Consequences of Feature Inheritance for Subject Movement

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1. Introduction

In recent developments in phase syntax, the mechanism of feature inheritance has been proposed, and unvalued/uninterpretable features (to be more specific, φ-features) in phase heads are inherited by non-phase heads in the course of the derivation. This is illustrated in (1) with C phase:

(1) $[_{CP}\ C_{\{\varphi\}}\ [_{TP}\ T\ [_{v^*P}\ \dots\ ]]] \rightarrow [_{CP}\ C\ [_{TP}\ T_{\{\varphi\}}\ [_{v^*P}\ \dots\ ]]]$

This mechanism is motivated by the assumption that only phase heads work as computational pillars in the derivation, with computation-driving features (or probes) being restricted to phase heads. The purpose of this paper is to investigate feature inheritance and consider its logical consequences for subject movement. I first argue that feature inheritance can be suspended in the root C phase (hereafter, root phase). I then propose that lack of feature inheritance in the root phase is not due to full-phase Transfer but head movement, claiming that feature inheritance can be straightforwardly predicted by independent assumptions. Finally, I argue that head movement follows as one consequence of free Merge. The conclusion of this paper is presented in the last section, where some remaining issues are noted.

2. Feature Inheritance

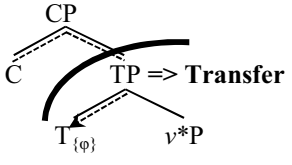
Richards (2007) argues that feature inheritance to non-phase heads is deducible from the following two premises:

(2) *Premise 1*: Value-Transfer Simultaneity
Value and Transfer of uFs (unvalued/uninterpretable features) must happen together.

(3) *Premise 2*: Cyclic Transfer
The edge and non-edge (complement) of a phase are Transferred separately.

As for Premise 1, valuation must be simultaneous with Transfer for the proper distinction of unvalued features at the C-I interface. Given cyclic Transfer (Premise 2), feature inheritance from phase to non-phase heads makes valuation of unvalued features simultaneous with Transfer, as shown in (4).

(4)



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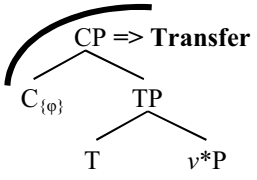
Thus, feature inheritance is motivated by Value-Transfer Simultaneity, coupled with cyclic transfer of phase-head complements.

With this deduction of feature inheritance in mind, now consider the root phase. In the root phase, unlike in the embedded phase, its edge must be transferred along with its complement; otherwise, it would never be transferred to the interface components. Thus, full-phase Transfer obtains at the root (Chomsky 2004). If so, then full-phase Transfer entails the following logical consequence: in the root phase, Value-Transfer Simultaneity comes for free *without* feature inheritance. As shown in (5), φ-features can be valued and simultaneously transferred even if they remain in C:

(5)



If feature inheritance is deduced from Value-Transfer Simultaneity, as Richards argues, we then get the following prediction: feature inheritance is not motivated in the root phase.[1]

In the next section, I discuss the absence of feature inheritance in the root phase with three pieces of evidence and argue that the prediction is correct.

3. Without Feature Inheritance

In this section, I consider subject movement and show that feature inheritance does not take place in the root phase but that it does in the embedded. If feature inheritance is not motivated in the root phase, root and embedded clauses should show contrasts because of feature-inheritance asymmetries. To see whether feature inheritance takes place or not, I introduce the following assumptions:

(6) (i) The edge-feature (EF) is a feature that requires its bearer to be merged with some syntactic object. (Chomsky 2007, 2008)
(ii) EF is a higher-order property of features. (Epstein, Kitahara and Seely 2012)
(iii) φ-features bear EF as their property. (cf. Carstens 2005, among others)

(6i) states that EF is satisfied by merging a syntactic object. (6ii) says that features can bear EF as one of their properties. From (6ii), it follows that φ-features bear EF as their property (= (6iii)). Thus, as shown in (7), if Head α has φ-features, a syntactic object (most typically, a DP) is merged (either externally or internally) to its edge/spec (that is, a sister of {α, βP}) for its EF.

(7) $[_{\alpha P}$ XP $[\ \alpha_{\{\varphi\}}\ [_{\beta P} \ldots [\ \ldots (t_{XP}) \ \ldots\ ]]]]$

One illustration of the assumptions is subject raising, in which the subject is raised to Spec,TP, the head of which bears φ-features via inheritance (Chomsky 2008).

