Movement and Spell-Out

Xuan DI
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1. Introduction

On the syntactic notion *movement*, it's not uncommon to hear comments such as: "what's the point of moving things around?" or "(on addressing analysis built on movement). This is not an argument. Nobody understands it."

In this short paper, my attempt is to share my understanding on movement. Movement is a syntactic operation that encodes semantics and reveals its result via phonology. Under a principle of labelling, Move, conditioned by Agree (feature projecting), makes the labelling of a previously (pre-Move) symmetric tree possible by breaking the symmetry thus allowing features to project. This symmetry-breaking idea is closely related to Moro (2000), apart from that the 'motivation' for symmetry breaking is not PF (linearization requirements in the phonological component), rather driven by LF necessity (i.e. interpretable features need to be projected, an idea developed from Holmberg and Odden 2004).

Section 2 states the definition of movement and separates it from permutation which is often mistaken as movement. Section 3 illustrates how movement is related to spell-out theories, i.e. morphology—which morpheme spells out which part of a derived tree (structured features). I argue that not only do we need a non-terminal spell-out mechanism in morphology, in addition, a morpheme can contain traces that are govened by other morphemes.

2. Movement vs. Permutation

2.1 Permutation

As Chomsky (2006) summarized, in the earliest work of generative syntax, the term movement was not used, instead, phenomena such as *wh*-displacement were formulated in terms of permutation.

Permutation changes the linear order of syntactic objects (morphemes/words/ phrases), and the base position and the derived position do *not* have different semantics.

For instance, sentences in (1) were derived by changing the linear order of X and α in a syntactic object X-α-Y.

(1) a. Did John see Mary?
b. Who did John see __?

This is a representation/derivation where the *wh* word replacing a DP before a permutation. Namely, (1b) was derived from (1a) where α (the lexical item *who*) is the element displaced to the front, after replacing *Mary* (2). In other words, it is assumed that *who* is pronounced (heard) at the initial position, but it is really *just* interpreted at the gap (indicated by "___" in (1b)).

(2) Did John see *Mary?*
who

Later in the theory, even up to Chomsky (1993), some interpretations of the copy theory still assume that the base position and the derived position are filled by *identical* copies, i.e. items with the exact (ordered) sets of features.

I assume that (i) a bottom-up syntactic derivation must go from simplex to complex, each step maps onto a semantic[1] representation[2]. (ii) Each morpheme in a sentence is licensed in the process of the feature composition.

Under these assumptions, there isn't such a syntactic operation that will move a morpheme around without affecting its feature composition. That is to say, permutation is not a syntactic operation.

As the copying theory (to be more specific, the identical copy theory) being abandoned in Chomsky (2005), permutation and all of its incarnations should be completely abandoned and restricted (sets of) *movements* and the restrictions on movements are in demand.

2.2 Movement

As shown in the above section, within generative grammar in the modern sense, the earliest work had already started to propose answers that related to displacement. Displacement is a hypothesis about the existence of a phenomenon where an "expression is produced/heard in one position but interpreted as well in other positions" (Chomsky 2006).

Permutations and movements are two methods in interpreting displacement. As introduced in §2.1, permutation assumes the moved position(s), i.e. the landing site(s) and the launching site are identical in the logical form (semantics). Whereas movement states that a launching site and its landing site are related but not identical.

The logic behind these is this. If an expression is a syntactic complex, and it is heard at the landing site and interpreted at the launching sites as well, there are two possible representations. One possibility is permutation, the entire complex subtree being interpreted at all nodes of a chain (i.e. all of its landing and launching sites). The other possibility is to assume that *part* of the expression (part of the subtree that encodes in a lexical item) is interpreted at the launching site, and a little more is interpreted at the intermediate landing sites, each landing site provides more features, until the entire set of features are being interpreted at the final landing site.

In short, movement is a representation when a syntactic unit (e.g. a phrase) appears to occupy more than one position in a syntactic structure (Pesetsky 2000:2). Those different syntactic positions are not of the same properties, assuming that each syntactic position has a different syntactic configuration and therefore different semantics.

