Magnetic grammar

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Abstract

This paper is an attempt to unify basic tools across language modules. Specifically, we wish to propose a featural model whereby features include more specification than is usually assumed, while being both syntax and phonology primitives.

We propose to consider features as specified for their capacity of attracting or repelling other features. With this basic extra specification, we claim, many phonological as well as syntactic patterns, as well as morphosyntactic paradigms, can be easily explained.

Introduction

Languages differ, and they do so at possibly every level of grammatical description: phonology, morphology and syntax (and maybe semantics). Unfortunately, the work in these subfields has become separated over the years, mostly as a result of specialization. This is also true for the theories of variation; although there have been general proposals such as Principles and Parameters or Optimality Theory to account for the way in which languages vary across domains, there is in actual practice no general theory anymore, and the way in which parameters or constraint ranking is conceptualized is very different in different subfields. This makes it very hard to build a language typology that captures variation in all modules: while syntax refers to some primitives, phonology refers to completely different ones.

We believe that this is an unfortunate state of affairs. We would argue that it is implausible that language learners use different kinds of mechanisms to acquire different aspects of their native language. We propose a theory that spans at least the modules of phonology and syntax, trusting that this will also be able to encapsulate morphological variation and hoping that it can be expanded to even further modules of grammatical description. This paper proposes to replace the purely formal features posited in a substantive body of syntactic work, or the constraint ranking envisaged in current phonological Optimality Theory, by *forces* operating on syntactic and phonological primitive items, which we identify as features. We posit that there are only two such forces in natural language: *attraction* and *repulsion*; that these forces are always binary (they operate between two features at the same time) and that such forces are operative in a cross-modular fashion.

We wish to propose that language variation is not a result of syntax-PF mapping non-isomorphism, nor of idiosyncrasies imposed by the SM system, but it is rather intrinsic to the tools that are used by the two modules. In particular, we propose that syntax and phonology work with the same set of features, which are however defined in a more articulated fashion

than usual. Features are empty functions, the value of which is determined by the interface systems (semantics for syntax; phonetics for phonology). These shells have, aside from a possible internal architecture, a specification for attracting or repelling other features. The feature system of syntax and phonology is thus representable as follows:

(1) $F_{\supset G}$, G_{*H}, H

where F, G and H are three random features, and F is specified as attracting G, while G is specified as repelling H, and H has no specification. This model, which we call Magnetic Grammar, has the advantage to consist in a cross-modular, uniform apparatus which encodes variation at its core.

Any two elements within a module may either attract or repel each other, and they do so on a language-specific basis. We show how such a model of 'magnetic grammar' (MG) can capture many of the properties formerly ascribed to formal features (Fs), without suffering from some of the conceptual and empirical problems that current models have.

The paper is organized as follows. In Section 1 we discuss language variation and the way it is tackled across modules; in Section 2 we discuss the similarities between syntax and phonology, with particular attention to features; Magnetic Grammar is also introduced there. Section 3 provides some examples of attraction, in syntax and phonology; Section 4 is about repulsion. In Section 5, we give some thoughts on acquisition. Section 6 contains the conclusions.

1. Language variation

The issue of language variation is addressed quite differently in syntactic and phonological studies. In generative syntax, the computational system of language is considered unique; what needs investigation is the locus of variation (for instance, interface conditions that are different in different languages; parameter settings; features). Traditional parametric approaches consider Universal Grammar as an articulated system with many open parameters that receive their setting during language acquisition. According to traditional macro-parametric approaches, the grammar of a specific language gets fixed once and for all at acquisition (Chomsky 1981 ff., Chomsky & Lasnik 1993, Baker 1996, 2008, Huang 2005, and many others). Contemporary Minimalist approaches have rephrased the parametric approach in terms of featural setup. The Borer-Chomsky conjecture (as in Baker 2008) states that parametric variation can be attributed to featural differences on some given lexical items, such as functional heads. Microparametric approaches reduce variation to the lexicon, and syntactic variation to functional heads. It is not completely clear how these features interact with interface conditions. Most likely, the correct interpretation of the Borer-Chomsky conjecture with respect to the Strong Minimalist Thesis (Chomsky 1998), according to which language is the optimal solution to interface conditions, is that the featural setup is established language by language in conformity with interface conditions.

Be as it may, the mechanisms that narrow syntax has in place to account for variation are reduced to the single lexical items or to interface conditions. Variation is not generated by applying different kinds of operations (like, different kinds of Merge) to syntactic items. The

Merge operation is the driving force of syntactic structure building. Displacement is also a sort of Merge (internal Merge, Chomsky 2001).

In phonology, theories of variation take different forms and tackle different issues. Phonological work worries less about the locus of variation, for instance the setup of features, but more about models of variation in the grammar. We can group roughly the ideas about variation into three main streams: variation is due to the application of different rule systems (SPE, Chomsky & Halle 1968); variation is attributable to parametric settings, pretty much like the ones we find in syntax (Hayes 1995); or variation can be described in a constraint ranking fashion, as in Optimality Theory (Prince & Smolensky 2004). In particular the SPE system differs radically from the idea of a unique operation applying to different items and external conditions yielding variation, as in the MP. OT is an interesting case of a "filter-based" system, whereby phonology generates freely a potentially infinite number of expressions, and a mechanism filters them, based on the constraint ranking of a given language.

Free generation and filtering recalls very much the radical MP mechanism according to which narrow syntax generates a virtually infinite number of expressions, which then crash at the interface (some kind of filter; Chomsky 1995) if not legible by the interface systems, PF/SM and LF/CI.

We do not wish to indulge too much on the differences between these mechanisms for the creation of linguistic expressions: what matters for us is underlying the difference between syntactic and phonological approaches to variation. This point being made, we cannot but notice that this way of considering what we can call cross-modular approaches to variation is not very economical. Syntax and phonology work under different assumptions, making use of different primitives. In our view, this is not the best way to proceed on Occam's razor considerations. We believe it to be quite unlikely that syntax and phonology work with completely different tools. In this paper, we wish to explore an alternative way to go about variation, involving cross-modular devices for handling linguistic (both syntactic and phonological) variation.

2. What syntax and phonology might have in common: features

We concentrate our investigation on syntax and phonology, leaving semantics aside for this article under the assumption that semantics is compositional and isomorphic to syntax. We will also concentrate instead on syntax and phonology, two modules that are considered to be non-isomorphic for domains (Selkirk 1980, Nespor & Vogel 1986, but see more recently D'Alessandro & Scheer 2015 and Bonet *et al* 2018).