From the assumptions in (6), the absence of feature inheritance can be judged from the absence of the edge/spec of T. If feature inheritance is not motivated in the root phase, as we have argued, then it follows as a conclusion that the (external/internal) merge of a syntactic object to Spec,TP does not take place in the root phase while it does in the embedded.

3.1. Anti-agreement

With (6) in place, first consider (Tamazight) Berber. In this language, when the subject moves out of the embedded clause as in (8a), the verb is inflected for subject-verb agreement. On the other hand, when the subject moves locally in the root clause as in (8b), the verb shows anti-agreement (AAE). I illustrate this with subject *wh*-movement (Ouhalla 1993, 2005, Ouali 2008). The examples are cited from Ouali, with the relevant verbs underlined:

[1] For much related discussion, see Legate (2011), Obata (2010) and Ouali (2008).

(8) a. ma ag inna ali theʕla (*ʕlan) araw
who Comp 3.Sg.said ali 3Sg.Fem.saw (*saw.Part) boys
'Who did Ali say saw the boys?'
b. mani thamttut ag ʕlan (*thʕla) araw (AAE)
which woman Comp see.Perf.Part (*3Sg.Fem.see.Perf) boys
'Which woman saw the boys?'

Provided that unvalued φ-features are valued via the operation Agree (probe-goal) in both root and embedded clauses, the contrast in (8) should not be reducible to Agree in φ-features. Suppose that the realization of canonical subject-verb agreement crucially depends on movement to Spec,TP (see Brandi and Cordin 1989); that is, movement to Spec,TP is a syntactic instruction to the phonological component that subject-verb agreement is realized canonically. Thus, agreement is defective or absent (or default) when the subject does not move there (cf. Henderson 2009, Kinyalolo 1991). This assumption is endorsed by the fact that in languages such as Standard Arabic which allow subject-inversion constructions, verbs do not show morphological subject-verb agreement with inverted subjects (that is, the subjects not in Spec,TP). Consider (9) from Standard Arabic (Ouhalla 1993):

(9) a. Wasal -a al- tullab -u.
arrived 3.M.Sg the students Nom
'The students arrived.'
b. Al- tullab -u wasal -uu.
the students Nom arrived Pl

Given this assumption of the realization of abstract φ-features, anti-agreement in (8b) argues that there is no movement to Spec,TP. Given (6), φ-features are thus not inherited by T in the root phase. On the other hand, in the embedded clause, φ-features are inherited by T for Value-Transfer Simultaneity, and the subject moves to Spec,TP. Thus, canonical subject-verb agreement is realized in (8a). The root/embedded contrast in (8) follows if there is no feature inheritance in the root phase.

As further evidence for the absence of feature inheritance, consider (10) and (11). As shown, in the root phase, an overt complementizer is obligatory while in the embedded it is disallowed.

(10) ma ***(ag)** swan aman
who Comp drink.Perf.Part water
'Who drank water?'
(11) ma ay thenna Fatima (***ay**) iswa aman
who Comp 3S.F.say.Perf Fatima Comp 3S.M.drink.Perf water
'Who did Fatima say drank water?'

Assuming that complementizers with φ-features cannot be omitted for full interpretation (morphological realization) at the phonological component, (10) argues that φ-features are not inherited and remain in C; hence, the complementizer must be present. On the other hand, the overt complementizer in (11) is ungrammatical because there are no φ-features left in the embedded C for feature inheritance. The complementizer asymmetry can be considered another piece of evidence for lack of feature inheritance in the root.

3.2. Case Marking

The subject in Japanese is marked with either a topic marker *–wa* or a nominative marker *–ga*. As illustrated in (12) and (13), the subject is more naturally marked with a topic marker in root clauses while in embedded clauses (say, a relative clause), only a nominative marker is allowed:

(12) Taroo-**wa**/??**-ga** kinoo LGB-o yon-da.
Taroo-Top/Nom yesterday LGB-Acc read-Past
'Taroo read LGB yesterday.'
(13) [Op_i [Taroo-**ga**/***wa** kinoo t_i kat-ta]] hon
Taroo-Nom/Top yesterday buy-Past book
'the book Taroo bought yesterday'