The present definition on movement strictly constrains the trigger of movement to semantically interpretable features. Namely, there aren't any uninterpretable features in syntax (argued by Kayne 2006 on 'expletive' *there*).

The transformation grammar of Harris assumes one sentence one structure and Chomsky's transformation grammar has underlying representation (Lasnik et. al. 2000:66). Nowadays, in the era of Minimalism, D(eep)-structure is disfavoured

[1] Semantics here is used in a wider sense which includes notions sometimes classified as pragmatics, such as *referentiality*, *speaker/hearer orientation*, etc.

[2] This assumption is in accordance with all theories that represents covert movement with overt movements (Kayne 2003), and with the school of semantic works that based on syntactic/morphological evidence.

(Chomsky 1993), does that implies that the theory simply goes back to the Harris old one? The answer is yes and no. "Yes" in the sense that active and passive sentences have different features and feature composition. "No" because movements require an abstract system that restricts all movements in all human languages.

A theory about 'one syntactic unit occupying multiple positions' has at least two unspoken assumptions:

(i) the DP and the *wh*-words are both the complement of the verb "see". They are theta marked by the verb, and this theta position is the *trace* of "who". That is to say, WHO has been "who" at the launching site (the position(s) where the trace sits) and it is still pronounced as "who" in the landing site after the derivation.

(ii) The other part of the sentence (*did John see*[3]) has the same structure in (1a) and (1b). The only thing that is changed is the position of "who"/ "Mary".

However, assumption (i) has a hidden problem, unless it is an echo-question, *who* is not pronounced in the launching site, rather it has to be a DP being pronounced at that position. Nobody is there to guarantee that "who" was a "who" when it is first come into the derivation (i.e. at the launching site). Why can't one assume that *who* /hu:/ (/huu/) was just /u/ at the launching site and join /hu/ at the landing site (the moved position) after the movement?[4]

The current idea that *who*, *what*, *where* etc. moves (in questions) into the Spec of an interrogative head in effect says that the interpretation of an interrogative containing *who* depends in part on the contribution made by *who* in its launch position, but also in part on the contribution of the overt morphology encoded in the interrogative head (such as the intonation, for instance[5]) as well.

Assuming movement, i.e. assuming two features in two syntactic configurations (different positions in a tree) are related to each other in a certain way, does not go against having one word (or morpheme or a phrase) spell-out these different features. In other words, the non-terminal spell-out theories in principle allows the head of a chain and the traces to be spelled out by two (or more) different morphemes.

3. Movement and Spell-Out principles

[3] The standard assumption is that in English root interrogatives the auxiliary moves up, too. Here for the presentation of the argument, I assume auxiliary raising is constant in both (1a) and (1b).

[4] In fact, Kayne (1998, see Kayne 2000:256) argues that the non-initial *where* (as well as other *wh*-words) in multiple interrogation is associated with an abstract counterpart to indefinite quantifiers such as *some/any/no/every*. The fact that (i) *who, what, where*... appear in relative clauses and ii) that they sometimes appear as parts of a certain kind of indefinite (Postma 1994), such as *somewhere, anywhere, nowhere, somehow, anyhow, nohow*, etc, suggests that *wh*- words are not intrinsically interrogative.

[5] Sportiche (1998) once proposed that French yes-no questions without inversion, such as Elle est déjà arrivée?, might involve movement of the whole IP into Spec,CP (in which case one could take C in such sentences to contribute rising intonation).

3.1 Morpheme-Feature mapping: one-to-many

The idea that a word can be decomposed into many different subcomponents has always been the core study of morphology. When we claim that there isn't an independent morphology module, it is not denying that words can be decomposed, rather, the principles regulating the composing of morphemes into words are essentially the same as those regulating the composing of words into phrases.

In other words, each morpheme can be further decomposed into features as words into morphemes[6]. Movements exist in syntax, so should they exist in morphology (structuring features into morphemes).

3.2 Theories on the structure of features inside one morpheme

In earlier theories of distributive morphology, features inside a given lexical item are a feature bundle, i.e. the features are not structurally organized. Theories stated in the nanosyntax (Starke 2005) school (section 3.2.1) and the present theory has one important common ground, i.e. each morphemes is a feature-complex, the features are structured. Kayne's covert morpheme school (section 3.2.2) and the present morphological theory shares the assumptions that there is movement inside morphology. Spell-out does not target on adjacency.

