

- POLLARD, C., and I. SAG (1994). *Head-Driven Phrase Structure Grammar*. Chicago: CSLI / University of Chicago Press.
- SCHÜTZE, C. (1997). 'Infl in child and adult language: Agreement, case and licensing.' Ph.D. Dissertation, MIT, Cambridge, MA.
- SELLS, P. (1998). 'Scandinavian clause structure and Object Shift,' in M. Butt and T. Holloway King (eds.), *Proceedings of the LFG98 Conference, University of Queensland*. Stanford, CA: CSLI. <http://csli-publications.stanford.edu/LFG/3/lfg98.html>.
- SIGURÐSSON, H. Á. (1989). 'Verbal syntax and case in Icelandic in a comparative GB approach.' Ph.D. Dissertation, University of Lund, Sweden.
- (1993). 'Agreement as head visible feature government,' *Studia Linguistica* 47: 32–56.
- (1996). 'Icelandic Finite Verb Agreement,' *Working Papers in Scandinavian Syntax*, 57: 1–46.
- SKORIK, P. J. (1977). *Грамматика чукотского языка, часть II: глагол, наречие, служебные слова* [Grammatika chukotskogo yazyka, chast' II: glagol, narechie, sluzhebnye slova; Grammar of the Chukchi language, vol II: Verb, Adverb and Auxiliary Words]. Leningrad: Nauka.
- TARALDSEN, K. T. (1995). 'On agreement and nominative objects in Icelandic,' in H. Haider, S. Olson, and S. Vikner (eds.), *Studies in Comparative Germanic Syntax*. Dordrecht: Kluwer, 307–27.
- THRÁINSSON, H. (1979). *On Complementation in Icelandic*. New York: Garland.
- WATANABE, A. (1993). 'AGR-based Case Theory and its interaction with the A-Bar system.' Ph.D. Dissertation, MIT, Cambridge, MA.
- WILLIAMS, E. (2000). 'Representation Theory.' Unpublished ms.
- WOOLFORD, E. (1999). 'Ergative Agreement Systems.' Workshop University of Maryland, College Park (May 1999).
- WURMBRAND, S. (2001). *Infinitives: Restructuring and Clause Structure*. Berlin: Mouton de Gruyter.
- (2006). 'Licensing Case.' *Journal of Germanic Linguistics*.
- YIP, M., J. MALING, and R. JACKENDOFF (1987). 'Case in Tiers,' *Language* 63.2: 217–50.
- ZAENEN, A., J. MALING, and H. THRÁINSSON (1985). 'Case and grammatical functions: The Icelandic passive,' *Natural Language and Linguistic Theory* 3: 441–83.

## 11

## Cross-Modular Parallels in the Study of Phon and Phi

ANDREW NEVINS

## 11.1 Introduction

As the variety of papers in this volume makes apparent,  $\varphi$ -features are relevant to many different domains of the grammar: syntax, semantics, morphology, pragmatics. Conspicuously absent from this list is phonology. In the current chapter, I wish to discuss the underlying unity of processes affecting  $\varphi$ -features in different domains of the grammar, and I will argue that operations performed on  $\varphi$ -features in the syntax, in the morphology, and even in the pragmatics strongly parallel operations performed on articulatory features in the phonology.

Below, I will consider two main case studies. The first (Section 11.2) concerns the Person Case Constraint, which bans various clitic/agreement combinations. Although widely attested crosslinguistically, the constraint is subject to variation; for instance, some languages permit the clitic combination *you + to me*, whereas others ban it. I propose that the full scope of variation can be captured in the same way that variation between systems of vowel harmony is captured in phonology. This leads to the claim that Agree is parameterized to be sensitive to all feature values, or to marked ones, or to contrastive ones.

The second (Section 11.3) concerns the ways in which the realization of  $\varphi$ -features can deviate from what is straightforwardly expected. Close inspection reveals that the morphology can simplify complex  $\varphi$ -bundles by, for instance,

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deleting some features or by splitting the entire bundle. Interestingly, not only do these same types of operations affect articulatory features in the phonology, but they act under the same circumstances, namely, when feature bundles, or combinations of feature bundles, are excessively marked.

Finally, some pragmatically surprising uses of the first person inclusive are discussed in Section 11.4. These uses involve symbolic effacement either of speaker or of hearer and show that feature deletion can have interpretative correlates.

#### 11.1.1 Features as the currency of structure-building

One of the elements of Phonological Theory and Phi Theory that enables very close comparison, and perhaps unification, of the representations and operations in both domains, is the fact that the basic currency of both phonological segments and of morphological exponence is the feature. When binary features can be interpreted as boolean predicates that are true or false of, in the case of phon, a given articulatory configuration, or, in the case of phi, a given referential set.

$$(1) \quad [+F] = \neg[-F]$$

Thus, the phonological height features  $[\pm\text{high}]$  and  $[\pm\text{low}]$  are binary predicates such that:

- (2) a.  $[\text{+high}]$  is true if the tongue body is raised above the midline of the oral cavity  
 b.  $[\text{-high}]$  is true otherwise  
 c.  $[\text{+low}]$  is true if the tongue body is lowered below the midline of the oral cavity  
 d.  $[\text{-low}]$  is true otherwise

Given the definitions in (2), it becomes evident that although the combination  $[\text{+high } \text{+low}]$  is impossible, as the two predicates cannot be both true simultaneously, the combination  $[\text{-high } \text{-low}]$  is well formed and defines a configuration in which neither  $[\text{+high}]$  nor  $[\text{+low}]$  are true, namely a configuration in which the tongue body has been neither raised nor lowered from the midline and the resulting predicate is true of mid vowels.

Thus, although there are three categories of vowel height, phonological theory has pursued representations in which there are two binary features, rather than a single ternary feature. That is, one might imagine that a simple  $[\text{height: } n]$  feature, where  $n$  can range over  $\{1, 2, 3\}$ , might be in some way

simpler. Clearly a ternary valued system cannot appeal to the tools of binary predicate logic of (1). This in and of itself would be a surmountable issue; the real problems are empirically motivated.

In a  $[\text{height: } n]$  system, there is no possibility of *grouping* and thus no prediction that, for example, high and mid vowels are more likely to behave together to the exclusion of low vowels than, say, high vowels and low vowels to the exclusion of mid. In the system in (2), however, there is no natural class containing high and low vowels to the exclusion of mid that can be read off from the values of the features themselves. This is a positive result, as there are no known phonological processes (e.g., vowel harmony, apocope, etc.) in which high and low vowels pattern together to the exclusion of mid.

The same decision, then, to represent a three-category system using two binary features rather than a single ternary feature, is a decision that the human mind seems naturally to employ for the morphological category of person in the domain of  $\varphi$ . Thus, although the traditional Aristotelian labels "first, second, and third person" yield the appearance of a ternary-valued system, a great deal of research has revealed that the category of person is represented with two binary values, as in (3).

- (3) PERSON FEATURES (Noyer 1992, Halle 1997, Nevins 2007)
- a.  $[\text{+author}]$  true iff the reference set contains the speaker  
 b.  $[\text{+participant}]$  true iff the reference set contains one of the discourse participants
- (4) a.  $[\text{+author } \text{+participant}]$  = first person  
 b.  $[\text{-author } \text{+participant}]$  = second person  
 c.  $[\text{-author } \text{-participant}]$  = third person  
 d.  $[\text{+author } \text{-participant}]$  = logically impossible

Thus, the feature assignments in (4) create natural classes between, for example, first and second person, to the exclusion of third person, and at the same time, do not, on their own, create natural classes between first and third person to the exclusion of second. A wide variety of phenomena in morphological exponence reflect a grouping of first and second person, including patterns of syncretism in agreement, patterns of anaphoric binding, and patterns of gender and plural marking in pronouns.<sup>1</sup>

In the discussion of both vowel height and person, it is important to emphasize that although these two binary features yield four combinations, of which

<sup>1</sup> The pattern of 1/3 syncretism found throughout Germanic may still be well-modeled through an impoverishment-based treatment within this system of features; see Nevins 2003, Harbour 2006 for analyses.

one is impossible, this does not mean that the representational vocabulary is “wasteful”, as it creates the prediction that if a syntagmatic operation yields the impossible configuration [+high +low] or [+author –participant], the result will have to be repaired.

(Of course, the logic developed thus far does not require that all features be binary. If the negative value of a feature is never referred to in any syntagmatic process and if the negative value of a feature does not create any groupings that behave alike, then there is little evidence to recommend the negative value of a feature. For example, Steriade (1995) proposes that [nasal] is a privative feature and that [–nasal] is never a feature activated in assimilation or dissimilation processes. In Section 11.4, based on similar considerations, I will discuss the existence of a privative feature, [addressee], whose privative status has been proposed in McGinnis (2005), Nevins (2007) and Harbour (2006).)

As it turns out, a similar situation, of three categories being represented by two binary values, arises once again in Phi Theory for the category of number. For systems with singular, dual, and plural, the following binary values create groupings which are empirically motivated.

- (5) NUMBER FEATURES (Harbour 2007, Nevins 2006)
- a. [+singular] =  $\lambda x[\text{atom}(x)]$
  - b. [+augmented] =  $\lambda P\lambda x\exists y[P(x) \wedge P(y) \wedge y \sqsubset x]$
- (6)
- a. [+singular –augmented] = singular
  - b. [–singular –augmented] = dual
  - c. [–singular +augmented] = plural

### 11.1.2 Contrastiveness and markedness

Given a set of phonological features like those for vowel height, person, and number above, two important properties may single out certain sets of features: *contrastiveness* and *markedness*.

Contrastiveness refers to whether a given feature serves to uniquely determine a category in the inventory or not. For example, in the presence of the feature value [–low], the feature [+high] is contrastive, as it serves to uniquely identify high versus mid vowels. On the other hand, in the presence of the feature value [+low], the feature [+high] is not contrastive, because [+low] alone uniquely determines a low vowel.