Phonology and syntax share many things: they are both hierarchical in some way (though syntax is recursive and phonology isn't). Syntactic computation, however, takes place based on hierarchical structure, while phonological computation considers linear order. Both syntax and phonology have some sort of cyclicity. We will not discuss these differences and similarities here. Our assumption is roughly that both syntax and phonology operate in similar ways, and the differences emerge because of their interfaces (semantics for syntax; phonetics for phonology).

While keeping these considerations in the background, here we wish to focus on one device that has been largely used in both syntax and phonology, and that we believe has not been exploited to its full potential: the feature. Following the Borer-Chomsky conjecture, we take the locus of variation to be features. Differently from them, we assume these features to have a richer setup, allowing them to describe both syntactic and phonological items, as well as accounting for microvariation in these two modules.

Rather than a complete theory, this is a programmatic paper, with the aim of rethinking linguistic tools in a cross-modular fashion.

2.1. Linguistic primitives: features

Features were first proposed by Jakobson & Halle (1956) to classify English phonemes. Every phoneme was identifiable by means of binary features. These features referred to some salient characteristic of the sounds that Jakobson & Halle wished to describe. The list of features proposed by Jakobson & Halle, which could describe every English phoneme, is in (1):

(1) vocalic/non-vocalic, consonantal/non-consonatal, compact/diffuse, grave/ acute, flat/plain, nasal/oral, tense/lax, continuant/interrupted, strident/mellow
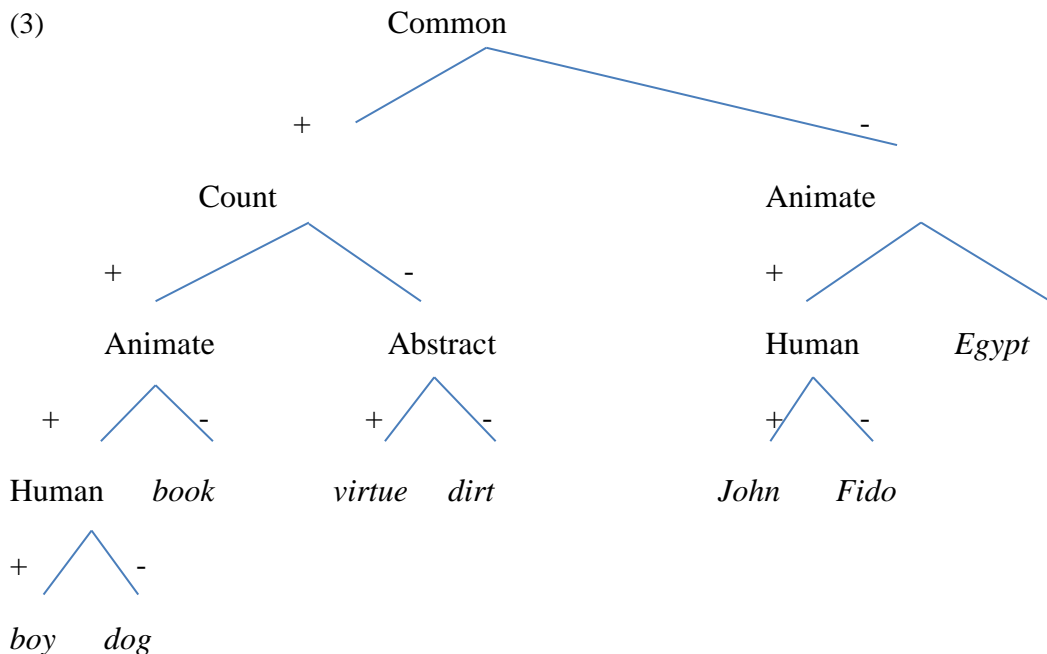
Underneath this inventory was furthermore the claim that the feature set was universal. Other languages might need more or different features to make phonologically relevant distinctions, but in the end the feature matrix for every phoneme in every language was the same, and defined in the same way.

It was again Jakobson, in (1958), who proposed features also for syntax, with the intent to describe the case system of Russian. Franks (1995:42) summarizes Jakobson's enterprise as follows: "The three necessary and sufficient features proposed in Jakobson (1958) for describing the Russian case system were [±quantified] (obëmnyj), [±directional] (napravlennyj) and [±marginal] (periferijnyj). Jakobson (1958: 179) defines these "semantic marks" as "focusing upon the extent to which the entity takes part in the message," "signalizing the goal of an event" and "assigning to the entity an accessory place in the message, respectively". Jakobson classified Russian case as follows:

(2) nominative = [–marg, –quant, –dir]
      accusative = [–marg, –quant, +dir]
      genitive = [–marg, +quant, –dir]
      instrumental = [+marg, –quant, –dir]
      dative = [+marg, –quant, +dir]
      locative = [+marg, +quant, –dir]

As Jakobson was well aware, his system overgenerated case possibilities. In particular, two combinations: [–marg, +quant, +dir] and [+marg, +quant, +dir] could not be found in Russian. Quite soon after, features started being used to define syntactic categories. Specifically, Chomsky (1965) explains how features are crucial for phonological operations. For instance, there are rules targeting only voiced consonants. How can we make sure that we select all segments that are voiced? By expressing voice as a feature. Each segment with a [voice] feature

will be then easily selectable as a target for the rule. Each phonological unit must be designed as a set of features, so that the phonological component can target all element characterized by one or more features. This also holds for syntactic rules, according to Chomsky (1965). In fact, each lexical formative must be characterized by a unique set of features. Chomsky continues with proposing the following general featural architecture for nouns:

(3)

```
                    Common
              +                    -
           Count                Animate
        +          -         +          -
     Animate    Abstract   Human       Egypt
    +     -     +     -     +    -
  Human  book virtue dirt  John  Fido
  +    -
 boy  dog
```

Observe that the feature diagram for Chomsky specifies two things: first, the nature of the feature (animate/count/human etc.), often called DIMENSION or ATTRIBUTE, then the presence of the feature on a lexical item. According to Chomsky, a feature must be represented as [αF], where (α = + or -). This is called a BINARY feature system: we specify the characteristic of the element (whether a noun is countable, animate) and whether this characteristic is or is not found on a syntactic element.

The theory of features has fragmented and evolved up to present day, but the debate is still ongoing regarding the right way to represent them. Syntactic features like GENDER, NUMBER and PERSON cannot be easily represented in a diagram like that in (2), unless there is the common understanding that each node has a different ontological status. A language like German, for instance, with three genders, is quite difficult to represent in a binary feature system.

In this context, it is worthwhile mentioning two notable alternatives to binary feature systems. The first, called PRIVATIVE feature system, is already somehow included in the diagrams we have seen above: according to this representation, a feature may or may not be present on an item. Think for example of ANIMACY: a noun can have an [animate] feature, or not. For instance, the noun *computer* in a privative system would not have an [animate] feature. The noun *girl*, instead, would. The limits of privative systems are obvious: while they account quite

well for binary systems (singular vs plural, masculine vs feminine), they fail to describe accurately more complex systems.

