

Agreement and Anti-Agreement in Berber: A Multiple-Feature Inheritance Account

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Abstract

This study proposes understanding Agreement and Anti-Agreement in Berber from Multi-Feature Inheritance (MFI) account following Branigan's (2016) recent approach. The study aims to bridge a misunderstanding in the literature where it has been assumed that Feature Inheritance (FI) can only account for Agreement relations while Anti-agreement relations can only be established by a direct Agree between C as a probe and its goal. Under MFI, it can be argued that FI can account for all aspects of Agreement/Anti-agreement. The study, therefore, presents a unification of the three mechanisms proposed by Ouali (2008). The new approach is tested on data from Berber.

Keywords: Linguistics, Phase Theory, Multiple Feature Inheritance.

1. Introduction

Subject-verb agreement is one of the well-studied phenomenon in the literature. In many languages, subject-verb agreement is established when verbs agree with their subjects in terms of person, number, and gender. An interesting group of languages, however, show that under certain constructions subject-verb agreement is blocked. Ouhalla (1993) calls this linguistic phenomenon Anti-Agreement Effect (AAE). Based on Baier's (2016) recent survey of AAE, seven different proposals have been set to provide an analysis of AAE in eighteen languages, among which is Berber. Two of such proposals argue that AAE can be C-T relation (Henderson, 2013; Ouali, 2008). While Henderson (2013) and Ouali (2008) share the view that C-T relation can account for AAE, they differ in the way they tackle the problem and the languages they explore (Berber and Bantu). Basically, the aim of this article is to describe agreement and anti-agreement constructions in Berber, analyze Ouali's (2008) proposal and explore how such constructions can be accounted for under Branigan's (2016) new proposal, Multiple-Feature Inheritance (MFI).

2. Theoretical Background

Across languages, subject-verb agreement is established when the person/number features of the verb get assigned the same values as those of the subject. In some languages like Arabic and Berber, subjects can agree with their verbs fully (Soltan, 2006). A full agreement is established when the person, number and gender features of the verb match those of the subject. A few representative examples from Arabic and Berber appear below.

- (1) *alwalad-u ya?kulu alburtuqalata* (Arabic)
the.boy.3SG.M-NOM eat.3SG.M the.orange
'The boy is eating the orange' (Al-Shorafat, 2012)
- (2) *thamttut Th-eɣla araw* (Berber¹)
woman 3SG.FEM-see.PERF boys
'The woman saw the boys' (Ouali, 2008)

In both

Arabic and Berber, the verbs *ya?kulu* 'eat' and *Th-eɣla* 'see' show a full agreement with their subjects. Like Arabic, Berber has two word orders: SVO (e.g., (2)) or VSO (e.g., (3)).

- (3) *Th-eɣla thamttut araw* (Berber)
3SG.FEM-see.PERF woman boys
'The woman saw the boys'

Moreo

ver, Berber is a pro-drop language i.e., it permits the use of null subjects because its verbs are rich in agreement morphology.

Subject agreement on verbs can be blocked. In Berber, verbs do not inflect for their subjects in constructions that involve local subject extraction. These include: (1) subject wh-clauses, (2)

¹ The examples throughout this article are drawn from Ouali's (2008) study unless otherwise stated.

subject-relative clauses and (3) cleft constructions (Ouali, 2008, p. 164). The three types are illustrated in the following examples, respectively.

*mani thamttut ag ɣlan *Th-eɣla araw* (4)
which woman COMP see.PERF.Part 3SG.FEM-see.PERF boys

‘Which woman saw the boys?’

*thamttut ag ɣlan *Th-eɣla araw* (5)
woman COMP see.PERF.Part 3SG.FEM-see.PERF boys

‘The woman who saw the boys’

*thamttut-a ag ɣlan *Th-eɣla araw* (6)
woman COMP see.PERF.Part 3SG.FEM-see.PERF boys

‘It was this woman that saw the boys’

Unlike example (2), we notice that the agreement on the verb *ɣlan* ‘see’ does not match its subject *thamttut(-a)* ‘woman’. In fact, using a verb that inflects for subject instead leads to ungrammatical sentences. That is to say, the use of the verb *Th-eɣla* ‘see’ instead of *ɣlan* ‘see’ is not possible. Ouhalla (1993) and Ouali (2008) attribute the lack of agreement on verb to AAE; once AAE is active, the default participial form of the verb appears.

