Features Inheritance with Reference to Standard Arabic: A Minimalist Analysis

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ABSTRACT

This paper attempted to show that Chomsky's Features Inheritance (2005, 2008) is a systematic operation in- and applicable to Standard Arabic. Syntactic features including phi-features and Tense are encoded in phasal heads such as C and v. These features according to Chomsky percolate to a substantive lower non-phasal head which acts as a probe looking for a goal with matching interpretable features. Hence, all uninterpretable features on both heads, i.e. the probe and the goal, get checked and are assigned interpretable values via the probe-goal analysis. In other words, the phasal heads C and v (rather than T and V) can probe and locate a close goal so the uninterpretable features will be assigned values before spell-out. Failure to assign interpretable values to these features will lead the derivation to crash. Finally, the study proposed that valued features are sent to their criterial position in the PF rather than prior to spell-out. In this article, Standard Arabic is taken as a case study to demonstrate that features inheritance is a systemized operation like any other syntactic operation and to show that Chomsky's proposal of features inheritance is valid and applicable to Standard Arabic.

Keywords: Features Inheritance, Subject-Verb-Object, Verb-Subject-Object, Phonetic Interface, Standard Arabic.

Introduction

1. A Brief Review of the Minimalist Program

The Minimalist Program is conceived by Chomsky & Lasnik (1993) in terms which may be summarized as follows (cf. Chomsky 1995, ch.1).

Every human language comprises two a computational system (CS) and a lexicon. The role of the lexicon is to select or determine the lexical items that the CS 'selects and integrates to form linguistic expressions - PF and LF pairings, we assume. The lexicon should provide just the information that is required for CS, without redundancy and in some optimal form, excluding whatever is predictable by principles of UG or properties of the language in question.' (1995, 6).

Universal grammar (UG) has been a matter of debate for decades. Chomsky, in particular, is the one concerned with proving that all languages share some fundamental Principles and Parameters. Thus, according to Chomsky, UG deals with the invariable principles of the initial state (S_0) of language acquisition, and the range of permissible variation (cf. Chomsky, 1995, 169). Variation in language depends on visible primary linguistic data. 'It is not surprising, then, to find a degree of variation in the PF component, and in aspects of the lexicon' (Chomsky, 1995, 169).

UG feeds an array of items from the lexicon 'in a form accessible to the computational system' (Chomsky, 1995, 172). 'We may take this form to be some version of X-bar theory….In a minimalist theory, the crucial properties and relations will be stated in the simple and elementary items of X-bar theory.'(Chomsky, 1995, 172).

An X-bar structure comprises heads from the lexicon. The head is involved as one term in X-bar basic relations, which

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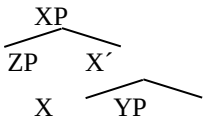
are typically local. Hence, in the diagram below, two relations can be observed: Spec-head (ZP to X) and the Head-complement relation (X to YP).

1.



However, Chomsky introduces a rather radical and 'brutal' revision of this earlier version of the minimalist program. In a complex chapter (chapter 4) of his intricate book (1995), Chomsky reshapes The Minimalist Program along the following lines.

i. Language L is taken as a generative operation which produces linguistic expressions (SDs) as pairs of representation (л, λ). л is a PF representation and λ is an LF representation. These pairs are to be interpreted 'at the articulatory-perceptual (A-P) and conceptual-intentional (C-I) interfaces respectively as "instructions" to the performance systems' (p. 219). Each of the PF and LF levels of representation consists of "legitimate objects" which satisfy the full interpretation (FI) condition.

ii. Chomsky then dispenses with the two levels which are known in Generative Transformational Grammar, i.e. TG, as D-Structure and S-Structure:

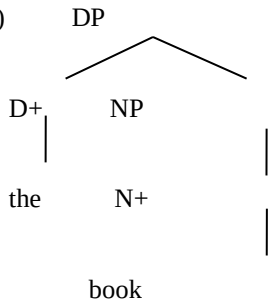
'…there are no levels of linguistic structure apart from the two interface levels PF and LF; specifically, no levels of D-Structure or S-Structure.'

iii. Computations or derivations must converge at PF and LF; otherwise, the derivation crashes.