The second alternative is the one which is currently used in most of agreement literature within the generative framework. It is known under the name of ATTRIBUTE-VALUE and consists of a system, in which each feature has two "layers": first, what we called the dimension, and then the specification of the value for this dimension. The way attribute-value features are represented is the following:

(4)   [attribute: value]

For example, 1st person would be indicated as in (5):

(5)   [person: 1st]

This system is very powerful, and can describe all possible items in language. The risk that using such a system may cause is that of overgeneration.

For the purposes of this paper, we will consider monovalent features, in a highly specified privative system: we will not separate attribute and value, but we will consider each feature as fully specified and distinct from others. We also assume that features are specified on lexical items; in the case of XPs, or syllables, they percolate up to the highest syntactic or phonological component. The proposal, we believe, can be extended to other ways of feature representation.

2.2. Linguistic primitives: forces

Linguistic representations, we propose, have two types of primitives: syntactic and phonological items (of the feature, X, and XP sort in syntax, and of the feature, segment, syllable, foot sort in phonology) on the one hand, and forces operating on those primitives on the other.

The only forces that seem to be at work are the tendency for elements to get embedded in the same domain (we call this the ATTRACTING FORCE, $\supset$) and the (conflicting) tendency for elements to get outside of each others domain (REPELLING FORCE, $*$). These can be represented as follows: A $\supset$B means 'item A attracts item B', and A$*$B means: 'item A repels item B'. The proposal is that language acquisition consists solely of learning the set of forces operative on syntactic/phonological items, together with the feature inventory that is language specific. For this paper, we will mainly focus on features, under the assumption that their specification percolates to any element including them. Observe that we do not take position regarding the issue whether features are innate (Chomsky 2001,Westergaard 2009), or partially or fully emergent (Gianollo, Guardiano & Longobardi 2008, Dresher 2009, 2014, Rizzi 2014, 2015, Biberauer & Roberts 2015, 2017, Biberauer 2019). The assumption we make regards the fact that they are more complex than previously assumed, and in particular specified for attracting/repelling other features.

In particular, we propose that these forces are seen as properties of the primitives themselves. For instance, suppose that a hypothetical language only has a labial nasal *m* and no other nasals,

although it has other labials (say, *p* and *b*), and that the relevant features are [Nasal] and [Labial]. We can then formalize this as assuming that the inventory of features in the language is as follows:

(6)   [Nasal$_{\supset Labial}$]
        [Labial]
        [Coronal$_{*Labial}$]
        [Voice$_{*Nasal}$]

This notation says that the toy language has three features, [Nasal], [Labial] and [Voice]; furthermore, [Nasal] attracts [Labial], the language does not have sounds that are both [Labial] and [Coronal] and [Voice] does not go together with [Nasal]. The assumption is that all feature combinations are allowed, in which the requirements on all features are satisfied. These are:

(7)   a.   [Nasal$_{\supset Labial}$, Labial] = [m]
        b.   [Labial] = [p]
        c.   [Labial, Voice$_{*Nasal}$] = [b]
        d.   [Coronal$_{*Labial}$] = [t]
        e.   [Coronal$_{*Labial}$, Voice$_{*Nasal}$] = [d]
        f.   [Voice$_{*Nasal}$] = floating voice

The reader can check that these are indeed the only segments that can be generated with this feature set. Other combinations ([Nasal$_{\supset Labial}$, Labial, Voice$_{*Nasal}$], [Nasal$_{\supset Labial}$], etc.) all show a clash between features: some feature attracts another feature that is not there, or some feature repels a feature which is. With this toolbox, we can construct the segments [t, d, p, b, m, h], because they consist of features that go together, but not a voiced nasal or a nasal that is not labial.

The proposal is that (6) is the only thing the child will have to learn when s/he is learning the consonants of our toy system: features and their magnetic properties. A general computational system – we are neutral with respect to the question whether this is language-specific or not - will be able to put together all features in segments (syllables, words, and higher order domains), as long as their feature specifications are met: [Nasal$_{\supset Labial}$] is fine in any segment that has [Labial], [Voice$_{*Nasal}$] is fine in any segment that does not have [Nasal] (and [Coronal$_{*Labial}$] in any segment without [Labial]. Otherwise, features are freely combinable to segments.

In essence, this toy example illustrates the core of our proposal, which can be applied also to syntax.

We propose that the grammar of a language consists of:

    a. a set of primitives of the shape [F $_{\supset G, *H,…}$], with F, G and H features (or nodes containing them)
    b. a universal combinatorial system

We assume, in line with a consensus in the literature, that the combinatorial systems of phonology and syntax may be different – e.g. syntax has self-embedding structures whereas phonology does not, or only to a limited extent, while notions like *left* and *right* seem more central to phonological computation than to syntax. We will not be concerned with the precise nature of the computational system putting together the features in higher-order structures, as we believe that our proposal is compatible with many different views on this. In practice, here we assume what we take to be more or less standard view on computation and representation in syntax (roughly, the kind of structure produced by operations of Merge and Agree) and phonology (roughly, autosegmental structures within a prosodic hierarchy).

As a last important point, notice that the example in (7) is an instance of paradigmatic selection, i.e. of attraction/repulsion values that are learnt once and for all during acquisition, and are reflected in the phoneme inventory of a language. Attraction and repulsion are however actively at work also during syntactic and phonological derivations, as we will show below.

3. Attraction

3.1. Attraction in syntax

Within syntax, attraction triggers movement: a feature (or feature bundle) will be attracted to another feature in order to satisfy an attraction requirement on one of the features or feature bundles involved. Take the following (simplified but well-known) taxonomy of verb movement in Western European languages:

(8) a. Romance: V-to-T

Au	cinéma,	Pierre	embrasse	souvent	Jean	(French)
At-the	cinema	Peter	kisses	often	John	

'Peter often kisses Richard at the cinema'

b. Germanic: V-to-C

In de bioscoop	kust	Piet	Jan	vaak	(Dutch)
in the cinema	kisses	Peter	John	often	

'Peter often kisses John at the cinema'

c. English: no movement

At the cinema, John often kisses Mary

The crucial data here is the relative order of subject, verb and adverb (Emonds 1978, Pollock 1989). English represents something relatively close to the underlying order. In French, the verb is moved to a position higher than the adverb – the T head. In Dutch, it moves even higher, to a position above the subject, the C head.

In terms of our analysis, we can express these differences in terms of different verbal features for the three languages:

(9)   a. Romance: [V; T $\supset$v ; C]
       b. Germanic: [V; T; C $\supset$ v]
       c. English: [V; T; C]

(9a) means that Romance T is endowed for a specification for attracting elements holding a V feature (Alexiadou & Anagnostopoulou 2001). (9b) means that V2 Germanic languages display a C which is endowed with the same specification (ATTRACT V). In English, on the other hand, no such specification is present on T or C.

