In F. Bailyn, E. Dunbar, Y. Konrod & C. LaTerza (eds). *Formal Approaches to Slavic Linguistics 19: The Second College Park Meeting 2010.* Michigan Slavic Publications: Ann Arbor, MI. 116–130.

Sundaresan, Sandhya (2012). *Context and (Co)reference in Syntax and its Interfaces.* PhD thesis, Universtity of Stuttgart and Universtity of Tromsø.

Sundaresan, Sandhya (2016). Anaphora vs. agreement: A new kind of Anaphor Agreement Effect in Tamil. In P. Grosz & P. Patel-Grosz (eds). *The Impact of Pronominal Form on Interpretation.* de Gruyter: Berlin. 77–105.

Tesar, Bruce, Jane Grimshaw & Alan Prince (1999). Linguistic and Cognitive Explanations in Optimality Theory. In E. Lepore & Z. Pylyshyn (eds). *What is Cognitive Science?.* Blackwell: Oxford. 295–326.

Thiersch, Craig (1978). *Topics in German Syntax.* PhD thesis, MIT.

Torrego, Esther (1984). On Inversion in Spanish and Some of Its Effects. *Linguistic Inquiry* 15(1). 103–129.

Trommer, Jochen (2002). Modularity in OT-Morphosyntax. In G. Fanselow & C. Féry (eds). *Resolving Conflicts in Grammars: Optimality Theory in Syntax, Morphology and Phonology.* Buske: Hamburg. 83–118.

Vaux, Bert (2008). Why the Phonological Component Must Be Serial and Rule-Based. In B. Vaux & A. Nevins (eds). *Rules, Constraints and Phonological Phenomena.* Oxford University Press: Oxford. 20–60.

Walkow, Martin (2012). The Syntax of the Person Case Constraint Drives Morphological Impoverishment of Clitics. *Coyote Papers: Working Papers in Linguistics* 20. 145–153.

Walkow, Martin (2013). A Unified Analysis of the Person Case Constraint and 3-3 Effects in Barceloní Catalan. In S. Kan, C. Moore-Cantwell & R. Staubs (eds). *Proceedings of NELS 40.* GLSA: Amherst, MA. 239–252.

Woolford, Ellen (1999). More on the Anaphor Agreement Effect. *Linguistic Inquiry* 30(2). 257–287.

Woolford, Ellen (2013). Aspect Splits and Parasitic Marking. In H. Broekhuis & R. Vogel (eds). *Linguistic Derivations and Filtering: Minimalism and Optimality Theory.* Equinox: Sheffield. 166–192.

Yip, Moira (1998). Identity Avoidance in Phonology and Morphology. In S. LaPointe, D. Brentari & P. Farrell (eds). *Morphology and its Relation to Phonology and Syntax.* CSLI: Stanford. 216–246.