However, AAE will have no effect when subjects are extracted from embedded clauses as illustrated in example (6) below.

*ma ag inna Ali th-eɣla *ɣlan araw* (6)
who COMP 3.SG.said Ali 3SG.FEM.saw *saw.PART boys

‘Who did Ali say saw the boys?’

In example (6), we

notice that the use of a verb that does not inflect for subject is not possible and leads to ungrammatical sentence. Therefore, subject-verb agreement is obligatory and AAE is blocked in this context.

To sum up, in Berber, subject-verb relations can be described as follows: in simple declarative constructions, verbs show agreement with their subjects, in root clauses, local subject extraction blocks subject-verb agreement, yet, in embedded clauses, long subject extraction does not affect subject-verb agreement.

3. Review of Ouali’s Proposal

AAE has been a topic of research since Ouhalla's (1993) study. Recently, two studies ((Henderson, 2013) and (Ouali, 2008)) have suggested that AAE could fit the framework of Feature Inheritance and Agree once some “small changes” are made. Such changes pour out from a logical understanding of the way features transfer from C to T. In this section, I review the two approaches and their basic principles. Yet, since my immediate concern is to analyze AAE in Berber, Ouali’s (2008) approach will be the centre of discussion throughout the remainder of this article.

Ouali’s analysis of agreement and anti-agreement is based on three core conditions that are introduced in Chomsky’s earlier works. The conditions can be stated as follows: (1) Heads Activation (for him, heads are active only when they include unvalued features), (2) Probe Condition (probing takes place only if heads are active) and (3) Completeness Condition (u-case is valued and deleted as long as probing heads contain a complete set of agreement features)

(Radford, 2009, pp. 312–313). Thus, if T is active and ϕ -complete, it can value u-case of subjects. He extends this generalization by proposing that an active C with a complete ϕ can value u-case of subjects as well.

Having the three conditions in mind, Ouali proposes deriving the three types of the aforementioned constructions, in light of the following logic:

- A. In simple declarative clauses, agreement takes place when T becomes active by inheriting unvalued features from C. By being active, T probes for the closest DP to value its unvalued features. Both T and the subject value their unvalued features.
- B. In local subject extraction, AAE shows up by establishing a direct probe-goal relationship between C and the subject. The basic idea is that C, in AAE constructions, does not transfer its unvalued features to T. Assuming this to be the case means that C remains active while T is not by virtue of not inheriting any features from C.
- C. In embedded clauses that involve long subject extraction, two stages are involved. The first utilizes the logic of (A) to account for subject-verb agreement (T and the DP) in the embedded CP. The second blends the logic of (A) and (B). That is to say, C not only transfers its u-features to the matrix T but also keeps a copy for itself. C and T in the matrix clause are active heads.

(A), (B) and (C) are referred to as DONATE, KEEP and SHARE, respectively (Ouali, 2008, p. 170). Ouali (2008) argues that these mechanisms should be applied in order. If the derivation does not converge by using (A), (B) comes second and as a final resort (C) is used. Even though (B) and (C) seem to be turn over stages to approach the problem, they have logical bases. How C skips transferring features to T is based on a logical understanding of the Completeness Condition. Such logic legitimizes (B) and (C) since nothing prevents C from valuing unvalued features of subjects.

In order to test Ouali's (2008) proposal, I aim to apply his mechanisms to a new set of data from Berber relying on Ouhalla's study (1993). The analysis, therefore, focuses on deriving constructions phase by phase with the following assumptions in mind:

- A) Donate C Tu ϕ > Simple declarative constructions
- B) Keep Cu ϕ T > Locally extracted subject
- C) Share Cu ϕ Tu ϕ > Long subject extraction in embedded clauses