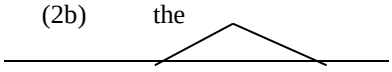
iv. An SD, i.e. a linguistic expression, must have an optimal derivation which satisfies "certain natural economy conditions: locality of movement, no "superfluous steps" in derivation, and so on. Less economical computations are blocked even if they converge". (p. 220)

v. With respect to x-bar theory, Chomsky (op cit, 246) dispenses with such structures as shown in (2a) in favour of (2b) [*]:

(2a)



(2b)



[*] Although (2b) is a conceptually simpler representation of the head-projection relation, it is useful to refer to category labels such as DP, NP, D & N in formulating generalisations (Personal Communication with Professor Andrew Radford- 2015).

the book

In Chomsky's words (ibid), "Standard X-bar theory is thus largely eliminated in favor of bare essentials".

vi. Chomsky (p. 249) also dispenses with the phrase structure theory to achieve one of the goals of the minimalist program:

"At least one goal of the Minimalist Program seems to be within reach: phrase structure theory can be eliminated entirely, it seems, on the basis of the most elementary assumptions."

vii. Chomsky conceives of the lexicon "as a list of "exceptions" (p.235), which do not follow from the UG principles, or the finite language-particular finitely valued parameters. The lexicon is assumed to provide "optical coding" of the idiosyncratic exceptions. Chomsky gives the English word book as an example. This English word "has a collection of properties, some idiosyncratic, some of varying degrees of generality. The lexical entry for book specifies the idiosyncrasies, abstracting from the principles of UG and the special properties of English" (p. 235). This optimal coding of information is just sufficient to construct the LF representation and to build the PF representation. The optimal coding for the word book must include its unpredictable phonological and semantic features. These do not, for instance, include the Case and phi-features of book which are assigned to it by general principles (p. 236).

In a brief summary of chapter 4, Chomsky says (p.378):

Reviewing briefly, it seems that we may be able to eliminate the theory of phrase structure entirely, deriving its properties on principled grounds. Many consequences follow for the theories of movement and economy when these conclusions are combined with other minimalist assumptions. Taking the latter seriously, we are led to a fairly radical reformulation of the theory of the computation system that relates form and meaning, and to a sharpening and improvement of economy and other central notions.

2. Properties of Phases

"In order to ensure a 'reduction of computational burden' Chomsky (1999, p.9) proposes that 'the derivation of EXP [ressions] proceeds by phase' (ibid.), so that syntactic structures are built up one phase at a time. He maintains (2001, p. 14) that 'phases should be as small as possible, to minimise memory'" (Radford 2009, 379). So, what are the properties and nature of phases?

First, Chomsky (2001, 12) mentions that phases are "propositional": verbal phrases with full argument structure and CP with force indicators, but not TP alone or "weak" verbal configuration lacking external arguments…".

Second, Chomsky (2001, 9) states that "just as C_{comp} selects T_{comp}, we might expect v_{comp}…to select $V_{comp.}$ Moreover, he (pp. 8-9) adds that "" It is tempting to associate EPP with θ-completeness: C, and T selected by C, are θ-complete and therefore allow an EPP-feature; $T_{def.}$ Cannot have an EPP-feature. Accordingly, there is no internal raising to [Spec, $T_{def]...}$".

Third, according to Chomsky (2001, 12), phases are propositional: "verbal phrases with full argument structure and CP with force indicators, but not TP alone or 'weak' verbal configurations lacking external arguments (passive, unaccusative)".

Furthermore, he (2005, 10) mentions that features percolate from the phase head to the lower nonphasal head. In his words:

In the lexicon, T lacks these features. T manifests the basic tense features if and only if it is selected by C (default agreement aside); if not, it is a raising (or ECM) infinitival, lacking φ-features and basic tense. So it makes sense to

assume that Agree- and Tense-features are inherited from C, the phase head.

Having reviewed some of the properties of phases, I will turn now to deriving sentences along these lines of phases.

Traditionally, T, V are the Case assigners because they inherit features from the phasal heads C and v* respectively. However, as pointed out by Radford (2009, 405), there seems to be a problem with this analysis. In his words: "With respect to the analysis of transitive structures, Radford (2009, 405) points out that "it would seem that v must be the probe which agrees with and assigns accusative case to the…direct object…of VP". Indeed, if V inherits features from the v*, then the former would agree and assign case to the direct object (DO)[*].

Let us start our discussion here by analyzing several sentences taken from Chomsky (2001).

First, consider the derivation of the following sentence:

1. a. [C[T be likely [Expl to-arrive a man]]]

b. there is likely to arrive a man

According to Chomsky, this sentence is derived as follows. The uninterpretable feature *person* agrees with T under local match; consequently, the expletive raises to Spec T. The Φ-set of T remain intact; therefore, T keeps probing until its uninterpretable features are deleted. Thus, T locates *man* as its goal and Agree holds by deleting the uninterpretable features of T and assigning a structural Case to *man*. Hence, the derivation converges and the result gives 1.b above. This derivation takes C to be the strong phase not vP. The associate man does not raise to the higher Spec TP because it is already filled with the expletive.