Following Kuroda (1992) and others, I argue that whether the subject is marked with a nominative or topic marker is structurally dependent and is determined by the position in which the subject is located. As illustrated in (14), *–ga* is attached to the subject in Spec,TP while *–wa* to the subject in Spec,CP:

(14) $[_{CP}$ Subject-*wa* $[_{TP}$ Subject-*ga* […] T] C]

With this analysis of Japanese case marking in mind, the root/embedded asymmetry in case marking is a straightforward consequence of lack of feature inheritance in the root: in the root phase, φ-features are not inherited and the subject moves to Spec,CP for the absence of feature inheritance, which results in *–wa* marking. On the other hand, the subject moves to Spec,TP for φ-feature inheritance in the embedded, and is thus marked with *–ga*. Case marking in Japanese gives us another piece of evidence for the argument that feature inheritance is not motivated in the root phase.[2]

3.3. Expletive Merger

In Yiddish, when the subject undergoes *wh*-movement, the expletive *es* can be merged in the embedded clause while it cannot in the root. Furthermore, instead of the expletive, a topic element (say, an adverb) can be merged in the embedded clause. Consider the following data (Diesing 1997, 2005):[3]

(15) a. Ikh veys nit $[_{CP}$ ver $[_{TP}$ es hot gegesn a brukve]].
I know not who Expl has eaten a turnip
'I don't know who has eaten a turnip.'

b. $[_{CP}$ Ver hot $[_{TP}$ (*es) gegesn dos broyt]]?
who has Expl eaten the bread
'Who ate the bread?'

(16) Zi iz gekumen zen $[_{CP}$ ver frier vet kontshen].
she has come see who earlier would finish
'She has come to see who would finish earlier.'

Given the assumptions in (6), which state that φ-features trigger merge of a syntactic object to the edge/spec of φP, the root/embedded contrast in (15) argues that φ-features are not inherited by T in the root phase: the merge of a syntactic object to its edge/spec is impossible for lack of φ-features in T. On the other hand, in the embedded clause, where φ-features are inherited by T for Value-Transfer Simultaneity, the expletive or a topic element can be merged to Spec,TP thanks to the inherited φ-features in T. The root/embedded contrast in expletive/topic merger confirms our empirical prediction.

In summary, I have argued in this section that the root/embedded contrasts in agreement phenomena in (Tamazight) Berber, case marking in Japanese and expletive merger in Yiddish endorse the prediction that φ-features are not inherited by T in the root phase. This prediction, in turn, follows from a logical consequence suggested by full-phase Transfer at the root.

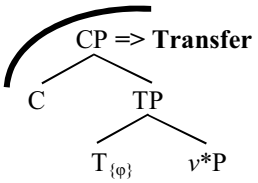
4. Feature Inheritance in the Root Phase

4.1. Head Movement and Lack of Feature Inheritance

I have argued that φ-features can remain in C and we have seen empirical evidence for the absence of feature inheritance in the root phase. We should note, however, that full-phase Transfer at the root does not force lack of feature inheritance. As shown in (17), Value-Transfer Simultaneity can be achieved in the root phase *even if features are inherited by T*, which is because TP is transferred together with CP. Compare (17) with (5):

[2] In the Japanese literature, *koto* 'the fact that' is often added to a matrix sentence with a *ga*-marked subject to avoid unnaturalness (see (12)). This fact is straightforward under our proposal here: unless *koto* is added, the subject moves to Spec,CP for lack of feature inheritance and is marked with *–wa*; by adding *koto*, the sentence is embedded and the subject can be *ga*-marked thanks to its movement to Spec,TP for feature inheritance.

[3] I thank Molly Diesing (p.c.) for helping me with Yiddish examples.

(17) 

Thus, full-phase Transfer does not force the absence of feature inheritance in the root phase under Value-Transfer Simultaneity. Furthermore, Epstein et al. (2012) argue that φ-features are inherited by T for Case valuation: nominative Case-value is assigned by φ-features + Tense (see also Mizuguchi 2006 for this proposal). These arguments leave room for feature inheritance even in the root phase. I thus conclude that full-phase Transfer is *not* responsible for lack of feature inheritance in the root.