Markedness refers to whether one value of a binary feature is “singled out” asymmetrically in paradigmatic relations (i.e., implicational in inventory acquisition, or diachronic change) or in syntagmatic

relations. Markedness can be context free, as for example in phonological representations, the feature [–strident], characterizing apical fricatives /θ, ð/, among the most difficult consonants for children to acquire, and the crosslinguistically most marked consonants in English. A marked feature is also one for which additional contrasts are more limited; in the case of [–strident], we may observe that the voicing contrast is limited, with a very small number of minimal pairs (*either, ether*) and a very limited distribution of the [+voice] value in initial position, occurring only in determiners, demonstratives, and complementizers. This last aspect of markedness, leading to fewer subdistinctions within a marked category, is dubbed the *syncretizational* aspect of markedness by Greenberg (1963). Reinterpreting the typological research of Harley and Ritter (2002) for  $\varphi$ -inventories in a bivalent feature system leads to the following context-free markedness statements:

- (7) CONTEXT-FREE MARKEDNESS
- a. Marked value = + for both [+participant] and [+author]
  - b. Marked value = – for [+singular]

In the above cases, markedness is directly read off from one value of a binary feature. Markedness may, however, also be *context sensitive*—in which case, neither value of a feature is inherently marked, but in a given combination with other features, one of the values is more marked. For example, few phonologists would claim that either value of [+back] is marked. However, in the presence of the feature [+round], the feature [–back] is marked. The combination is “unstable”, and often leads to diachronic loss of one of these features, as for example in the history of English, where words containing /ü/ (represented by the letter <y>) came to be pronounced with /i/ instead, due to loss of [+round], or in modern borrowings of French/German /ü/, which English speakers pronounce with [+back] /u/, as in the American pronunciations of *Münich* by movie-goers or *au jus* by sandwich-lovers. This combination of features is inherently unstable, due to the fact that [+round] and [–back] have opposite effects on the second formant (F2) of a vowel: while [+round] lowers F2, [–back] raises it. In a similar way, while neither value of [+augmented] is inherently marked, the feature [–augmented] is marked in the context of [–singular], namely, the category dual, whose marked behavior can be established implicational (the presence of dual implies presence of plural but not conversely), acquisitionally (cf. Ravid and Hayek 2003 on late dual acquisition in Arabic), and syncretizationally (case distinctions are lost in Sanskrit, Zuni, and Slovene in the dual). The combination of [–singular –augmented]

is unstable in the sense that it expresses the fact that a cardinality of two is the most minimally nonsingular that one can get, that is, the closest nonsingular to singular. This context-sensitive markedness is expressed in (8).

- (8) CONTEXT-SENSITIVE MARKEDNESS  
[–augmented] marked in the context of [–singular]

Having established that the concepts of contrastivity and markedness apply to  $\varphi$ -features in a manner that parallels phonological features, we turn to a set of phenomena that establish the far-reaching explanatory value of this representational vocabulary in expressing syntagmatic agreement restrictions and in triggering morphological operations.

### 11.2 Contrastiveness, markedness, and syntagmatic visibility

In this section, I examine syntactic agreement restrictions involving combinations of  $\varphi$ -features in ditransitive arguments, namely, those restrictions on the features that may cooccur on the indirect and direct object which have been grouped under the label of Person Case Constraints (PCC). I discuss how the  $\varphi$ -feature system proposed above allows a restrictive typology of PCC effects that arise from the way that agreement works within the syntax. The current proposal stands in contrast to accounts of the PCC that focus on the \**me lui* effect (the fact that combinations of a third person dative and a first or second person accusative are banned) as the result of the fact that third person is “underspecified for person”. As a wide range of morphological phenomena point to the fact that third person must consist of a full specification of features (namely [–author –participant]), among them, the spurious *se* phenomenon in Spanish (called the \**le lo* constraint in Nevins 2007), one of our goals is to pursue a theory in which third person can be simultaneously visible for some phenomena but “insufficient” or “invisible” for others. Such a theory, developed below, is inspired by value-based relativization in phonology, with central appeal to the properties of contrastiveness and markedness.

#### 11.2.1 Contrastive visibility: phonological parallels

I will begin by reviewing a formally identical problem in phonology. Much as in syntax, underspecification was pursued as an attempt to “make invisible” or render deficient those objects which behaved differently (Archangeli 1984). However, immediate problems arose. Consider the plight of coronal

underspecification: many researchers attempted to treat coronals as underspecified for place, due to their transparency in assimilation phenomena. However, Mohanan (1991), McCarthy and Taub (1992) and Steriade (1995) pointed out a number of problems for underspecification in phonology: while underspecification made a feature F invisible for process X, it turns out that feature F is *required* to state the environment for some other process Y. The solution to this problem came with Calabrese (1995), who proposed that it is not F which is underspecified, but X and Y which are relativized in their domain of visibility. More specifically, Calabrese proposed that rules may be parametrized to include reference to all values, only contrastive values, or only marked values. Calabrese’s idea was that the invisibility of noncontrastive values on certain segments is part of the conditions of a particular rule, but not part of the inherent representation of those segments, since other rules may in fact have to refer to the presence of those values.

Let us consider a case study, based on the behavior of Finnish vowels. Finnish has the inventory in (9), for both short and long vowels.

(9) FINNISH VOWEL INVENTORY

	[–back]		[+back]	
	[–round]	[+round]	[–round]	[+round]
[+high –low]	i	ü		u
[–high –low]	e	ö		o
[–high +low]	ä		a	

The language is famous for its vowel harmony, whereby suffixes must agree in [ $\pm$ back] with the root vowels (see, e.g., Ringen 1975). However, a well-known exception is the transparency of [–low –back –round] vowels in harmony. Thus, in a word such as *koti-na* ‘home-ESSIVE’, the essive suffix takes the [+back] form *-na* (rather than *-nä*), because of the [+back] root vowel *o* in the first syllable of the root. The high front vowel *i* is ignored for the purposes of computing the harmonic value of the suffix. Based on (9), some researchers have proposed that /i/ is underspecified for [ $\pm$ back] throughout the phonology, hence literally invisible at the point at which harmony applies. This solution achieves the goal of making all harmony essentially local, as, by hypothesis, the representation for /i/ lacks [–back] until after harmony is computed.

A problem is caused by depriving /i/ of its [-back] feature, however: the rule of Finnish assibilation (Kiparsky 1973b) turns a coronal stop into a fricative before /i/, as shown in (10). (This rule applies only in derived environments and hence not within roots. It is subject to further conditions, as discussed extensively by Anttila (2003), who points out the important role of metrical conditioning.)

- (10) a.  $t \rightarrow s / \_\_\_ [-\text{round} -\text{back} +\text{high}]$   
 b. /tilat-i/ 'order-PST'  $\rightarrow$  [tilasi]

It is difficult to make a case that assibilation occurs after vowel harmony; thus, judicious ordering of [-high] fill-in after harmony but before assibilation enjoys little support (and no generality as a solution to the problem of underspecification; see Steriade (1995) on other problems with ordering of "fill-in" rules). The process in (10) can be understood as having a phonological basis in the fact that [+high -back] vowels often cause palatalization and lenition of obstruents, in particular, *t* to *s*, with *president*~*presidency* as an example of spirantization in English (Chomsky and Halle 1968: 161) beside a host of other crosslinguistic examples, such as affrication of coronal stops before high front vowels in Brazilian Portuguese (Cagliari 1997). In fact, Hall and Hamann (2006) characterize the high, front quality of /i/ as aerodynamically crucial in causing assibilation. However, if Finnish /i/ literally lacks [-back], assibilation cannot be characterized in these terms, because the conditioning feature is, by hypothesis, absent from the representation. Thus, while depriving /i/ of [-back] does work in making it invisible for harmony, such a representation leaves it puzzling why that same vowel should trigger assibilation.

The proper solution, then, is one in which /i/ is fully specified for [-back] throughout the phonology, but in which different processes (e.g., harmony versus assibilation) are differentially sensitive to marked or contrastive feature values. In this case, as /i/ is noncontrastive for the feature [ $\pm$ back] (since there is no other [+high -round] vowel in the inventory to distinguish it from by backness), one can understand Finnish suffixal harmonic alternations as restricted to conditioning by contrastive values of [ $\pm$ back].<sup>2</sup> So, in

<sup>2</sup> An interesting cognitive parallel arises in Sedivy et al. (1999), who made use of the real-time eye-tracking paradigm in an experiment with spoken language and visual contexts. Given a scene with a pink comb, a yellow comb, and a yellow bowl, subjects were given instructions such as *Pick up the yellow comb*. Sedivy et al. found that at the onset of the word *yellow*, subjects looked much faster and more frequently at the yellow comb, even before they had heard the head noun. The only logical explanation is that subjects understood that, given spoken instructions, their interlocutor would be more inclined to use the predicate *yellow* when it was *contrastive* for the object to be manipulated. That is, even

Finnish, vowel harmony is a rule of feature-valuation relativized to contrastive values of [ $\pm$ back] (see Nevins 2004 for a more detailed application of this proposal).

The key idea here, to be adopted in the treatment of person-case effects below, is that certain syntagmatic processes may be restricted in their access to all values of a given feature. Calabrese's proposal for phonological processes such as vowel harmony, which across languages seem to have differing locality conditions and to involve different sets of participating segments, was that the core grammatical principle was the same, but that the search for a feature may be restricted to, for example, only contrastive values of a feature:

- (11) VALUE RELATIVIZATION  
 For a feature [ $\pm$ F], a search may be relativized to be sensitive only to the *contrastive* values of [ $\pm$ F], or only to the *marked* values of [ $\pm$ F], or to *all* values of [ $\pm$ F].

This parametric variation in which values of a feature are included in a search turns out to be very useful in understanding microvariation between languages that have the same inventories, but different items that participate in a given grammatical process. Within this chapter, I will extend the general approach to cases of microvariation within person-case effects in clitic clusters.

### 11.2.2 Conditions on Multiple Agree

The general approach that I will take to person-case effects is that they arise when both pronouns/clitics are within the same agreement domain. I will adopt the insight of Anagnostopoulou (2005), Béjar and Řezáč (2003), and Adger and Harbour (2007) that the PCC is a result of two DPs within the domain of a single probing head. Thus, within the framework for agreement proposed in Chomsky (2001) and subsequently refined by Hiraiwa (2001, 2004), (*Multiple*) *Agree* is a featural relation between a probe and a set of one or more goals.