One wonders why we need the expletive in the sentence in the first place. It is known that expletives are dummy pronouns that have no semantic content but they have a grammatical role in the derivation. I would say that the occurrence of the expletive in 1.a is unnecessary- contrary to fact. Since the associate *man* is in the domain of a defective CP, it will need to value its case via Agree with the strong phase head that is C in this structure. But since the EPP feature of T had already been checked via Agree with the expletive, *man* remains in situ. In short it seems odd to have the expletive in the first place: without the expletive and following the same derivational steps, T will probe for *man* and the latter will satisfy the EPP feature and get its Case valued giving 2 below:

2. A man is likely to arrive.

The strong phase in Chomsky's second sentence is *v**P rather than CP:

3. a. [C[we[$_{v*P}$ *v** -expect[Expl to-arrive a man]]]]

b. we expect there to arrive a man

The derivation goes as in 1 above except for the fact that *v**P is the strong phase. Hence, *v**P agrees with the expletive raising it to Spec vP; the Φ-features of the strong phase remains intact and probes and locates man as its goal. Hence, all features are valued and *man* is assigned accusative Case giving 3.b above. Now, let us apply the same question as above "why do we need the expletive?". Without the expletive, we will get the unacceptable sentence **We a man expect to arrive*. Thus, the occurrence of the expletive here is important.

Three conclusions are apparent here. First, the occurrence of the expletive in 1 above is unnecessary because the verbal phrase *is* which is in T (or AuxP) lacks the 'external argument' as opposed to 3. And because English sentences, generally speaking, have the order S-V-O, the expletive can occur in the sentence although preference would be given to *A man is likely to arrive*. Second, in 1, *man* is assigned Nominative Case whereas in 3, it is assigned Accusative Case. The simplest explanation is that the closest strong phase assigns Case. Hence, in 3, the closest phase is the verbal configuration; hence,

[*] shall not pursue this issue here and leave it for further research.

the Accusative Case. In 1, on the other hand, there is only one strong phase that is the matrix C; hence, the Nominative Case. Another third conclusion is that the matrix strong phase in 3 cannot assign another Case to *man* because this will lead to Case-conflict (Accusative *vs* Nominative). To put it in other words, a strong phase cannot enter into Case assignment with a goal that belongs to another strong phase. In 1 above, the strong phase head C can agree with the goal *man* giving 1.b and 2, whereas in 3 it cannot. Thus, it seems that a goal in one strong phase is immune to Agree with a probe of another c-commanding strong phrase. More generally, phases seem to be barriers to each other. As we have so far noticed, one strong phase cannot assign Case to an active goal that belongs to another strong phase. Nonetheless, Are strong phases immune to each other in terms of all features including θ-features, Tense, Case, EPP? Chomsky (2005, 14) assumes that C can probe: "A- as well as A'-movement must be triggered by probes in C: the probe for *wh*- accesses *which* in its base position…raising *of-which* to SPEC-C…". Thus it seems that the Edge or the EPP features are, to borrow Chomsky's terminology, from Agree. For θ-features, it remains unclear to me whether they, when in C, can probe and agree with a goal that belongs to another strong phase. Nonetheless, as we proceed with our analysis here, it seems that only the *Edge* and the EPP features that can access another strong phase value their features.

Hence, one wonders how the agentive subject of a finite clause gets its nominative Case. We can assume that CP is directly linked to vP; hence, C assigns Case to the subject in the edge of the vP phase. But this might also mean that the subject will raise to Spec C- an assumption ruled out in the literature.

The normal derivation would be by assuming that C percolates its θ-features, Case, and Tense to TP which probes and assigns Nominative Case to the subject in the edge of the vP phase and thus triggering its movement to Spec TP satisfying thereby the EPP feature.

Indeed, Chomsky (2005, 10) mentions that "it seems to be T, not C, that is the locus of the φ-features that are involved in the Nominative-agreement system, and raising of the external argument subject or unaccusative/passive object to SPEC-T."

However, a puzzling question; namely, why do we need TP. All projections are headed by intrinsically identifiable features, e.g. +V, +D, +Neg, etc., but T is not headed by any element that allows it to project into TP- until it inherits such features from C. In an email I sent to Professor Noam Chomsky wondering why we need TP or how TP projects particularly since Tense itself is encoded in C, his answer was as follows in his own words:

The evidence that TP exists is pretty strong. Otherwise, there is no way to describe subject-predicate structures accurately, with EA raised above the position that manifests phi-features and tense, attracts the verb out of verb phrase, etc. The question why it exists is a good one.

Going along these lines, the derivation would be as is widely accepted in the literature: features percolate from C to a substantive projection, i.e. a non-phasal head; namely, TP, hence, the label. Consequently Agree holds between the probe T and the goal in the edge of the vP phase.

3. Literature Review on Arabic Structures and Position of Subject

Many linguists and scholars of linguistics and language have proposed different analyses to Arabic clause structures. However, a few linguist and syntacticians strongly prevailed. Chief among them are FassiFehri (1993), Ouhalla (1994), Shonsky (1997), Mohammad (2000). In this section I will briefly summarize what these linguists and have proposed particularly with respect to word order and the position of subject.

