DM and Minimalism

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1   Introduction

Distributed Morphology (DM) and the Minimalist Programme (MP) were developed
around the same time, in the early 1990s, both stemming from the Massachussets In-
stitute of Technology (MIT). The first major work in DM was by Morris Halle and Alec
Marantz (Halle and Marantz, 1993), and the Minimalist Programme was developed in
the late 1980s in lectures at MIT, before being introduced in print by Noam Chom-
sky in a series of papers in the early 1990s, later being collected together in Chomsky
(1995). As one might expect from two frameworks that were developed concurrently
by people working so closely together, there is a high degree of compatibility between
the foundational assumptions of the two, and the two frameworks nicely intersect in
their inner workings. This has not necessarily always been the case, but the gen-
eral picture is that there is much that accords between the two frameworks. Both
frameworks largely agree on the shape of the grammar, in the sense that the syntac-
tic component precedes phonology and semantics, both agree that the input to syntax
consists of abstract features that are later turned into their phonological and semantic
realisations, and finally both assume — with some exceptions — a set of operations
that are in large part reminiscent of one another.

In addition to the two theories sharing a similar view on the overall architecture
of the grammar — effectively, syntax preceding all other components — one can see
clear parallels in each framework with respect to certain processes. We will discuss
the linearisation of structure, and see that it is postulated by DM to be an operation
of the morphology, something that fits in well with Minimalism. Locality effects in
syntax have long been investigated from Ross (1967) onwards, under different guises,
and as we will see below, we also find parallels of syntactic locality in the morphol-
ogy, sometimes a lot closer than one would think initially. Finally, we will discuss an
area where DM and Minimalism explicitly work together, for the operation of AGREE,
which is divided over the syntax and the morphology. The discussion serves to high-
light how closely aligned the two theories are, and come together to form a coherent
theory of the syntax and morphological components.

2 Key tenets of the Minimalist Programme

In a volume such as this, there is little point in me here giving an overview of the key points of DM, so I refer the reader to the other papers, in this volume. Here I give an overview of the major assumptions of Minimalism. As one would expect, Minimalism has developed in various ways of the years and the theory has changed from its original inception.[1]

2.1 Major design features

Minimalism evolved from the Government and Binding Theory ((GB) Chomsky, 1981) in the early 1990s. In congruence with GB, Minimalism assumes a model of the grammar whereby the syntax builds structure, which is later transferred to the phonological and semantic component. That is, the components of the grammar do not run in parallel, but rather in sequence. This preserves the 'inverted-Y model of the grammar' that was familiar from GB theory. In contrast to GB however, one of the central tenets of Minmalism is that there are no levels internal to the syntax, but rather the only 'levels' where syntax is evaluated in any meaningful way are the interfaces where syntax meets form and meaning. These interfaces, which are traditionally known as Phonological Form (PF) and LF (Logical Form) (also known as the Conceptual-Intentional (CI) Interface and the Sensori-Motor (SM) Interface, respectively) are what conver the syntactic structure into something that can be interpreted by the CI and the SM systems. It is important to note that just because one can define positions in the syntax, such as the input, and transfer (which I have done in the diagramme below), nothing is evaluated here. This is in contrast to the levels of Deep Structure and Surface Structure in GB. Throughout the derivation, elements 'Merge' into the structure (or 'remerge' in the case of movement) in a manner that is similar to Generalised Transformations of Chomsky 1975.

(1)

Input to syntax

Transfer of structure to interfaces

PF   LF
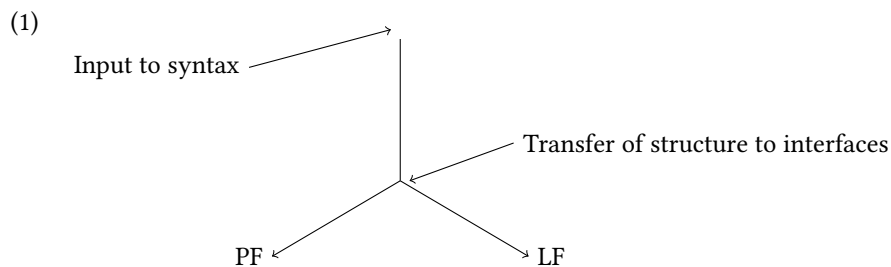
The central branch of the diagramme represents the syntax proper, or 'narrow syntax' as it is sometimes called. This branch begins at the input to syntax and ends at

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[1]As is often pointed out, it is not strictly accurate to refer to MP as a theoretical framework, but is in fact a programme of research. This is technically true, but makes the job of presenting it concretely very difficult in a short space such as this. Therefore, in what follows, I will use more than a little rhetorical license and present what I see as the dominant set of ideas in work that follows MP. It should be borne in mind by the reader that there is work in MP that may disagree with lots of, in some cases basically all of, the technical details of what follows, agreeing in the sense of the bigger picture 'make do only with what you need' tenet of MP. Such are the difficulties of writing an overview of a topic like this, so apologies to any reader who finds this distracting. For a wider discussion of these issues, see Boeckx (2006).

the point of transfer, where as the name suggests, the syntactic structure is transferred to the interfaces. The core of the grammar is the same as in GB, but in contrast to GB, nothing is evaluated at the input or the point of transfer. These are merely steps on the way to the interfaces, where the points of structure evaluation lie. The original idea behind this desire to reduce the grammar to just these two levels, as articulated in the writings collected in Chomsky (1995), was to explore the idea that a theory of the grammar could be built containing only what was conceptually necessary. A syntactic structure must at some point be related to a phonological structure and a semantic structure, hence the need for the levels of PF and LF, but levels within the syntax itself are not motivated for any conceptual considerations, and so are jettisoned in Minimalism. The operations postulated in Minimalism are supposed to hold to this ideal: they should be necessary to allow the derivation to succeed, that is, the thoery should be built without redundancy and arbitrariness should be avoided.

Relevant for our purposes will be the SM interface, since this is the output of the PF-branch. Any operation that takes place along the PF-branch only will only have a surface effect, and will not feed into the interpretation of the structure (see Hornstein, Nunes, and Grohmann (2005) for discussion and examples). Pressingly here, this is where the structure and the features contained therein are converted into their phonological form through the operations that have been discussed elsewehere in this book. It is not just VI that happens here, but rather some syntactic movements can take place, and there will not be an interpretation difference. Scope reconstruction, for instance, has been claimed to be a syntactic operation that takes place along the PF-branch without a corresponding movement of the element in the LF-branch (Sauerland and Elbourne, 2002). Embick and Noyer (2001) also discuss lowering of morphemes and local dislocation that are supposed to take place here too.

A second key design feature of minimalism is that the syntactic computation is derivational and feature-driven. Not all features that are used in the syntactic computation are (immediately) legible to the interfaces, and if they survive to PF or LF, then the structure crashes and is uninterpretable. Such features must be made legible before the structure reaches the interface, and depending on which iteration of Minimalism one uses, this is either done by a process of *checking* or *valuation*. We will see some differences between versions of Minimalism in the next subsection, but consistent throught the development of Minimalism has been the notion that the syntax works to create an object that is readable at both interfaces. Failure to do so results in ungrammaticality of a structure. As with above, operations postulated that render features legible must be motivated and non-arbitrary.