The following two conditions on Multiple Agree will be crucial to the account. These are inspired by Anagnostopoulou (2005) and Hiraiwa (2001, 2004), but formalized differently here. The first pertains to locality within an agreement domain: that, once the visibility parameter is set for a given domain, the highest argument within that domain must fall within the scope of that visibility parametrization.

though the predicate *yellow* was true of both the comb and the bowl, the subjects preferred to interpret it in a contrastive use.

- (12) CONTIGUOUS AGREE  
 $\forall x \in \text{Domain}(R(F)) \forall y \in \text{Domain}(R(F)) \rightarrow y \in \text{Domain}(R(F))$ ,  
 where  $R(F)$  is a relativization of the probe  $F$

Informally, anything between a probe and an element in its relativized domain is itself in that domain. The second condition pertains to feature identity for elements within that domain: they must match in value with each other.

- (13) MATCHED VALUES  
 $\forall x \in \text{Domain}(R(F)) \forall y \in \text{Domain}(R(F)) [\text{val}(x, F) = \text{val}(y, F)]$ ,  
 where  $R(F)$  is a relativization of the probe  $F$

Informally, all elements within the domain of the relativized probe  $F$  have the same value for  $F$ . Both conditions are crucial to the present understanding of the PCC.

### 11.2.3 Varieties of PCC

In this section we explore a variety of person–case effects that have been investigated throughout the literature. Bonet (1991) and Anagnostopoulou (2005) discuss the “weak” and “strong” versions of the PCC, which involve different constraints on licit clitic combinations. However, in actuality, four varieties must be distinguished.

Type of PCC	(1 2)	(2 1)	(3 1)	(3 2)
weak			X	X
me-first		X	X	
strictly-descending		X	X	X
strong	X	X	X	X

Each of these is illustrated below.

The weak PCC bans (3 1) and (3 2), where the first element in each pair is the dative and the second element, the accusative. In other words, a [–participant] dative cannot dominate a [+participant] accusative within the same domain. Consider the following examples from Catalan (Bonet 1991: 178–9); note that clitic order is independent of Case.<sup>3</sup>

<sup>3</sup> Number and its indication are systematically disregarded throughout this section.

- (15) Te 'm van recomanar per a la feina  
 1DAT/ACC 2ACC/DAT AUX recommended for the job  
 “They recommended you to me for the job.” (1 2)  
 “They recommended me to you for the job.” (2 1)
- (16) \*A en Josep, me li va recomanar la Mireia  
 to the Josep, 1ACC 3DAT AUX recommended the Mireia  
 “She (Mireia) recommended me to him (Josep).” \*(3 1)
- (17) \*A en Josep, te li va recomanar la Mireia  
 to the Josep, 2ACC 3DAT AUX recommended the Mireia  
 “She (Mireia) recommended you to him (Josep).” \*(3 2)

Next, we examine the strong PCC, which bans all of the configurations of the weak PCC above, as well as excluding configurations in which there are two [+participant] arguments in the same domain that bear different values for the feature [ $\pm$ author]. In other words, in addition to the ban on (3 2) and (3 1) from the weak PCC, in the strong PCC, (1 2) and (2 1) are also banned. An example of such a language is Greek (Bonet 1991, Anagnostopoulou 2003).

- (18) \*O Kostas mu se sistise  
 the Kostas 1DAT 2ACC introduced  
 “Kostas introduced you to me.” \*(1 2)
- (19) \*O Kostas su me sistise  
 the Kostas 2DAT 1ACC introduced  
 “Kostas introduced me to you.” \*(2 1)
- (20) \*Tha tu me stilune  
 FUT 3DAT 1ACC send  
 “They will send me to him.” \*(3 1)
- (21) \*Tha tu se stilune  
 FUT 3DAT 2ACC send  
 “They will send you to him.” \*(3 2)

We now turn to the me-first and strictly-descending PCC, which are intermediate in restrictiveness between the weak and strong PCC, and less widely encountered than either.

The me-first PCC bans configurations in which a [–author] argument dominates a [+author] argument; in other words, if there is a first person argument, it must be first in the domain (that is, first in the notation (1  $x$ ), not

necessarily first in the clitic cluster). This is illustrated in Romanian (Farkas and Kazazis 1980; Ciucivara 2004):

- (22) Maria me- te- a prezentat  
Maria 1DAT 2ACC has introduced  
"Maria has introduced you to me." (1 2)
- (23) \*Maria tie- m- a prezentat  
Maria 2DAT 1ACC has introduced  
"Maria has introduced me to you." \*(2 1)
- (24) \*Maria i- m- a prezentat  
Maria 3DAT 1ACC has introduced  
"Maria<sub>m</sub> has introduced me to her<sub>z</sub>." \*(3 1)
- (25) Maria i- te- a prezentat  
Maria 3DAT 2ACC has introduced  
"Maria<sub>m</sub> has introduced you to her<sub>z</sub>." (3 2)

Akin to the me-first is the strictly-descending PCC. It differs from the aforementioned in banning (3 2) too. This is illustrated by Classical Arabic (Abdelkader Fassi-Fehri p.c., and Fassi-Fehri 1988: 116; see Fernández-Soriano 1999: 1297 for parallel facts in Spanish).

- (26) ʔaʔta:- ni:- ka  
gave.3SUBJ- 1DAT- 2ACC  
"He gave you to me." (1 2)
- (27) \*ʔaʔta:- ka- ni:  
gave.3SUBJ- 2DAT- 1ACC  
"He gave me to you." \*(2 1)
- (28) \*ʔaʔtay- ta- hu:- ni:  
gave- 2SUBJ- 3DAT- 1ACC  
"You gave me to him." \*(3 1)
- (29) \*ʔaʔtay- tu- hu:- ka:  
gave- 1SUBJ- 3DAT- 2ACC  
"I gave you to him." \*(3 2)

#### 11.2.4 Account of the PCC

Turning to a syntactic account of these PCC effects, I will adopt Anagnostopoulou's (2005) idea that the strong and weak (and, I claim, the

other versions of the) PCC all arise in the same configuration: when two weak DPs are in the domain of the same head. An interesting challenge here is to understand and explain how there can be so much microvariation reported for dialects of Spanish/Catalan; in the words of Bonet (1991: 179): "The judgements concerning combinations of first and second person clitics vary considerably from speaker to speaker." Ideally, this microvariation is best understood in terms of a microparameter on the head that facilitates such configurations.

#### (30) DESIDERATUM

All versions of the PCC should be explained by the same syntactic mechanism, differing only in relativization to which (values of which) features must obey the constraint

The crucial idea that I will adopt here is that the locus of variation is in the search domain as set by the probing head in charge of agreement within this domain (the proposal is consistent with this head being identified either as *v* or Appl, and no commitment is made here). I will thus adopt an idea that is inspired by Béjar (2003): variation in the agreement "preferences" of a given multi-argument configuration are due to the featural requirements for agreement set by the probe.

Thus, rather than viewing PCC effects as arising from the nature of the representations specified on arguments (e.g. "3rd person datives have no person feature in Spanish"), what I will pursue here is the idea that "strength" of PCC depends on how many values are excluded by the relativization domain as set on the agreeing head that controls the domain. Once the parametric choice of value-relativization of the domain is chosen, the conditions on an Extended Agree domain (with no interruptions/interveners in the domain) and on Matched Values (with agreeing values for the chosen feature) must be met. Let us proceed to see how varying relativizations of the search domain will yield the varieties of the PCC.

11.2.4.1 *Deriving the weak PCC* In the first scenario to consider, the search has been relativized to the marked (i.e., positive) values of [ $\pm$ participant] (7). For a convergent derivation to occur, therefore, the following condition must be met (CA—Contiguous Agree): there cannot be any unmarked values of [ $\pm$ participant] that intervene between the probe and elements with the feature specifications it is looking for. Note that a second condition, MV (Matched Value), is trivially met when there is marked relativization to a single value of a binary feature (as in this case), as there cannot

be elements within this domain that have differing values for the feature in question. The possibilities for clitic ordering are given below (31), and, in each case, a 'X' indicates that the configuration fails to meet a condition on Multiple Agree.<sup>4</sup> Checkmarks (✓) are used to indicate convergent derivations.

- (31) WEAK PCC: IF ACC IS 1/2, THEN DAT IS 1/2  
Relativization: Marked [ $\pm$ participant]

	CA	MV
✓ (1 3)		
✓ (1 2)		
✓ (2 1)		
✓ (2 3)		
(3 1)	X	
(3 2)	X	

To summarize the intuition behind the weak PCC within the current syntactic implementation: the probe is searching for marked values of [ $\pm$ participant]. Configurations such as (3 1) and (3 2) constitute violations of the Contiguous Agree domain, because a nonmarked value of [ $\pm$ participant] interrupts the Agreement span. Independent of the particular implementation in terms of Multiple Agree given here, the general logic behind the claim is that given the feature [ $\pm$ participant], a marked value of this feature cannot be only on the lower argument within the domain of the  $\nu$ P.

11.2.4.2 *Deriving the strong PCC* The strong PCC results from relativization of a probe to contrastive values of [ $\pm$ author]. According to the definition of contrastiveness, whereby a feature [ $\pm$ F] is only contrastive in a feature set S if both values of [ $\pm$ F] may occur in S, [ $\pm$ author] is not contrastive in the context of [ $-$ participant], that is, in third persons. Given this relativization on the probe, the condition on Continuous Agree will be contravened when a noncontrastive value of [ $\pm$ author] intervenes in the agreement span, namely when a third person dominates a first or second person in the domain.

<sup>4</sup> This is purely for presentational purposes; readers who see an affinity with optimality-theoretic tableaux are reminded that these conditions are inviolable and unranked.

Moreover, given this relativization, as Multiple Agree can potentially apply within combinations of first and second person, the condition on Matched Values for Multiple Agree will lead to an illicit derivation when there are conflicting contrastive values for [ $\pm$ author], namely [ $+participant +author$ ] and [ $+participant -author$ ]. The possibilities for clitic ordering are given below (32).