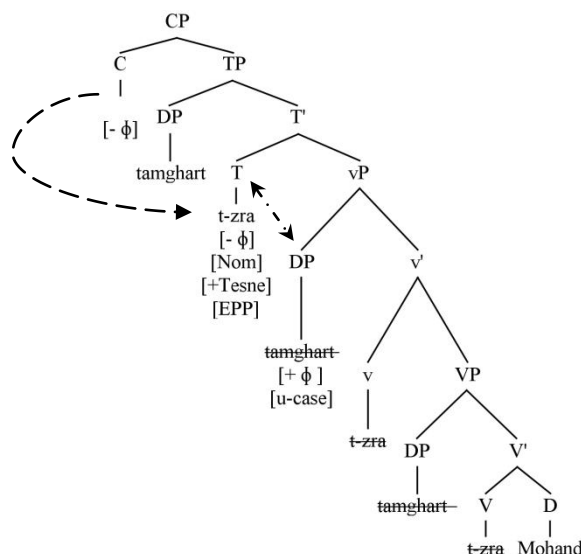
In light of Ouali's (2008) proposal, in simple declarative structures, ϕ -features originate in the phasal head C of the CP, through FI, they transfer down to the T head of the TP. Once C transfers its features, it becomes inactive. The T head gets activated and probes for the closest DP to value its unvalued features. The example in (7) can be derived as shown in (8) below.

- (7)
- | | | |
|------------------------|-----------------------|-------------------------|
| <i>tamghart</i> | <i>t-zra/ *yzrin</i> | <i>Mohand</i> |
| woman | 3FEM.SG-See/*see-PART | Mohand |
| 'The woman saw Mohand' | | (Ouhalla, 1993, p. 479) |

According to Ouali (2008), C gives all its features to T without leaving a copy. Once T inherits the unvalued ϕ features of C; T becomes active and probes for the closest active DP to value its unvalued features. The DP *tamghart* is active since it has u-case. Thus, it becomes the goal of T

(T probes for the DP *tamghart* and not *Mohand* since the case of *Mohand* has already been checked and erased by the verb *t-zra*). Feature Valuation guarantees that the unvalued features of T and the DP get valued. Once Feature Valuation is complete, the DP *tamghart* moves to occupy Spec-TP in order to satisfy the EPP requirement. This guarantees that the verb *t-zra* inflect for the subject because of the Agree relation between T and the DP.

(8)

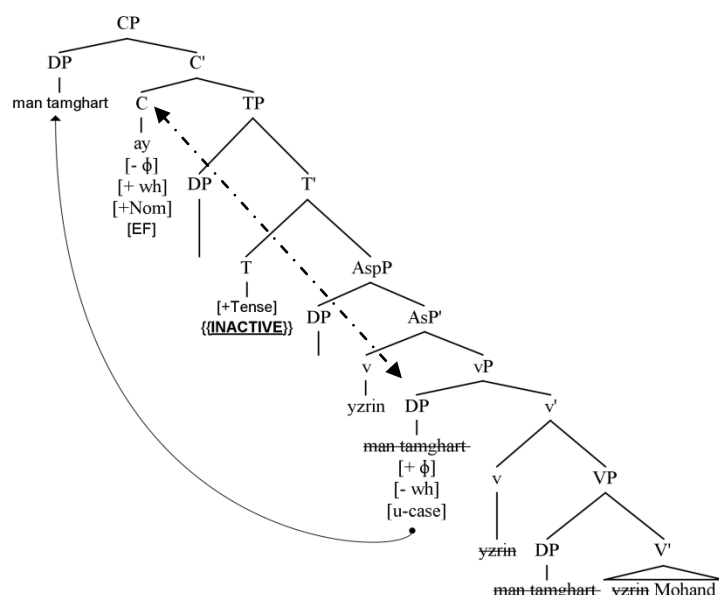


The example in (9) below illustrates the case of AAE; while the use of the verb *yzrin* that lacks ϕ agreement features with its subject is acceptable, using *t-zra* leads to ungrammatical construction.