## 2.2   The Development of Minimalism with respect to DM

2.2.1   Early Minimalism

The earliest version of Minimalism was quite different than what is assumed today, and somewhat lexicalist in nature. Chomsky (1995) proposed that elements are inserted into the syntactic structure with a set of phonological features, a set of semantic features, and a set of syntactic features. The syntactic features were the ones relevant for the syntactic derivation, and in essence, controlled where elements ap-

peared in the structure. There were dedicated Agr positions for subject and objects, and choice of whether to move there or not was dependent on the *strength* of the relevant feature. Syntactic features were not legible at the interfaces in their original form, and needed to undergo a process called 'checking', whereby the offending syntactic features were made legible through matching against a feature on a licensing item. Checking is carried out by matching an uninterpretable feature against an element that bears a matching interpretable feature. Originally (though this has been updated since, see below) this would also need to involve a Spec-Head configuration whereby the uninterpretable feature c-commanded the interpretable one, thus, by the end of the derivation, each uninterpretable feature would need (at some point) to c-command an interpretable counterpart.

(2)
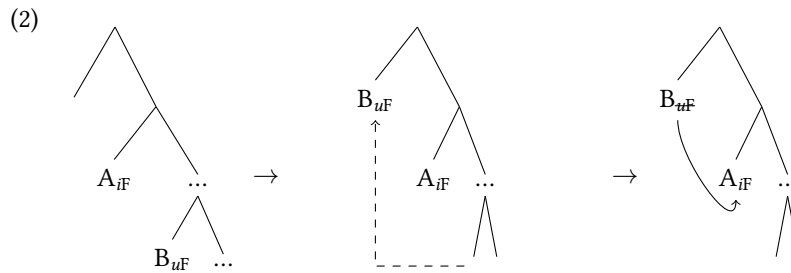
The strength of a feature determined where this Spec-Head configuration would need to hold. A strong feature required that the DP would move to the specifier position of the head bearing the matching feature immediately so that the feature could be checked as soon as possible. A weak feature on the other hand was not compelled to move immediately, and could wait until the structure has been delivered to the interfaces before moving covertly (in the sense that it moves only in the LF-branch) to the specifier of the licensing head.

(3)
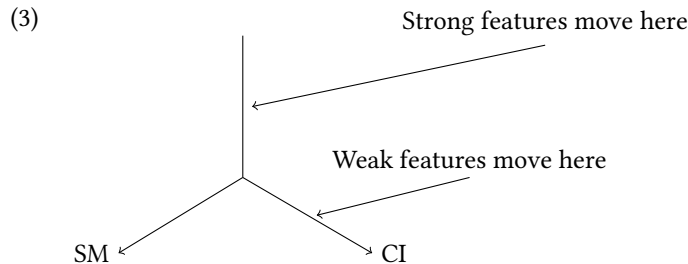
This short description should give the reader enough of a view of how Minimalist syntax operates, and the exact mechanics surrounding this are largely irrelevant to this paper, so I do not consider them any further. However, the reader should be able to gather two things. Firstly, whether an item moves overtly or not was thought to be a result of whether it bears a feature that would be tolerated at the PF-interface. Strong features were not tolerated there, and so items bearing strong morphosyntactic features were compelled to move to check them early, whereas weak ones could wait, as it was thought, perhaps erroneously, that covert movement was more econonmical.

The second point for the reader to make note of is that it was thought that at the level of the CI-interface, all languages were thought to be equal. The variation seen on the surface, at least morphosyntactically, was all due to the stength of the features of the certain elements. Put another way: feature strength was a property of items, and items varied idiosyncratically across languages, leading to surface variation, but at the CI-interface, everything would get to the same configuration — subjects would always rise to Spec,AgrSP etc.[2]

2.3 Later Versions

As mentioned, early minimalist theories had syntactic items bearing three sets of features: syntactic, semantic and phonological, and once introduced into the derivation, these items would move to positions whereby any and all uninterpretable features were able to be checked. There are a number of problems that arise from such a model for the morphological component. In a critical review of Minimalism's early findings, Pinker and Jackendoff (2005, p. 220) write that "the leading theory in the Chomskyan framework, Halle and Marantz's Distributive [*sic*] Morphology, does not naturally conform to the principles of Minimalism (Halle and Marantz, 1993), and considerable work must be done to reconcile them." It is relatively easy to see how this conclusion is drawn for early iterations of Minimalism. DM, as explained throughout this volume, is a late-insertion theory of morphology, whereby the features that are used in the morphological component are inserted at the end of syntax. Assuming therefore that all lexical items enter into the derivation with their phonological features already present flies in the face of the late-insertion aspect of DM. If one assumes that, say, the phonological exponent of a fused inflectional morphology is present early in the derivation as the realisation of some functional head, then there is little reason to think that morphological operations exist in any real way in the post-syntax, given that the information contained within the syntax already presupposes that they happen. This may of course turn out to be true — early Minimalism was not the first framework to operate in this manner, as some other theories of syntax seem to assume by and large the same fundamental set up, e.g. HPSG (Pollard and Sag, 1994) and LFG (Dalrymple, 2001) — but it doesn't fit with the spirit of DM, and so if we are to maintain this view of the morphology, then the syntax needs to change.

That being said, it is a relatively small change on this point to bring Minimalism more in line with the late-insertion requirements, and the idea that lexical items are prespecified for their phonological features is not fundamental to the core perspective in Minimalism.[3] More recent versions of the framework assume that there is a set of features present in the syntax, which are then converted at the interface to the features that are to be used in the relevant component. Put another way, it can be assumed that within the syntax itself, features are abstract, with the operations of the syntax operating only on the abstractness of such a feature. At the interfaces, the abstract value is converted to something which the following compenents can make proper

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[2]Features are therefore the locus of parametric variation, as proposed by Borer (1984), rather than a distinct set of grammatical parameters.

[3]Pinker and Jackendoff (2005) note another number of criticisms for Minimalism that we will not go further into here.

use of. Take for instance number features, as illustrated in (4), which illustrate the point nicely, (on the relationship between the morphological exponent of a number feature, and its semantic interpretation, see especially Harbour, 2007; Harbour, 2011; Harbour, 2014; Smith et al., 2019).

(4)

Syntactic Value: SG $\rightarrow$

Semantic:	$\lambda x : atom(x)$
Phonological:	-$\emptyset$

Syntactic Value: PL $\rightarrow$

Semantic:	$(\lambda x : \neg atom(x)) \wedge (\lambda P.\lambda x : P(x).\exists y[P(y) \wedge y \neq x])$
Phonological:	-s

On such a view, the morphological component is partly conceptualised as a translation mechanism between the syntactic features and the phonological features: all that needs to be said is that the syntactic features are unique to that component, before being turned into phonological (and semantic) features later on. The conversion of abstract features to phonological features is clearly then part of the purview of DM.

This newer version of features also more naturally reflects the core priniciples of Minimalism in the sense of it being a derivational mechanism. Recall from above, that the driving force behind movement operations in Minimalism was in order to eliminate (or 'check') features that could not be read at the interfaces. In recent iterations of Minimalism, this is largely the same, but 'make legible' mostly involves them receiving a value, with the idea that valueless features are not legitmate objects at the interface. Values are transferred between items using the operation of AGREE, and Movements happen because certain features are specified to receive their value in a particular way, by having to probe for the value either downwards or upwards in the structure, depending on both the probe and the goal, see Abels (2012) for discussion.

More recent versions of Minimalism then, assume that the fundamental nature of syntax is to make all morphosyntactic features interface-legible, and the operations of syntax — MERGE, MOVE, AGREE etc. — all exist to serve this purpose. There is then a nice division of labour between the Minimalism and DM: the syntax in effect works to produce a structure that the morphological component can interpret, and the morphology has a set of operations that operate on the output of syntax to provide the phonology with something that it can in turn interpret.

We have discussed the commonalities between DM and Minimalism in terms of how they view the architecture of the grammar. I now move on to discussing three phenomena that show how the two theories co-exist in more detailed and concrete terms. We will discuss linearisation, locality and agreement, with attention being paid to the parallels that exist in terms of both the phenomena, and the explanations of the theories.