Plunkett (1993, 231) suggests that "subjects always originate inside a lexical projection, usually within VP". She also mentions (p. 232) that the subject in Arabic in its base position: "subjects may in principle remain in situ in Arabic".

Plunkett (p.241) assumes, in line with traditional Arabic grammarians, that the preverbal NP (as in the following example) is a topic rather than a subject:

1. al-ṭullab-u ya-drus-uuna

the students-NOM study-3MP

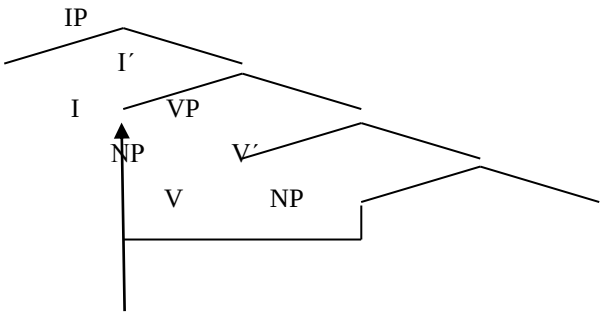
'The students, (they) are studying.'

Plunkett (ibid) assumes that "the initial NP, which is functionally a topic …is taken to be referential with a small pro subject".

In short, Plunkett (1993) proposes that the subjects in VSO structures are genuine and originate in Spec VP; whereas, in SVO structures, the preverbal NP is a Topic that is co-referential with null pro.

Fassi Fehri (1993, 16) proposes that "the grammar of Arabic instantiates a canonical phrase structure" such as 2 below:

2.



Fassi Fehri mentions that the subject in 2 above is "base-generated in Spec of VP" (p.16). He also states that VSO structures are derived at S-structure by raising the verb to I/T. Conversely, SVO structures are derived by raising the subject to Spec IP/TP. Fassi Fehri (pp. 16-17) proposes that the movement of the subject from Spec VP to Spec IP is "triggered by the occurrence of rich AGR on the verb. Poor AGR prevents such an operation from taking place, thus resulting in a VSO structure".

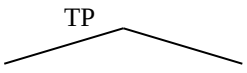
FassiFehri is aware of the proposal some linguists provided with respect to the position of the subject outside the VP shell, namely, in Spec IP (p.17). Nonetheless, he refutes such a proposal relying on Chomsky's (1986) Principle of Full Interpretation. In his words:

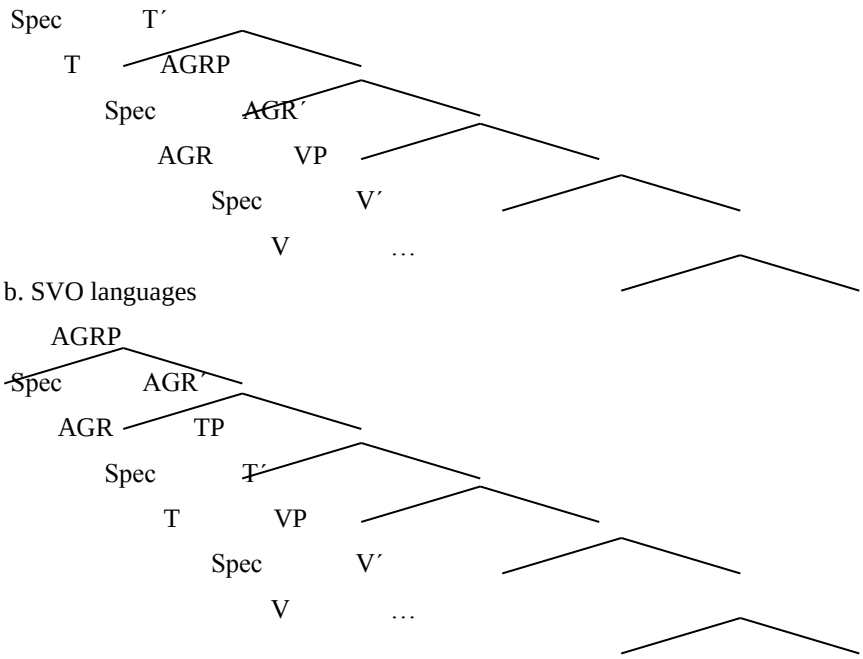
Let us suppose that Chomsky's (1986a) Principle of Full Interpretation is to generalize to D-structure, and that the occurrence of NPs at D-structure positions is licensed only by virtue of a thematic relationship, then a thematic NP subject would occur in Spec of VP at D-structure, not in Spec of IP.

Still, FassiFehriacknowledges that some NPs that precede the verb may function as Topics rather than subjects. He states that preverbal NPs, i.e. topics, "occur outside IP" as opposed to subjects which "occur within the domain of NP" (p.30). Furthermore, FassiFehri mentions that topics "must then be definite or 'strongly referential', preverbal subjects can be quantificational or 'weakly referential' indefinite NPs (with a specific or generic interpretation), but they cannot be pure indefinite 'non-referential' NPs" (p. 29).