- (32) STRONG PCC: ACC MUST BE 3  
Relativization: Contrastive [ $\pm$ author]

	CA	MV
✓ (1 3)		
(1 2)		X
(2 1)		X
✓ (2 3)		
(3 1)	X	
(3 2)	X	

Summarizing the strong PCC intuition, since the probe is searching for contrastive values of [ $\pm$ author], configurations such as (3 1) and (3 2) constitute violations of the Contiguous Agree domain, because a noncontrastive value of [ $\pm$ author] interrupts the Agreement span, while configurations of 1 and 2 constitute violations of the Matched Value condition. Independent of the particular implementation in terms of Multiple Agree given here, the general logic behind the analysis of the strong PCC here is that given contrastive values of [ $\pm$ author], there cannot be distinct values of this feature within the domain of the  $\nu$ P.

11.2.4.3 *Deriving the me-first PCC* The me-first PCC has received little analytical attention in the literature. The constraint is that if the dative is 2/3, the accusative cannot be first person. This constraint arises when there is a relativization on the probe to agree with marked values of [ $\pm$ author], which are the positive values according to (7). For a convergent derivation to occur, therefore, the following condition must be met (CA): there cannot be any unmarked values of [ $\pm$ author] that intervene between the probe and elements with the feature specifications it is looking for. Note that the second condition, MV, is again trivially met. The possibilities are given below (33).

- (33) ME-FIRST PCC: ACC CANNOT BE 1  
Relativization: Marked [ $\pm$ author]

	CA	MV
✓	(1 3)	
✓	(1 2)	
	(2 1)	✗
✓	(2 3)	
	(3 1)	✗
✓	(3 2)	

To summarize the me-first PCC intuition, the probe is searching for marked values of author. Configurations such as (3 1) and (2 1) constitute violations of the Contiguous Agree domain, because a nonmarked value of [ $\pm$ author] interrupts the Agreement span. The general logic behind the claim is that given the feature [ $\pm$ author], a marked value of this feature cannot be only on the lower argument within the domain of the  $\nu$ P.

11.2.4.4 *Deriving the strictly-descending PCC* Descriptively, the strictly-descending PCC is the sum of the me-first and the weak versions. Theoretically, it is the conjunction of the relativizations of these versions: marked [ $\pm$ author] and marked [ $\pm$ participant]. That the strictly-descending PCC requires this joint relativization may go some way to explaining its rarity. A convergent derivation requires that there be no unmarked values of [ $\pm$ author] and no unmarked values of [ $\pm$ participant] that intervene between the probe and elements with the feature specifications it is looking for. The possibilities are given below (34). The features, [ $-$ author] or [ $-$ participant],

- (34) STRICTLY-DESCENDING PCC: ACC CANNOT BE 1; NOR 2 IF DAT IS 3  
Relativization: Marked [ $\pm$ author], marked [ $\pm$ participant]

	CA	MV
✓	(1 3)	
✓	(1 2)	
	(2 1)	✗ [ $-$ author]
✓	(2 3)	
	(3 1)	✗ [ $-$ author] [ $-$ participant]
	(3 2)	✗ [ $-$ participant]

that intervene and cause the derivation to crash are indicated on the appropriate lines.

To summarize the strictly-descending PCC intuition, the probe is searching for marked values of author and participant. Configurations such as (3 1) and (2 1) constitute violations of Contiguous Agree, because a nonmarked value of [ $\pm$ author] interrupts the Agreement span. Configurations such as (3 1) and (3 2) constitute violations of Contiguous Agree, because a nonmarked value of [ $\pm$ participant] interrupts the Agreement span. The general logic behind the analysis of the strictly-descending PCC given here is that given the features [ $\pm$ author] and [ $\pm$ participant], a marked value of either of these features cannot occur on only the lower argument within the domain of the  $\nu$ P.

### 11.3 Impoverishment rules and repair operations

While the last section explored the logic of contrastiveness and markedness of  $\varphi$ -features with the syntax proper, in this section I discuss morphological processes that apply to these features. In the first two subsections I examine cases of postsyntactic feature deletion involving the marked feature [+author] with a case from English (Section 11.3.1), marked [+participant] with a case from Basque (Section 11.3.2.1), and contextually marked [ $-$ augmented] with a case from Warlpiri (Section 11.3.2.2). In Section 11.3.3 I examine another markedness-induced postsyntactic repair operation, breaking, with a case from marked privative [addressee].

#### 11.3.1 *Repair via impoverishment*

Of central interest to morphological theory are cases of mismatches: when the combinatorics of syntax create a structure, but the realization of  $\varphi$ -features deviates from what is expected. As a working assumption in exploring mismatches between what the syntax generates and what the morphology realizes, we adopt a model in which all syntactic computation occurs prior to morphological realization of  $\varphi$ -features. That is, we adopt a model in which the syntax operates with abstract morphological features such as [ $\pm$ author], [ $\pm$ singular] and combines and copies these features, after which the process of Vocabulary Insertion occurs. Vocabulary Insertion is a process of inserting phonological material (i.e., an exponent) that realizes a set of syntactic features present at a particular syntactic node. One of the most canonically adopted principles governing the selection of an exponent to realize a particular set of  $\varphi$ -features at a node is the Subset Principle, based on the formulation in Halle (1997).

- (35) a. **THE SUBSET CLAUSE**  
 A phonological exponent realizes a feature bundle (syntactic node) if the item matches all or a subset of the grammatical features specified in the syntactic node. Insertion does not take place if the vocabulary item contains features not present in the syntactic node.
- b. **THE MAXIMAL SUBSET CLAUSE**  
 Where several vocabulary items meet the conditions for insertion, the item matching the greatest number of features specified in the syntactic node must be chosen.

(It is important to note in passing here, while drawing phi-phon parallels, that (35) closely resembles the Elsewhere Condition of Kiparsky (1973a), governing the selection of which phonological rule to apply when more than one matches a phonological string.)

Our focus here is on cases in which the operation of (35) is not sufficient to explain the phonological exponents that are chosen to realize a given set of morphological features, and in fact, in which (35) alone might lead us to expect a wholly different outcome. As an introductory case, we may consider the “*amn’t* gap”, discussed by Francis (1985). Although contraction of a pronoun and a copula in a sentence with negation is licit (e.g., *I’m not lucky*), when negation and the auxiliary contract due to question-inversion, the expected *amn’t* form cannot surface; thus *\*Amn’t I lucky* is not a possible output in British or North American adult English. The resulting *amn’t* gap is not something we would want to model as a syntactic restriction: there is little motivation for a syntactic rule that bans head-movement of negation together with first person copula to the complementizer position. More damning for a syntactic account of this phenomenon is the fact that the result of attempting to ask a negated-copula question with a first person subject is not ineffable. Speakers who wish to convey such questions do so through the use of morphological exponents for the copula that exhibit a clear mismatch:

- (36) a. Aren’t I lucky?  
 b. Isn’t I lucky?

Speakers who utter (36a) exhibit a mismatch in the feature of number: the vocabulary item *are* is not used with first person singular subjects, though it is used with first person plural subjects. Speakers who utter (36b) exhibit a mismatch in the feature of person: the vocabulary item *is* is not used with first person singular subjects, though it is used with third person singular

subjects. Such phenomena are captured very well in a model of postsyntactic realization of features. In our pursuit of cross-modular parallels, we may note the fact that it is quite common to observe in phonology a situation in which a syntagmatic process creates and the result must undergo subsequent “repair”. Thus we may assume that the syntax operates with the same process of head-movement of negation and copula to the complementizer position in questions, regardless of the  $\varphi$ -features on the copula, but that the result may not ultimately contravene the following feature cooccurrence ban:

- (37) *Amn’t* BAN  
 \* [+author +singular] on the same node as [+negative] under  $C^0$

In examining (37), we may attempt to understand it in terms of markedness: as negation is marked, [+author] is marked, we may understand the ban in (37) as a reaction to the doubly marked presence of these features on the same node. In understanding (37) in terms of markedness, we are doing more than attempting a post hoc motivation for the existence of the ban: we are crucially predicting, for example, the nonexistence of a pattern, in any language, such as the following:

- (38) **IMPOSSIBLE PATTERN GIVEN THE MARKEDNESS ACCOUNT**  
 a. Ban: \* [−author +singular] on the same node as [+negative]  
 b. Allowed: [+author +singular] on the same node as [+negative]

Thus, the formalization of the *amn’t* gap as a ban on feature cooccurrence as in (37), with direct reference to the  $\varphi$ -features, allows for implicational predictions based on markedness. Perhaps even more importantly, the formalization of the *amn’t* gap as a ban on feature cooccurrence as in (37) permits scenarios in which there is more than one way to resolve the cooccurrence restriction. At this point, a very important parallel with phonological theory emerges, sufficient to motivate a brief overview of the process of metaphony in Italian.

Metaphony is a process that involves the spreading of the feature [+high] from a final vowel onto the stressed vowel, which is usually penultimate in Romance nouns, and will be penultimate in all of the examples we consider. This process of spreading a height feature gives rise to alternations such as those in (39), in which the stressed underlyingly mid vowels *e*, *o* raise to *i*, *u* as a result of the presence of a high final vowel. The following Veneto examples are from Calabrese (1998: 31); all examples of metaphony discussed in this section are from Calabrese (1998).

- (39) a. vedo "I see"                    te vídi "you see"  
 b. coro "I run"                      te cúri "you run"

The relevant dialects of Italian for our discussion have the seven-vowel system illustrated in (40), given the vowel features [ $\pm$ high], [ $\pm$ low], [ $\pm$ back], and [ $\pm$ ATR] (advanced tongue root).

(40)	[-back]	[+back]
[+high +ATR -low]	i	u
[+high -ATR -low]	*	*
[-high +ATR -low]	e	o
[-high -ATR -low]	ɛ	ɔ
[-high -ATR +low]	*	a

Importantly, the system in (40) contains a feature cooccurrence ban: vowels composed of the following features are simply disallowed in these dialects:

- (41) COOCCURRENCE RESTRICTION  
 \* [+high -ATR] under the same [-consonantal] node

A feature set contravening the ban may be generated under the normal application of metaphony: when [+high] is spread to a stressed vowel that also happens to be [-ATR], [+high -ATR] results and, in virtue of (41), must be "dealt with". Consider Foggiano Italian, which has straightforward spreading of [+high] to the [+ATR] mid vowels:

- (42) a. mójfa "soft.FEM"                    mújfu "soft.MASC"  
 b. k'éna "full.FEM"                      k'ínu "full.MASC"

When [+high] spreads to [-low -ATR], the result contravenes (41). As a repair, Foggiano Italian deletes [-ATR] from the feature set (Calabrese 1998: 44). The result is an alternation between a mid [-ATR] vowel and a high [+ATR] vowel, a phenomenon sometimes known as "hypermetaphony":

- (43) a. gróssa "big.FEM"                    grússu "big.MASC"  
 b. péte "foot.SG"                      píti "feet.PL"

The result in (43) is straightforward if we understand Foggiano as responding to the ban in (41) through the repair operation of feature deletion:

- (44) FOGGIANO REPAIR  
 Delete [-ATR] when on the same node as [+high]

Let's return now to the *amn't* gap. Resolution of (37) may occur via deletion of one of the offending features, in very much the same manner as (44). In particular, in response to (37), one may delete [+author].