3.2.1 Nanosyntax

As a development of the Principle and Parameter's tradition, Starke (2005) proposes a research project—nanosyntax. The essential building block of nanosyntax is the observation that the terminal nodes of syntactic structures have become very small as syntactic trees getting more specified, "and at some point they crossed the line to become smaller than a morpheme—terminals have become 'submorphemic'".

"One immediate consequence is that morphemes and words can no longer be the spell-out of a single terminal. Rather, a single morpheme must 'span' several syntactic terminals, and therefore corresponds to an entire syntactic phrase. This in turn means that entire syntactic phrases are stored in the lexicon (not just terminals) and it also means that there cannot be any lexicon before the syntax, i.e. syntax does not 'project from the lexicon'" (Starke 2009).

Starke's theory as articulated in Caha (2006) assumes that a morpheme must spell-out adjacent features, the *A-B-A principle, named as the "superset principle".

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[6] Although that morphemes can have more than one feature is not fully agreed on, for instance Kayne (2003) proposes that each morpheme spell-out one interpretable feature. However, Kayne's theory crucially allows cover lexical items, morphemes that do not have an overt morphological content due to their syntactic positions, which in fact equivalent to the present claim that for each (overt) morpheme, there are more than one features that is spell-out. Further, Kayne's theory is much closer to the present proposal on morphological spell-out in the family of non-terminal spell-out. Unlike super-set theories which only allow spell-out to target on adjacent features, both Kayne's and the present theory allow a morpheme to map onto non-adjacent features.

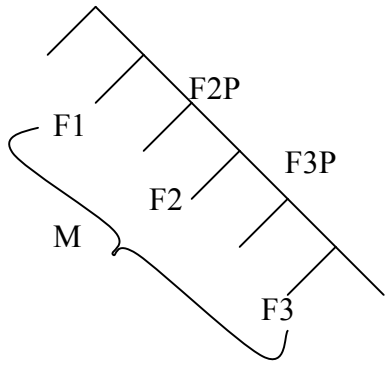
However, the features that are spelled out by one morpheme are connected in the present theory. Whether the present theory of spell-out is a notional variant of Kayne's, is not clear to me; even though on the surface it is clear that I don't assume a phase-based theory, labelling principles are not driven by linearization (although many points are in agreement with LCA).

This is a claim that Given a fixed functional hierarchy, it is not possible (*) to have a lower part of the structure being spelled-out by one morpheme (A) and a middle part of the tree being spelled-out as another morpheme (B) and an even higher part of the tree spelled-out by the morpheme A again.

This school of theories assume that features that can be spelled-out by a given morpheme are locally structured, and only adjacent features can be spelt out as one morpheme. There are two sub-groups of theories inside the "superset school": one assumes the existence of specifier positions inside syntax (as in Caha 2006 and Ramchand 2008), the other do not assume specifier as a position that has special syntactic status, i.e. the inexistence of specifiers (Starke 2007). The theory that presupposes the specifiers is illustrated in (3a) and the one that does not assume specifier positions is illustrated in (3b), with F stands for Features, M for Morphemes.

(3)

a.



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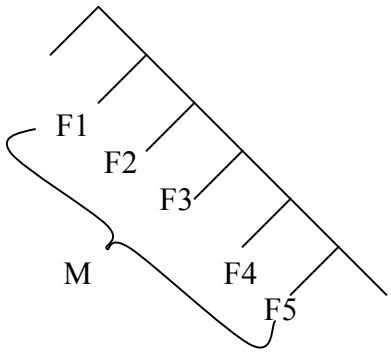
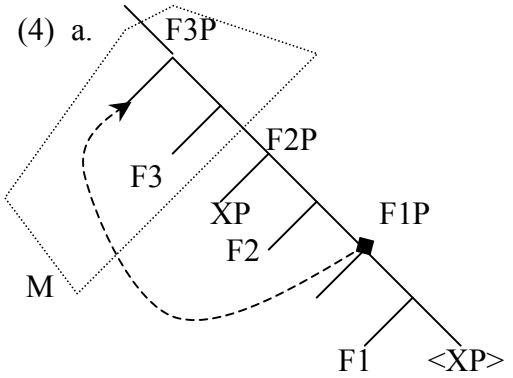