Ouhalla (1994, 46) states that "in VSO languages T is higher than AGR_S, whereas in SVO languages the reverse relation is found". The following two diagrams, according to Ouhalla (ibid), account for the derivation of VSO and SVO languages:

3. a. VSO languages





Ouhalla (p.46) suggests that SVO languages such as French and Italian are derived from the structure in 3.b. above, whereas the structure in 3.aVSO languages such as Arabic.

He (p.46) proposes that the postverbal subject in VSO languages may bein one of the following two positions: either in Spec AGRs or in Spec VP.

Ouhalla (ibid) adds that the structure in 3.a. "is also compatible with a well-known property of VSO languages, including Arabic, namely the fact that they tend to have SVO as an alternative order". He suggests the SVO is derived by raising the verb to head T and the subject to Spec TP, "a legitimate subject position in much the same way that Spec of VP and Spec of AGRs are" (ibid).

Shlonsky (1997) proposes that the subject in Arabic is in Spec VP position. According to Shlonsky (p.2), a clause consists of three main layers: thematic, functional, and operator. He mentions that the thematic layer contains the verb and its theta-marked complements (ibid). Accordingly, "the VP includes, in addition to the verb, all of its θ-marked arguments. In particular, I take the subject to be base-generated as the specifier of VP" (ibid).

Mohammad (2000) also argues in favour of the proposal that the genuine subject originates in Spec VP. He adds that the derivation of VSO structures involves raising the verb to head T "with the subject remaining in situ in its D-structure position, namely in Spec of VP" (ibid, 83). Moreover, Mohammad provides evidence that Spec TP in VSO structures is filled with an expletive (p.108). SVO structures, On the other hand, are derived, according to Mohammad (p.83), by raising the verb to head T and the subject from Spec VP to Spec TP.

Having briefly reviewed some properties of phases as well as literature on Arabic structures, I will try in the next section to put Chomsky's proposal of Features Inheritance in practice particularly with respect to Arabic.

4. Features Inheritance and the Derivation of Clauses:

In this section, I will make some remarks on phasal heads, agreement, subject raising, and Feature Inheritance. My attempt here is to make such proposals as Features Inheritance consistent and systematic with respect to analysing Arabic structures.

My first proposal is that any head with uninterpretable features is a probe. This means that the Locus of features

whether C or v (considering that both are phasal heads) is a probe. Indeed, Chomsky (2005, 14) assumes that C can probe: "A- as well as A'-movement must be triggered by probes in C: the probe for *wh-* accesses *which* in its base position…raising *of-which* to SPEC-C…".

I will start by analyzing the following sentences. Consider:

1. ʔakala-**t**il-banaat-**u** l-ʕinab-**a**

Past.eat-**3fs** the-girls (3fp)-**Nom** the-grapes-**Acc**

The girls ate the grapes.

The verb *ʔakal* merges with its complement *l-ʕinab* thereby forming VP which is merged with the little null light verb v which itself merges with the agentive subject *l-banaat*. The phase at this stage is completed. Accordingly, the null light verb (the phasalhead) bearing uninterpretable features agrees with the complement of V that is *l-ʕinab*. The former values its features and the latter receives Accusative Case. The valued features on the null light verb are not manifested overtly (a natural conclusion because it is null). However, note that the lexical verb itself does not agree with the complement for otherwise we would expect the interpretable features of the complement to appear on the lexical verb. (If this claim is correct, then we might find languages in which verbs overtly agree with their complements- an issue I will put aside here).[no need for parentheses here]

The second stage in the derivation is by merging vP with T(P). At this stage the lexical verb is assumed to raise to head T. However, there is no way we can identify that this Head is T (remember that Chomsky (2005, 10) says that "for T, φ-features and Tense appear to be derivative, not inherent… In the lexicon, T lacks these features. T manifests the basic tense features if and only if it is selected by C."). Thus I will label this Head as X until it receives its features that identify it allowing Labelling Algorithm (cf. Chomsky 2013) to take place. And as is known in Arabic, Spec XP in VSO structures is filled with the Expletive *pro* which is specified for interpretable *Singular* feature.

The assumption of having Expletive in VSO structures is not novel. FassiFehri (1993), Mohammad (2000), Ouhalla (1994), among others, assume the occurrence of an Expletive in VSO structures. For instance, FassiFehri (1993, 39) points out that "these expletives are shown to be only in singular forms, although they may be masculine or feminine, as the following contrasts (ibid) illustrate:

2. a. ʔinna-huzaar-a-nii talaat-u šaaʿiraat-in

That-it visited-me three-nom poets.f.-gen

b. ʔinna-haazaar-at-niitalaat-u šaaʿiraat-in

That-her visited-f.-me three-nom poets.f.-gen

c. *ʔinna-hunnazur-na-niitalaat-u šaaʿiraat-in

That-them.f. visited-pl.f.-me three-nom poets.f.-gen

It visited me three poets.