- (9)
- | | | | | |
|------------|-----------------|-----------|------------------------------|---------------|
| <i>Man</i> | <i>tamghart</i> | <i>ay</i> | <i>yzrin</i> /* <i>t-zra</i> | <i>Mohand</i> |
| which | woman | COMP | see-PART/*3FEM.SG-See | Mohand |
- ‘Which woman saw Mohand?’ (Ouhalla, 1993, p. 479)

According to Ouali (2008), when AAE is present in local subject extraction, the derivation converges when C keeps its features (wh-features, ϕ -features) and probes directly for the closest goal to value its unvalued features. Therefore the derivation proceeds through the lines in (10).

(10)



The DP, *man tamghart*, enters the derivation with valued ϕ -features and with unvalued case and wh-features. According to Chomsky, in order for the derivation to be sent to the PF component, the unvalued features must be valued. Therefore, a probe-goal relationship must be established between the DP and a syntactic phase head that is able to value its unvalued features.

Ouali (2008) shows that if the C head, a head that contains unvalued ϕ -features and a valued wh-feature transfers its features to T, this would result in an agreement relation between T and the DP. Thus, the DP raises to occupy Spec-TP. This would result in an agreeing verb with the subject. That is to say the verb **t-zra* ‘see’ would surface instead of the non-agreeing PERF verb *yzrin* ‘see’. Therefore, Ouali argues that features should not transfer from C to T but the phasal head C probes for the DP directly resulting in a non-agreeing verb *yzrin* ‘see’. Since T does not have/inherit unvalued features, it remains inactive during the derivation. Thus, the unvalued ϕ -features of C get valued by the valued ϕ -features of the DP and the unvalued wh-feature and u-case of the DP gets valued by C (see section 3.1 for when C can value u-case). The DP moves to Spec-C to satisfy the edge feature on C.

In embedded clauses, long subject extraction does permit subject agreement on verbs because of SHARE. The question in (11) below can be derived in the following lines.

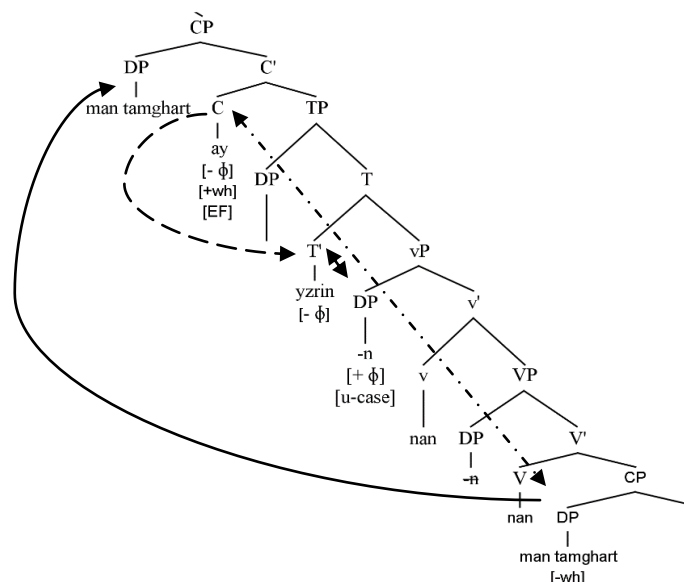
man tamghart *ay* *nna -n* *qa -t* *zra* **ʕlan* *Mohand*
Which woman COMP 3.SG.said that 3SG.FEM.saw *saw.PART Mohand
Which woman did they said [sic] saw Mohand? (Ouhalla, 1993, p. 479)

(11)

The C head transfers its unvalued ϕ -features to T and keeps a copy of these features so it remains active. In line of this T and C become active. T probes for the DP *man tamghart*. Since C in the

embedded clause does not have *wh*-feature, the *wh*-feature on the DP remains unvalued. Having unvalued *wh*-feature, the DP remains an active goal to probing.

(12)



In the matrix clause (See the derivation (12) above), C transfers its features to T and keeps a copy of such features. C and T are active heads for probing. Feature Valuation takes place between T and the DP *-n* and at the same time the unvalued wh-feature of *man tamghart* is valued by C. The DP *man tamghart* moves to occupy Spec-C satisfying the edge feature.

To guarantee that three mechanisms remain without overlapping, as a preventive measure, Ouali suggests that their application should be done based on a fixed order. Once a mechanism fails in Feature Valuation another mechanism apply. Saying so might be less economical from a biolinguistic point of view; the mind has to go through a complex algorithm to test the validity of each mechanism. In the following section, I present a new approach that blends the three mechanisms into one.