- (45) POSSIBLE *amn't* REPAIR  
 Delete [+author] when on the same node as [+singular] and [+negative] under  $C^0$

In order to have the appropriate effect, (45) must occur after the syntax has already generated the offending combination, and before vocabulary insertion has applied to insert the form of the copula. Deletion rules that operate on  $\varphi$ -features after syntactic computation but before vocabulary insertion are called *impoverishment* rules, as they "impoverish" a node of its featural "richness".<sup>5</sup> Thus, in order to see the potential effects of (45) in remedying the *amn't* gap, we must first state the relevant vocabulary items for the English present tense copula:

- (46) /am/  $\Leftrightarrow$  [+author +singular +copula +present]  
 /is/  $\Leftrightarrow$  [+singular +copula +present]  
 /are/  $\Leftrightarrow$  [+copula +present]

It will be noticed that *am* is the most highly specified vocabulary item. Thus, when the output of the syntax contains a node with the feature set [+author +singular +copula +present], *am* will always be inserted rather than the other two vocabulary items. The other two vocabulary items are compatible with such a feature set, but do not constitute the *maximal* available subset, in accordance with (35). Thus, in normal scenarios, the output of syntax with the (partial) feature set [+author +singular +copula +present] triggers insertion of *am*. However, when such a node cooccurs with [+negative] under the node  $C^0$ , as the result of head-movement and question formation, the result contravenes the filter in (37) and must be repaired.

Much like the case of metaphonic [+high] spreading to [-ATR] vowels, then, we have a scenario in which combinatorial operations create, but the result must be repaired. Impoverishment rules are a repair operation

<sup>5</sup> Though we follow the terminology established by Bonet (1991) and subsequent authors here, it is important to emphasize that deletion rules such as (45), as an imperative to delete offending material, are perhaps more akin to a "purge" of something unwanted, rather than impoverishment of something that was treasured.

for taking care of a set of nodes that contravene a filter like the one in (37). Impoverishment, as a feature deletion rule, occurs in response to context-sensitive markedness in this case. Importantly, as the context-sensitive markedness involves the features [+author] and [+singular] together with [+negative], in principle, either of these features could be deleted in order to satisfy (37). In fact, we find precisely two different repairs occurring, under just this logic.

The first of these repairs is in much wider distribution, especially in North America:

- (47) REPAIR TO *Amn't* FILTER I  
 Impoverish [+singular]  
 (Result prior to vocabulary insertion: [+author +copula +present])

Given the vocabulary items in (46), the impoverishment rule in (47) will yield a set of features that is realizable by *are*, and the result will be dialects that deal with the *amn't* gap by saying *Aren't I lucky?* (Francis 1985).

The other repair, somewhat less well-known, is to impoverish person:

- (48) REPAIR TO *Amn't* FILTER II  
 Impoverish [+author]  
 (Result prior to vocabulary insertion: [+singular +copula +present])

Given the vocabulary items in (46), the result of impoverishment will be a set of features that still contains the number feature [+singular], and thus realizable only by *is*. The result occurs in dialects that say *Isn't I lucky?*

Importantly, then, the system of filters-and-repairs, implemented in terms of morphological markedness and impoverishment rules, bears a great deal of similarity to scenarios in phonology, in which the same filter may be repaired in various ways. Consider, for example, hiatus of two vowels, which, as discussed at length in Casali (1998) and Calabrese (2005), may be repaired by various different operations, such as deleting the first vowel, deleting the second vowel, coalescing the two into a single vowel that shares the features of both, or performing glide formation. An important result emerges for cases like the (37) filter: the morphological microvariation documented by Francis (1985) is the consequence of different repairs to the same filter.

### 11.3.2 Impoverishment: additional case studies

11.3.2.1 *Basque* [+participant] We turn to a second case study that illustrates the same phenomenon of microvariation as a result of different repair operations to the same markedness filter. Basque auxiliaries show agreement with

both the ergative and absolutive arguments (and with datives and allocutives as well, though these will not be relevant for the current discussion). In Bizkaian dialects of Basque, there is a "dissimilation" constraint that bans adjacent [+participant] features on the same auxiliary, dubbed the "g/z-constraint" by Arregi and Nevins (2006), owing to its morphological exponents. The g/z-constraint is always resolved by feature-deletion, although which feature deletes may be a point of microvariation. The structural description for the application of the impoverishment rules is in (49). Note again that this is a syntagmatically marked configuration, and recalls a number of phonological configurations in which adjacent identical values of a feature are banned.

The g/z-constraint disallows two structural descriptions: (i) second person ergative and first person plural absolutive (\**you-us*); and (ii) first person plural ergative and second person absolutive (\**we-you*):

(49)	Ergative	Dative/Absolutive
	[+participant]	[+participant]
	<u>and either</u>	
	[−author]	[+author −singular]
	<u>or</u>	
	[+author −singular]	[−author]

What is common to all dialects is that the structural description contains two adjacent [+participant] features, which is what triggers dissimilatory repair. Just as phonological theory incorporates a notion of the Obligatory Contour Principle as a trigger for segmental rules of feature-deletion (e.g., Yip 1988), impoverishment rules repair configurations generated by the syntax that contravene (49). Importantly, as (49), like any syntagmatically marked configuration, contains two potential repair sites, we expect microvariation to emerge in dictating which repair is chosen. In two Bizkaian dialects, Maruri and Ondarru, we find just this microvariation. The same combination of pronominal arguments, a second person ergative and a first person plural absolutive, is repaired by impoverishment of the former argument in Maruri but impoverishment of the latter argument in Ondarru.

In (50), the second person ergative agreement on the auxiliary is deleted; thus the expected suffix *-su* surfaces instead as default ergative suffix  $\emptyset$  (which is employed for third person). This is the result of an impoverishment rule deleting [+participant] on the ergative agreement node in repair to (49).

- (50) (Suk gu ikusi) g- aittu-su → g- aittu- $\emptyset$   
 (You us seen) 1PL.ABS-TR- 2SG.ERG → 1PL.ABS-TR- 3SG.ERG  
 "You have seen us." (Maruri; de Yrizar 1992, vol.1: 651)

In (51), the 1PL.ABS agreement on the auxiliary is deleted; thus the expected prefix *g-* surfaces instead as default *d-*, employed with third person absolutes. This is the result of an impoverishment rule deleting [+participant], as well as the concomitant features [+author –singular], on the absolutive agreement node in repair to (49).

- (51) (Suk gu ikusi) g- aitxu-su → d- o- su  
 (You us saw) 1PL.ABS-TR- 2SG.ERG → 3SG.ABS-TR-2SG.ERG  
 “You have seen us.” (Ondarru; Ikuska Ansola, p.c.)

This impoverishment rule has an additional effect in that the auxiliary root HAVE normally displays an allomorph *-aitxu* in the presence of a [+participant] absolutive, but as a result of impoverishment of [+participant] on the absolutive node, the elsewhere auxiliary root *-o* appears instead.

In both examples, we can tell that the impoverishment rule is a postsyntactic effect, as the pronominal arguments retain their first and second person features. The impoverishment rule specifically targets adjacent feature identity on the auxiliary that arises as a result of agreement processes during the syntax. It is important to contrast this with the PCC effects in Section 11.2, therefore: PCC effects cannot be “repaired” through a postsyntactic impoverishment operation on the verbal agreement, and are prohibited by the very mechanisms of syntactic agreement. The *amn’t* gap and the Basque *g/z-* constraint, on the other hand, arise as a result of agreement-as-usual, with postsyntactic repair of a marked configuration created by the combinatorics of syntax.

11.3.2.2 *Warlpiri dual* Impoverishment of  $\varphi$ -features in a syntagmatic configuration arises as the result of two types of phenomena: (i) head-movement of a lower node, as in the case of Neg<sup>0</sup> moving to T<sup>0</sup> and onwards in question formation, thus placing subject agreement features on the same node as [+negative], or (ii) multiple-argument agreement, as in the case of Basque, in which two sets of  $\varphi$ -features may come to be realized on the same auxiliary. In both cases thus far, we have observed that the marked features [+author] in (37) and [+participant] in (49) lead to a cooccurrence restriction requiring repair. We turn to a further case of impoverishment in repair to a syntagmatically marked configuration created by multiple argument agreement, for the contextually marked feature [–augmented], which is marked in the context of [–singular] (8).