3   Linearisation

3.1   Linear relations and the syntactic structure

The question of how syntactic structures come to be linearised came to be of key importance in the early 1990s, in large part following the seminal work of this area in Kayne (1994). One of the key findings of generative syntax has been that the syntax

is mostly blind to linear relations, but rather, the relations that matter — by and large — hold over hierarchical structure, and reference c-command, rather than precedene (Reinhart, 1976). One of the most famous cases to see this is with anaphoric binding: an anaphor can be licitly bound whether it precedes or follows the antecedent as long as a c-command relation can be formed such that the anaphor is (locally) c-commanded at some point by the antecedent.

(5) a.   Dylan saw a picture of himself.

 b.   A picture of himself was barked at by Dylan.

 c.   * His owner walked every dog.

 d.   Every dog pulled his owner along.

Thus, the linear relations between elements don't seem to matter an awful lot to the syntax, with the hierarchical relations doing all the heavy lifting. There are exceptions to this — one case, agreement, I will discuss briefly later on insert link to agreement chapter, when citation available — but by and large the relations that matter for the syntax are hierarchical, not linear and there don't seem to be purely linear relations that hold for syntactic operations.[4] Yet, there clearly must come a point in the grammar that linear relations need to be established, given that speech is pronounced sequentially.[5] In principle, there are a number of ways that this could happen. Kayne (1994) proposed that linear relations effectively exist within the syntax alongside hierarchical relationships, given that linear relations are directly predictable from syntactic structure. Kayne proposes the Linear Correspondence Axiom (LCA), which says that syntactic structure is valid only if all the elements are can be linearly ordered on the basis of the structural relationships. For Kayne, the set of asymmetric c-command relations between non-terminal nodes directly map onto the linear relations of a sentence. That is, if a non-terminal node α asymmetrically c-commands a non-terminal node β, then the terminals contained within α will precede those contained within β. In (6) we can order {j, m, p} in the order <j, m, p>, since J asymmetrically c-commands M, which asymmetrically c-commands P (Kayne, 1994, p. 7).
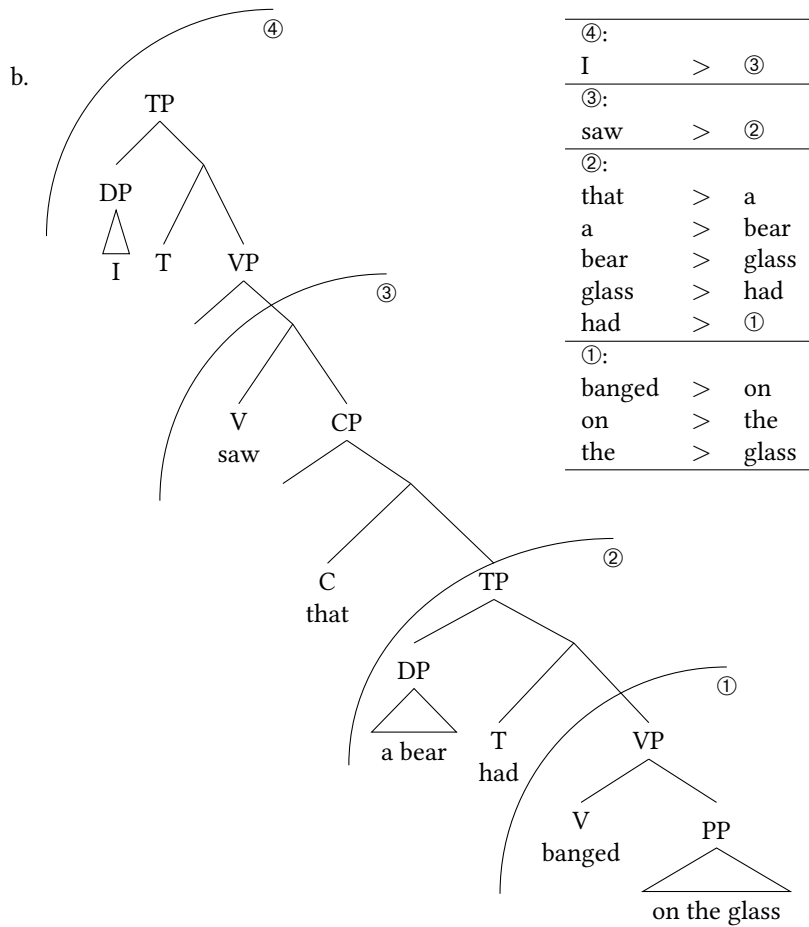
(6)

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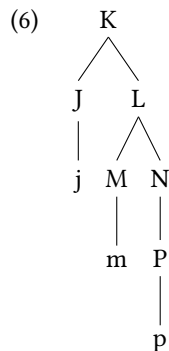
[4]Though agreement *can* be sensitive to linear order, it is usually determined by hierarchical structures.
[5]I ignore signed languages, which are capable of expressing things non-sequentially.

To the extent that this view of linear relations is correct, then the question of linearisation is relevatively trivial: structure can be linearised for pronunciation since it already is linearised in the syntax, in a manner of speaking. An obvious and well noted issue with such an approach however is the difference between head-initial and head-final languages. The former are the default state of affairs, whilst the latter require large-scale syntactic movements in order to derive the correct output. This is not to say that the LCA is wrong, per sé — Kayne (1994) mounts a defence of the syntactic derivations needed, and Cinque (2005) shows that there are clear upsides to this approach; yet, the imposition of linear relations into the syntax brings with it various non-trivial problems that need to be answered.

Another option is to assume that syntax itself is free from linear relations, but that they are established along the mapping from syntax to phonology, and as such, the linearisation mechanism is a property of the PF-branch of the grammar. Numerous proposals have gone this way. Chomsky (1995) suggests that Kayne's LCA can be implemented in the PF-branch, which keeps syntax 'proper' free from linear relations, whilst maintaining a one-to-one mapping between hierarchical structure and linear order. A less direct mapping mechanism comes from Fox and Pesetsky (2005), who argue that the syntax builds a hierarchical structure, and then there is a mechanism that extraneously maps a sequence to the worlds themselves. For them, sentences are linearised at the point of phasal spell-out (after the narrow syntactic operations have applied to the phase) in a set of ordering statements, such that the elements being spelled out are totally ordered relative to one another, as shown below

(7) a. I saw that a bear had banged on the glass.

b.

Tree (b.): TP branches into DP (I) and T, VP. V (saw) and CP. C (that) and TP. DP (a bear), T (had), VP. V (banged) and PP (on the glass). Arcs labelled ④, ③, ②, ①.

④:		
I	>	③

③:		
saw	>	②

②:		
that	>	a
a	>	bear
bear	>	glass
glass	>	had
had	>	①

①:		
banged	>	on
on	>	the
the	>	glass

It should be immediately obvoius to the reader that this view of the mapping from hierarchy to linear order is naturally consistent with DM. We can treat the linearisation mechanism as an operation of the morphology, given that it is post-syntactic. A prediction made by this approach, whereby linearisation is interleaved with other morphological operations, is that we expect to find modularity effects in play, as some morphological operations come before linearisation, whilst others take place afterwards. I disucss this in the next section.

