ON C-TO-T Φ-FEATURE TRANSFER: THE NATURE OF AGREEMENT AND ANTI-AGREEMENT IN BERBER

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1. Introduction

In recent developments of Minimalism, Chomsky (2000, 2001 and 2004) argues that agreement results from a Probe-Goal relation established between a head X and an argument YP. Chomsky proposes that Subject-verb agreement is obtained upon establishing an Agree relation between T and the subject (in Spec-*v*P). T however is not merged bearing Φ-features but inherits these Φ-features from C. In light of this hypothesis, this paper examines the nature of feature inheritance or Feature Transfer and its implications for the nature of agreement and the so-called Anti-Agreement Effect (AAE) (Ouhalla 1993, 2005b) in Berber.

Chomsky (2000, 2001, 2004) eliminates Spec-Head as a syntactic relation and proposes an analysis for how agreement is obtained since Spec-Head agreement is also eliminated. Alternatively, Chomsky argues that agreement is obtained as a result of an Agree operation that takes place upon establishing a Probe-Goal relation between a probing head and a target goal which is in the Probe's c-command domain. Subject-verb agreement, for example, is obtained as a result of a relation established between T, which bears uninterpretable and unvalued Φ-features, and the subject, which bears among its features an uninterpretable unvalued Case feature, in Spec-*v*P. Bearing an uninterpretable and unvalued feature is a

pre-condition for a Head or Phrase to be an active Goal or an active Probe respectively. Chomsky (2004) hypothesizes that T inherits its Φ-features from C and writes:

> "T functions in the Case-agreement system only if it is selected by C, in which case, it is also complete. Further, in just this case T has the semantic properties of true Tense. These cannot be added by the Ø-features, which are uninterpretable; they must therefore be added by C. Hence T enters into feature-checking only in the C-T configuration…"
>
> Chomsky (2004: 13)

Chomsky (2005b: 9) also writes:

> "In the lexicon, T lacks these features. T manifests them 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 tense. So it makes sense to assume that Agree- and Tense-features are inherited from C, the phase head"

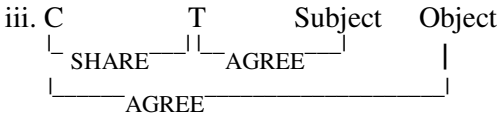
In nonfinite clauses, the assumption is that T is not selected by C, and the argument that T does not have Φ-features is logical since C, from which it inherits these features, was never merged. However, the assumption that in finite clauses, when C is merged, T inherits the Φ-features from it is logically incomplete, and should in fact allow three logical possibilities: 1) C transfers the Φ-features to T, 2) C does not transfer the Φ-features to T and 3) C transfers the Φ-features to T but also keeps a copy. In this paper and building on Ouali (2006), I will show that all these theoretically viable options are empirically attested. Option (1), which I call DONATE, and which is sketched in (i) below, is the case of simple declarative clauses:

i. C T Subject *Decalaratives*
|_DONATE_| |_AGREE_____|

Option (2), which I call KEEP, is the case of local subject extraction namely subject wh-clauses, clefts and subject relative clauses, which yield the so-called Anti-Agreement Effect (AAE) (Ouhalla 1993, 2005). This is schematized below (the representation shows the subject in situ prior to extraction; the position that is relevant for Agree to be established):

ii. C T Subject *AAE*
|_ KEEP_| |
|_____AGREE____|

Option (3), which I label SHARE, is the case of object local extraction, and subject or object long distance extraction. Local object extraction is schematized below (here also the subject and object are in situ):



I will argue that the application of DONATE, KEEP and SHARE is ordered with DONATE applying first and if that yields a derivation crash, KEEP then applies and if that in turns yields a crash SHARE applies. I will show that the ordering of application of these three mechanisms is empirically motivated given Berber facts, and theoretically desirable given principles of economy.

The paper is organized as follows: section 2 presents an analysis of subject-verb agreement in English and Berber, section 3 proposes an analysis of Anti-Agreement, section 4 discusses object extraction and long distance extraction, section 5 presents a note on wh-questions in English, and section 6 discusses the different cases of Feature Transfer and their order of application.

2. Subject-verb Agreement: Analysis

Chomsky (2001, 2004) argues that T inherits its Φ-features from C; i.e. upon merging C, it transfers its [-interpretable] Φ-features to T, and only then T, now having [-interpretable] Φ-features, probes the subject. As a result of an Agree operation defined in (1), these Φ-features are valued and deleted as illustrated in (2) and (3).

(1) Agree

The probe P agrees with the closest matching goal in D.