If feature inheritance does not take place in the root phase as we have discussed in the last section, the question is: How can features remain in C in the root phase, and why? I propose that head movement (more concretely, T-to-C movement) preempts feature inheritance in the root phase. As illustrated in (18), head movement brings T up to C, keeping features from being inherited:

(18) $[_{CP}\ C_{\{\varphi\}}\ [_{TP}\ T\ [_{v*P}\ \dots\ ]]]$ — **Head Movement** → $[_{CP}\ C_{\{\varphi\}}\text{-}T\ [_{TP}\ t_T\ [_{v*P}\ \dots\ ]]]$

This proposal can not only explain lack of feature inheritance in the root, where T-to-C movement can generally take place; it can also make Case valuation possible even without feature inheritance. The proposal, coupled with Epstein et al.'s assumption on feature inheritance, suggests that unless T-to-C movement takes place, feature inheritance is motivated by Case valuation. Thus, our proposal makes the following prediction on feature inheritance in the root:

(19) Features are not inherited only under the T-to-C movement contexts; in others, features are inherited even in the root phase.

In the next section, I consider this prediction and argue that it is in fact borne out.

4.2. Asymmetries in the Root

According to McCloskey (2000), in West Ulster English, subject *wh*-movement can strand a quantifier in the object position but subject raising cannot. Consider the following examples:

(20) a. Who$_i$ was arrested all t_i in Duke Street?
b. *They$_i$ were arrested all t_i last night.

He argues that quantifier float presupposes the derivation in (21), in which a DP associated with a quantifier moves to the edge/spec of the DP headed by the quantifier (Koopman 1990, Postal 1974):

(21) $[_{DP}\ they_i\ [_{D'}\ all\ \ t_i\ ]]$

Given (21), *wh*-movement and subject raising in (20) originate from Spec,DP. In (20a), which is an interrogative, T-to-C movement takes place and *who* does not move to Spec,TP for the absence of feature inheritance under our proposal. Hence the derivation will be (22a). On the other hand, in (20b), in which there is no T-to-C movement and feature inheritance is motivated for Case valuation, the derivation will be (22b). Assuming that Spec,DP is an A-bar position, subject raising from Spec,DP to Spec,TP will be improper movement. Thus, (20b) is ruled out.

(22) a. $[_{CP}\ who_i\ C_{\{\varphi\}}\text{-}was_j\ [_{TP}\ t_j\ arrested\ [_{DP}\ t_i\ [_{D'}\ all\ t_i]]]\ in\ Duke\ Street]]$

b. $[_{CP}\ [_{TP}\ they_i\ [were\text{-}T\ [_{VP}\ arrested\ [_{DP}\ t_i\ [_{D'}\ all\ t_i]]\ last\ night]]]]$

***Improper Movement**

The asymmetry in quantifier float in the object position upholds the prediction in (19).

The next argument comes from scope relations. As shown in (23), the subject shows different scope relations with an object quantifier depending on whether it is *wh*-moved or subject-raised (May 1985):

(23) a. Who loves everyone? (*who* > *everyone*, **everyone* > *who*)
b. Someone likes everyone. (*someone* > *everyone*, *everyone* > *someone*)

Given that scope relations are determined by c-command relations, the unambiguous interpretation in (23a) is a straightforward consequence of lack of feature inheritance for T-to-C movement. In (23a), which is an interrogative sentence, T-to-C movement takes place and *who* does not move to Spec,TP for the absence of φ-feature inheritance. Thus, as illustrated in (24a), the quantifier object, which quantifier-raises to Spec,TP, cannot scope over the *wh*-phrase. On the other hand, because T does not move to C in (23b), the subject is raised to Spec,TP for feature inheritance and the quantifier-raised object can scope over the subject at the TP edge, as shown in (24b):

(24) a. $[_{CP}$ who$_i$ C $[_{TP}$ everyone$_j$ $[_{TP}$ T $[_{v*P}$ t$_i$ *v** likes t$_j$]]]] (*who* > *everyone*)
b. $[_{CP}$ $[_{TP}$ everyone$_j$ $[_{TP}$ someone$_i$ $[_{TP}$ t$_i$ likes t$_j$]]]] (*everyone* > *someone*)

The scope relations in (23) provide us with another piece of evidence for our prediction.