3.2   Linearisation and a modular architecture in Basque

Arregi and Nevins (2012) show that there are effects of linear order that determine how the auxiliary in Basque dialects is realised. The form of the auxiliary in Basque is complex, and Arregi and Nevins devote a great deal of attention to the topic, more so than I could hope to go into here. Unless otherwise noted, I have used data from the Lekeitio dialect. What suffices for our purpose here is a contrast between monotransitive and ditransitive verbs. T, in present tense monotransitives (Table 1), shows a

| | Absolutive | |
Ergative	3 singular	3 plural
3SG	d-au-$\emptyset$	d-itxu-$\emptyset$-s
3PL	d-ab-$\emptyset$	d-ab-$\emptyset$-e-s

$$\text{L/Cl}_{\text{ABS}}\text{-T-e}_{\text{ABS}}\text{-Cl}_{\text{ERG}}\text{-e}_{\text{ERG}}\text{-s}$$

Table 1: Monotransitive T: Present tense (Arregi and Nevins, 2012, p. 377)

| | T = absolutive singular Dative | | T = absolutive plural | |
Ergative	3 Singular	3 Plural	3 Singular	3 Plural
3SG	d-**o**-tz-o	d-**o**-tz-e-$\emptyset$	d-**o**-tz-o-s	d-**o**-tz-e-$\emptyset$-s
3PL	d-**o**-tz-$\emptyset$-e	d-**o**-tz-$\emptyset$-$\emptyset$-e	d-**o**-tz-$\emptyset$-e-s	d-**o**-tz-e-$\emptyset$-$\emptyset$-s

$$\text{L-T-Cl}_{\text{DAT}}\text{-e}_{\text{DAT}}\text{-Cl}_{\text{ERG}}\text{-e}_{\text{ERG}}$$

Table 2: Ditransitive T: Present Tense (Arregi and Nevins, 2012, pp. 378–379)

distinction between *au/ab* and *itxu*: *itxu* is seen when the ergative clitic is 3SG (which is realised as a null morpheme -$\emptyset$ in these contexts) *and* the absolutive is 3PL. If either of these conditions does not hold, the form is *au/ab*. This sensitivity is lost in the ditransitive forms: T, boldfaced in the Table 2, is uniformly *o*.[6]
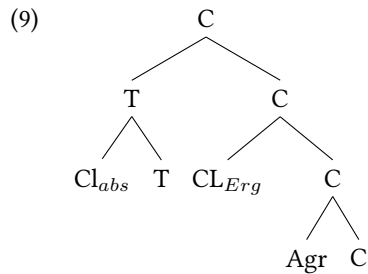
Arregi and Nevins claim that the lack of number sensitivity in the ditransitive forms is explained through Vocabulary Insertion, and crucially they assume that linear adjacency is required when specifying the context.[7] Specifically, the following rules are relevant for our purposes:

(8) a. itu $\leftrightarrow$ [+have, −past, +part, +auth, +sg] / ___ [Erg, −part, +sg]
    b. au $\leftrightarrow$ [+have, −past, −part, −auth] / ___ [Erg, −part]
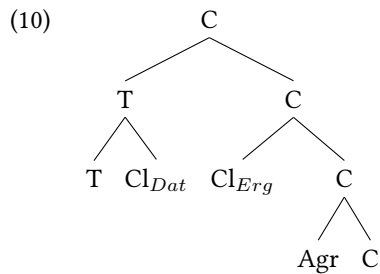   c. o $\leftrightarrow$ [+have]

The rules in (8a) and (8b) both reference the ergative clitic. In the monotransitive form, the ergative clitic is next to T. However, in the ditransitive forms, the dative clitic *-tz* intervenes between T and the ergative clitic. Since the context for allomorphy requires adjacency, then neither (8a) nor (8b) apply when there is a dative clitic (i.e. in ditransitives), and the elsewhere form for T, (8c), is used. What is also crucial is the structures of the auxiliary argued for by Arregi and Nevins.

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[6]There is a lot of morphology in the forms that is not relevant to us. Specifically, the *-e* morphemes are plural clitics inserted when one of the arguments is plural (Arregi and Nevins, 2012, pp. 132–136). What is glossed as 'L' refers to a morpheme that is inserted at the left edge of T, in case an absolutive clitic is not present, to avoid T being the leftmost morpheme in the M-word (Arregi and Nevins, 2012, pp. 286–287). *-s* is analysed by Arregi and Nevins (2012, pp. 89–95) as being a morpheme reflecting (plural) complementiser agreement with C. Rather than discussing these in any detail, I refer the reader to the cited sections for further clarification.

[7]In section 4 we will see that the idea that VI is sensitive to linearly adjacent contexts is not without controversy, but we can assume that it holds at least here.

(9)

```
              C
         ┌────┴────┐
         T         C
      ┌──┴──┐   ┌──┴──┐
    Cl_abs  T  CL_Erg  C
                     ┌──┴──┐
                    Agr    C
```

And for ditransitives:

(10)

```
              C
         ┌────┴────┐
         T         C
      ┌──┴──┐   ┌──┴──┐
     T   Cl_Dat Cl_Erg  C
                     ┌──┴──┐
                    Agr    C
```

In neither of the structures is T structurally adjacent to the ergative clitic. Rather, they will be adjacent on the surface. Thus, the rules must be formulated in linearly adjacent terms in order to account for the sensitivity to the ϕ-features of the ergative clitic, and to all for the dative clitic to block the allomorphy. Importantly, it is not sufficient for T to be in the same morphological word as the ergative clitic, it needs to be linearly next to it.

Such cases of morphological operations being apparently sensitive to linearly adjacent morphemes are not exactly rare, and this particular point could have been illustrated by a number of other — arguably simpler to present — instances. However, I have illustrated with Basque, because Arregi and Nevins make a further two interesting claims. The first is that there are also operations in Basque that do not make reference to linear relations of morphemes. The second, building on the first, is that this shows evidence for a modularity effect: the operations that do not reference linear structure precede the point of linearisation, and so *cannot* reference linear order. An illustrative example comes from participant dissimilation. Participant dissimilation refers to the partial or complete deletion of a clitic when there are two clitics in the auxiliary that reference [+Participant] arguments. In the following, the dative clitic is not grammatical and deleted from the verb form.

(11) Ondarru dialect

Su-k   gu-ri liburu-∅ emo-∅ d-o-su   /
you(sg)-ERG us-DAT book-ABS give-PRF L-PRES.3.SG-CL.E.2.SG /
*d-o-ku-su
L-PRS.3.SG-CL.D.1.PL-CL.E.2.SG

'You(sg) have given us the book.'   [Arregi and Nevins (2012, p. 212)]

The clitic is not deleted if the other clitics are not [+Participant] (i.e. 3rd person):

(12) a. Ondarru dialect

Ber-ak   gu-ri   liburu-∅   emo-∅   d-o-ku-∅
he-ERG.SG us-DAT book-ABS give-PRF L-PRS.3SG-CL.DAT.1PL-CL.ERG.3SG

'He has given us the book.'   [Arregi and Nevins (2012, p. 213)]

      b. Ondarru dialect

Su-k   ber-ai   liburu-∅   emo-∅
you(SG)-ERG him-DAT.SG book-ABS give-PRF

d-o-tz-su
L-PRS.3SG-CL.DAT.3SG-CL.ERG.2.SG

'You(sg) have given him the book.'   [Arregi and Nevins (2012, p. 213)]

      c. Ondarru dialect

Gu-ri   liburu-∅   gusta-ten g-a-ku
us-DAT book-ABS.SG like-IMP   L-PRS.3.SG-CL.DAT.1PL

'We like the book.'   [Arregi and Nevins (2012, p. 212)]

Particularly interesting is the example they give from the Zamudio dialect, where the clitic *-u* is deleted because of the presence of the absolutive clitic. Note though, that the absolutive clitic is a prefix to T, whilst the ergative clitic is suffixal. That is, they are never adjacent to one another. The rule must then hold over the entire M-word.