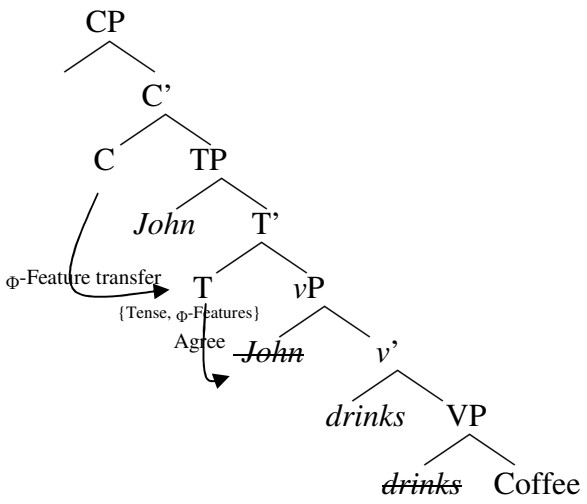
a. Matching is feature identity

b. D is the sister of P. [D= c-command Domain of P]

c. Locality reduces to closest c-command (Chomsky 2000: 122)

(2) *John drinks coffee*

(3)



Given this analysis, the questions that beg to be answered are:

1. Why does T inherit the C's Φ-features, or in other words why does C transfer its features to T?
2. Does C always transmit its Φ-features to T? Can it for example not transfer these features at all or transfer them but keep a copy?

Let us take question 1. The only possible motivation and reason for why C transfers its Φ-features to T is minimal search; the subject is closer to T than to C in terms of c-command path. One could argue that "closeness" in terms of c-command is more computationally efficient than the opposite. In principle, C could retain its Φ-features hence remain an active probe and enter into an agreement relation with the subject. In this case it would have to probe the subject over T violating "locality conditions" (see Chomsky 2004 among others).[1]

Lets us now take question 2 which is: does C transmit its Φ-features to T without keeping a copy of these features?
The answer to this question, considering the example from English represented in (3), is yes for the following reason:
These Φ-features are [-interpretable] and presumably make any head that bears them 'active'. If C transfers them to T and retains a copy, now both C and T are active and would act as Probes. Minimal search would enable T,

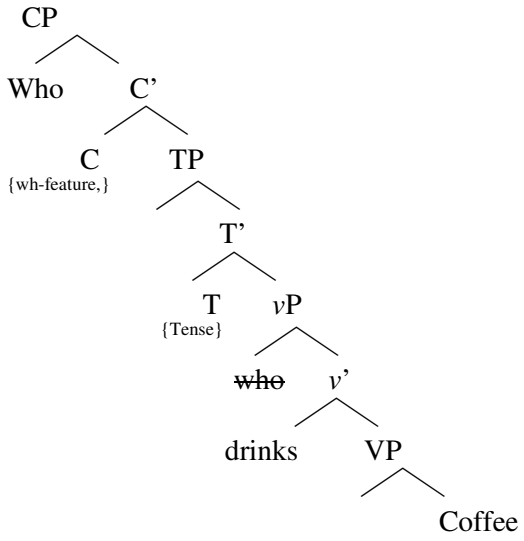
now bearing [-interpretable] Φ-features to probe the subject. After the Agree operation takes place the Φ-features on T are valued as well as the case feature on the DP subject. C, now bearing a copy of the [-interpretable] Φ-features will not be able to find an active goal because the case on the subject DP has been valued and hence it is inactive and invisible to C. Therefore, if C retains a copy of Φ-features, the derivation is doomed to crash. This leads us to conclude that, in declarative finite clauses such as (2), when C is merged it transfers its Φ-feature to T without keeping a copy, let us call this: DONATE.

(4) DONATE
Transfer Φ-features from C to T without keeping a copy.

We just showed that C cannot keep a copy of the Φ-features in English declarative sentences, but now the big puzzle is how do we ever get wh-questions in English? Consider the following sentence in (5) represented in (6).

(5) Who drinks coffee?

(6)



With the assumption that the wh-word has a [-interpretable] wh-feature whereas C has a [+interpretable] wh-feature, let us see what happens if we

apply DONATE.[2] C transfers its Φ-features to T without keeping a copy. Now T is active by virtue of bearing [-interpretable] Φ-features whereas C is not. T probes and Agrees with the wh-subject, and as a result of this agreement the Φ-features on T are valued as well as the case feature on the wh-subject. The [-interpretable] wh-feature on the wh-word is not however valued, and will not be able to be valued because the head that is needed for this to happen, namely C, is now inactive because it transferred its [-interpretable] Φ-features to T. The derivation is doomed to crash. Let us leave this as an open problem for now and I will return to it in section 5.
Let us now ask another question and that is: can C keep the Φ-features and not transfer them at all? I will show that this is exactly the case that we find in the subject extraction facts in Berber.

3. Subject extraction and Anti-Agreement Effects

Verbs in Tamazight Berber (TB) are always inflected for subject agreement. The agreement element can co-occur with the subject as illustrated in (7). TB is also a pro-drop language as illustrated in (8).

(7) *ytsha* *wrba* *thamen*
3s.eat.PERF boy honey
'The boy ate honey'
(8) *pro* *ytsha* *thamen*
pro 3s.ate.PERF honey
'He ate honey'

There are three contexts which show lack of subject-verb agreement in Tamazight and in Berber in general as pointed out by researchers such as Ouhalla (1993, 2005b). These are: subject-wh clauses, subject-relative clauses, and cleft-constructions. The obligatory lack of agreement between the verb and the subject, triggered by extraction of the subject is called, as previously mentioned, AAE (Ouhalla (1993, 2005), Richards (2001) and Ouali and Pires (*to appear*)). If we look at the two examples in (9) and (10), we see that the subject-verb agreement is overtly marked on the verb.