With the above assumption in mind, I will now try to analyze the sentence in 3 below:

3. ʔakal-at il-banaat-**u** l-ʕinab-**a**

past.eat (3fs) the-girls-**Nom** the-grapes-**Acc**

The girls ate the grapes.

The third stage merges XP with CP. Thus, head C, bearing uninterpretable features, will probe and agree with the closest goal which is *pro* in this case. Hence, The *Number* feature on C is valued *Singular* leaving φ -features intact. Thus, head C will keep probing until it values all its features. Then, we expect head C to agree with the lexical subject *l-banaat*. But this does not happen because *l-banaat* belongs to another domain: the vP shell (this is attributed to locality condition).

Hence, two ways to value the uninterpretable features on C. First, the lexical subject raises to Spec TP. Second, the uninterpretable features must percolate to T so they become close to their goal. The former option is ruled out because Spec TP is already filled with *pro*. Thus, the second option must take place.

At this stage of the derivation, it is head X (now X= T because X inherits Tense from C) that is the probe because it bears uninterpretable features. Thus, T probes and agrees with *l-banaat*; the former gets its *Person* and *Gender* features valued, the latter receives Nominative Case. Thus, the valued features of T appear overtly on the verb in the PF.

Now, let us consider the following SVO sentence:

2. ʔal-banaat-**u**ʔakal-na l-ʕinab-**a**

the-girls (3fs)-**Nom** past.eat-**3fp** the-grapes-**Acc**

The girls ate the grapes.

The vP formation goes through the same processes as in 1 above. Thus, vP merges with the affixal head X (X =T when X receives Tense from C) which triggers overt movement of the lexical verb to head T. At this stage of the derivation, as above, we face a problem: head X is not yet merged with its specifier nor with head C, the locus of features. Hence, no movement of the subject from its position in the edge of vP. Once X merged with C, the uninterpretable features of C cannot reach the subject (as mentioned above because it belongs to another domain). Hence, features percolation to head X (which becomes T) is a **must** in this case. Accordingly, T, being the probe, agrees with subject and the EPP feature is valued by raising the subject which received Nominative to Spec TP.

Now, consider the introduction of the complementizer*ʔinna* in the clause:

3. ***ʔinna*** l-banaat-**i**ʔakal-**na** l-ʕinab-**a**

Compl. The-girls-Acc past.eat-**3fp** the-grapes-**Acc**

Verily the girls ate the grapes.

The derivation of this sentence is not different from the derivation of 3 above except in one aspect. The complementizer*ʔ inna* has intrinsic Accusative Case. Thus, having *ʔinna* in C will value the uninterpretable Case feature of C as Accusative as opposed to the default Nominative. Hence, the subject receives Accusative Case as shown in 3 above.

Observe that once the Case feature is valued in C, it does not need to percolate to T. Thus, φ-features percolate so they become close to the lexical subject and agreement takes place as before except for the assumption that T fails to value the Case feature of the lexical subject. Two more processes are required for the derivation to converge. First, C needs to discharge its valued feature; second, the subject needs to value its Case feature. Thus, the subject raises to Spec TP where it gets its Accusative Case from head C. The derivation then converges.

According to this analysis, the valued Case in C doesn't percolate to T. An alternative assumption is that Case does indeed percolate to T and there it is discharged to the subject. Both analyses seem potentially acceptable. An interesting issue highlighted by Radford (2009, pp. 397-398), among others, is that Complementizers in West Flemish show the same agreement features that appear on the verb. Radford (2009, 404) assumes that this is a problem for the Features Inheritance proposal. In fact it seems the opposite. Thus in the following West Flemish examples (Radford, 397), the Complementizer is introduced in head C with uninterpretable features. As before, head C probes but cannot reach the subject in Spec vP. Thus, the subject raises to Spec TP to get its Case valued. Accordingly, C agrees with the subject which receives Case and then features percolate to T (the criterial element for Tense position) so they overtly appear on the verb.

4. (a) Kpeinzen*dank***ik** morgen goan

I.think that$_{1.sg}$.Sg I tomorrow go ('I think that I'll go tomorrow)

(b) Kpeinzen*daj***gie** morgen goat

I.think that$_{2.sg}$ (you) tomorrow go ('I think that you will go tomorrow')

(c) Kpeinzen*dan***Vale`reen Pol** morgen goan

I.think that$_{3.pl}$Vale`re and Pol tomorrow go ('I think that Valere and Paul will go tomorrow')

If our analysis is correct, then it seems that *Attract* (unless blocked by another element such as *pro* in VSO structures) gets priority over *Percolate*. Consequently we can abandon the EPP feature. Chomsky (2005, 23) states the following:

It is tempting to ask whether EPP can be reformulated in terms of feature inheritance… reformulation of the EPP properties in such terms might open a way to resolving the problems they raise. If so, it would be a welcome development, another step towards the goals of the MP and the long tradition of inquiry from which it derives.