We begin by noting the following constraint:

- (52) WESTERN WARLPIRI NUMBER CONSTRAINT  
 \*[–augmented –singular] on a clitic adjacent to a [–singular] clitic

Like Basque, Warlpiri auxiliaries agree with both the ergative and the absolutive argument. Whenever there is a dual clitic on the same node as a non-singular clitic, the [–augmented] feature of the dual is deleted. The result of deletion of [–augmented] on a node bearing [–singular], of course, is a feature set that will allow insertion of plural, rather than dual morphology. Impoverishment of [–augmented] on a dual, leading to dual-plural syncretism, is a crosslinguistically common feature-deletion operation (cf. Vinka 2001 on Sámi). In Western Warlpiri, the combination of a dual argument with a plural (or dual) argument yields plural agreement instead of the expected dual:

- (53) maliki-tjara-lu ka- lu- tjana wawiri- patu nja-nji  
 dog- DL- ERG PRES-3PL-3PLO kangaroo-PC see-NPST  
 “Two dogs see several kangaroos.” (Western Warlpiri; Hale 1973: 330)

Notice that the dual marker still remains on the subject argument, and thus it is only the agreement node that is affected, by virtue of combinatorially creating multiple argument agreement with adjacent identical marked values. The impoverishment rule that repairs the violation to (52) in Western Warlpiri is the following:

- (54) WESTERN WARLPIRI NUMBER REPAIR  
 Delete [–augmented] on a [–singular] clitic when adjacent to a [–singular] clitic

Importantly, given the formulation of (54) in terms of deletion of the contextually marked feature [–augmented] in the environment of [–singular], when a configuration arises in which both arguments are dual (i.e., both [–singular –augmented]), (54) will require deletion of both instances of [–augmented]. As a result, when *both* clitics are dual, they *both* neutralize with plural:

- (55) ŋatjara-lu ka- ŋalu- njara njumpala nja-nji  
 1EX.DL- ERG PRES-1EX.PL-2PLO 2DL see-NPST  
 “We two see you two” (Western Warlpiri; Hale 1973: 330)

The case of adjacent duals in Warlpiri is yet again a scenario, however, in which microvariation is attested. In Eastern Warlpiri, the structural description of the cooccurrence filter is subtly different from (52):

- (56) EASTERN WARLPIRI NUMBER CONSTRAINT  
 \*[–augmented –singular] on a clitic adjacent to a [–augmented –singular] clitic

Thus, while (52) eliminates a contextually marked feature in the environment of adjacent identity for the feature responsible for the *context* of markedness, (56) eliminates a contextually marked feature in the environment of adjacent identity for the feature responsible for the context of markedness *and* the marked feature itself, i.e., total identity. This is a point of variation that we might expect precisely with context-sensitive markedness: syntagmatic dissimilation may be triggered by the feature itself, the context, or exclusively by the combination of both. As Eastern Warlpiri has impoverishment only under syntagmatic identity of both [–augmented] and [–singular], impoverishment of [–augmented] does not occur in dual–plural combinations, such as (53), but does occur in dual–dual combinations, such as (55).

In addition to variation in the structural description of the filter, Eastern Warlpiri differs from Western Warlpiri in the nature of the repair. Specifically, in certain combinations of dual–dual, only one of the dual arguments is impoverished. The choice of which dual argument is impoverished is based on the person features of the arguments. Hale (1973: 331) remarks that a “hierarchy” appears to govern dual impoverishment in Eastern Warlpiri, such that 1 > 2 > 3; in other words, when a first person and second person are both dual, the second person will be the one to undergo impoverishment, and when a third person and a first or second person are both dual, the third person will be the one to undergo impoverishment. This is illustrated by the following examples of 1DL-2DL and 2DL-1DL combinations, in which it is always the 2DL argument that undergoes [–augmented] impoverishment, yielding surface appearance of the plural morpheme.

(57) *ɲatjara-ɭu ka- ɭitjara- njara njumpala nja-nji*  
 1EX.DL- ERG PRES-1EX.DL-2PLO 2DL see-NPST  
 “We two see you two” (Eastern Warlpiri; Hale 1973: 331)

(58) *njumpala-ɭu ka- nkulu-tjaran̄ku ɲatjara nja-nji*  
 2DL- ERG PRES-2PL- 1DLO 1DL see-NPST  
 “You two see us two” (Eastern Warlpiri; Hale 1973: 331)

We may capture this hierarchy without explicit reference to a hierarchy. The logic of the Subset Principle (35), formulated for maximally specified features for the operation of Vocabulary Insertion, may be extended to choosing between disjunctive application of impoverishment rules with overlapping structural descriptions. Thus, consider the following three impoverishment rules, all of which arise as repairs to the structural description in (56).

(59) a. Delete [–augmented] on a [–singular] clitic when adjacent to a [–augmented –singular] clitic that is [+author +participant]

- b. Delete [–augmented] on a [–singular] clitic when adjacent to a [–augmented –singular] clitic that is [+participant]  
 c. Delete [–augmented] on a [–singular] clitic when adjacent to a [–augmented –singular] clitic

Clearly, (59a) will trump (59b–c), and (59b) will trump (59c), simply in virtue of the quantity of feature specification in the statement of the rules; again, in a manner reminiscent of Kiparsky’s Elsewhere Condition, the most specific rule (repair) is chosen, where specificity is determined by maximal subethood of  $\varphi$ -features.<sup>6</sup>

The Warlpiri data provide a case study of a syntagmatic rule of markedness reduction operating in the context of multiple dual morphemes, further support for the conclusion that dual is a marked category, and evidence of microvariation in the nature of markedness-based dissimilation in terms of both its structural description and chosen repairs.

### 11.3.3 Repair via breaking

Thus far our discussion has focused on filters such as (37), (49) and (52), (56), which ban the cooccurrence of feature-values [ $\alpha$ F] and [ $\beta$ G] on the same morphosyntactic node *N*, and repairs to these filters by deletion of [ $\alpha$ F], [ $\beta$ G], or both. There is, however, another way to circumvent a filter of [ $\alpha$ F] and [ $\beta$ G] on *N* without deleting anything: namely, generating a new node *N'*. Like two chemical compounds which must be kept in separate beakers, as long as [ $\alpha$ F] remains on *N* and [ $\beta$ G] remains on *N'*, the cooccurrence filter will be respected. Such cases, of generating a new node to host one of the offending features, is a strategy we will call “breaking”, following Calabrese (1998), who investigates such repair operations in the context of Italian metaphony. We thus return to the phonological feature cooccurrence filter (41), repeated below:

(60) \* [+high –ATR] under the same [–consonantal] node

Recall that metaphony is the spreading of a [+high] feature to the stressed vowel, resulting in a change in height of the stressed vowel, whose output must ultimately respect (60). In Arpino Italian, the effect of metaphonic spreading of [+high] from plural suffixes has undergone morphologization: although

<sup>6</sup> Incidentally, the Eastern Warlpiri dual impoverishment pattern provides a further argument that person should be captured with [ $\pm$ author] and [ $\pm$ participant]. The alternative system of binary [ $\pm$ author] and [ $\pm$ addressee] (actually proposed by Hale, and many others subsequently) cannot naturally capture the fact that second person, and not first person, undergoes dual impoverishment in (57) and (58), as there is no natural subset relation between putative [+author –addressee] (“first person” in that system) and [–author +addressee] (“second person” in that system).

the number endings have become reduced to schwa, the effect of metaphony remains, inducing height alternations in which an underlyingly mid vowel in the singular corresponds to a raised vowel in the plural. Morphologized metaphony affecting [+ATR] mid vowels is illustrated in (61):

- (61) a. mészə "month.SG"      mészə "month.PL"  
 b. fjórə "flower.SG"      fjúrə "flower.PL"

Arpino Italian has the vowel system in (40) and thus has underlying [-ATR] mid vowels which can potentially serve as targets for metaphony. However, recall that when metaphonic [+high] feature-docking affects [-ATR] vowels, the [+high -ATR] result must be "dealt with." Arpino Italian "breaks" this illicit combination through diphthongization (Calabrese 1998: 19): a [+high] glide is created, in order to host the offending [+high] feature.

- (62) a. vérmə "worm.SG"      vjérmə "worm.PL"  
 b. fórtə "strong.SG"      fwórtə "strong.PL"

The nature of breaking in segmental phonology yields diphthongization: when the cooccurring features [+high -ATR] occur on the same node N, the repair is to generate a secondary node N' to the left, and send [+high] to the first node, send [-ATR] to the second node, and keep [-low around] on both.

Cases of breaking with  $\varphi$ -features may arise when a paradigmatically marked feature set is copied via agreement: instead of impoverishment, breaking is another possible repair operation. Consider the category of inclusive we, which is well-known to be marked on both implicational and formal grounds. We adopt the view of McGinnis (2005) that systems with first person inclusive involve a language-specific adoption of the privative feature [addressee]. The feature representation of inclusive we ("inclusive") is thus the following marked combination:

- (63) FEATURE REPRESENTATION OF *inclusive*  
 Marked combination of [+participant +author -singular] with [addressee]

The feature set in (63) is paradigmatically marked: the feature set on its own is marked, independently of multiple argument agreement or head-movement by negation. Given the marked combination in (63), we can envision various repair operations. For example, Mam deletes the entire set of features in its suffixal node:

- (64) MAM EMPHATIC POSSESSOR MORPHOLOGY (England 1983)

Possessor	<i>x's cat</i>
1SG	n-wi:xh-a
2SG	t-wi:xh-a
3SG	t-wi:xh
1EX	q-wi:xh-a
1IN	q-wi:xh
2PL	ky-wi:xh-a
3PL	ky-wi:xh

The vocabulary items for the prefixes are straightforward:

- (65) PREFIXAL VOCABULARY ENTRIES  
 /n-/  $\Leftrightarrow$  [+author +participant +singular]  
 /t-/  $\Leftrightarrow$  [-author +singular]  
 /q-/  $\Leftrightarrow$  [+author +participant -singular]  
 /ky-/  $\Leftrightarrow$  [-author -singular]

In this case, there is simply no vocabulary item that is specialized for the inclusive; the same prefix is employed for both inclusive and exclusive 1PL (i.e., with and without the presence of [addressee]). Syncretism here emerges as the result of underspecified vocabulary items and shared feature identity among the syncretizing categories. However, when we consider the distribution of the suffixes -a and - $\emptyset$ , a syncretism emerges between the inclusive and third person. Clearly these two categories have no features in common in the system of person features adopted here. Putting aside the inclusive for a moment, consider the following vocabulary entries:

- (66) SUFFIXAL VOCABULARY ENTRIES  
 /-a/  $\Leftrightarrow$  [+participant]  
 /- $\emptyset$ /  $\Leftrightarrow$  []

Given the markedness of the inclusive in (63), an impoverishment rule operative in the suffixal position of exponence can potentially delete all of the offending features.

- (67) Delete all features in the set [+participant +author -singular addressee] on the suffixal node

The result of (67), prior to vocabulary insertion, will render the resulting feature set only eligible for realization by the elsewhere vocabulary item  $-\emptyset$  in (66). The inclusive/third person syncretism thus results from the fact that the former undergoes paradigmatic impoverishment, rendering it featurally available for insertion by only the elsewhere item, which is also chosen to realize the latter.

Syncretisms such as inclusive/third person, which cannot be the result of shared feature specification, may thus be understood as the result of impoverishment. As we are maintaining the strict hypothesis here that impoverishment is markedness-driven, we thus expect the possibility of a different repair to the same cooccurrence filter. We find a case of breaking as repair in Algonquian pronouns.