(9) *th-e3la thamttut araw* VSO
3sf- seePERF woman boys
'The woman saw the boys'

(10) *thamttut th3la araw* SVO
woman 3sf.see.PERF boys
'The woman saw the boys'

This subject-verb agreement is suppressed in the subject extraction environment. (11) is an example of a subject wh-extraction which shows AAE on the verb; and as illustrated by (12), full subject-verb agreement is impossible.[3]

(11) *mani thamttut ag 3lan araw*
which woman COMP see.PERF.*Part* boys
'Which woman saw the boys'

(12) **mani thamttut ag th3la araw*
which woman COMP 3sf.see.PERF boys
'which woman saw the boys?'

The same pattern is observed in subject relative clauses as in (13) and (14), and clefts in (15) and (16) where subject verb agreement is again impossible.

(13) *thamttut ag 3lan araw*
woman COMP see.PERF.*Part* boys
'The woman who saw the boys…'

(14) **thamttut ag th3la araw*
woman COMP 3sf-see.PERF boys
'the woman who saw the boys…'

(15) *thamtutt-a ag 3lan araw*
woman-this COMP see.PERF.*Part* boys
'It was this woman that saw the boys'

(16) **thamtutt-a ag th3la araw*
woman-this COMP 3sf-see.PERF boys

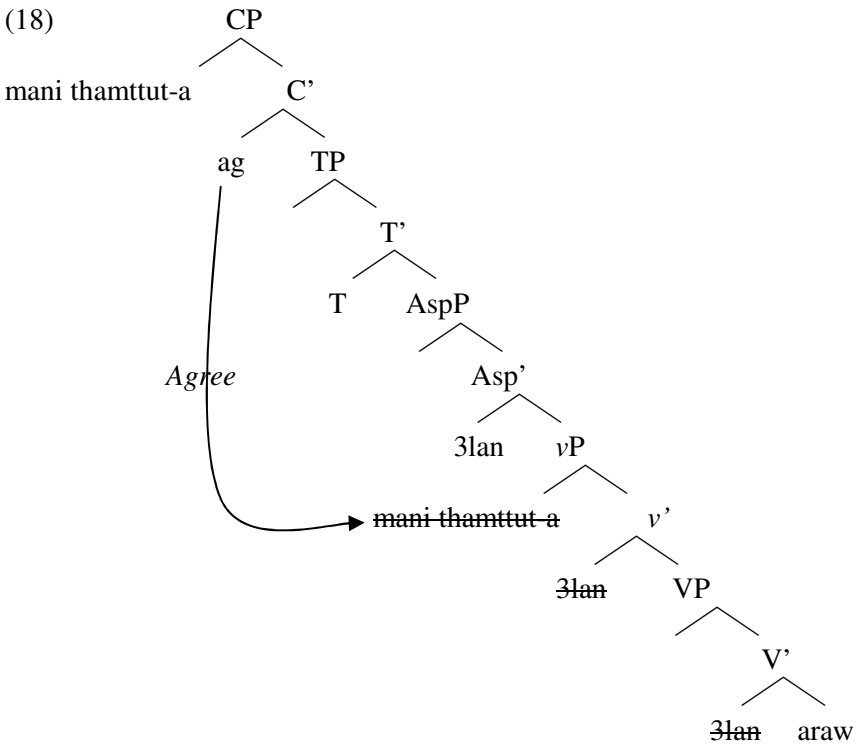
One of the main questions that I will address is: how can one account for these facts under a derivational approach and given the Probe-Goal Relation and the Agree operation adopted here and also given the hypothesis that T inherits the Φ-features from C?[4] Note that Agree holds between T which is specified for a full set of unvalued Φ-features and the

subject which is specified for valued Φ-features and unvalued case feature; and according to Chomsky's analysis the case feature of the DP gets valued and deleted as a "reflex" or a result of full agreement in Φ-features between the probe T and the goal DP. If full agreement is a pre-requisite for case valuation and deletion, how can one derive the Berber subject extraction facts where T presumably is not specified for a full set of Φ-features?
Take for example the wh-sentence from Tamazight Berber repeated in (17).

(17) *mani thamttut* *ag* *3lan* *araw*
which woman COMP see.PERF.Part boys
'Which woman that saw the boys'

Given Chomsky's proposal that C transmits its Φ-features to T, which I called DONATE in (4), let us examine the representation of this sentence in (18).

(18)



If DONATE applies, the following will take place:

(**a**). T will probe the wh-subject and agree with it; agree meaning the [-interpretable] Φ-features on T are valued and the case feature on the subject is also valued.

(**b**). C, now bearing only [+interpretable] wh-feature, will not be active and the subject, which is still active by virtue of bearing an uninterpretable wh-feature will not get this feature checked. Recall that this is exactly the same puzzle I pointed out regarding English Wh-questions to which we will return in section 5.