This model is obviously too simplistic. A number of issues need to be tackled for it to work. To start with, V is strictly speaking not a feature, but a category. This is actually not a problem, given the fact that V has also been considered to be a feature (for instance in Chomsky 1970, Jackendoff 1977, Stowell 1981, Fukui and Speas 1986, Abney 1987), and that according to some scholars there is no ontological difference between a feature and a category (see in this respect Zeijlstra's 2008 proposal). We assume here that all heads hosting the verb are endowed with a V feature, which is specified with different attraction/repulsion values in varius languages.

Even on the assumption that the V feature is present on the T, C functional heads, one issue remains problematic: the V feature could in principle move on its own, without the need to pied-pipe the host.

These questions recall very closely the debate around strong and weak features of early Minimalism. Strong and weak features were first used to account for overt and covert movement (Chomsky 1993, 1994, 1995). The difference between features that require movement, in early MP, and features that do not require it is not in the nature of the features, but in a further specification attached to them: features can be weak or strong. Strong features trigger movement, i.e. they force the element hosting them to move overtly, in syntax. Weak features also require movement, but this movement can happen at LF, covertly. Strong features are in fact visible at PF and must be checked before the interface is reached or the derivation will crash. Weak features are invisible at PF and can be checked after Spell-Out, at LF.

A better way to redefine covert movement, which evoked at the time the just abandoned D-structure, was to imagine a system in which features can move independently from their hosts. Chomsky explored in fact the possibility that only features move, carrying along "enough material for convergence" (Chomsky 1995:262). Leaving aside the discussion on PF convergence, which Chomsky himself did not address, the important element for us is that features could move independently from their host (allowing the dismissal of covert movement).

In Chapter 4 of the MP, Chomsky considers both options, with and without pied-piping. He considers the possibility that features can move without their host, i.e. that it is features, not morphemes, that move. This step towards the independence of features from their host was in the air around the 1990. In particular, Halle & Marantz were discussing the possibility that morphemes are abstract entities, called "Q" by Halle, to indicate variables for complex symbols.

Reconceptualizing morphemes as abstract entities, separating features from their "hosts" as Distributed Morphology was starting to do was an important step towards feature independence.

Weak and strong features had their advantages. One of them was as we said the possibility to describe overt and covert movement systematically. Whether a feature was weak or strong was determined language-specifically.

Attributing a weak and strong value to features also had its disadvantages, first and foremost the total arbitrariness and possible circularity of this definition. In Romance, V had a strong feature (recall that strength was not defined on the attractor in the beginning, but on the moving element) which determined V-to-T. V-to-T was due to a strong specification on V in Romance. This looked like an *ad hoc* descriptive tool, which did not capture the essence of the moving phenomenon (not more than postulating an EPP does, in any event). While the *ad hoc* stipulation still represents an obstacle, we do not believe the arbitrariness of strength specification, translated into ATTRACT/REPEL in our terms, to be necessarily an issue. Reducing variation to the level of features and assuming that children need to learn featural specifications just like they learn lexical items is perfectly plausible (see the discussion in Biberauer 2019). The feature specification for strength (attraction or repulsion in our case) can be easily learnt this way; from a microvariational viewpoint, it is not at all strange that languages would have slightly different feature specification (see for instance Pollock 1989, but also Schifano 2018 on the different landing sites of verb movement in Romance). Attraction can therefore be easily specified on a feature and learnt easily[1]. Head movement, of the sort taking place in Romance and Germanic, can be easily captured within our system.

For XP movement, the situation is slightly more complicated, precisely for the reasons just mentioned. Why does the whole XP move with the feature? Why is there pied-piping of the whole phrase, when the feature could just move on its own? As stated above, we propose that the feature with its magnetic specification is the target of computation, but also that the specification percolates to the head and the phrase containing the feature. Whether the "nodes" are pied-piped, and which part of the phrase is pied-piped is determined parametrically by language. As an example, consider wh- movement.

As known, Chinese is a language with wh- in-situ, while English displays wh- movement. We can express these facts in terms of magnetic grammar as follows:

(10) a. Chinese   wh- in situ   C $\supset$ **wh-**
      b. English   wh- in C   C $\supset$ **whP**

English and Chinese only differ for the quantity of syntactic material that is pied-piped by the feature (see also Cheng and Rooryck 2000).

Displacement in syntax can be easily accounted for through this mechanism.

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[1] The issue of how to obtain a macroparametrical effect starting from microparameters stays open (we tentatively suggest a Uniformity of the Input approach à la Roberts 2010, but will not delve into this issue any further).

Another possible application for Magnetic Grammar is agreement, as also remarked by an anonymous reviewer. First, let us clarify that MG cannot rephrase the operation Agree directly, given that Agree is based on an [attribute:value] system, and what is copied is the feature value, not the feature itself.

Agree in the MP is a syntactic operation taking place between a probe P and a goal G between which a Matching relation holds.

Chomsky (2000) defines Agree as follows: "Matching is a relation that holds of a Probe P and a goal G. Not every matching pair induces Agree. To do so, G must (at least) be in the domain D(P) of P and satisfy locality conditions. […] The simplest assumptions for the probe-goal system are: (I) matching is feature identity; (II) D(P) is the sister of P; (III) locality reduces to "closest c-command".

Operationally, this translates into a system whereby one or more unvalued/uninterpretable φ-features[2] probe for a goal with the same - valued – features in their c-command domain. The values of the goal are copied in the probe's feature matrix, making them interpretable at the interface. This mechanism cannot be expressed directly as MG, given the fact that our features are of a different sort. However, the concept of uninterpretability can be rephrased in terms of "neediness", in Nevins's (2012) sense (see Section 3.2). Specifically, a Probe does not need to have a bundle of unvalued features, but can be simply specified as attracting some.

As an example, consider V-T agreement in English, in a sentence like (11).

(11)   Mary like-s Ann

If we wish to derive this through Agree, we assume that T hosts a bundle of unvalued φ-features [p:__; n:__] that need to be valued by the closest matching goal. The subject *Mary*, with valued person and number features [p:3; n:sg], being merged in spec,vP at the moment of probing, is the closest matching goal. Valuation takes place: the feature values of *Mary* get copied in T's φ-matrix.

Within MG, agreement takes place as follows:

(12) $T_{\supset p, \supset n}$
       Agreement takes place between the probe T and the closest Matching goal

T looks for a matching goal; it finds *Mary*, and it attracts it person and number feature. Notice that there is no copying of values, but a sort of gap filling: T needs to attract a person feature, which it does not have at the moment of probing (this is the meaning of ATTRACT).