In Potawatomi, when the set of morphological features in (63) is generated on the same node, the result is repaired by breaking, in very much the same manner as Arpino Italian above, for phonological features. Specifically, where there are two nodes, [addressee] is sent to the first node, [+author] sent to the second node and [+participant -singular] is kept on both. The pronominal forms for each category are:

(68) POTAWATOMI PRONOUNS (Déchaine 1999)

Gloss	Pronoun
1SG	nin
1EX	ninan
2SG	kin
1IN	kinan
2PL	kinwa
3SG	win
3PL	winwa

The vocabulary items for the prefixes and suffixes are the following:

- (69) a. PREFIXAL VOCABULARY ENTRIES  
 /k-/  $\Leftrightarrow$  [addressee]  
 /n-/  $\Leftrightarrow$  [+participant]  
 /w-/  $\Leftrightarrow$  [-participant]
- b. SUFFIXAL VOCABULARY ENTRIES  
 /-an/  $\Leftrightarrow$  [+author +participant -singular]

- /-wa/  $\Leftrightarrow$  [-singular]  
 /- $\emptyset$ /  $\Leftrightarrow$  [+singular]

As a result of breaking of the inclusive, the “volatile combination” of [addressee] and [+author] on the same node are kept apart, and therefore the following feature sets are present at prefix and suffix:

- (70) a. [+participant addressee -singular]<sub>N</sub> [+author +participant -singular]<sub>N'</sub>  
 b. Result after vocabulary insertion: *k-in-an*

In a sense, the Potawatomi inclusive is a “constructed inclusive,” much like the “constructed duals” of Hopi and Zuni; neither the prefix nor the suffix position alone realizes the set of features in (63), but the union of all of these features does represent inclusive *we*. The fragmentation of these features into two distinct positions of exponence, which keep apart the marked [+author] and [addressee], is precisely what breaking accomplishes. The constructed duals of Hopi (Noyer 1992; Harley and Ritter 2002) illustrate exactly the same point, although at a phrasal level:

- (71) pam wari  
 he ran
- (72) pima yi?ti  
 they ran.PL
- (73) pima wari  
 they ran  
 “They (two) ran”

The four vocabulary entries are the following:

- (74) /pima/  $\Leftrightarrow$  [-singular]  
 /pam/  $\Leftrightarrow$  [+singular]  
 /wari/  $\Leftrightarrow$  [-augmented]  
 /yi?ti/  $\Leftrightarrow$  [+augmented]

This pattern is not limited to pronouns: determiners syncretize dual/plural (although nouns do not) as the following examples demonstrate (Jeanne 1978: 73):

- (75) mi? maana paki  
 that.sg girl.sg entered

- (76) **mima** mamant yiq<sup>y</sup>a  
those girl.PL entered.PL
- (77) **mima** maanat paki  
those girl.DL entered

All pronouns and demonstratives differentiate only [ $\pm$ singular] (Jeanne 1978: 76):

	SINGULAR [+singular]	DUAL/PLURAL [-singular]
(78) Gloss		
1	niʔ	ʔitam
2	ʔim	ʔima
3	pam	pima
"this"	ʔiʔ	ʔima
"that" (removed)	miʔ	mima

A large number of verbs occur in suppletive pairs, in addition to "enter" and "run" (Jeanne 1978: 87):

	SINGULAR/DUAL [-augmented]	PLURAL [+augmented]
(79) Gloss		
die	mooki	soʔa
sleep	piiwi	took <sup>y</sup> a
exit	yama	nöŋa
stand	wini	hoon <sup>y</sup> a
fall	poʔsi	löhö
arrive	piti	ʔöki
eat	tiimoyta	noonova
sit	qati	yeese
climb	wiivi	yayva

Other verbs distinguish plural and non-plural using reduplication, infixation, or suffixation. The fact that all pronouns only distinguish [ $\pm$ singular] and that all verbs only distinguish [ $\pm$ augmented] cannot be taken as accidental

properties of the vocabulary items realizing these categories. This systematicity is indicative of a filter against the realization of these features on the same node in pronouns and on verbs (though not nouns). The fact that there is no dedicated dual marker in either pronouns or verbs smacks of a cooccurrence filter. I propose that agreement occurs between the subject pronoun (and in the case of demonstrative–noun pairs, between features of the D<sup>0</sup> head of the subject DP) and the verb, copying [ $\pm$ singular] and [ $\pm$ augmented] from the former to the latter. Notably, Hopi is not a pro-drop language, despite the fact that it is polysynthetic (Gronemeyer 1996). I would like to tentatively propose that the items labeled as pronouns and determiners are the spellout of postsyntactic "breaking" of [ $\pm$ singular] into realization in subject position:

- (80) HOPI BREAKING RULE  
Split the features [ $\pm$ singular] off from verbal agreement onto a separate position of exponence in subject position

Admittedly, the Hopi breaking rule is clumsily stated, as this is a phrasal, rather than word-internal case of breaking. An alternative might emerge under the view that the feature [ $\pm$ augmented] is spelled out on the verb as the underlying result of an agreement chain with features on the pronominal subject. In this case one could view the fact that [ $\pm$ singular] is spelled out on the pronoun whereas [ $\pm$ augmented] is spelled out on the verb as a very particular repair to cooccurrence of these features: namely spelling out [ $\pm$ singular] in the head of the chain and [ $\pm$ augmented] in the tail of the chain. This type of repair would resemble the strategy proposed in Bošković (2001), in which the decision to pronounce copied features in the tail of a chain may be forced in order to respect a cooccurrence filter at the head of the chain; in the case he discusses, the cooccurrence filter involves adjacent occurrences of the *wh*-word *šta* "what". Whatever the preferred implementation of Hopi breaking may be, I believe that the similarities of the marked "constructed dual" with the marked "constructed inclusive" above are too similar to pass without an attempt at unification.

#### 11.3.4 Interim conclusion

On the view developed here, impoverishment theory emerges as a feature-based formalization of repairs to syntagmatic and paradigmatic configurations involving marked categories. Thus, like phonological neutralization rules that operate as repairs to marked configurations—e.g., [+voice] in obstruents, [+high –ATR], adjacent feature identity (the OCP)—impoverishment rules and breaking rules may be viewed not as arbitrary, but

rather as resulting from a comprehensive theory of morphological markedness. In the next section, I turn to some interesting consequences of taking impoverishment as feature deletion extremely seriously.

#### 11.4 Pragmatic effects of $\varphi$ -deletion

Pursuing the postsyntactic treatment of marked inclusive, in this section I draw attention to some pragmatically surprising uses of the inclusive, which become understandable when viewed in the context of deletion of either marked [+author] or [addressee]. If analyzed as feature deletion, impoverishment becomes much more than a formal expression of contrast neutralization in the strictly morphophonological sense. Consider what happens when the exponent of [+author +participant addressee] is used in scenarios in which its referent is *not* inclusive *we*. There are two opposite cases to consider.

The first is the Tamil inclusive *naam* as a “super-honorific”, which can be used “by lower-status persons to address higher-caste persons” (Brown and Levinson 1987: 202). The second is the Santali inclusive, which can be used when threatening someone (Cysouw 2005: 221). The latter is illustrated below:

- (81) *daka dɔhɔe-me ar ba-m dɔhɔe-khan-dɔ nāhāk'-laŋ*  
 rice put-2SG and NEG-2SG put-if-TOP just-IN.SJNCT  
*ger-gitic'-gɔtme-a ar boge-te-laŋ tɔyɔ-me-a*  
 bite-lie-2SGO-IND and good-INSTR-IN.SJNCT kick-2SGO-IND  
 “Put the rice down, and if you don't put it down, I shall just bite you that you lie there, and I shall give you a good kicking”

It is impossible to conceive of these cases as purely morphological; that is, one cannot claim that, for example, in Santali, the subject agreement is syntactically [–author +participant addressee +singular] (normal second person singular) and is transformed, via morphological operations, into [+author +participant addressee –singular] (first person inclusive nonsingular), as the morphological operations are quite irregular—if they can effect this transformation, then they are apparently unbounded in power: switching signs from marked to unmarked, unmarked to marked.

Under the “Y-model” of grammatical computation, adopted here, syntactic computation feeds both LF and PF, which are independent of each other. What we have called impoverishment, and dealt with thus far, have been

postsyntactic feature deletion operations on the PF branch. In such cases, given the independence of PF and LF as postsyntactic components, the  $\varphi$ -features that have been deleted in the course of morphophonological computation remain intact on the parallel LF branch. Indeed, Sauerland (this volume), discussing the LF interpretation of  $\varphi$ -features, makes the proposal that a given  $\varphi$ -feature may be marked on the PF branch but unmarked on the LF branch; in particular, he makes this claim for [+singular].<sup>7</sup> Given the existence of distinct LF operations on and markedness of a given  $\varphi$ -feature, and given the existence of PF-branch feature-deletion (namely, impoverishment), there is naturally the logical possibility that the converse may hold as well: features may be deleted on the LF branch, while surviving intact on the PF branch. Such cases have been amply documented, see for example Heim (this volume) on bound pronominal variables in cases such as *Only I did my homework*, which can be analyzed as deletion of [+author +participant] on the LF branch, but clearly not the PF branch. I propose that the cases above are instances of *deprivation*, an LF operation of deleting otherwise interpreted  $\varphi$ -features. Other potential instances of deprivation worth exploring might be instances of second person pronouns used in generic contexts, which could be analyzed as deletion of [–author +participant] on the LF branch, under binding by a (silent) generic operator.

While Heim's cases of deprivation are syntagmatic, occurring under variable-binding, the cases of deprivation discussed here are paradigmatic, and apply to the marked inclusive regardless of interconstituent relations. These cases of deprivation as postsyntactic deletion of a complex (marked) feature set on the LF branch are the analog to impoverishment of the complex feature set on the PF branch observed in Mam above.