Notice that the Numeration is now exhausted and there is no hope for the wh-subject to get its wh-feature valued and the ultimate result would be 'crash'.[5] I assume then that there is a second option and that is: C does not transmit its Φ-features to T, in for example wh-clauses, for the reasons mentioned in (a) and (b) above. Descriptively, AAE seems to be a repair strategy that results from enabling C to probe the wh-word and Agree with it. How does that take place at the feature level? When C is merged it does not transmit its [-interpretable] Φ-features to T, and therefore remains active. T bears [+interpretable] tense features and since it does not receive the [-interpretable] Φ-features it will remain inactive. The wh-subject bears valued [+interpretable] Φ-features, unvalued [-interpretable] Case, and [-interpretable] wh-feature. Principles of minimal search will force C to search for the closest goal, which is the active subject. As a result of Agree the Φ-features on C are valued and the wh-feature on the subject is also valued. The question arises if the Φ-features on T are "suppressed" how does the Case feature on the DP get valued and deleted?[6] There is a good reason here to assume that this happens as a result of Agree with the Φ-complete C. Since according to Chomsky 2000 and 2004, case valuation is a reflex of a Match relation and Agree between the Φ-complete T and the DP, there is absolutely nothing that would prevent the same to happen when a Φ-complete C probes a subject DP. Let us call this second option that I just laid out KEEP:

(19) KEEP
No Φ-features transfer from C to T.

As a result of KEEP we expect not to have "T-agreement", i.e. no agreement between T and the subject, hence the so-called AAE is deduced.

As first noted in Ouhalla (1993) and discussed in Ouali & Pires (*to appear*), The AAE disappears in Berber when the subject is long-distance extracted; i.e. when it is extracted from an embedded clause to the front of a matrix clause. If we look at (20), we see that the subject is in post-verbal position and the verb is inflected for full agreement.

(20) *ydda* *ali*
leave.IMP.3sm ali
'Ali left'

On the other hand, in (21), a cleft construction where the subject is in pre-verbal position, we see that the verb shows AAE.

(21) *Ali ag dan*
Ali Comp leave.IMP.Part
'It was Ali that left'

In (22) the subject is extracted from the embedded clause all the way to the front of the matrix clause and as we can see only full subject-verb agreement is allowed on the embedded verb.

(22) *Ali ay thenna Miriam __yedda / * dan*
Ali Comp say.PERF.3sf Miriam___ leave.PERF .3sm/ *.Part
'It was Ali that Miriam said left'

The same question that was raised before is again raised here about how an agreement theory could reconcile these facts. The next section proposes an analysis of an analysis.

4. Evading Agreement Suppression Effect

As noted in the previous section, when the subject is Long-distance-extracted, full subject-verb agreement must occur as illustrated in (22) and the wh-question in (23).

(23) *ma ag inna ali the3la (*3lan) araw*
who Comp 3.s.said ali 3sf.swa (*saw.Part) boys
'Who did Ali say saw the boys'

Let us examine the derivation of the sentence above CP phase by CP phase.

(24) *ma ag inna ali* [$_{CP}$ ~~*ma*~~ C [T [*the3la* [*v*P ~~*ma*~~ *the3la araw*

Φ-Feature Transfer |____Agree_____|

Who Comp said ali who ~~3sf.swa~~ who ~~3sf.swa~~ boys

By virtue of DONATE repeated in (25) (first option available), the embedded C, which does not bear a wh-feature, transfers it Φ-features to T and T then agrees with the wh-subject.

(25) DONATE
Transfer Φ-features from C to T without keeping a copy.

Up to this point the [-interpretable] wh-feature on the subject has not been valued yet. Does the derivation crash? The answer is no because the Numeration has not been exhausted yet which therefore means that there still is hope for the wh-subject. At the embedded CP level we get "T-agreement" hence full subject-verb agreement and now the wh-subject moves the intermediate Spec-CP. Let us then examine what happens at the matrix CP level.

(26) [CP *ma* [C *ag* [T [*inna* [*v*P *ali* ~~*inna*~~ [$_{CP}$ ~~*ma*~~ *the3la* [*v*P ~~*ma*~~ *the3la araw*

Φ-Feature Transfer |___Agree_____| |

|_____|

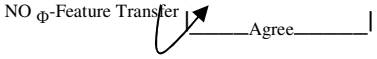
Who Comp said ali ~~3s.aid~~ [$_{CP}$ ~~who~~ 3sf.saw [*v*P ~~who~~ ~~3sf.saw~~ boys

The first available option is that DONATE by which the matrix C, which bears a [+interpretable] wh-feature, transfers its Φ-features to T as represented in (26). Remember that at this point we have not valued the wh-feature of the wh-word yet. When C transfers its Φ-features to T it will not remain active and consequently it will not act as probe and Agree with the subject. The Numeration has been exhausted, and there remains no hope for the subject yielding a fatal crash. Now there is no other solution but to try KEEP repeated in (27).

(27) KEEP
NO Φ-feature Transfer from C to T.