The problem with this approach is that the feature does not move (by itself or with its host) to join to T; in other words, the person and number features do not excorporate from *Mary* and adjoin to T. We tentatively assume that some language-specific mechanism is at play, determining whether attracted features move (with or without their host, as in the case of X or

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[2] See Pesetsky and Torrego (2007) for a discussion on whether the two concepts should be synonyms. We do not go into this here.

XP movement) or get copied (see also the following section). This covers the different instantiation of agreement: subject-verb agreement but also adjectival agreement in languages with rich agreement like Italian, where the same feature appears on all items in a DP for instance, like in (13):

(13) l-a   bell-a   cas-a   ross-a
      the-F.SG beautiful-F.SG house-F.SG   red-F.SG
      'the beautiful red house'

In (13), the feminine and singular features get repeatedly copied on every lexical item. In other languages, however, that is not necessarily the case. Take for instance German, exemplified in (14). In (14a), 'beautiful house' displays neuter agreement on the adjective; in (14b), in the presence of more items, neuter agreement only surfaces on the determiner. We take this to show that agreement does not always involve copying, but that it can sometimes also involve excorporation of a feature and movement on the feature onto a different item, which is better instantiated within an ATTRACT system:

(14)   a. schönes   Haus
           beautiful-N.SG   house-N.SG
        'beautiful house'

        b. das   schöne   rode   Haus
           the-N.SG   beautiful   red   house
        'the beautiful read house'.

We can see attraction at work also paradigmatically, by looking at the kind features that occur together with given functional heads. Consider for example subject-verb agreement. One simplified way of representing it is the following:

(15)   Russian   rich φ-agreement   T $\supset$ p, $\supset$n, $\supset$g
        Dutch   not-so-rich agreement   T $\supset$p, $\supset$n
        English   poor agreement   T $\supset$ - participant[3]
        Chinese   no agreement

Starting from the assumption that verbal morphology reflects the featural setup of inflection, we can describe the Russian agreement system as one in which T attracts person and number, and in some cases gender. As for Dutch, T attracts person and number only, and so on. The paradigms of agreement inflectional endings, we claim, are a manifestation of feature magnetism.

The advantage of this system is that it can easily describe some grammatical fringe phenomena that have often be considered quirks of the system (like verb movement, or scrambling).

3.2. Attraction in Phonology

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[3] We represent the English agreement system like this for lack of a better way to capture the fact that 3rd person singular (i.e. no person, Benveniste 1966) is the only morphologically marked inflectional ending.

As noted by Nevins (2010), vowel harmony in phonology works very similarly to syntactic agreement: there are elements "in need" of a specification, which copy their value/specification from the most prominent one. In both cases, the underlying force is one of assimilation, i.e. of particles wanting to acquire the same features as some

Vowel Harmony in Turkic languages is an easy example to illustrate this point. Turkish, for example has a simple 8-vowel system, that can obviously be described perfectly with three features (Kabak 2011):

(16) ɯ   {Vowel}   i   {Vowel, Front}
       a   {Vowel, Low}   e   {Vowel, Front, Low}
       u   {Vowel, Round}   y   {Vowel, Front, Round}
       o   {Vowel, Low, Round}   œ   {Vowel, Front, Low, Round}

If we only look at the inventory, we see a symmetric system: no feature attracts or repels any other feature in the lexicon. Yet, Turkish also famously has vowel harmony, both of the rounding type and of the fronting type. We concentrate initially on the latter, but will return to rounding harmony afterwards:

(17) kɯz 'girl'   kɯz-lar 'girls'
       ip 'rope'   ip-ler 'ropes'
       sap 'stalk'   stap-lar 'stalks'
       el 'hand'   el-ler 'hands'
       pul 'stamp'   pul-lar 'stamps'
       jyz 'face'   jyz-ler 'faces'
       son 'end'   son-lar   'ends'
       kœj 'village'   kœj-ler 'villages'

The suffix vowel is always Low, and never Round, but its specification for Front is dependent on the stem: if the stem has a Front feature, it spreads autosegmentally to the suffix, but if such a feature is absent, the suffix (also) stays back. This is the standard autosegmental analysis of vowel harmony.

Nevins (2010) argues that we should understand this analysis in terms of what he calls 'neediness': vowels want to be specified for certain features. We can translate this idea into our framework right away. A 'needy' vowel is a vowel that attracts certain features. Turkish vowels are needy for frontness, hence the Vowel feature in this language looks as follows:

(18) V ⊃ Front

The question now arises why Turkish has back vowels at all. Should not all back vowels in our inventory in (16) be disallowed? One way to get around this idea would be to posit that only some vowels have the specification in (18), viz. only the vowels in suffixes, because Vowel Harmony applies only to them. This is basically Nevins' (2010) strategy: vowels can be arbitrarily marked for being needy, although in some languages all vowels are. Technically this way of going about it works, although it does not explain, for instance, why front vowels in suffixes do not harmonize to the stem (becoming back when the stem has a back vowel).

An alternative strategy is to stipulate that vocalic features (or at least Front) need to belong to the stem in Turkish. Interestingly, this can also be formalized, given an appropriate theory of the lexicon. The feature Front would have the following specification:

(19)   Front $\supset$ $_{Stem}$

Where 'stem' is some morphological or perhaps semantic feature that is exclusive to stems (i.e. to lexical items that can occur as independent words). (19) says two things about the feature Front: (i) that it can only be sponsored by the stem and not by a suffix, and (ii) that it can only be underlying, and not epenthetic. This means that if a stem vowel happens to not be Front, there is little we can do about it. Changing our assumptions so far a little bit, this means that we end up with a vowel within a stem that is not entirely perfect, but since there is no possible repair, we keep it as it is. Back vowels are in this sense 'marked'. However, in case there is a suffix without a Front vowel and a stem with such a vowel, there is a way to keep all features happy, viz. by spreading the Front vowel from the stem to the suffix.

Note that under this alternative view we get to an idea of grammaticality that is somewhat similar to that of Optimality Theory in its original form (Prince and Smolensky 1993/2004). There is a conflict between two features in case of a stem with (only) a back vowel, such as *sap*. The features of the vowel are as follows:

(20)   /a/ in Turkish: {Vowel$\supset$ $_{Front}$, Low}

The vowel is incomplete. However, since there is no Frontness available, there is nothing we can do but epenthesize one:

(21)   /a/ in Turkish after possible repair: {Vowel$\supset$ $_{Front}$, Low, Front $\supset$ $_{Stem}$}

There is still something missing, viz. the Stem feature. However, this feature cannot be epenthesized. We assume that the lexical affiliation of a feature can not be changed by computation: we cannot all of a sudden make an epenthetic vowel 'part of the stem'. This is in line with the theory of Coloured Containment (Van Oostendorp 2006), which states that morphological affiliations of phonological material never change: something that belongs to a morpheme underlyingly will always belong to that morpheme.