(13) Zamudio dialect

Eroa-n bear s-ara   / *s-aitu-u
take-NF must CL.ABS.2SG / CL.ABS.2SG-PRES.2SG-CL.ERG.1PL

'We have to take you to school.'   [Arregi and Nevins (2012, p. 212)]
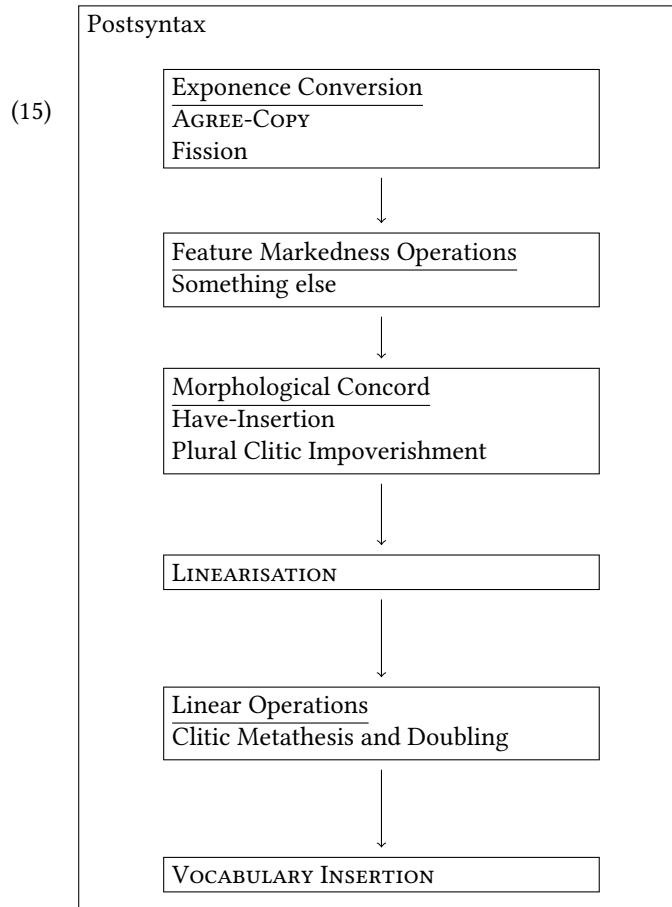
They formulate Participant Dissimilation in the following way:

(14) Arregi and Nevins (2012, p. 213)
       Participant Dissimilation
       a. Structural description: an auxiliary M-word with two clitics Cl_1 and Cl_2 such that Cl_1 is specified as [+Participant, Φ] and Cl_2 is specified as [+Participant, Ψ].
       b. Structural change:
             i. Delete [+participant] in Cl_1, or
             ii. Delete Cl_1.

It is striking that in none of the cases of impoverishment that Arregi and Nevins discuss does linear order play a role. That is, they do not find an instance of an adjacency blocking effect such as we saw with VI in (8). They make the further claim that this is not accidental but is a consequence of the way the order of morphological operations applies:

"On the other hand, while the domain for these neutralization rules (e.g. their Structural Description) is features on other morphemes in the same M-word, it is notable that none of them need to refer to linear order. We contend that this is not an accident: in our serial and modular architecture, Impoverishment is ordered at a point in the derivation *before linearization of terminals*, and so there simply *is no* linear order to refer to. This contrasts with processes that apply after Linearization, such as linear-order-altering Metathesis and determination of allomorphy at Vocabulary Insertion." Arregi and Nevins (2012, p. 211), original emphasis.

With regards to the order of operations in the postyntax, they assume the following shema. As can be seen from the diagramme, Participant Dissimilation is ordered in such a way that it comes before linearisation takes place and therefore cannot reference linear structure. As Vocabulary Insertion follows Linearisation, it can (but does not have to) reference linear structure.

(15)

> **Postsyntax**
>
> > | Exponence Conversion |
> > | Agree-Copy |
> > | Fission |
>
> ↓
>
> > | Feature Markedness Operations |
> > | Something else |
>
> ↓
>
> > | Morphological Concord |
> > | Have-Insertion |
> > | Plural Clitic Impoverishment |
>
> ↓
>
> > | Linearisation |
>
> ↓
>
> > | Linear Operations |
> > | Clitic Metathesis and Doubling |
>
> ↓
>
> > | Vocabulary Insertion |

4 Locality domains

One of the key features of Minimalism is that syntactic structure is not built all in one go, but rather in a piecemeal fashion, both in the sense that two nodes are combined together by MERGE to form a larger unit which can then act as an input to further structure building, but also in the sense that there are various local domains that act independently, before they combined together in the final output. These domains are known as *phases*, and relevant for our purposes here is that they form domains that delimit syntactic interactions by determining locality effects, i.e. which elements can interact with one another. Such locality domains have been observed also in words: interactions between morphemes are observed not to apply freely such that a morpheme cannot have an effect on whatever other elements in the word. Rather, morphemes can only interact if they are sufficiently local enough to one another.

4.1 Phases in Minimalism

The guiding indication that phases play a key role in the computation of syntactic structure are instances of syntactic structure being 'frozen' after a certain part of the structure has been passed. These instances indicate that these phases are computed by themselves, and once complete, elements contained within them cannot interact with elements contained with other phases. Locality effects have occupied the attention of syntacticians since at least Ross (1967), who observed that syntatic movements were not free, but constrained by the syntactic environment of the moving object. Terming such environments *islands* to indicate the independence of certain portions of syntactic structure, two famous conditions he identified are the Complex NP Constraint (CNPC), and the Coordinate Structure Constraint (CSC).The former observes that an element cannot be extracted from within a DP/NP that is embedded by another DP/NP (*the claim that the book was about marmalde*), whilst the latter means that a single conjunct cannot be extracted away from the conjunction as a whole.

(16) a. * What$_i$ did the man make the claim that the book he bought was about t_i?

  b. * What$_i$ did the bear wave at t_i and the elephant?

A range of island effects were identified by Ross, and since observed in many languages. It has long been a goal of generative syntax in the Chomskian tradition to unify such island effects under one and the same rubric, and attempt to find what the common pieces of structure are and understand what it is about such structure that prevents movement from within it. This has been most clearly outlined in detailed investigations, such as Chomsky (1973), Chomsky (1981), Chomsky (1986), Chomsky (2000), Chomsky (2001), Chomsky (2008), Takahashi (1994), and Bošković (2007) to name an outlandishly select few. A lot of work has been done on the formulation of phases, and I refer the reader to Müller (2011) and Abels (2012) for a detailed overview of the literature and the key issues.

For our purposes here, it is sufficient to note that once a phase is complete, in the sense that all syntactic relevant syntactic operations have been carried out, the

structure is 'frozen' and it counts as its own unit, with no other operations able to alter or access its internal structure. Simplifying massively, there are certain nodes in the structure — most commonly assumed to be v, C and —, whose complement is a phase, and acts as a self-contained unit. Any element that has not moved to the edge of the phase (Spec,vP, Spec,CP or Spec,DP) will necessarily remain in the lower structure, and inaccessible for further syntactic operations. This is an oversimplication, of course, but will suffice for our purposes here. To illustrate the point, consider the following:

(17)   * When$_k$ did John ask what$_i$ he bought t$_i$ t$_k$?

In (17), two movements have happened in the lower clause. The first moves the direct object to Spec,CP of the lower clause. This movement is assumed to take place because the *wh*-item bears an uninterpretable Q-feature, which must be licensed in a Spec-head configuration against the interpretable Q-feature carried in the embedded C. The second movement is of the lower adjunct, which tries to move from the lower clause into the specifier of the matrix CP. Whilst the matrix C can be assumed to carry the correct feature, this feature is not present in the lower clause. If we assume that Spec,CP can host maximally one moved element, then it can be the case that either the direct object or the adjunct can move to Spec,CP, but not both.[8] At the point that the matrix C-head is merged, carrying its interpretable C-feature, the syntactic operations internal to the lower CP have been completed, since all possible feature checking relationships have been established. It is thus too late for the embedded adjunct to move to the matrix clause, given that the lower C-domain has been spelled-out, and thus all items including the adjunct are frozen in place.