For instance, in (3b) the tree below F5 (include F5) is spelled out by *–en*, and the tree from F5 to F1 is spelled out by *–ed* (Starke 2006). There isn't any position for the subject. Ramchand (2008)'s under-association allows spell-out of adjacent heads, excluding their specifiers, for instance, in (3a) the head of F2 and F3 can be spelled out by a single lexical verb. Crucially, it is not allowed for a verb to spell out F1 (*init*) and F3 (*result*), excluding F2 (*process*).

(4) a.



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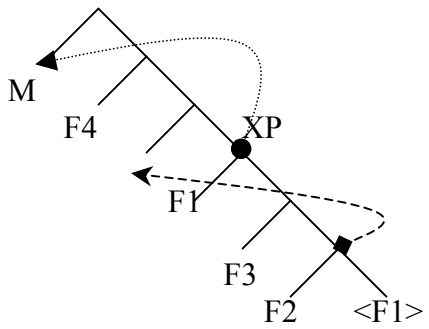


The convention to read (4) is: the phrase that is inside the angled bracket (in (4a) it is XP) has moved to the specifier of F2; then the remnant tree that contains the trace of XP has raised to the Spec-of-F3. A morpheme (M) spells out the part of the tree that contains F3 and Spec-F3 (the part of the tree that is inside the dotted-line

cycled subtree in (4a)). In (4b), the morpheme (M) spells-out the raised XP, which contains the trace of other raised subtrees.

Whether we consider Move as remerge (Starke 2001) or not, both derivation process in (4), each involves a different number of movements which are not argued by anyone to be illegitimate operations. Therefore, we have no reason to consider the cases in (3) as a 'run-of-the mill' case and non-adjacent spell-out in (4) being wired.

Apart from the fact that homophones in many languages are hard to claim to be having two syntactic functions that are properly contained (entailed) to each other (e.g. adjectival and adverbial *–ly* in English are difficult to be argued to be licensed in any Head-Complement relation[7]). Purely logically speaking, to bar a single morpheme spelling-out a moved phrase (F1P) together with the head that triggers its movement (i.e. F3) in (4), one must bar movements (remnant movement and phrasal movement) from syntax, had they also assume that there isn't any syntactic-independent module of morphology. If we bar head/phrasal (or remnant or any types of) movement in syntax/morphology completely, it amounts to say that each morpheme is corresponding to one feature, which I have assumed to be not the case.

Also, if spell-out only targets base generated adjacent features, there shouldn't have been any phenomena that have been explained by locality, because Locality tells you when you can move across and when you cannot. If everything is spell-out in its neighbourhood, no lexical items need to move across another. That amounts to claiming that language has no structure but just linear orders (or a functional sequence, a Cinque's Hierarchy). But a linguistic theory without locality cannot be true! Or can it?

3.2.2 Covert morphemes

That syntax contains terminal nodes that don't have a phonological representation is a notion that has been entertained since the era of PRO. Kayne's cover morphemes extend the "categories" of null morphemes.

Kayne's theory on morphological spell out allows movement. He assumes that each morpheme corresponds to one feature (a one-to-one mapping). In one sentence, for him, each null morpheme is pronounced at certain positions of a tree, the specifier positions of phases (2005, 200).

For instance, the grammaticality of (5a) and the ungrammaticality of (5b) has both been suggested (Kayne 2007) to be the argument for the existence of a null (unpronounced, cover) morpheme NOUS (6).

(5) a. *On te voit tous*.
ON you sees all
"we all see you."

b. **On me voit tous*[8].

[7] That is to say, the suffix *–ly* in *lovely*, *lonely* are taking the projection of that is projected from the *–ly* in *probably* as its complement, or vice versa is difficult to make any syntactic or semantic justifications. In more general terms, the relation between two different adjuncts is hardly entailment.