For in VSO Arabic structures, Spec TP is filled with *pro*, in SVO structures Attract in the sense explained above takes place triggering movement of the subject to Spec TP. Again, if this analysis is on the right track, then the first proposal for Case assignment in SVO structures like 3 above (the valued Case does not percolate) can be prioritized to the alternative one (the valued Case percolates).

An interesting example suggested by Radford (2009, 403) as problematic to the proposal of Features Inheritance is:

5. He would seem[$_{TP}$ [$_{T}$ to] have left] (which in Radford is numbered 46)

In his own words:

If T in defective clauses like that bracketed in (46) enters the derivation carrying an uninterpretable and unvalued person feature, it is clear that it cannot inherit this via selection by a C head immediately above it if defective clauses are TPs which contain no CP projection. One way of obviating this problem would be to modify Chomsky's proposal by supposing that all T constituents enter the derivation carrying an unvalued person feature, and that in addition T in a complete clause inherits an uninterpretable number feature from C. (A more radical solution which would enable us to maintain Chomsky's position would be to suppose that T carries no agreement feature of any kind in defective clauses – a proposal which could mean abandoning the idea of successive-cyclic A-movement.)

However, if we continue with our analysis, we can account for the derivation of 5 above and it would provide further evidence to our assumptions. So, let us go through the derivation of 5 above step by step. First, the verb *leave* merges with the subject *He* to form VP which merges with the null light verb ø v. The latter probes and agrees with the complement of V that is *He* since both (the probe and the goal) are in the same shell. But v fails to assign Case to *He* because it is intransitive. Thus *He* raises to Spec vP. The vP shell is then merged with the auxiliary *Have* which I assume heads V. But *Have* is a weak verbal configuration; thus its null light verb v (maintaining Split VP analysis) is not φ-complete. It, apparently lacks the *Number* feature. So *He* values the *Person* feature on *Have* and raises to the higher Spec VP which is headed by the raising verb *Seem* (assuming with Chomsky 2001 that there is no raising to T_{def}). The latter raises to the null light verb which probes and values its *Person* feature as it is not dominated by C (if *would* was not in the derivation, *He* then would value both *Person* and *Number* features of *Seem* and the sentence would be *He seems to have left*.). The same process happens to the verb *would*. The point here is that the functional Heads C, and v are the source of features (either complete or incomplete) and Attract is prioritized to Percolate. Thus, the subject keeps raising until it becomes accessible by the probe C. Agree holds between the subject and C; then features percolate to their criterial position because of T(ense). Remember that Chomsky (2001, 6) mentions that 'probe and goal match if features have values for the goal but not for the probe'.

Thus, the subject has unvalued Case feature; therefore, it keeps raising (cf. Chomsky 2005, 22): "the raised goal must reach the probe by means of local steps, passing through intermediate positions where it leaves copies, but not stopping there to be spelled out"), as in 5 above valuing φ-incomplete features of embedded probes, until it receives its Case from a φ-complete probe. This

analysis seems tempting but one wonders why Attract happens first and then Percolation takes place particularly since the latter can do the job without raising of the subject to Spec TP. Interestingly, verbs in German can raise to C; auxiliaries and modals in English questions also raise to C. One immediate assumption would be that T is the host of- or the Criterial position for Tense and therefore features percolate. In fact this is not a trivial assumption. Note that in English questions Tense is determined by the Auxiliary that raises to C (Hence, assumingly, there is no features percolation to T). So we can propose Features Percolation as a Last Resort Operation where valued features are discharged to their Criterial positions. Hence, Tense to TP, Aspect to AspP, Neg to NegP, Case to Nominals/pronominals, and so on[*].

More research is needed in this area and I must leave it at this point now.

4. **Conclusion**

This paper aims at identifying the process via which Features percolate from a phasal head to a nonphasal head. The conclusion reached is that features percolation is not just a proposal but rather is systematic and is a necessity like any other syntactic operation for derivational convergence. Thus, features in C/v can be valued by raising the associate goal. If the goal is not local to the probe or its movement is blocked by the occurrence of *pro*, for instance, then percolation must take place not only to the immediately nonphasal head below but rather further to more remote nonphasal heads until they become local to their goal (cf. Alrashdan (2015) suggestion with regard to features percolation to Neg in North Jordanian Arabic). In other words, as long as there are no intervention effects, features can agree with a goal in its domain. If, on the other hand, there is a goal with matching features in the same domain of the phase, i.e. the probe can enter into a checking relation with this goal, features percolation can be prevented. Chomsky (2005) proposes such intervention effect or constraint which is put in simpler terms in Radford (2009, 417) as follows:

Intervention Condition

Probe P cannot target goal G if there is some other visible goal of the same kind as

G intervening between the two and if the intervening goal is inactive for P.