This means that (21) is beyond repair, but it does not explain why in Turkish we still prefer (20) (a back vowel in the stem, with an unsatisfied Vowel feature) over (21) (a front vowel in the stem, with an unsatisfied Front feature). This is the point where we could adopt the idea of ranking from OT. However, the ranking mechanism would here be heavily simplified: all features in a language would be ranked, but nothing else. Furthermore, this means that *all* attraction and repulsion properties of a given feature are at the same level of ranking. With respect to classic OT, the ranking properties thus are extremely minimal: we have a feature ranking rather than a constraint ranking. In particular in Turkish we would have:

(22)   Front $\supset$ $_{Stem}$ > Vowel$\supset$ $_{Front}$

Furthermore, there is no need to build huge candidate sets and compare them in parallel, as in Classic OT. Evaluation can stay purely local. Once we have reached (21) in the derivation, we can notice that there is nothing to be done. Inserting a Front feature to satisfy the needs of Vowel will only make things worse, per (22). That is why we do not undertake this step: the only things to be compared are the current situation and the result of an eventual repair. If in a new cycle we do at a back suffix vowel to a front stem, on the other hand, we can satisfy the needs of both features at the same time, and it is worth spreading the stem Front feature to the needy vowel in the suffix, so that we can satisfy all features.

In all cases, there exist "disturbing" elements, elements that intervene in between other elements that are in a certain relationship and interrupt it. Given two elements A and B, if A and B are driven by an attracting force, there cannot be any element C, of the same nature of B intervening between the two. This "intervention" is found both in phonology (some vowels interrupt vowel harmony) and in syntax (relativized minimality effects).

4. Repulsion

Repulsion is the opposite of attraction. When a feature F attracts another feature G, F is only satisfied if it finds G in the relevant domain[4]. When a feature F repels G, F does not want G in its domain. We only need to distinguish between the two forces in a theory in which features are monovalent rather than binary. Within binary feature theory, $F_{* G}$ could mean $F_{\supset -G}$. From a purely formal point of view, therefore, adding repulsion to a theory of attraction is not much more than adding a negation to the syntax of features. This is however a conceptual mistake in several ways: first, as seen above, we are not working within a binary featural system. Even if we were, not allowing the operation O does not mean allowing its symmetrically opposite one. Imagine for instance again wh- movement: we could say that wh- in situ takes place because no ATTRACT feature is present on C or because C REPELS the wh- element. The two paths are not equivalent in terms of syntactic import that they have (see section 4.2. for more detail). Furthermore, assuming that REPEL means absence of ATTRACT makes REPEL a marked option: it is a force that is expressed in terms of the other force. This creates an asymmetry between the forces that is conceptually unjustifiable and empirically shaky, as we hope to show below, and we therefore wish to avoid.

4.1. Repulsion in Phonology

Repulsion is a handy addition to the notational apparatus, not just because many current features within phonology and syntax do indeed assume monovalency, but also because it seems more convenient to understand certain phenomena in terms of repulsion.

Here is a rather simple example. Many languages allow Round vowels (/u/) and Front vowels (/i/) but not vowels that are Front and Round at the same time (*/y/). This is easy to describe in terms of repulsion, for instance postulating that the relevant features are Front$_{*Round}$, Round. We could get the same effect with binarity and Front$_{\supset -Round}$, Round, but that would capture less

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[4] We have not taken any position regarding the domain of application of ATTRACT and REPEL. We assume that the domains of application of syntactic and morphological operations are the same in which ATTRACT and REPEL operate.

straightforwardly that front rounded vowels are simply more marked than front unrounded vowels (since in the case of the binary theory, we would state that front vowels want to acquire a feature [-Round], rather then getting rid of [Round]).

Avoidance of front rounded vowels is an example of repulsion. This hierarchy of features can also be used in order to derive another kind of phenomenon, that can also be illustrated on the basis of Turkish. We already noted that this language also has rounding harmony, which can be illustrated with the genitive singular suffix (in the righthand column below):

(23) kɯz 'girl'   kɯz-ɯn
      ip 'rope'   ip-in
      sap 'stalk'   stap-ɯn
      el 'hand'   el-in
      pul 'stamp'   pul-un
      jyz 'face'   jyz-yn
      son 'end'   son-un
      kœj 'village'   kœj-yn

The genitive suffix has an underlying vowel that is not specified for anything but the basic vowel feature; different from the plural suffix, it is not specified for Low, so that the genitive vowel is always high. Apparently, this Vowel feature does not just attract Front, but also Round. Its full specification in Turkish thus looks as follows:

(24) Specification of vowels in language with front and rounding harmony: $V_{\supset Front, \supset Round}$

Given that rounding harmony is also asymmetric, we have to assume that also the Round feature can only come from the stem, and that it is placed in the same place in the hierarchy:

(25) $Front \supset_{Stem}, Round \supset_{Stem} > Vowel_{\supset Front, \supset Round}$

However, the examples in (13) show that this is not the whole story yet. Low suffix vowels undergo frontness harmony, but not rounding harmony. The reason for this is probably a tendency of Low vowels to resist Roundedness. In other words, the following is the complete hierarchy of features in Turkish:

(26) $Low_{* Round} >, Round \supset_{Stem} > Vowel_{\supset Front, \supset Round}$

To see how this works, consider the derivation of the form *pul-lar*. In the first cycle, we only look at the stem vowel, which has the features { $Vowel_{\supset Front, \supset Round}$, $Round_{\supset Stem}$ } because it is an /u/. The feature , $Round_{\supset Stem}$ is satisfied because it does indeed belong to a stem. The feature $Vowel_{\supset Front, \supset Round}$ is looking for a Front feature, but it cannot find this. However, the only option to acquire one would be to insert a $Front \supset_{Stem}$, which would itself be unsatisfied. And since Front is a stronger feature in the hierarchy than Vowel, we decide not to do this, and keep /u/ as is.

We then add the suffix *-lar* which has a vowel { $Vowel_{\supset Front, \supset Round}$, $Low_{* Round}$}. The Vowel feature is needy and looking for a Front and a Round feature. The Front feature is not present

in the stem (if it were, it could be attracted), but the Round$_{\supset \text{Stem}}$ feature is. That feature is also satisfied, because it is linked to the stem. However, in this case the feature Low$_{*\text{Round}}$ resists connection to the Round feature. Since Low is higher in the hierarchy, hence stronger, it will not allow satisfaction of the wishes of the Vowel feature.