4.2   Phasal effects within words

To the extent that it is correct that syntactic structure is built in such self-contained units, then it is not just locality effects that we would expect to be the result of phases. Phases do have the effect of freezing the structure from further interactions, but the wider point about phases is that structure can be interpreted cyclically, and certain processes will then happen multiple times in different phases. Thus, we expect to see further effects of this cyclic spell-out, including potential effects seen in the morphophonology, as smaller bits of structure will reach those domains at a different time. This will be particularly visible in highly languages with a highly synthetic morphology, whereby large parts of the syntactic structure are expressed within a single word.

Newell (2008) claims that this is the case, and that it is possible to identify domains within words are identical to phases in syntax, and that smaller bits of structure than are manipulated by the syntax act as phases. Starting from the observation in Chomsky (2001) that "[p]hases are [any] configurations of the form F-XP, where XP is a substantive root projection, its category determined by the functional element F that selects it", Newell proposes that category defining nodes would also count as F (in

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[8]That multiple specifiers are not allowed is not at all a given, and controversy surrounds this issue, see eg. Richards (1997)

F-XP) given that they are functional, and select for the root. Thus, along with CP, DP and *v*P, the syntactic phases, we can add the word level phases vP, nP and aP.[9] Newell points out that the addition of the word level phases leads us to the expectation that we would find effects of these in the morphology.

Newell argues that this is the case with regards to stress assignment in some languages: she claims that computation of stress happens within phases Cupeño, and can be seen in the following contrast Newell (2008, p. 50). The facts under discussion are complicated, and for a full picture of stress assignment in Cupeño, the reader is referred to Alderete (1999), Alderete (2001), and Newell (2008).

(18)   a.   wíchax-ne-n-qal
          throw-1SG-IN-IMP.PST.SG

          'I was throwing it.'

    b.   pe-yax-qál
          3.SG-SEE-IMP.PST.SG

          'S/he saw.'

The verb form in (18a) consists of the verbal root *wichax*, and a light verb *n*, and stress falls on the verbal root. The verb form in (18b) on the other hand consists only of the verbal root, but this time stress is on the TAM affix *-qal*. Newell claims that *-qal* is inherently stressed in Cupeño. Under Newell's analysis, a verbal element must raise up to TAM. Where there is a light verb, this is the element that moves, where there is no light verb, it is the verbal root that moves up. In case the light verb has moved, this leaves the verbal root low in the structure, within the complement of *v*. As this phase is spelled-out, the verbal root is on its own. A prosodic word is built, and stress is assigned there, and the root receives default initial stress. However, if the verbal root has moved higher, then there is no low prosodic word built (or at least, there is one built, but with no element within it to receive stress). In this scenario, stress assignment is computed at the next phase, the complement of C, where the root and *-qal* are spelled out together. Since *-qal* is inherently stressed, there are no further rules of stress assignement, and as such, the verbal root does not receive initial stress as a default.[10] Stress is only assigned in case there is not stress already in the structure, and so, in case the verbal root is spelled out in a phase before *-qal* enters the structure, the default stress that is assigned to it will remain, and not be overidden by the inherent stress that *-qal* bears.

4.3   Locality within words and the relation to phases

Similar to the locality effects just seen, it appears as though there are constraints on how elements can interact within words. It is often claimed that the relevant locality restrictor within words is adjacency (Embick, 2010; Bobaljik, 2012): two morphemes must be linearly or structurally adjacent to one another either linearly or structurally, depending on the formulation, in order to interact with one another.

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[9]'Word-level' is used loosely here, given that 'word' is notoriously hard to define in DM.

[10]Verbal roots can also be inherently stressed, in which case, they always win the competition for main stress over affixes, see the cited works, especially Alderete (1999) and Alderete (2001).

	First Person		Second Person	
	SG	PL	SG	PL
NOM	naan	naan-ga	nii	nii-nga
OBL	en	en-ga	on	on-ga
DAT	en-akku	en-gal-ukku	on-akku	on-gal-ukku

Table 3: Personal pronouns in Tamil (Schiffman, 1999)

| 1SG	1PL	Voice+Aspect+Tense
tró-o	tró-me	ACTIVE, IMPERFECTIVE, NONPAST
fá-o	fá-me	ACTIVE, PERFECTIVE, NONPAST
tróɣ-ome	troɣ-ómaste	NONACTIVE, IMPERFECTIVE, NONPAST
faɣo-θ-ó	faɣo-θ-úme	NONACTIVE, PERFECTIVE, NONPAST
é-troɣ-a	tróɣ-ame	ACTIVE, IMPERFECTIVE, PAST
é-faɣ-a	fáɣ-ame	ACTIVE, PERFECTIVE, PAST
troɣ-ómun	troɣ-ómastan	NONACTIVE, IMPERFECTIVE, PAST
faɣó-θ-ik-a	faɣó-θ-ík-ame	NONACTIVE, PERFECTIVE, PAST

Table 4: Greek suppletive stem *troo*

That adjacency is the relevant locality restrictor within words has been shown to be incorrect by further studies into allomorphic relations. Moskal (2015), Moskal and Smith (2016), and Smith et al. (2019) provide a number of cases of allomorphic relations holding across elements that are neither structurally, nor linearly, adjacent. Some clear instances of this come from the first and second person pronouns in Tamil shown in Table 3, which show suppletion for case, even across an overt plural morpheme. Specifically, the roots *naan* and *nii* supplete for oblique and dative case to *en* and *on* respectively.[11] The suppletion is clearly unaffected by the plual morpheme *gal*, which lies between

Furthermore, Merchant (2015) provides clear cases from Greek, where some roots are sensitive to the combination of voice and aspect. The stem *troo* is suppletive for perfective aspect, as well as voice alternations. For instance, the verb *troo* 'to eat'. The default stem is *tró*, the active perfective stem is *fa(ɣ)-* and the non-active perfective stem is *faɣo-*. Importantly, as Merchant shows, the suppletion must make reference to *both* voice and aspect, even though aspect is clearly separated from the root by the voice suffix *-θ* in the nonactive, perfective forms. This can be seen in the forms in Table 4. It is important to note that the suppletion is not conditioned (solely) by the voice value, but that the aspect is also important in addition to the voice value.

The authors of these works do not claim that there are no locality relations within words, however. Rather the conclusion drawn in each is that locality domains must be formulated in a different manner and cannot simply refer to adjacency relations. Merchant (2015) argues that allomorphy can be conditioned between two elements,

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[11]The suppletion is simply for a case more complex than the nominative, and is not in reality a disjunctive rule over select cases. This is explained in Moskal (2015), Moskal and Smith (2016), and Smith et al. (2019) by appeal to case containment, following Caha (2009).

as long as they form a *span*, a contiguous sequence of morphemes within the form. Taking a different tack, Moskal (2015) and Moskal and Smith (2016) argue that the relevant formulation that holds over such elements is what Moskal (2016) terms the *Accessibility Domain* (AD): a dynamically created domain whose members are spelled out together. Following in the spirit of Embick (2010) and Bobaljik (2012), Moskal argues that category defining nodes are *cyclic* in that these nodes trigger the spell-out of their complement. Once the material is spelled-out, then it becomes opaque to further interactions.[12] The Accessibility Domain is not fixed, but rather consists of the complement of the category defining node, its complement, and one node on top.[13] Graphically, we can see this in the following:

(19)
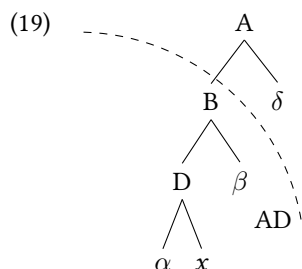
The elements α and β are within the AD that is created by the cateogry defining node, since they are the complement of x, and the node above it. They are thus able to interact for the purposes of allomorphy. However, the node δ lies outside the accessbility domain, and cannot cause suppletion of α. The AD is not without its problems — counterexamples have been noted to it — but Moskal's formulation seems to hold quite robustly. Interesting for us is the formulation that Moskal gives to the AD, which is directly reminiscent of phases. Moskal proposes that category defining nodes are not inherently cyclic, but potentially cyclic, and only the highest one in a sequence (which can be a sequence of one, which is trivially the highest) would count as cyclic. The node above the (potentially) cyclic node is therefore crucial in determining whether it will be cyclic or not, and it is through this role that the extra context becomes visible. Cyclic nodes, and the domains that they create are therefore not fixed but dynamic, in that there is no sense that n or v are inherently cyclic, only that they *can* be, provided they are the top node in a sequence of potentially cyclic nodes.