4. Multiple Feature Inheritance

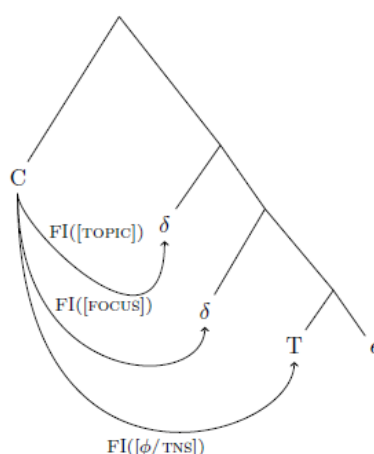
In his recent approach, Branigan (2016) changes some aspects in phase theory in order to increase its ability to account for the aspects of left periphery constructions that have been proposed by Rizzi (1997). The logic of his approach is based on two ideas. The first is that the interpretable features that are part of the C head should be expanded to include discourse features such as [wh], [Foc], [Top], [Subord] and [Tense]; as he shows this idea is well-rooted in the literature (e.g., Shlonsky, 2006). Yet, it differs in that “FI can transfer features

literature (e.g., Shlonsky, 2006). Yet, it differs in that “FI can transfer features downwards to a variety of heads [...] Shlonsky’s [(2006)] analysis [,however,] has C raising upwards through a series of “reprojected” positions, and actualising different feature sets in turn” (Branigan, 2016, p. 4). The second idea is that FI can apply multiply; thus, features can transfer from the phasal head C to many other discourse and phasal heads down in a derivation.

In principle, his approach works as follows. C includes different sets of interpretable features. By FI, C transfers these features down to different heads. The heads in turn becomes active and

ready to probe for their goals. While the mechanism does not differ from the way FI works, it does not limit the inheritance of features to one process – FI applies multiple times. This change is what gives the theory its name, Multiple Feature Inheritance (MFI). To understand how the theory works see the illustrative derivation below.

(13)



(Branigan, 2016, p. 6)

The approach has been proved to be fruitful for analyzing a number of syntactic phenomena: Left Periphery Constructions, Verb-Second constructions, Island effects and phrasal movement at the phrase level (Wh-questions and Subject-Auxiliary inversion). To illustrate how the approach work on the variability of left periphery, consider the following example as cited in Abdelhady (2017).

Due to the fact that it is not always the case where one topic precedes the focus or comes after it, MFI inheritance provides a relatively free order of left periphery constructions. Under MFI, the discourse features originate in the C head of the CP and they target discourse heads; such heads enter the derivation without any predefined features. They get their functions from the features they inherit from the phasal head C. Thus, the order of the left periphery heads is relative to which head is targeted by which feature. That is to say, if a delta head, δ , inherits a [Foc] from C, it becomes a target for a focalized element. By the same logic, if it inherits a [Top] feature, it becomes a target for a topicalized element. The theory, thus, gives free order of left periphery and does not limit the number of the unspecified discourse heads. In Arabic, two topics can come

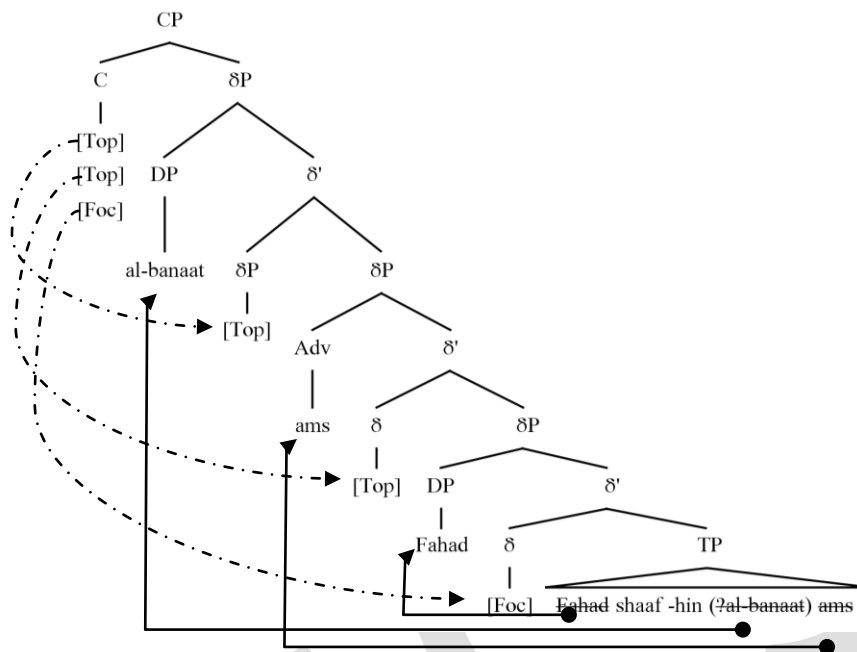
before the focus as it is illustrated in (19) below.