Given KEEP the matrix C retains its Φ-features, and therefore is active. Minimal search forces C to search for the closest goal which is the matrix subject. Even though C bears a wh-feature, this feature, as we established before, is valued and [+interpretable], which means Agree with matrix subject would go through; C gets its Φ-features valued and the matrix subject gets its case feature valued. Now C is inactivated and will not probe the active embedded wh-subject which is in the intermediate Spec-CP. Here again the Numeration is exhausted, no hope remains for the subject, and the derivation faces a fatal crash.

(28) [CP *ma* [C *ag* [T [*inna* [*v*P *ali* ~~*inna*~~ [$_{CP}$ ~~*ma*~~ *the3la* [*v*P ~~*ma*~~ *the3la araw*

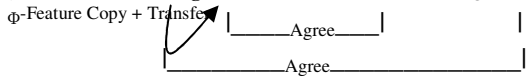


Only at this stage and as a last resort do we invoke a third option, namely SHARE, which I formulate as follows:

(29) SHARE
Transfer Φ-features from C to T and keep a copy.

Since this is a last resort option, the derivation up to the embedded CP (lower CP phase) proceeds as explained in (24) appealing to DONATE, because the Numeration at the point of the intermediate CP is not exhausted and there is still hope for the subject. As we reach the matrix CP, and as we just saw we exhaust both DONATE and KEEP, and our last hope is SHARE. Let us examine how SHARE operates.

(30) [CP *ma* [C *ag* [T [*inna* [*v*P *ali* ~~*inna*~~ [$_{CP}$ ~~*ma*~~ *the3la* [*v*P ~~*ma*~~ *the3la araw*



The matrix C, which bears a [+interpretable] wh-feature, transfers its [-interpretable] Φ-features to T and keeps a copy of these features. As a result, both C and T are now active probes. Minimal search enables T to find the closest active DP, namely the matrix subject. Agree takes place, now both matrix T and matrix subject are inactive and "T-agreement" is obtained. C, still active, probes the closest active DP, which is the embedded wh-subject in intermediate Spec-CP.[7] Again, Agree takes place, the Φ-features on C are valued as well as the wh-feature on the wh-subject. Now the derivation converges.[8]

Let us now recapitulate the analysis that I have proposed so far:

(31) a. If C does not bear a wh-feature, or any left-periphery feature, C transmits its Φ- features to T by virtue of DONATE. This is the case in simple declarative sentences as in (32), represented in (33).

b. If C bears a wh-feature or a similar feature, appealing to DONATE and transferring the Φ-features to T causes a fatal crash. As a repair strategy KEEP is invoked and C does not transfer its Φ-features to T. This is the case in 'local' wh-clauses, clefts and subject-relative clauses, hence AAE as in (34) represented in (35).

c. In long distance extraction clauses, the embedded C does not bear a wh-feature or a similar feature, and transmits its Φ-features to T, hence the evasion of AAE as shown in (36) and represented in (37). Matrix C however can make use of neither DONATE nor KEEP, for the reasons explained in detail above. As a last resort we appeal to SHARE and this is the case in (36) and (37).

(32) *iswa* *ali* *aman*
3s.drink.PERF Ali water
'Ali drank water'

(33) [C [T [AspP *iswa* [*v*P *ali* ~~*iswa*~~ [VP ~~*iswa*~~ *aman*]]]]]
Φ-feature Transfer
|_____*Agree*_____|

(34) *ma* *ag* *swan* *aman*
who Comp drink.PERF.Part(AAE) water
'Who drank water?'

(35) [CP *ma* *ag* [T [AspP *swan* [*v*P ~~*ma*~~ ~~*swan*~~ [VP ~~*swan*~~ *aman*]]]]]
NO Φ-feature Transfer
Agree

(36) ma ay thenna Fatima iswa aman
who Comp 3sf.say.PERF Fatima 3sm.drink.PERF water
'Who did Fatima say drank water?'

(37) [CP *ma ay* [TP[AspP *thenna* [vP *Fatima* [CP ~~*ma*~~ C [T [Asp *iswa* [vP ~~*ma*~~ *aman*]]]]]
Agree *Agree*
Φ-feature Transfer

This analysis makes a prediction that an "agreeing" C i.e. a C that does not transmit its Φ-features to T, should be different from a non-agreeing C i.e. a C that transmits its Φ-features to T. This is exactly what we observe in Tamazight Berber and in Berber in general. In local extraction contexts such as (38) Comp is obligatory otherwise the sentence becomes ungrammatical as in (39):

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

(39) **ma swan aman*
who drink.PERF.Part water
'Who drank water?'

In long-distance extraction, on the other hand, Comp is disallowed in the embedded clause as illustrated by (40) and (41). This, I argue, is a strong empirical evidence for C agreement or lack thereof. In other words, my proposal shows how C agreement is disallowed when T agreement (subject verb agreement) is allowed and how C agreement is allowed where T agreement is disallowed.

(40) *ma ay thenna Fatima iswa aman*
who Comp 3sf.say.PERF Fatima 3sm.drink.PERF water
'Who did Fatima say drank water?'