As final evidence, consider subject-verb agreement in Kinande. In this language, the subject shows subject-verb agreement when it is raised but anti-agreement appears if the subject is *wh*-moved. Consider (25), which is cited from Schneider-Zioga (2007):

(25) a. Kambale *a*-alangira Marya
Kambale agr-saw Mary
'Kambale saw Mary.'
b. iyondi yo *u*-alangira/**a*-alangira Marya (AAE)
who that anti.agr-saw/agr-saw Mary
'Who saw Mary?'

Recall our argument in Section 3.1 that movement to Spec,TP serves as a syntactic instruction to the phonological component that φ-features in T valued by Agree are realized canonically. With this in mind, the agreement asymmetry in (25) matches well up with our prediction. In (25a), where T-to-C movement does not take place, φ-features are inherited by T for Case valuation and the subject raises to Spec,TP for the inherited φ-features in T. Since the subject is in Spec,TP, canonical subject-verb agreement is realized (= (26a)). On the other hand, in (25b), which is an interrogative sentence and for which T-to-C movement can reasonably be assumed, feature inheritance does not take place for the head movement, and the *wh*-subject does not move to Spec,TP but moves at one fell swoop to Spec,CP. Hence, canonical agreement is impossible and instead, anti-agreement is realized (= (26b)):

(26) a. $[_{CP}$ C $[_{TP}$ Kambale$_i$ T$_{\{\varphi\}}$ $[_{v*P}$ t$_i$ *v** $[_{VP}$ alangira Marya]]]]
b. $[_{CP}$ iyondi$_i$ C$_{\{\varphi\}}$-T$_j$ $[_{TP}$ t$_j$ $[_{v*P}$ t$_i$ *v** $[_{VP}$ alangira Marya]]]]

Subject-verb agreement in Kinande endorses our prediction on feature inheritance.

To summarize our argument in this subsection, the data we have considered here demonstrate that T-to-C head movement, not full-phase Transfer, is the reason behind the absence of feature inheritance in the root phase. As we have discussed, feature inheritance does not take place when T moves to C; otherwise, features are inherited even in the root phase for Case valuation. The discussion bolsters our proposal and upholds the prediction in (19).[4]

[4] My proposal implies that what Legate (2011) calls "over-inheritance," by which both φ-features and Q-feature of C are inherited by T (Chomsky 2011), does not take place in subject *wh*-movement.

4.3. Root and Embedded Asymmetries Reconsidered

I have argued that feature inheritance is blocked by T-to-C head movement and that φ-features can remain in C in the root phase. With this proposal in place, we need to consider the root/embedded asymmetries in feature inheritance we discussed in the last section. To the extent that the proposal in this section is correct, T-to-C movement takes place to block feature inheritance in the root clauses. I argue that this is in fact the case. In this subsection, we go through the data we considered.

Let us start with anti-agreement in (Tamazight) Berber, which is repeated below as (27):

(27) mani thamttut ag ʕlan (*thʕla) araw (AAE)
which woman Comp see.Perf.Part (*3Sg.Fem.see.Perf) boys
'Which woman saw the boys?'

In support of the absence of feature inheritance in (27), we noted that overt complementizers are obligatory in the root clause while in the embedded, they must not be present. Consider once again the examples given in (10) and (11), which are repeated below for convenience:

(10) ma ***(ag)** swan aman
who Comp drink.Perf.Part water
'Who drank water?'

(11) ma ay thenna Fatima (***ay**) iswa aman
who Comp 3S.F.say.Perf Fatima Comp 3S.M.drink.Perf water
'Who did Fatima say drank water?'

Assuming that complementizers with φ-features cannot be omitted for full interpretation at the phonological component, I argued that φ-features remain in C in the root clause. This immobility of φ-features is straightforward if T-to-C movement takes place in the root: the movement forces φ-features to get stuck in C because there is no head below C to which the features can be transmitted. We can reasonably take the obligatory complementizer in (10) to be evidence (though indirect) for T-to-C movement in the root phase. The absence of feature inheritance in (27) can thus be credited to the head movement.

Now turn to Japanese, in which the root clause prefers *–wa* marking on the subject, which I have argued is due to lack of feature inheritance.

(28) Taroo-**wa**/??**-ga** kinoo LGB-o yon-da.
Taroo-Top/Nom yesterday LGB-Acc read-Past
'Taroo read LGB yesterday.'