[8] *Tous me voit*. The quantifier must raise to the pre-clitic position (Many thanks to Aude Noiray for confirming these data). The null NOUS is at a different syntactic

ON me sees all

(6) a. NOUS on te voit tous.
b. *NOUS on me voit tous.

Covert morphemes are not pronounced in PF (phonological form) because they are moved to the specifier position of a phase.

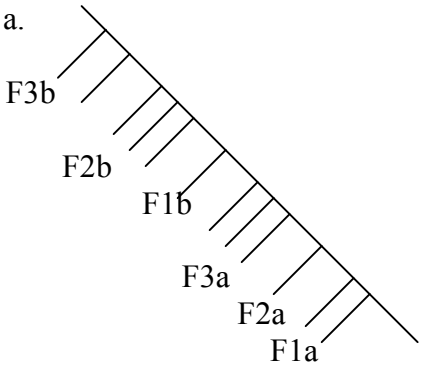
Kayne's theory of spell-out does not assume ellipsis or deletion needs any additional operations other than those available syntactic operations[9].

4. Movement harmonizes Functional Sequence and Labelling

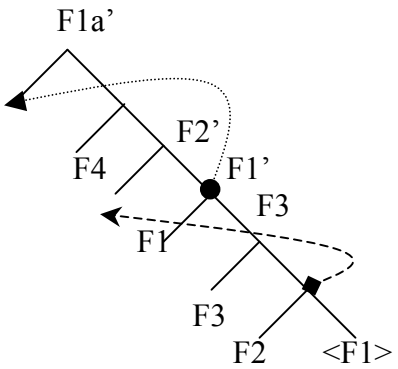
That adjectives have a fixed order when being stacked has been discussed since the 1930s (and probably earlier); then Cinque (1999) takes the fact to argue that the order is to be explained by a hierarchy of functional heads. When given a fine-grained piece of structure, with functional heads each carrying a different label, a natural question to ask is whether these different functional heads have something underlyingly similar to each other. Feature geometries have been suggested (Rizzi 2004: 314), level of embedding (Ramchand 2008) and Abels (2008) argues that the left peripheral (Rizzi 1997) can be derived by Relativized Minimality, i.e. by locality—a principle that restrains the possible movements.

Why do we have a sequence of functional heads and yet are able to derive such a sequence from other primitives? Because syntax is compositional! Then how to derive functional sequence from other primitives? There are logically two types of theories, by recursion (Ramchand 2008) or by movement (Kayne 2008, Abels 2008). In (7), I illustrate the two basic approaches.

(7) a.



b.



4.1 Problem with deriving fseq (functional sequence) without movement

In (7a) the big functional sequence is derived from a small functional sequence plus an operation—recursion. F1a is lower than F2a, which in turn is lower than F3a, by assumptions. The three heads forms a small fixed frequency. Then recursion starts,

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position from its overt counterpart, as the verbal agreement is third singular but not *on te voyons.

[9] Although the notion of phase is not terribly clear to me, that ellipsis or deletion is syntactically determined and that Kayne (2005)'s reading of Chomsky (1995: 160)'s remarks on parametric variation across languages/grammars is to be thought of in terms of varying features/properties of corresponding items of the lexicons of the languages in question is shared in the present work.

we get another sequence of functional heads F1b, F2b, F3b. F1b is higher than F1a because F1a is embedded under F1b by recursion[10]. A head is higher because it is merged later, either later in the same cycle or later in another higher cycle. Unfortunately, this seems to be too true to be falsified.

4.2 Deriving fseq with movement

4.2.1 Movement and labelling

The derivation in (7b) diverges from (7a) at two points. Firstly, it doesn't assume tamplate. Because a template can be highly semantically/syntactically condensed, a complex notion such as the causal relation can be asserted as when one 'lead to' relation embeds another 'lead to' relation. The syntactic relation is therefore opaque. Secondly, it is based on a labelling principle that is determined by the derivation history of the tree (see section 4.2.1). It does not attempt (in principle it forbits) to explain syntactic differences by presenting two structurally identical trees and only asserts that a label in one tree is different from the other.