(41) **ma ay thenna Fatima ay iswa aman*
who Comp 3sf.say.PERF Fatima Comp 3sm.drink.PERF water
'Who did Fatima say drank water?'

An even stronger prediction is that in long distance extraction contexts and given my proposal that matrix C transfers its Φ-features to T and keeps a copy (SHARE), we expect to see both "T-agreement" and "C-agreement" when this happens in the matrix domain. This prediction is born out as we see in (40) repeated in (42):

(42) *ma ay thenna Fatima iswa aman*
who Comp 3sf.say.PERF Fatima 3sm.drink.PERF water
'Who did Fatima say drank water?'

If we drop "T-agreement" we get an ungrammatical sentence as we see in (43).

(43) **ma ag nan Fatima iswa aman*
who Comp say.PERF.Part Fatima 3sm.drink.PERF water
'Who did Fatima say drank water?'

Also, if we drop "C-agreement" we get, again, an ungrammatical sentence as in (44):

(44) **ma thenna Fatima iswa aman*
who 3sf.say.PERF Fatima 3sm.drink.PERF water
'Who did Fatima say drank water?'

Similarly, we expect to see both T-Agreement and C-Agreement in Object extraction contexts in Berber, since T will agree with the subject and C will agree with, for example, a wh-object. In other words we expect SHARE to be the only convergent option and to observe both subject-verb agreement and an obligatory Comp. These predictions are born out as shown in (45), (46), and (47).

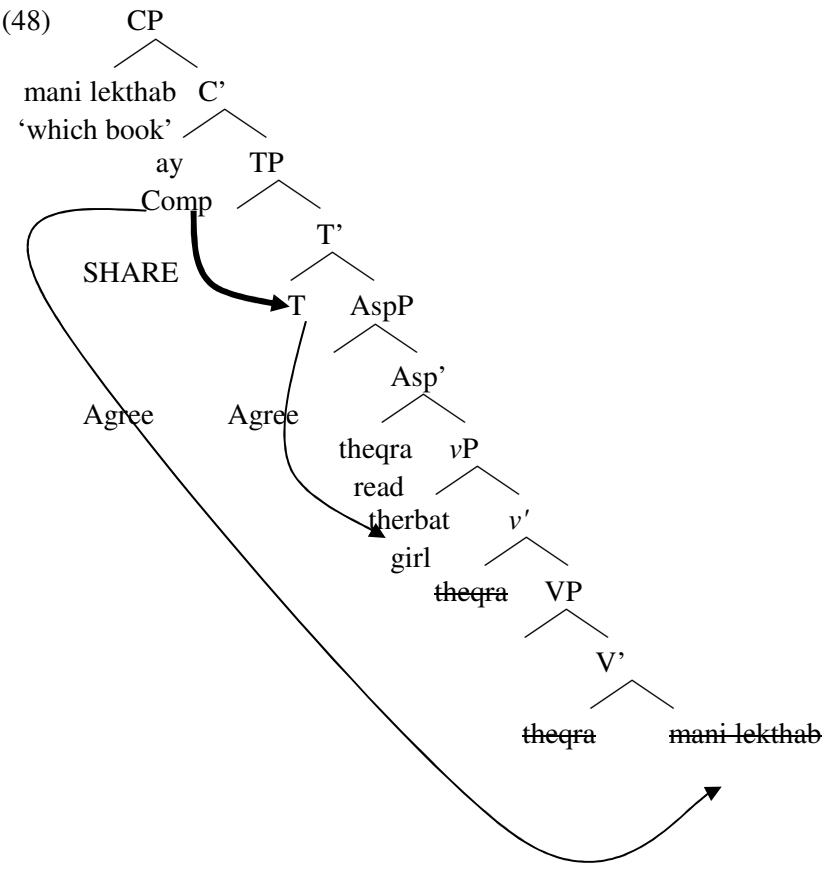
(45) *mani lekthab *(ay) theqra therbat*
which book *(Comp) 3sf.read.PERF girl
'Which book did the girl read?'

(46) *lekthab-a *(ay) theqra therbat*
book-this *(Comp) 3sf.read.PERF girl
'It was this book that the girl read'

(47) *lekthab *(ay) theqra therbat ur-ighuda*
book-this *(Comp) 3sf.read.PERF girl Neg-1sm.good
'The book that the girl read is not good'

The example in (45) is an object wh-question, (46) is an object cleft-construction and (47) is an object relative clause. As shown in all these cases, Comp or C-Agreement is obligatory as expected if we consider the derivation of (45) represented in (48) below.