If T-to-C head movement is responsible for lack of feature inheritance, it should take place in the root clause in Japanese. Koizumi (1995) argues with TP-coordination in (29) that verbs can move up to C in Japanese declarative clauses (= (30)). If so, it can be said that the absence of feature inheritance in (28) can be attributed to T-to-C movement in Japanese declarative clauses.

(29) [[Mary-ga ringo-o 2-tu] to [Nancy-ga banana-o 3-bon]] tabe-ta.
Mary-Nom apple-Acc 2Cl and Nancy-Nom banana-Acc 3-Cl eat-Past
'Mary ate two apples, and Nancy, three bananas.'

(30) $[_{CP}\ [_{TP}$ Subj. $[_{v^*P}\ [_{VP} \ldots t_V]\ t_{V\text{-}v^*}]\ t_{V\text{-}v^*\text{-}T}]$ & $[_{TP}$ Subj. $[_{v^*P}\ [_{VP} \ldots t_V]\ t_{V\text{-}v^*}]\ t_{V\text{-}v^*\text{-}T}]$ V-v*-T-C]

In Japanese, there are some instances in which a nominative-marked subject is possible even in the root clause. This is shown in (31) (Miyagawa 2001):

(31) Zen'in-ga sono tesuto-o uke-nakat-ta (yo).
all-Nom that test-Acc take-Neg-Past Excl
'All did not take that test.' (all > not, *not > all)

Given that case marking in Japanese is structurally dependent and that a *ga*-marked subject is in Spec,TP (see (14)), features are inherited for Case valuation in (31), and T-to-C movement does not

take place; that is, verbs move only up to T. This is endorsed by scope relations in (31). As indicated, the subject takes scope over the negation; if T moves up to C, the subject would fall under the scope of Negation, which is empirically not the case:

(32) a. all > not: [$_{CP}$ [$_{TP}$ zen'in-ga [$_{NegP}$ [$_{v*P}$ [$_{VP}$ sono tesuto-o t_V] $t_{V\text{-}v*}$] $t_{V\text{-}v*\text{-}Neg}$] V-*v**-Neg-T] C]
b. not > all: [$_{CP}$ [$_{TP}$ zen'in-ga [$_{NegP}$ [$_{v*P}$ [$_{VP}$ sono tesuto-o t_V] $t_{V\text{-}v*}$] $t_{V\text{-}v*\text{-}Neg}$] $t_{V\text{-}v*\text{-}Neg\text{-}T}$] V-*v**-Neg-T-C]

Finally, consider Yiddish. Recall that unlike in the embedded clause, the expletive *es* cannot be merged in the root in Yiddish, which we have argued is evidence for the absence of feature inheritance in the root clause:

(33) [$_{CP}$ Ver hot [$_{TP}$ (*es) gegesn dos broyt]]?
who has Expl eaten the bread
'Who ate the bread?'

In this language, subject-auxiliary inversion is observed in root interrogatives while it is not in embedded interrogatives. This is evidenced by the following examples (Diesing op.cit.):

(34) a. Vos$_i$ hot maks gesesn t_i?
what has Max eaten
'What did Max eat?'
b. Ikh veys nit vos$_i$ maks hot gesesn t_i.
I know not what Max has eaten
'I don't know what Max ate.'

(35) Hot er gezen Maxn?
has he seen Max
'Has he seen Max?'

The examples argue that T-to-C movement is independently motivated in the root interrogative. Thus, we can say that feature inheritance does not take place in (33) for T-to-C head movement. The absence of expletive merger in (33), as I argued, comes from lack of φ-feature inheritance.

To summarize this subsection, we have reconsidered the examples from the last section under our proposal that T-to-C movement, not full-phase Transfer, is the reason behind lack of feature inheritance. I have argued that T-to-C movement is motivated in the examples. We can conclude that the absence of feature inheritance shown by (27), (28) and (33) is attributable to T-to-C movement.

4.4. Verb Second

In this section, I discuss Verb Second (V2) in German and argue that V2 follows as one straightforward consequence of our proposal. V2 is illustrated by the following examples:

(36) a. Die Kinder haben diesen Film gesehen.
the children have this film seen
'The children have seen the film.'
b. Diesen Film haben die Kinder gesehen.
c. * Haben die Kinder diesen Film gesehen.

(37) a. Gestern sahen die Kinder den Film.
yesterday saw the children the film
'The children saw the film yesterday.'
b. * Sahen die Kinder gestern den Film.