Holmberg and Odden (2004) propose a theory on Merge and labelling. They develop Chomsky's two types of set-merge and propose a syntactic position that represents symmetry breaking. Chomsky (2000) proposes two types of merge: set merge and pair merge. Set merge is a symmetrical operation, which takes two syntactic objects/elements *a, b* and forms a set {*a*, *b*} out of it. In Chomsky's original proposal, Set-merge faces a dilemma: it is claimed that set merge typically has an inherent asymmetry because this operation is triggered by a selection feature of either *a* or *b* (the selector); however, we know that elements inside a set is symmetrical to each other, there isn't any order between them[11].

Holmberg and Odden get around of this dilemma by separate the labelling operation from Merge. They argue that when an adjective and a noun merge, neither category can project, the tree they formed is a labelless bare tree, with two symmetric sister nodes. Moro (2000) argues that when a result of merge is too symmetrical, the PF cannot linearize it, therefore, we need a symmetry breaking operation—move. Holmberg and Odden takes Moro's idea that symmetric relations exist in syntax and such relations (a labelless tree, the set) must have the symmetry broken for further syntactic operation. Further more, Holmberg and Odden associate more significance to symmetry breakers, not only it is important at syntax-PF interface, but it is important at LF. A labelless tree is not visible at LF, and not visible for selection nor movement operation in Narrow Syntax.

In the following section, I will articulate a derivational process for the symmetry breaking. Differing from Holmberg and Odden, I don't assume syntax and semantics to be two different modules, and PF plays no role in the present theory because what gets linearized are, as claimed above, structured-features (morphemes), not the elements that label/move sees or operates with.

4.2.2 The Labelling Principle

I assume (8) as an axiom.

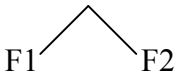
(8) Features shall project and Simplex labels.

[10] This is Ramchand's explanation on some of the light verb constructions embedding the first phase, i.e. lexical verbs.

[11] Otherwise, it would be a pair-merge.

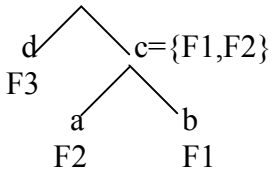
The derivation process in (7b) is illustrated in (9-13).

(9)

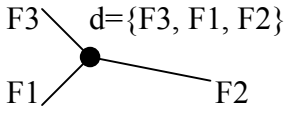


Two features F1 and F2 Merge (Chomsky 1993), because both are simplex features, the two elements are too symmetric to project any label for their mother nodes. Therefore, the resulting set is {F1, F2}, namely, the first step forms a bare tree. In Moro (2000)'s term, the resulting tree is too symmetric to be linearized at PF. As Holmberg and Odden (2004) argue, this tree is not visible at LF or syntax as well. To break the symmetry, another feature F3 needs to be Merged. I mark each node with a lower case letter for ease of references.

(10) (i) e={F3, {F1, F2}}

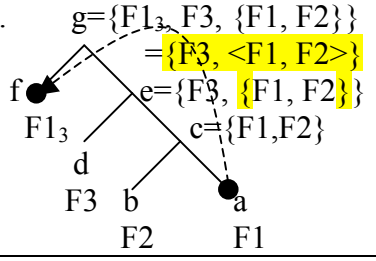


(ii)

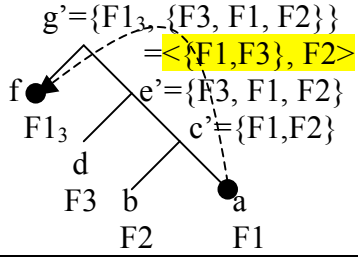


When F3 merges with the bare tree, it adds its feature into the merged feature set ({F1, F2}). Suppose F3 is closer to (Agree) one of the previously merged features, suppose it is F1 that Agrees with F3. Informally (i.e. if we loose track of the steps of merge), we could think that F1 is closer to F3 than to F2 in a graph as (10-ii).