Repulsion forces are also clearly at work in phonology in OCP-related phenomena. The OCP (obligatory contour principle) has been proposed as an acting principle in morpho-phonology by Leben (1973) regarding the impossibility of identical high tones to occur next to each other and has been figuring in the literature ever since. In the course of time, the OCP has come to indicate any process impeding the co-existence of two identical features (or even more widely, phonological elements) in each other's vicinity. When two elements violate the OCP, their sequence is not allowed, hence repair strategies must be put in place, by changing one of the two offending elements or by deleting one.

Here is a classic case of a phenomenon usually ascribed to the OCP. In Shona, the word *mbwá* has an underlying high tone. However, this high tone turns into a low tone if the word is preceded by a preposition *né* 'with' that also has a high tone:

(27)   *né-mbwá > né-mbwà*

In terms of the theory we are presenting here, OCP can be seen as an effect of auto-repulsion: Bantu languages like Shona have a High tone feature that looks as follows:

(28)   OCP on high tones: H$_{\supset \text{H}}$

The high tone does not literally repel itself (or else it would not surface) but it does repel other instances within its domain, in this case the prepositional phrase. (The low tone which does surface on the noun can either be analyzed as a default tone, so not having a feature at all, or as the result that the nominal vowel does attract a low tone because toneless vowels do not exist in the language).

4.2. Repulsion in Syntax

Something very similar to OCP is at work in syntax, namely the ban on symmetrical structures, where two phrases are in a sisterhood relation (XP YP configuration, in Chomsky's 2011 terms). When two phrases are in the equivalent relation as adjacency in phonology (namely direct sisterhood, like for example in a small clause), one of the two must move. This theory of movement, first proposed by Andrea Moro (2000) to resolve XP YP configurations in predicative sentences/small clauses (or to create asymmetry, in his terms) consists in the resolution of a dissimilation problem: two elements that are "identical" (under the right formulation) cannot occur next to each other structurally. In MG terms, this can be expressed as in (29):

(29)   N $_{*\text{N}}$

Repulsion in syntax is also not a new concept. Platzack (1996) already proposed a Repel [F] operation at work triggering a phrase marked as [Repel F] to move out of the domain hosting

[F]. This proposal was followed by that of Van Craenenbroeck (2006), who shows convincingly that some syntactic sequences cannot be accommodated in the clause.

Van Craenenbroeck examines the following data from Venetian, where the wh- phrase precedes the complementizer:

(30)   Venetian, Van Craenenbroeck (2006:53)
       a. WH < CHE
       Me   domando   chi   che   Nane ga   visto al marcà.
       me   I.ask   who   that   Nane has   seen at.the market
       'I wonder who Nane saw at the market.'
       b. CHE ≮ WH
        * Me   domando   che   chi   Nane ga visto al marcà.
       me   I.ask   that   who   Nane has seen at.the market

In Venetian, the wh- phrase precedes the complementizer. The complementizer in turn always precedes clitic-left dislocated phrases, as in the following examples:

(31)   Venetian, Van Craenenbroeck (2006:53-54)
       a. CHE < CLLD
       Me dispiase   che a Marco i   ghe   gabia   ditto cussi.
       me is.sorry   THAT to Marco they   to.him have.subj   told so
       'I am sorry that they said so to Marco.'

       b. CLLD ≮ CHE
       * Me dispiase   a   Marco che   i   ghe   gabia   ditto cussi
         me is.sorry   to   Marco THAT   they   to.him have.subj   told so

This given, we would expect the wh- to precede the clitic-left dislocated sentence, by transitivity. This is not the case, however:

(32)   Venetian, Van Craenenbroeck (2006:53-54)
       a. WH ≮ CLLD
       * Me   domando   a   chi   el premio Nobel che i   ghe lo podarìa dar.
         me   I.ask   to   who   the prize Nobel that they   to.him it could give

       b. WH ≮ CLLD
        * Me   domando   a chi   che   el premio Nobel i ghe lo podarìa dar.
          me   I.ask   to who that   the prize Nobel they to.him it could give
       intended: 'I wonder to whom they could give the Nobel Prize.'

       c. CLLD < WH
       Me domando el premio Nobel a chi che i ghe lo podarìa dar.
       me I.ask the prize Nobel to who that they to.him it could give
       'I wonder to whom they could give the Nobel Prize.'

Van Craenenbroeck proposes an analysis in terms of repulsion within focus domains. What is crucial is that he assumes a [Repel Focus] feature forcing a CLLD phrase to leave any Focus domain. Normally, it is enough for the CLLD element to move to the left periphery. If the Focus domain is however enlarged through wh- movement to spec,CP, movement to the left periphery is no longer sufficient to obey the [Repel Focus], and the CLLD phrase must move outside the clause (like in 27c).

We can rephrase Van Craenenbroeck's intuition in our formalism in the following way:

(33)   Top *Foc

Where with [Foc] we broadly indicate also wh- elements. CLLD phrases are topics (Rizzi 1997), and in Venetian it seems that they cannot be structurally adjacent to Foci.

Another example of repulsion in morphosyntax can be found in Romance, where for instance some restrictions to co-occurrence of some elements apply, when these elements are in the same domain. One such phenomenon is negative imperatives in Italian, as in (25):

(34)   a. Di=mme=lo
          say.IMP=me.DAT=it.ACC
          'Say it to me'

       b. *non   di=mme=lo
             NEG say.IMP=me.DAT=it.ACC

       c. non   dir=me=lo
             NEG say.INF=me.DAT=it.ACC
          'Don't say it to me'

In Italian and in many Romance languages, an imperative cannot be combined with a negative. This phenomenon has been explained in many different ways: considering the place in the structure of the negative and the imperative as crucial (Rivero 1994, Rivero & Terzi 1995), or the nature and/or possible lexical ambiguity of the negative operator (Zanuttini 1997). In our system, we can express this ban on co-occurrence as feature repulsion: in some languages,

(35)   NEG *IMP

Examples of repulsion are also found, paradigmatically, in morpho-syntax.

4.2.1. Repulsion in morpho-syntax

Some cases of repulsion in morpho-syntax regard the paradigmatic ban on mutual co-occurrence of identical/very similar clitics in clitic clusters. In Spanish, the cluster *le lo*, with two *l-* clitics (3rd person, according to Kayne 2003), is banned. The OPC sequence is repaired by impoverishing the first clitic, from a 3rd person to an impersonal clitic (Bonet 1991):

(36)   a. Spanish
          *le=lo   >   se=lo

him.DAT=him.ACC   IMP= him.ACC
'it to him'

This restriction can be expressed, in our terms, as feature repulsion of the sort F_{*F}. For this particular case, $3p_{*3p}$.