(48)



As shown in (48), we have a case of SHARE. Before we detail the analysis let us ask the question of what happens if we apply DONATE and KEEP? If DONATE applies C will transfer its Φ-features to T, and C will cease to be active. T will probe the subject and T-Agreement will be achieved, yet the [-valued] [-interpretable] wh-feature on the object will not be valued and deleted and the derivation will ultimately crash. If, on the other hand KEEP applies, C will not transfer its Φ-features to T, which means it will remain active and probe the closest active DP. The subject in Spec-*v*P is the closest goal to C, and since C is Φ-complete it will agree with the subject and value its case; the Φ-features on C should conversely get valued and deleted. The same problem arises again here and that is the wh-feature on the wh-object will fail to get valued and deleted and the derivation will yet again crash. With SHARE, the derivation proceeds as follows: C transfers its Φ-features to T and keeps a copy. C and T are both active; T probes the

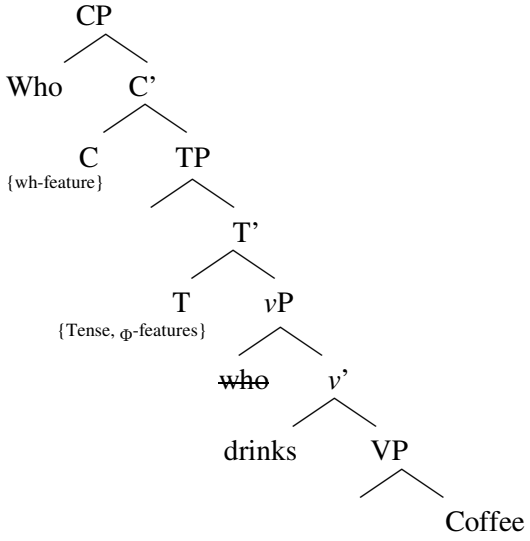
closest goal i.e. the subject, and as a result T-Agreement is obtained as marked by the subject-verb agreement, and C probes the closest active DP which is now the wh-object, since the subject has been inactivated by T. C-Agreement is then obtained as marked by the obligatory Comp. This is another compelling evidence for the different Φ-Transfer options that I have discussed so far namely: DONATE, KEEP, and SHARE.

5. A Note on English Wh-Questions

Now we return to the big question we left un-answered regarding how we ever get Wh-questions, such as (49) represented in (50), in English.

(49) Who drinks coffee?

(50)



Notice that DONATE (Transfer) is not going to help us here. If C transfers its Φ-features to T, it will cease to be active hence it will not probe and value the wh-feature on the wh-subject. KEEP (No Transfer) however, seems to be a viable option. C retains its Φ-features, remains active and enters into a Probe-Goal Match relation with the subject. C is Φ-complete therefore should be able to value the case feature on the DP. It should also be able to value the wh-feature on the subject. Although it looks like what we get in English subject wh-questions is "C-agreement", it may be

morphological similar to “T-agreement”; the reason why we do not observe the same effects we see in Tamazight Berber.

6. DONATE, KEEP and SHARE and their order of application

We will now shift gears to a larger question regarding the order of application of DOANTE, KEEP and SHARE. I pointed out at the beginning of this article that these operations are ordered in terms of principles of economy, computation efficiency and minimal search. They should not be thought of as constraints ranked in an Optimality Theory fashion. An alternative approach would be not to complicate the rule system by, what seems like, “stipulating” the ordering and to let some of the empirical burden fall on the bare-output conditions namely feature interpretability at the interfaces. The application of these operations would be “free” and only derivations that meet bare-output conditions will ultimately converge. Berber facts however provide strong evidence for ordering of application of DONATE, SHARE and KEEP. This evidence comes mainly from the Anti-Agreement cases such as (17) repeated in (51).

(51) *mani thamttut* *ag* *3lan* *araw*
which woman COMP see.PERF-Part boys
‘Which woman saw the boys?’

If we consider the derivation of the sentence above we notice that both KEEP and SHARE should be convergent. Before I elaborate on this point recall that DONATE was not a viable option because if C does not keep Φ-features it will eventually not value the wh-feature of the subject and the derivation will crash. What happens if KEEP applies? As I discussed in detail in the previous sections, C will have Φ-features and will therefore be active, it will probe the closest active goal namely the wh-subject. C, by virtue of being Φ-complete, will be able to value the case feature of the latter, and since it is also specified for a wh-feature it will value the wh-feature on the subject. Alternatively, if SHARE applies both C and T will have Φ-features, hence both will be active. T will probe the subject, being Φ-complete, it will value the subject’s case feature and will get its own Φ-features valued and deleted; as a result T-Agreement should obtain. The wh-feature on the subject is however still unvalued and the subject therefore should still remain active and visible to the still active C. C

should probe the subject, the Φ-features on C should get valued and deleted and so does the wh-feature on the subject and as a result C-Agreement should obtain. As we can see both KEEP and SHARE are convergent options, but only KEEP is empirically attested as shown by (52) vs. (53).

(52) *mani thamttut* *ag* *3lan* *araw*
which woman COMP see.PERF-Part boys
'Which woman saw the boys?'

(53) **mani thamttut* *ag* *th3la* *araw*
which woman COMP 3sf**.**see.PERF boys
'Which woman saw the boys?'