(11) i. g={$F1_3$, F3, {F1, F2}}
={F3, <F1, F2>}



ii. g'={$F1_3$, {F3, F1, F2}}
=<{F1,F3}, F2>



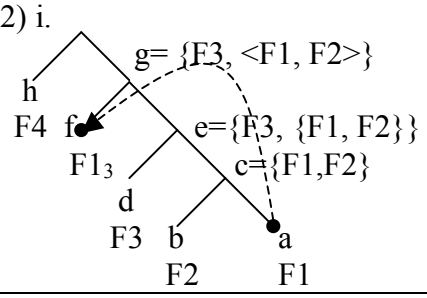
F1 can Agree with F3 being a consequence of (or is -conditioned to) the merge of F3. We can even re-write (10-ii) in a binary representation as in (11-ii). But the problem is serious that we would have 'hidden' the relation between F3 and {F1, F2} away from syntax at *e'*, because the three elements in *e'* are parallel. Even if we move F1 to f, picking up the feature (F3) that it agrees with $F1_3$, $F1_3$={F1, F3} (11-ii). The *g'* node thus created is a binominal head. g'={{F1, F3}, {F1, F2, F3}} = <{F1,F3}, F2>.

It seems that we have breaking an symmetry {F1, F2} but created another symmetry {F1, F3}. However, F1 and F3 are merged at different steps in the derivation, which should make them asymmetric. Therefore, the merge of a mother node and a simplex is not a process of putting the existing features into one set, rather, adding new features is done in a way that preserves the information of the previously formed structure. The derivation should be (11-i).

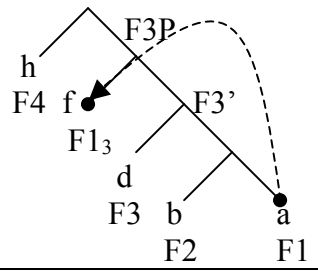
In (11-i), *e* is a set with two elements, F3 and the *set* {F1, F2}. The terminal node *f* has the information {F1, F3} due to Agree and Move, but *g* is able to get rid of the redudant F3, forming a set with two elements: F3 and an ordered pair <F1, F2>.

So far, we start with a set-merge of F1 and F2 without inherent symmetry and build a pair relation for them. To the extend that the symmetry breaking feature is the one that F1 Agrees with, it can be considered as the Head/selector.

(12) i.

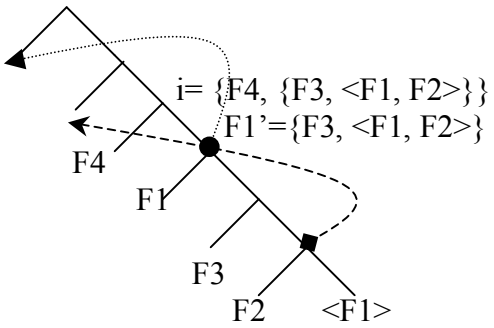


ii.



Now that there isn't any symmetric relations, every feature is visible to syntax now. F2 hasn't projected yet, and it is the first time that it is capable of interacting with further derivation, so if another feature merges into the tree, the node that contains F2 should be the immediate target that syntax operates on. Is it *b* or *c*? Because F2 is only active after F1 and F3 are connected, the terminal node *b* does not contain the information about F1 nor F3, therefore, it is *c* that participate in the next step of derivation (13).

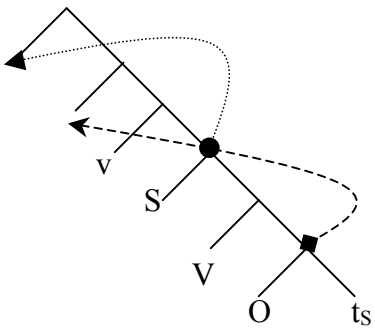
(13)



F4 could also Agree with F3, *e* (F2, F3 and the trace of F1) or with F1 to continue the derivation.

To associate the features with more specific syntactic objects, F1 F2 can be considered as subject and object, which forms a small clause in a simple transitive verb (F3) (14).

(14)



4.2.2 The hierachical order

A head is higher because of the labelling principle which is able to see the history of its derivation[12].

The landing site of each feature or subtree is different from the lanching site (i.e. not remerge), because the movement that is triggered by Agree picks up new features due to Agree.

Since the label of each non-terminal node carries information from the terminal node that carries its derivation history, the 'flavour' of F2 will be on each nodes that it moves to or Agree with. Therefore, we are expecting to see cyclic occurance of features.