It is not a settled issue whether the locality domains within words should be thought of in exactly the same ways that phases are (cf. the discussion of Newell 2008 above), and there is not a current consensus surrounding exactly what the relevant locality conditions should be. However, there is at least a broad acceptance around what locality ought to look like: cyclic nodes are responsbile for spelling out,

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[12]This is a simplification of Moskal's position. She shows that accessibility domains are not opaque in every sense, but the material contained within remains visible for certain morphophonological processes such as stress assignment and vowel harmony), but the domains for morphosyntactic operations and morphophonological operations are different.

[13]It is somewhat similar to the concept of Subjacency in GB Chomsky 1986, a connection explicitly made in Moskal (2013).

and freezing, smaller domains within words, and the complement of a cyclic node is in some sense privileged. Whether they are directly parallel to phases or not is an interesting question, but not one which I can adjudicate on there. The point that I wish to make is that all of the works cited in this section view locality at the sub-word level in a manner obviously reminiscent of phases in Minimalism, in the sense that subparts of the syntactic structure form contained units, which are spelled out together, and after having been done so, the information within them is frozen for further interaction. Phase theory accepts that there is a set of nodes that serve as the head of the phase, and that the complement of a phase head is special in that this will form a unit of spell-out, in the way that cyclic nodes are thought to.

There are of course various points of contention within phase theory about how these observations should follow from the theory, but interestingly, these by and large mirror those controversies that are seen in DM discussions on locality. For instance, as discussed above, Moskal proposes a dynamic construction of locality domains: some nodes are only potentially cyclic and it is the context of the structure that determines whether they are in fact cyclic or not. Such a dynamic notion of phasehood has been argued for by Bošković (2014) and Wurmbrand (2014), with the idea being that nodes that delimit phases are not fixed, but rather the highest node in a given domain constitutes the closure of the phase, as opposed to a fixed list of phase heads that are always cyclic. Furthermore, Moskal and Embick disagree on which complement of a phase head is spelled out, and therefore frozen at a specific point of the structure. For Moskal, a cyclic node spells out its immediate complement, whilst under Embick's formulation of locality a cyclic head spells out the complement of a lower cyclic head. This discussion mirrors the Phase Impenetrability Condition in syntax: for Chomsky (2000), spell-out targets the complemenet of the phase head, whereas this is revised in Chomsky (2001) to spell-out targeting the complement of a lower phase head. Similar issues then arise in both DM and Minimalism, but the fundamentals of locality are the same in both, as are the debates that are ongoing in each. To the extent that the debates are on the right track, then this is further evidence of the 'syntax-all-the-way-down' approach of DM.

5 Another area of cooperation: Agreement and AGREE

Along with the two main areas addressed above, there are a number of other operations that have a high degree of harmony between the two frameworks, namely the operation of agreement, as well as the movement operations assumed in the frameworks. Since agreement is discussed elsewhere in this collection, I will keep the discussion relatively cursory, other than to note the deep interplay between what is assumed in Minimalism and DM.

Agreement relations within Minimalism are often assumed to be created by AGREE, which is the assumed mode of feature transmission between elements. There is a wealth of literature on AGREE, many of which are irrelevant to our purposes here. What is relevant for our purposes however, is a growing body of evidence that suggests that AGREE is not only an operation of the syntax or only of the morphology, but rather split across both of these components. To see why, it is necessary to un-

derstand that there are two fundamental steps to create an agreement operation. First there needs to be an operation that matches or links the controller (the element that determines the features) and the target (the element that covaries according to the features of the controller). Secondly, the (relevant) feature values of the controller need to be transferred from the target to the goal. Thus, a two-step operation emerges, one that must both link target and controller, before the features are copied from controller to the target. Following Arregi and Nevins (2012) we can call these two operations Agree-Link and Agree-Copy respectively, which are both sub-operations of the larger process of Agree.

(20) Agree
      Agreement by Probe P with Goal G proceeds in two steps:
      a. Agree-Link: in the syntax, P has unvalued phi-features that trigger Agree with G (possibly more than once). The result is a link between P and G.
      b. Agree-Copy: in the Exponence Conversion Module (=post-syntax, AUTHOR), the values of the ϕ-features of G are copied onto P linked to it by Agree.

There is a question about where operations take place. Standardly, it is assumed that Agree-Link takes place in the syntax proper, given that at least some aspects of agreement seem to interact with operations that are clearly syntactic, see for instance Preminger (2014) and Smith (2015). There is some evidence however that Agree-Copy takes place not in the syntax itself, but rather in the PF-branch. This has been documented in a number of ways. Most prominently, it can be shown that Agree-Copy interacts with other morphological operations, suggesting that it itself is a morphological operation.

Secondly, Agree-Copy can be clearly seen to interact with linearisation. It has been clearly documented that what counts as the controller of agreement is determined by a hierarchical position in the structure (see Bobaljik 2008 in particular), and not by linear proximity to the target of agreement. In general, the relevant feature values are then copied from the controller to the target. However, in certain circumstances, the controller of agreement underdetermines which features are to be transferred. This is seen particularly with conjunctions, which are a single syntactic unit, composed of two distinct members. It is well known that a conjunction of two singulars yields plural agreement in many languages, as seen in the English below, which shows that the conjunction 'resolves' the two singular features to a plural value.

(21) A boy and a girl are watching Eurovision.

However, for a variety of circumstances, this resolved agreement sometimes fails. In English for instance, a post-verbal conjunction does not show resolved agreement, but rather the agreement value comes from the closer of the two conjuncts (see in particular Sobin 1997 and also Borsley 2009; Alexiadou, Anagnostopoulou, and Wurmbrand 2014; Smith 2017).

(22) a.   There is a book and some pens on the table.
      b.   * There are a book and some pens on the table.

  c. ?? There is some pens and a book on the table.

  d. There are some pens and a book on the table.

These data do not necessarily show that agreement becomes sensitive to linear order, but since coordinations are generally taken to involve a hierarchical structure where the first conjunct asymmetrically c-commands the second, they could simply show that agreement is a case of highest conjunct agreement, and so determined by structure still.

(23)
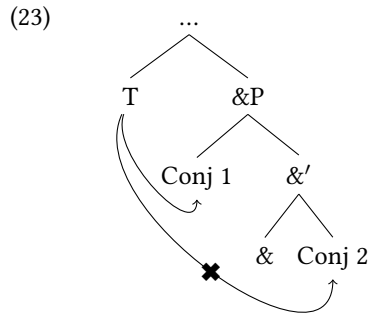
A clearer argument for the effect of linear relations on agreement comes from closest conjunct agreement, as is seen in Tsez (Benmamoun, Bhatia, and Polinsky, 2009), Hindi (Benmamoun, Bhatia, and Polinsky, 2009; Bhatt and Walkow, 2013) and various Slavic languages (Willer Gold et al., 2017), amongst others. I illustrate with data from Tsez:

(24) a. kid-no   uži-n   Ø-ik'i-s
     girl.ABS.II-and boy.ABS.I-and I-went

     'A girl and a boy went.'

  b. y-ik'i-s kid-no   uži-n
     II-went girl.ABS.II-and boy.ABS.I-and

     'A girl and a boy went.'