While their surface interpretive effects are opposite, Santali and Tamil are similar to each other in that the use of the inclusive displaces a debased participant. In Tamil, the speaker debases himself and uses “you and I” for “I”; in Santali, the speaker debases the hearer and uses “you and I” for “you”. Conversely, the superior, non-debased, participant retains their normal identity. What this amounts to, at the pragmatic, or social, level, is a denial of the independent identity of the debased participant: “I am so humbled that I do not even have a will/identity independent of you”, “You are so lowly that you do not have a will/identity independent of me”. Hence, a grammatical

<sup>7</sup> Though see Krifka (2005), who on the basis of the lack of cardinality presuppositions for Indonesian bare singulars, remarks that the LF-markedness of [+singular] in English may be language-specific. On the contrary, I know of no convincing language-specific case in which [+singular] is PF-marked.

form is chosen that represents the speaker–hearer dyad simultaneously. Pragmatically, this is understood as involving feature deletion of the intrusive argument. For instance, in Santali, the inclusive [+author +participant addressee –singular]  $\varphi$ -agreement is understood as [+author +participant +singular]; this involves deletion of [addressee], therefore reinstating the independence of the author.

### 11.5 Outlook

The core idea explored above is that the human mind has a unity of design and an economy of mechanism, and thus employs highly similar mechanisms and operates using formally identical principles across two seemingly different domains of data: phonological features and  $\varphi$ -features.

#### References

- ADGER, D., and D. HARBOUR (2007). 'The Syntax and Syncretisms of the Person Case Constraint,' *Syntax* 10: 2–37.
- ANAGNOSTOPOULOU, E. (2003). *The Syntax of Ditransitives*. Berlin: Mouton de Gruyter.
- (2005). 'Strong and weak person restrictions: A feature checking analysis,' in L. Heggie and F. Ordóñez (eds.), *Clitics and Affix Combinations*. Amsterdam: John Benjamins, 199–235.
- ANTTILA, A. (2003). 'Finnish Assibilation,' in M. Kadowaki and S. Kawahara (eds.), *The Proceedings of NELS 33*. Amherst, MA: GLSA, 13–24.
- ARCHANGELI, D. (1984). 'Underspecification in Yawelmani phonology and morphology.' Ph.D. thesis, MIT.
- ARREGI, K., and A. NEVINS (2006). 'Obliteration vs. Impoverishment in the Basque g-/z- constraint,' in *Penn Linguistics Colloquium Special Session on Distributed Morphology*, U. Penn Working Papers in Linguistics 13.1: 1–14. (Also available at <http://ling.auf.net/lingBuzz/000280>)
- BÉJAR, S. (2003). 'Phi-syntax: A theory of agreement.' Ph.D. thesis, University of Toronto.
- and M. ŘEZÁČ (2003). 'Person licensing and the derivation of PCC effects,' in A. T. Pérez-Leroux and Y. Roberge (eds.), *Romance Linguistics: Theory and Acquisition*. John Benjamins, 49–62.
- BONET, E. (1991). 'Morphology after syntax: Pronominal clitics in Romance.' Ph.D. thesis, MIT.
- BOŠKOVIĆ, Ž. (2001). *On the Nature of the Syntax–Phonology Interface: Cliticization and Related Phenomena*. Amsterdam: Elsevier.
- BROWN, P., and S. LEVINSON (1987). *Politeness: Some Universals in Language Usage*. Cambridge: Cambridge University Press.

- CAGLIARI, L. C. (1997). *Fonologia do Português: Análise pela geometria de traços*. Campinas: Edição do Autor.
- CALABRESE, A. (1995). 'A constraint-based theory of phonological markedness and simplification procedures,' *Linguistic Inquiry* 26: 373–463.
- (1998). 'Metaphony Revisited,' *Rivista di Linguistica* 10.1: 7–68.
- (2005). *Markedness and Economy within a Derivational Model of Phonology*. Berlin: Mouton de Gruyter.
- CASALI, R. (1998). *Resolving Hiatus*. New York: Garland.
- CHOMSKY, N. (2001). 'Minimalist inquiries: The framework.' Distributed by MITWPL.
- and M. HALLE (1968). *The Sound Pattern of English*. New York: Harper and Row.
- CIUCIVARA, O. (2004). 'Syntactic analysis of pronominal clitic combinations in Romanian.' Ms, NYU.
- CYSOUW, M. (2005). 'Clusivity and Politeness,' in E. Filimonova (ed.), *Clusivity*. Amsterdam: John Benjamins, 73–111.
- DÉCHAINÉ, R.-M. (1999). 'What Algonquian morphology is really like: Hockett revisited,' in L. Bat-El, R.-M. Déchaine, and C. Reinholtz (eds.), *MIT Occasional Papers in Linguistics 17: Papers from the Workshop on Structure and Constituency in Native American Languages*. Cambridge, MA: MITWPL, 25–72.
- ENGLAND, N. (1983). *A Grammar of Mam, a Mayan Language*. Austin: University of Texas Press.
- FARKAS, D., and K. KAZAZIS (1980). 'Clitic Pronouns and Topicality in Rumanian,' *Chicago Linguistic Society* 16: 75–82.
- FASSI-FEHRI, A. (1988). 'Agreement in Arabic, Binding and Coherence,' in M. Barlow and C. A. Ferguson (eds.), *Agreement in Natural Language*, Stanford: CSLI, 107–58.
- FERNÁNDEZ-SORIANO, O. (1999). 'El pronombre personal. Formas y distribuciones. Pronombres átonos y tónicos,' in I. Bosque and V. Demonte (eds.), *Gramática Descriptiva de la Lengua Española*. Madrid: Espasa Calpe, Chapter 19.
- FRANCIS, N. (1985). 'Amn't I, or the hole in the pattern,' in W. Viereck (ed.), *Focus on England and Wales*. Amsterdam: John Benjamins, 141–52.
- GREENBERG, J. (1963). 'Some universals of grammar with particular reference to the meaning of elements,' in J. Greenberg (ed.), *Universals of Language*. Cambridge, MA: MIT Press, 73–113.
- GRONEMEYER, C. (1996). 'Noun Incorporation in Hopi,' *Lund University Working Papers in Linguistics* 45: 25–44.
- HALE, K. (1973). 'Person Marking in Warlpiri,' in S. R. Anderson and P. Kiparsky (eds.), *A Festschrift for Morris Halle*. New York: Holt, Rinehart, and Winston, 308–44.
- HALL, T., and S. HAMANN (2006). 'Towards a typology of stop assibilation,' *Linguistics* 44.6: 1195–1236.
- HALLE, M. (1997). 'Impoverishment and Fission,' in B. Bruening, Y. Kang, and M. McGinnis (eds.), *PF: Papers at the Interface*. Cambridge, MA: MITWPL, 425–50.

- HARBOUR, D. (2006). 'Person hierarchies and geometry without hierarchies or geometries.' Queen Mary's OPAL #6. (Google: qmopals)
- (2007). *Morphosemantic Number: From Kiowa Noun Classes to UG Number Features*. Dordrecht: Springer.
- HARLEY, H., and E. RITTER (2002). 'Person and number in pronouns: A feature-geometric analysis,' *Language* 78.3: 482–526.
- HIRAIWA, K. (2001). 'Multiple Agree and the Defective Intervention Constraint in Japanese,' in O. Matushansky et al. (eds.), *The Proceedings of the MIT-Harvard Joint Conference (HUMIT 2000)*, MITWPL 40. Cambridge, MA: MITWPL, 67–80.
- (2004). 'Dimensions of symmetry in syntax: Agreement and clausal architecture.' Ph.D. thesis, MIT.
- JEANNE, L. (1978). 'Aspects of Hopi Grammar.' Ph.D. thesis, MIT.
- KIPARSKY, P. (1973a). '“Elsewhere” in Phonology,' in *A Festschrift for Morris Halle*, 93–106, Holt, Rinehart and Winston.
- (1973b). 'Phonological Representations,' in S. R. Anderson and P. Kiparsky (eds.), *Three Dimensions of Linguistic Theory*. Tokyo/ New York: TEC, 93–106.
- KRIFKA, M. (2005). 'A note on the pronoun system and the predicate marker in Tok Pisin,' in P. Brandt and E. Fuss (eds.), *Form, Structure, and Grammar: A Festschrift presented to Günther Grewendorf on Occasion of his 60th Birthday*. Berlin: Akademie Verlag, 79–92.
- MCCARTHY, J., and A. TAUB (1992). 'Review of Paradis and Prunet (eds.), *The Special Status of Coronals*,' *Phonology* 9: 363–70.
- MCGINNIS, M. (2005). 'On markedness asymmetries in person and number,' *Language* 81.3: 699–718.
- MOHANAN, K. P. (1991). 'On the bases of radical underspecification,' *Natural Language and Linguistic Theory* 9: 285–325.
- NEVINS, A. (2003). 'Do person/number syncretisms refer to negative values?' Paper presented at the 77th LSA Meeting, Atlanta.
- (2004). 'Conditions on (dis)harmony.' Ph.D. thesis, MIT.
- (2006). 'Dual is still more marked than plural.' Ms., Harvard. (Google: lingbuzz).
- (2007). 'The representation of third person and its consequences for person-case effects,' *Natural Language and Linguistic Theory* 25.2: 273–313.
- NOYER, R. (1992). 'Features, positions and affixes in autonomous morphological structure.' Ph.D. thesis, MIT.
- RAVID, D., and L. HAYEK (2003). 'Learning about different ways of expressing number in the development of Palestinian Arabic,' *First Language* 23.1: 41–63.
- RINGEN, C. (1975). 'Vowel harmony: Theoretical implications' Ph.D. thesis, Indiana University.
- SEDIVY, J. C., M. K. TANENHAUS, C. G. CHAMBERS, and G. N. CARLSON (1999). 'Achieving incremental semantic interpretation through contextual representation,' *Cognition* 71: 109–47.

- STERIADE, D. (1995). 'Underspecification and markedness,' in J. Goldsmith (ed.), *The Handbook of Phonological Theory*. Oxford: Blackwell, 114–74.
- VINKA, M. (2001). 'Impoverishment as Feature Deletion: dual and plural agreement in Sámi,' *Lund University Working Papers in Linguistics* 48: 183–91.
- YIP, M. (1988). 'The Obligatory Contour Principle and phonological rules: A loss of identity,' *Linguistic Inquiry* 19.1: 65–100.
- YRIZAR, P. DE (1992). *Morfología del verbo auxiliar vizcaino: estudio dialectológico*. Bilbao Bizkaia Kutxa: Euskaltzaindia.

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