The order of the Merge of features determines their role in projection and the manner they project. Agree picks up features from the head. Consequently a fixed order of features is derived.

Movement is used in labelling and it is triggered by the projection requirement of features. Functional sequence is derived without template.

5. Remaining questions: spell-out and ambiguity

If the same PF has different LF meanings, the two meanings correspond to two different structures that have different derivational history that are not related to each other. A sentence can be ambiguous at LF; namely, one surface string of words with exactly the same PF representation can have more than one interpretation. For instance, sentence (14) can be paraphrased by (15a) or (15b)[13].

(15) *Some student is likely to solve the problem*.

(16) a. There is some student of whom it is likely that he/she will solve the problem.

b. It is likely that some student or other will solve the problem.

(17) *Flying planes can be dangerous*.

(18) *chi-zi li you chu lai le yi zhi haibao*.
pool-N in swim out come ASP one CLF seal
"A seal is swimming out of a pool." (when the speaker is not in the pool)
"A seal swam into the pool that is near the speaker."

[12] Labelling principle is inspired by Michal Starke's nanosyntax seminar lectures. Due to lack of written records, I am not able to compare the present theory with his proposal. However, the present theory assumes the existence of specifiers. The feature F4 in (13) doesn't project at this step of the derivation; however, it will project later in the derivation. F1 hasn't project yet either; it is a specifier at this stage of the derivation, but it won't stay as a specifier throughout the derivation. This recalls Starke (2004)'s theory of specifierless structure. However, I don't assume remerge is the only instance of movement; F4 will Move only if there is another F_x that forms a chain with F4.

[13] On Quantifier raising see May (1977), Partee (1971) and Lasnik (1999) among others.

A morpheme can also be ambiguous. It may be selecting different types of complement. On the surface, the complement of the verb *think* can be a CP as in (19a), or it could be a DP (19b).

(19) a. Mary thinks [$_{CP}$ (that) John is a cute boy].
b. John thinks [$_{DP}$ clever ideas].

The *think* in (19b) is closer to the meaning of verb-particle *think out*, which is not readily as a paraphrase for the *think* in (19a). In other words, one could claim that different meanings of *think* correspond to different syntactic structures.

Different meanings of a sentence corresponds to different syntactic structures, different meanings of a word also corresponds to different syntactic structures.

However, that doesn't explain why human language different structures are spelled out by the same lexical items (or phrases), especially when the PF are exactly the same. Or on the flip side, a lexical item can be licensed in different structures. If in each of these structures, the structure that is associated to the lexical item is (slightly) different, is there anything similar that makes the different structure being spelled out by *red* vs. *red-coloured*? What is it that the possible structures have in common so that they can be spelled out by the same lexical item?—what is the relation between the possible structures of a lexical item[14]?

6. Conclusions

The present theory has the advantage of implementing the same set of operations in the theory of large linguistic unit (such as a sentence) and smaller linguistic expressions (such as a morpheme). Allowing traces or the head(s) of a chain to be spelled out by a morpheme has two theory-external advantages as well. Firstly, in a bottom-up model, the spell-out of any morpheme follows certain amount of derivation process (steps of merges and movements); if we are looking at a verb, the numbers of its argument (whether it is a transitive verb, such as *play the piano* or an unergative verb *smile*) will be specified in the lexicon, not because of lexical redundancy rules, but because the tree that is corresponding to (is spelled out by) *play* contains two traces of DPs.

Secondly, the present assumption has the advantage of allowing the theory to be better mapped onto psycholinguistic worries. In a top-down model, when a hearer is parsing a string of morphemes (20) and encounters a morpheme (M_2) that is heading a chain which contains the trace *t*, the range of possible choices of the coming

(20) M_1 M_2 M_3… *t*…M_i

structures are limited to those that can contain the trace.

If the preceding arguments go through, then movements and non-terminal spell-out that conditioned on movements are necessary components in the evolution of the human language.

[14] In the discourse of null lexical items, the question can be put as 'what is it that allow *on* to license a covert *NOUS*? Why not *PERSONNE* or *GENS* or even *CHOCOLAT* '?

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