As can be seen in the above examples, the gender class agreement comes from the conjunct that is closest to the verb. If the conjunction is postveral, then the first conjunct determines the gender agreement, if it is preverbal, then the second conjunct determines it. Notably, as Benmamoun, Bhatia, and Polinsky (2009) show, there is no evidence that the hierarchical relations of the conjuncts are flexible: and so the closest conjunct agreement is really a case of agreeing with the linearly closest conjunct (even if it is more structurally embedded), and not a subcase of highest conjunct agreement with a reversed structure. That is, there is clear evidence that the first conjunct c-commands the second, but none to suggest that the opposite is possible, even in cases where agreement is determined by the second conjunct.

A final argument is advanced by Smith (2015) and Smith (2017), from studying semantic agreement, and showing that semantic agreement is sensitive to the LF-position of the controller, in a manner that morphological agreement is not. Smith shows that the asymmetry between semantic and morphological agreement can be explained in a two-step model of agreement, but only if AGREE-COPY is an operation that takes place after the syntax has finished.

The significance of all this is that assuming that linearisation of structure is an operation that takes place post-syntactically as discussed above, where the operations of morphology are assumed in DM to take place, then AGREE-COPY must be able to also, in some cases, take place in the morphological component. It is then possible that AGREE-COPY can apply after linearisation, and we then expect instances whereby agreement is sensitive to linear relations, and not necessarily hierarchical.

(25) $\underbrace{\text{AGREE-LINK}}_{\text{Syntax}} \rightarrow \underbrace{\text{Linearisation} \rightarrow \text{AGREE-COPY}}_{\text{Morphology}}$

Of course, there is nothing to prevent AGREE-COPY from applying before the linearisation of the structure, leading to AGREE-COPY being guided by hierarchical structure.

(26) $\underbrace{\text{AGREE-LINK}}_{\text{Syntax}} \rightarrow \underbrace{\text{AGREE-COPY} \rightarrow \text{Linearisation}}_{\text{Morphology}}$

It remains an open question how a language determines when AGREE-COPY should take place, whether this holds globally across the whole language, it is a free option, or whether certain contexts allow for variation, and I do not wish to delve any further into this issue here. The point is that there is evidence that AGREE-COPY can take place after linearisation, and is therefore an operation of the post-syntax. In sum, the architecture assumed by DM, which takes the output of syntax as a starting point before the application of a set of morphological operations allows for a natural explanation of where the fact that agreement sometimes is sensitive to linear structure, but by and large not.

6   Concluding discussion

As discussed throughout this article, there is a great deal of common ground between DM and Minimalism. There are of course differences between the frameworks: not every assumption made by DM is shared with that of minimalism. However, in large part, these differences stem from the fact that the syntax and the morphology do different things. The syntax is conceptualised as a system of feature satisfaction, that ensures that the right elements get into the right configurations so that the derivation can converge. The morphology on the other hand exists by and large as a translation mechanism to turn the abstract features into their concrete phonological epxonents. The morphology does more than simply translate, of course, given that there are more operations than Vocabulary Insertion. However, DM and Minimalism share much more than what they don't share, and in the bigger-picture assumptions (late insertion

of phonology, abstract features, locality domains and incremental spell-out), they go very much hand in hand.

It is however clear that the two frameworks are not without their differences. Before ending the paper it is worth considering one area where there is a divergence between the two, namely movement. Within Minimalism, movement is uniformly upwards in the syntactic structure, targeting either the root node of the tree in the case of phrasal movement (known as the Extension Condition, Chomsky 1995, see also Adger 2003), or a c-commanding head node in the case of head movement. Movement that takes place within the syntax then is carried out by (internal) Merge, which operates according to the aforementioned priniciples. DM on the other hand allows for much more flexible movement than is assumed to hold in the syntax. For instance, Embick and Noyer (2001) propose that post-syntactic movement can include lowering of a morpheme from one position in the structure to a position beneath it:

(27) Lowering
$[_{XP} X^0 ... [_{YP} ... Y^0 ...]] \rightarrow [_{XP} ... [_{YP} ... [X^0 + Y^0 ...]]$

Lowering is assumed to apply before the point of linearisation (and hence subject to syntactic hierarchy, rather than linear order), and ensures that two morphemes are spelled out together, even if head movement in the syntax does not put them in a local configuration. Embick and Noyer claim that lowering is responsible for the English verb combining with the tense and inflectional information. The verb is assumed to remain low in English (see for instance Pollock, 1989), given that verbs do not tend to occur before adverbs assumed to delimit the vP boundary, eg. *often*. Yet, the suffixes that express tense and inflection (*-s, -ed*) clearly appear on the verb. Embick and Noyer's claim, is that the T head lowers onto the verb post-syntactically. Movement then, if Embick and Noyer are correct in their proposal go downwards in the structure, something that is ruled out within Minimalist syntax.

There are other movement operations within the post-syntax that one does not see in syntax, and this is to some degree a residue of architecture of the grammar. As discussed in detail above, linearisation is often assumed to take place post-syntactically, and thus any movement before this point will be sensitive only to hierarchical structure. Since the syntactic operations happen before this point, it is then no surprise that movement is constrained by hierarchy (though, this does not in and of itself derive the effects of the Extension Condition, which is a further restriction on Merge). However, movement that takes place in the post-syntax can in principle happen after the point of linearisation, and so we do expect that this type of movement will be able to alter the surface relations between morphemes. Whilst these operations seem to be relatively rare — the Mirror Principle of Baker (1985), which states that the order of morphemes reflects the order of syntax, holds in very many instances, and exceptions to it are somewhat uncommon — it does seem clear that the morphology does allow for the linear rearrangement of morphemes. Halle (2001), Harris and Halle (2005), Arregi and Nevins (2012), Smith (2013), and Calabrese and Pescarini (2014) all discuss morphological metathesis, which, in the same way its phonological counterpart alters the position of phonemes, alters the sequential position of morphemes. To briefly illustrate, Harris and Halle (2005) argue that such an operation is responsible for the

apparent movement of the plural morpheme in the Spanish verb, which presciptively (what Harris and Halle term the 'normative use'), appears directly after the verbstem, but can also appear after it.[14]

(28) a. Normative use:
          venda-n-lo 'sell-PL-it'
      b. Alternative:
          venda-lo-n 'sell-it-PL'

That being said, it still remains the case that despite there being some obvious cases of divergence — it is not simply the case that DM is a copy of Minimalism albeit at the end of the PF-branch — there remains a high degree of congruence between the two frameworks, and they naturally fit together to form a view of how elements move from the lexicon through the syntax before heading to the input of the phonology.

Acknowledgements

List of Abbreviations

1 = First person, 2 = Second Person, 3 = Third Person, ABS = Absolutive, AGR = Agreement, CI = Conceptual-Intentional, CONJ = Conjunct, DAT = Dative, ERG = Ergative, GB = Government and Binding Theory, I = Gender class 1 (Tsez), II = Gender class 2 (Tsez), IMP = Imperfective, L = L-Morpheme[15] LF = Logical Form, NF = Non-finite, PST = Past, PF = Phonological Form, PRF = Perfective, PL = Plural, SG = Singular, SM = Sensori-Motor, T = Tense

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[14]That the element has moved, is that there is a second alternative to *vendanlo — vendanlon* — whereby the plural morpheme *n* appears in two places, before and after the object clitic. Harris and Halle claim that this supports a movement/metathesis treatment, as such doubling instances can be seen as movement without deleting the moved element in its starting place.

[15]See fn. 6

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