Moreover, *Locality Constraint* and *Attract Closest Condition* principles are essential to the analysis presented in this paper. These two constraints are defined by Radford (2009) as follows respectively:

Locality Principle

Every grammatical operation is local in the sense that it affects the

Closest constituent of the relevant type. (p.31)

Attract Closest Condition

A head which attracts a given kind of constituent attracts the closest constituent of the relevant kind. (p.216)

In short, features percolation is indeed systematic. With respect to Standard Arabic, as shown in this article, the subject needs to get its nominative Case valued and the strong phase head- suppose C, needs to value its uninterpretable features. Hence, the features in C cannot enter into agree relation with the subject that belongs to another domain; accordingly, the features percolate to a mediating projection that links CP with vP. This mediating projection hosts the features from C including the Tense feature; hence, named TP. Irrespective of the terminology here, this mediating projection hosts the uninterpretable features and therefore becomes the probe. Consequently, this probe agrees with the subject in Spec vP. If this mediating projection did not exist in Arabic or even in English, the subject would raise to Spec C. As mentioned earlier in the main discussion of this article, such a movement is not welcomed and refuted in the literature in both English

[*] have cited the term CriterialPosition and it is necessary to give credit to Rizzi (2003).

and Arabic syntax. Hence, the importance of the TP projection can be attributed to hosting features percolating from the strong phase head.

This study also demonstrates that a head with uninterpretable features is a probe, including the locus of such features: C/v.

I also show that in Standard Arabic (with respect to embedded TPs) that Case is not a 'reflex of agreement' for the subject of an embedded TP can agree and assign values for all the uninterpretable φ-features associated with a mediating embedded probe. This, in line with Chomsky (2005), leads to the assumption that Tense plays a significant role in determining Case. A distinction, consequently, is made between strong phases and weak phases. The former bears the 'basic' Tense while the latter does not. Accordingly, such a distinction seems to be determined by the verbal configuration. Hence, strong verbal configurations head strong phasal heads and therefore they bear the 'basic' tense whether past or nonpast. On the other hand, weak verbal configurations do not head strong phases although they might be specified for a full set of φ-features but not the 'basic' Tense.

Finally, I propose that valued features are sent to their Criterial Positions (perhaps in the PF). For example, Tense to head T, Aspect to head Asp, and so on. If they fail to do, the derivation will crash. One final and important assumption made is that *Attract* is prioritized to *Percolate*.

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توارث السمات النحوية وعلاقتها باللغة العربية الفصحى: تحليل من خلال نظرية الحد الأدنى في علم اللغة

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ملخص

هذه الدراسة تعد محاولة لاثبات انَ نظرية تشومسكي (2005، 2008) التي تتعلق بتوارث السمات النحويه هي نظرية منتظمة ويمكن تطبيقها على اللغة العربية الفصحى. هذه السمات النحوية كالصفات التوافقية بين الفعل والفاعل وكذلك الزمن مصدرها الرؤوس المرحلية للاشتقاق (phasal heads). وفق نظرية تشومسكي، يتم توريث هذه السمات النحوية الى رأس نحويُ ثابت حيث يعمل كمسبار يبحث عن راس نحوي هدف ثابت آخر يحمل سمات نحوية مشابهة. وهكذا جميع السمات النحوية غير القابلة للتفسيرفي كلا الرأسين المشار اليهما (أي المسبار والهدف) يتم مطابقتها لتأخذ قيما قابلة للتفسير. أي أنَ الرؤوس النحوية المرحلية C و v (وليس T و V) تقوم بالبحث وتحدد هدفا قريبا حيث إن السمات النحوية غير القابلة للتفسير تأخذ قيما قابلة للتفسير قبل نهاية الاشتقاق النحوي. أي إخفاق في نسبة قيم قابلة للتفسير لهذه السمات النحوية يؤدي إلى فشل عملية الاشتقاق. وأخيراً اقترح أن السمات النحوية المقيمة ترسل إلى موقعها المعياريَ في المكون الصوتي وليس قبل نهاية الاشتقاق النحوي. في هذا البحث استعملت اللغة العربية الفصحى "دراسة حالة" لتبيان أن توارث السمات النحوية هي عملية منتظمة شأنها شأن أي عملية نحوية أخرى ولتبيان أن نظرية تشومسكي المتعلقة بتوارث السمات النحوية تصح بالنسبة للغة العربية الفصحى ويمكن تطبيق هذه النظرية عليها.

الكلمات الدالة: توارث السمات النحوية، فاعل– فعل– مفعول به، فعل– فاعل– مفعول به، المكون الصوتي، اللغة العربية الفصحى.

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