- (14) *al-banaat ams fahad shafi-hin*
the-girls yesterday Fahad see.perf.3sg.masc-them.f
'As for the girls, yesterday, FAHAD saw them.'

Turaif Arabic
(AlShammiry, 2007)

In order to account for this deviation, following MFI, Abdelhady (2017) argues that the three aspects of left periphery are features that originate in the C head. These features are transferred to δ heads in a multiple way. Thus, the example in (14) can be derived as follows.

(15)



First, the phasal head C transfers a [Foc] feature to δ . The DP *Fahad* 'Fahad' raises to occupy Spec- δ P to satisfy the [Foc] feature of δ . At the same time, C also transfers two [Top] features to the δ heads above the one that received the [Foc] feature. Once the δ heads inherits, the [Top] features, the Adv., *ams* 'yesterday', and the DP, *?al-banaat* 'the girls', raise to occupy the specifier position of these heads. By saying so, there is no need to follow Rizzi's (1997) hierarchical order as the order depends on FI.

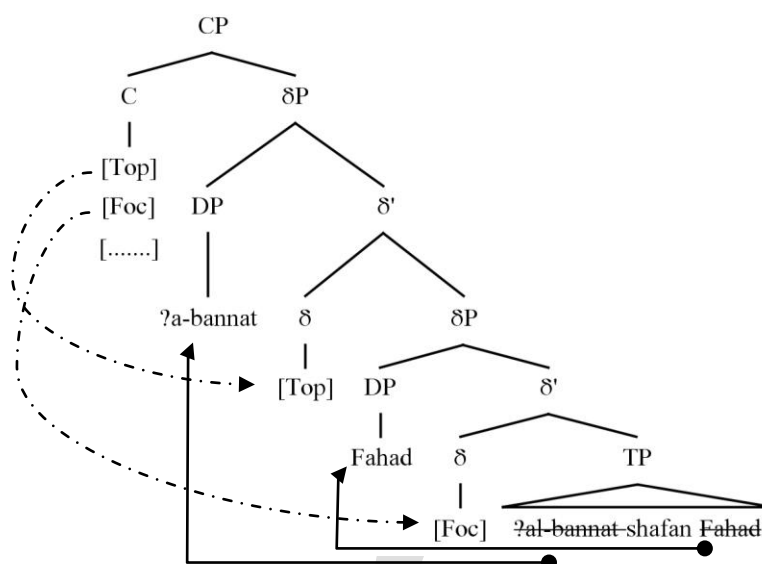
Moreover, the approach itself is able to account for structures that go side by side with Rizzi's (1997) approach. The sentence in (21) is repeated in (21) below.

(16) *al-banaat* *Fahad* *shaaf-an*
the-girl-pl.f Fahad see.perf-3pl.f
In 'As for the girls, they saw Fahad.'

Turaif Arabic
(AlShammiry, 2007)
(16) the topicalized element *al-banaat* 'the

girls' comes before the focused element *Fahad* 'Fahad'. By applying the same principle of MFI, the example in (17) can be derived as follows.