As we can see, (53), where both C-Agreement and T-Agreement are marked, is ungrammatical, whereas, (52) where only C-Agreement is marked, is grammatical. This may confirm that the ordering of DONATE, KEEP and SHARE follows naturally from principles of economy. In declarative sentences, C does not have any left-periphery feature and neither does the subject. KEEP seems to be, naturally, the first option given that T is closer to the subject than C. In wh-questions and other subject extraction cases, C possesses a left-periphery/"discourse" feature and so does the subject, it seems "natural" that applying KEEP, an operation, that requires only one Probe-Goal relation to value and delete all the uninterpretable features both the subject and C, would be preferred over an operation, namely SHARE, that requires two probe goal relations, hence two Agree operations, between two different probes i.e. C and T and the same goal namely the subject. Also, it seems natural that SHARE only applies when T and C probe two different goals as is the case in Long-distance extraction and in object wh/cleft/relative clauses. I therefore conclude that the ordering in (54) is both theoretically and empirically motivated:

(54) DONATE > KEEP > SHARE

Conclusion

Given Chomsky's (2001, 2004) proposal that T inherits its Φ-features from C, I argued that the hypothesis that C is first merged from the lexicon bearing Φ-features allows three logical possibilities namely: a) C transfers

its Φ-features to T (DONATE), b) C does not transfer its Φ-features to T (KEEP), and c) C transfers its Φ-features to T and keeps a copy (SHARE). I argue that all these options are possible, and that they might be "ordered" naturally under principles of efficient computation i.e. economy and "Minimal Search", with (a) DONATE being the most "economical", and (c) SHARE being the last resort and least "economical". It remains to be seen if this analysis can be extended to the *v*P domain, given Chomsky's hypothesis within DbP (Chomsky 2001) that V is to *v* what T is to C. It will be interesting to see if DONATE, KEEP, and SHARE, which are hypothetically attested between C and T are also attested between *v* and V. It will also be interesting to see how this relates to unaccusatives, accusatives and double object constructions. Besides these two open questions, there are other questions that are worth pursuing. For example, why do certain features participate in "Transfer" whereas others do not? As detailed in this paper, Φ-features are transferred from C to T, but the WH-feature, or any other left-periphery feature for that matter, is not. Also, are there differences in "Transfer" for different languages? In this paper I suggested that DONATE is "used" to derive declaratives in English whereas KEEP is invoked to derive Wh-questions; how does the analysis explain the subject-object asymmetry in English? If DONATE, KEEP and SHARE are Universal, is ordering, provided it is needed, parameterized? All these are potentially interesting questions that need to be addressed if one considers extensions of the Φ-Feature Transfer model. Also, one could ask the question why doesn't C transfer both Φ-fetaures and the wh-feature to T in wh-questions for example, and have T probe the subject and value both its Case and Wh-feature, since T now, under this analysis, bears a wh-feature? Maybe be this is the case, and maybe AAE is a morphological reflex of this. In fact this might explain why we get the same subject-verb agreement in declaratives and subject wh-questions in English. I will leave this alternative open for future research.

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[1] See Hiraiwa (2001) for a different view according to which both C and T can enter in an Agree relation simultaneously (Multiple Agree).

[2] Notice that this assumption is very crucial and seems to be unavoidable. If we reverse the situation and assume that C bears a [-interpretable] wh-feature whereas the wh-word bears a [+interpretable] wh-feature, the feature on C will not get valued. Why? Because T, having received Φ-features from C will probe the wh-subject and Agree with it. After this takes place the wh-subject

becomes inactive because the only feature that made it active was the unvalued case. C will not get its wh-feature checked and the derivation will crash.

[3] I will use the word participle (Part) to gloss the impoverished form of agreement marking AAE, following Ouhalla (2005b).

[4] See Richards (2001) and Ouhalla (2005b) for alternative analyses. Richard relies on Spec-Head relation to account for agreement and anti-agreement, a relation that is not compatible with the Probe-Goal approach adopted in this paper. Ouhalla (2005b) presents an analysis which shows that Anti-Agreement is a result of merging a featurely impoverished participle that in return requires merging a T specified for the feature [Class]. The requirement to check this feature forces DP movement through Spec-TP, hence the correlation between subject extraction and AAE. Ouhalla's approach does not assume Chomsky's hypothesis that T inherits its Φ-features from C. I will therefore not review his work here.

[5] "hope" in the same sense used in Boskovic. (2001).

[6] By suppressed I mean T never received the Φ-features from C, forcing default agreement morphology to appear on the verb (AAE).

[7] For the sake of discussion I am abstracting away from the "possible" movement of the Wh-subject to Spec of matrix *v*P. One could assume that this movement takes place and adopt Richards (1997) tucking-in mechanism in Spec-*v*P and the same results should hold.

[8] Note that Agree applies upon establishing a c-command Probe-Goal Match relation and it applies independently of Move. Move or internal merge is motivated by other independent mechanisms. For Chomsky, it is the EPP and for Epstein and Seely (2006) it is case. At this point I have nothing to contribute to this. The intermediate movement of the wh-word to the intermediate Spec-CP in sentences such as (36) represented in (37), is not forced by feature-checking, but rather by other mechanisms e.g. locality, as proposed by Boskovic (2002), or also as the result of the need for elements to move to the edge of the phase in order to check features in a higher projection later. The jury is still out on which of these different approaches is on the right track, although approaches that try to do away with stipulative mechanisms such as the EPP seem to be favorable on Minimalist grounds.

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