One of the distinctive characteristics of German V2 is that verbs leave TP and move to C (Schwartz and Vikner 1996); that is, T-to-C movement takes place in V2 clauses. In (36) and (37), we can see this from the positions of *haben* and *sahen*, which come to the right of *gesehen* and *den Film*, respectively, in the embedding (hence, non-V2) context:

(38) a. Ich weiß, daß die Kinder den Film gesehen *haben*.
b. Ich weiß, daß die Kinder den Film *sahen*.

For our purpose, it is important to note that in V2 clauses, as shown in (36) and (37), verb movement must accompany the movement of some syntactic object (subject, object, adverb, etc.) to its left, hence to Spec,CP; if nothing moves as in (36c) and (37b), ungrammaticality results. Our proposal can naturally explain this fact without making additional assumptions on the syntax of V2. In V2, φ-features remain in C without being inherited due to T-to-C movement. Given the assumptions in (6), since φ-features of C bear EF, which triggers merge to the edge/spec of φ-bearing head, a syntactic object must be merged to Spec,CP for the EF. The V2 phenomena, which are schematically summarized in (39), follow as a straightforward consequence of our proposal.

(39) $[_{CP}\ XP_j\ [C_{\{\varphi\}}\text{-}T_i\ [_{TP}\ t_i\ [\ \ldots\ t_j\ \ldots\ ]]]]$

5. Head Movement in Syntax

I have argued that an important component of our proposal is head movement, which is responsible for lack of feature inheritance in some root contexts. Head movement, however, has been a target of debate and we must consider its status in the theory of grammar. To be more specific, to the extent that head movement takes place in narrow syntax and affects the syntactic behaviors of subject movement, the question is how it is implemented. I argue that free Merge, which is proposed in a series of recent papers by Chomsky (2004, 2007, 2008, 2011), can derive head movement in a way that is compatible with phrasal movement. Free Merge states that Merge is unconstrained and applies freely in narrow syntax without caring about the objects to be derived, as far as it conforms to third-factor principles. Merge in this sense is *Merge α* (Merge anything, anywhere, anytime) and is most simply formulated as Merge(α, β) → {α, β}, where α and β are two arbitrary syntactic objects.

I propose that free Merge allows an element to be internally merged in the process of External Merge (it should be kept in mind that both External and Internal Merge are instantiations of the single operation Merge).[5] To make our argument specific, consider the derivation in (40):

(40) a. {T, {*v**, Obj}}
b. IM: (C, T) → {C, T}
EM: ({C, T}, {T, {*v**, Obj}}) → {{C, T}, {T, {*v**, Obj}}}

In constructing a clause, C is merged with TP. Suppose that in the process of the external merge, T undergoes merge again (that is, Internal Merge) and is merged with C. Under free Merge, nothing blocks this interplay of External and Internal Merge; a stipulation would be required to rule it out. A newly created set C-T is then merged with TP. Given that C is detected by the labeling algorithm as the label of this set, the derived structure is the one in (18), where T has head-moved to C inside CP.

In summary, head movement results from the derivational process in which External Merge and Internal Merge are intermingled in derivations. This mode of structure building, I have argued, naturally follows as one consequence of free, unconstrained Merge.

6. Conclusion

In this paper, I have argued that feature inheritance can be suspended in the root C phase, and that head movement is responsible for the absence of feature inheritance in the root phase. I also claimed that free Merge allows head movement in syntax. The conclusion of this paper is that whether or not feature inheritance takes place is governed by independent assumptions in syntax: features are not inherited when T moves to C; otherwise, they are inherited by T for Case valuation. There are still remaining issues that must be discussed: for instance, subject raising in root interrogatives, embedded

[5] Bobaljik and Brown (1997) propose the interplay of External and Internal Merge in the framework of Generalized Transformations. Our proposal argues that their proposal is a natural consequence of free Merge, and derives it from a yet simpler system of structure building in Minimalist theory. I thank Hans-Martin Gärtner (p.c.) for reminding me of Bobaljik and Brown (1997).

V2, cross-linguistic differences, etc. For lack of space, however, I have to leave the discussion for another occasion. I close this paper by saying that with independently motivated assumptions in Minimalist theory taken into account, the remaining issues can fall under the proposed system.

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