A similar case is at work in Italian, with the cluster formed of two phonologically identical clitics, *si si*, one of which is impersonal and the other reflexive. Also in this case, a repair mechanism is established replacing the impersonal *si* with the locative clitic *ci* (Cinque 1988):

(37)   *si=si guarda   >   ci[5]=si   guarda
       IMP=REFL   looks >   LOC=REFL   looks
       'one looks at oneself'

In this case, we are again in the presence of a morpho-syntactic OCP, a F_{*F} where the F is plausibly a underspecified 3rd person feature (or an impersonal one, see D'Alessandro 2007).

Last, in the Abruzzese dialect of Mascioni, this morpho-syntactic OCP is repaired through the cancelation of one of the clitics, as shown by Manzini (2014):

(38)   *li=lu   a   >   li   a
       him.DAT=it.ACCgives   it   gives
       'S/he gives it to him'

In some cases, the mutual exclusion involves combinations of features. One such case is for instance the PCC (Bonet 1991), which excludes some combinations of direct and indirect objects. The strong version, by Bonet (1991), is as follows:

(39)   Strong Person-Case Constraint: In a combination of a weak direct and indirect object, the direct object has to be 3rd person.

(27) excludes the possibility of a 1/2 internal argument clitic/weak pronoun in the presence of a weak/clitic indirect object.

The weak version of the PCC is more lenient of the co-occurrence patterns, and allows a 1/2 person DO if the IO is also 1/2 person. Languages vary with respect to which version of the PCC they adopt.

The generalization expressed by the PCC is thus the following:

(40)   Strong PCC:
       Given two weak pronouns/clitics,
       *1/2 DO if IO

The weak version is instead:

(41)   Weak PCC:

*1/2 DO if 3 IO
    *3 DO if IO

The PCC is often rephrased in terms of case: a 1/2 person accusative clitic/weak pronoun cannot co-occur with a dative pronoun (strong PCC); a 1/2 person accusative clitic/weak pronoun cannot co-occur with a dative clitic/weak pronoun unless this dative is 1/2 person.

Within our system, we can express the PCC as follows:

(42)   Strong PCC: IO$_{* DO [1/2]}$
(43)   Weak PCC: IO[3] $_{* DO[1/2]}$

The exact mechanism of this feature interaction is at the moment still unclear. The PCC suggests that repulsion mechanisms between features are in place, but that the internal structure of the feature bundle needs to be taken into account for computation.

Some mysteriously banned clitic clusters in Italo-Romance can also be accounted in this fashion:

(44)   Pescarini (2011:12)

	Spanish	**Italian**	**Vicentino**
a. Dat Acc	se lo	glielo	ghe lo
b. Acc Dat	*	*	*
c. Dat Imp	*	gli si	ghe se
d. Imp Dat	se le	*	se ghe
e. Dat Refl	*	gli si	ghe se
f. Refl Dat	se le	*	se ghe
g. Acc Imp	*	lo si	lo se
h. Imp Acc	se lo	*	se lo
i. Acc Refl	*	*	*
j. Refl Acc	se lo	se lo	se lo
k. Imp Dat Acc	*	*	se ghe lo
l. Dat Acc Imp	*	glielo si	ghe lo se

As (35) shows, the distribution of these clitic clusters and the restrictions on their occurrence vary per language. According to Pescarini, this distribution reflects a hierarchy according to which *se >3p >imp*. Furthermore, clitic placement is case sensitive (see also Franks 2018 on

clitic placement based on linear considerations). What matters for us is that we can express this system in a feature repulsion fashion. Feature repulsion can be sensitive to parametric restrictions, but it can also be totally arbitrary, just like lexical items are.

5. Learning features

Magnetic Grammar has the advantage that it is relatively simple and offers a rather precise view of the locus of language variation: this is only to be found in the features. Since theories of variation, especially within the generative tradition, are typically closely connected to theories of acquisition is worth pointing out that also theories of acquisition seem fairly easy to set up.

The learner will have to pay attention, first, to cues that a certain feature is present or absent in the input. This is probably not an easy task, but there presumably is no theory of phonology or syntax in which one does not have to learn that the language has Voiced consonants or a Past tense. Within Magnetic Grammar, the child furthermore has to learn the attraction and repulsion properties of these features. We assume that when learning a feature, the child initially posits that it attracts *and* repels all features already existing in the inventory. In other words, if the learner has established that the language already has the following inventory:

(45) {F, G}

Furthermore the child established that it needs to add a feature H, she will posit that it initially has the following properties:

(46) $H_{\supset F, \supset G, *F, *G}$

These properties are obviously conflicting, but those conflicts will also be certainly resolved immediately, as the feature occurs in a certain context: it will belong to one or more forms that the learner has observed, otherwise she has no reason positing it[6]. If the segment has an F, the child will now that she should retract *F from the specification of H; if it does not, she knows that she should withdraw ⊃F. And similarly for G; so that just from inspection of one form, the child knows which of the two conflicting demands should be withdrawn.

Van 't Veer (2015) has shown that this method (in his case: positing cooccurrence constraints on features immediately when they arrive, and then withdrawing them, without ever going back and positing new cooccurrence constraints) works as a learning strategy for segmental inventories and also seems to model fairly well the order in which children learn those inventories. We have of course a slightly different model here, but we have been able to implement an algorithm in functional Python that seems to be working just as well. We think there is no specific reason to believe that this should work differently for syntactic features,

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[6] A reviewer asks how Magnetic Grammar can account for cases of putative optionality. We tentatively assume that features can be left "undecided", i.e. that some features are *disjunctive*, in the sense of Wechsler & Zlatić (2001) and D'Alessandro (2004,2007): some features have both specification: attract and repel. Optionality derives from the speaker's personal choice.

given the fact that the formal systems are the same; but we would have to compare the results of our algorithm with those of studies on syntactic feature learning in human infants.

Obviously, the algorithm would have to be refined for some of the extensions we proposed, for instance for learning the feature hierarchy discussed in sections 4 and 5. However, learning algorithms have been successfully explored for e.g. OT constraint hierarchies and it does not seem far-fetched to believe at least some of those could be applied also to this case, in particular as it is much simpler than what is proposed here. (From some work with pencil and paper on the Turkish case, it seems likely that we can arrive at the hierarchy by assuming that every new feature starts at the bottom of the list, and rises only when the evidence requires it.)

6. Conclusions

We have proposed a fairly simple procedure for describing a wealth of phonological and syntactic phenomena. It should be noted that most of the analyses presented here are not completely new; they can often be seen as notational variants of existing analyses, very often even of mainstream analyses. The main advantage of the current proposal therefore is a conceptual one: it shows that standard analyses in syntax and phonology are very similar and can be expressed in the same theoretical language. There is no special reason to think that they are as 'different' as they have been sometimes made out to be.

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