(17)



In addition to the unvalued $[-\phi]$ and [Tense] features, the C head has a [Top] and a [Foc] features. The three features are transferred in a multiple way to three heads, T and two δ heads. After becoming active the T head probes for the closet active goal *?al-bannat* and values its unvalued [case] feature. The DP *?al-bannat* also values the unvalued $[-\phi]$ feature in C. After that the DP moves to occupy Spec- δ P to satisfy the [Top] feature that has been transferred from C to δ . The word *Fahad* also moves from its position as the complement of V after valuing its unvalued [u-case] feature to occupy Spec- δ P, the head of which has inherited the [Foc] feature from C. The derivation in (20) shows that MFI can give adequate prediction on the position of left periphery constructions that follow the order suggested by Rizzi (1997). Also, MFI can accommodate for the structures that diverse. Thus, Abdelhady (2017) concludes the variation of left periphery constructions can be covered in light of such theory.

5. Analysis and Discussion

While the mechanisms suggested by Ouali (2008) can account for the syntax of AAE. KEEP and SHARE might be “problematic if Feature Inheritance is obligatory” (Citko 2014, p. 52). To overcome the problem, I argue that the mechanisms can be reduced to one. According to Branigan (2016), left periphery features do not have fixed positions and could vary from one language to another. In (18) for example, the Focus, PP, precedes Comp, *what*. Branigan (2016) argues that the C head transfers the feature Foc to a δ head above which the PP occupies Spec- δ P. At the same time, C also transfers [+wh, $-\phi$ features] to another δ head that is called T- δ . *What* occupies Spec-T- δ .

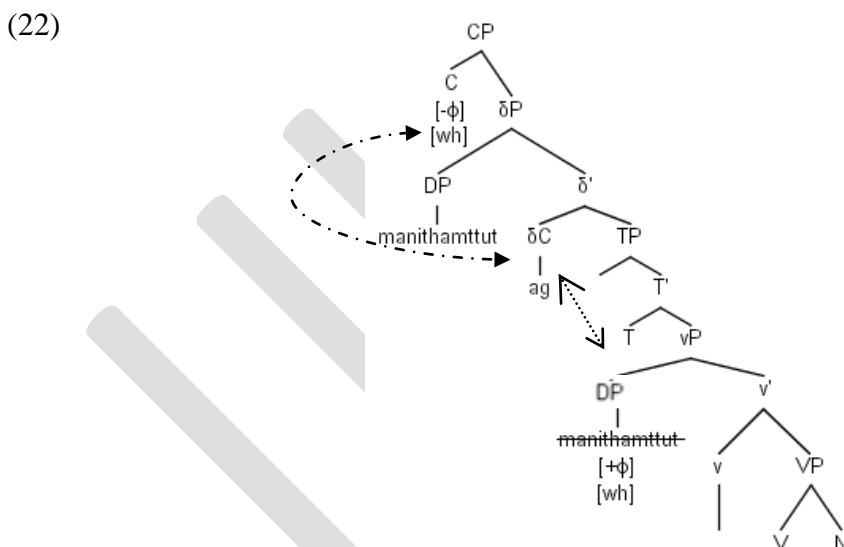
(18) At the market what do you want me to buy?

Can the same logic apply to AAE and explain why the verb does not inflect for its subject in Berber? I argue it does. Following Branigan’s (2016) MFI approach, I argue that C in local subject extraction donates its features to a syntactic head called delta, δ -C. Furthermore, I argue

that δ -C is not only able to receive Foc, Top, and wh-features but also $u\phi$. C chooses to transfer its features to the closest head that is able to receive left periphery features. Thus, C chooses δ -C instead of T. δ -C head becomes active and probes for a DP to value its unvalued features. Once probing is complete, the DP moves to occupy Spec- δ P. Since C has already transferred its features, it deletes.

My analysis could overcome the needs of features to be inherited by T simply because I argue that once a syntactic head inherits features from another head it cannot transfer the inherited features again. This simple logic explains why, in AAE constructions, the subject does not show agreement with T. T does not receive any features because it is the second head in the derivation after δ -C. The example in (19) can be derived as illustrated in (20) below.

- (21) *mani thamttut ag flan *Th-eſla araw*
which woman COMP see.PERF.Part 3SG.FEM-see.PERF boys
'Which woman saw the boys?'



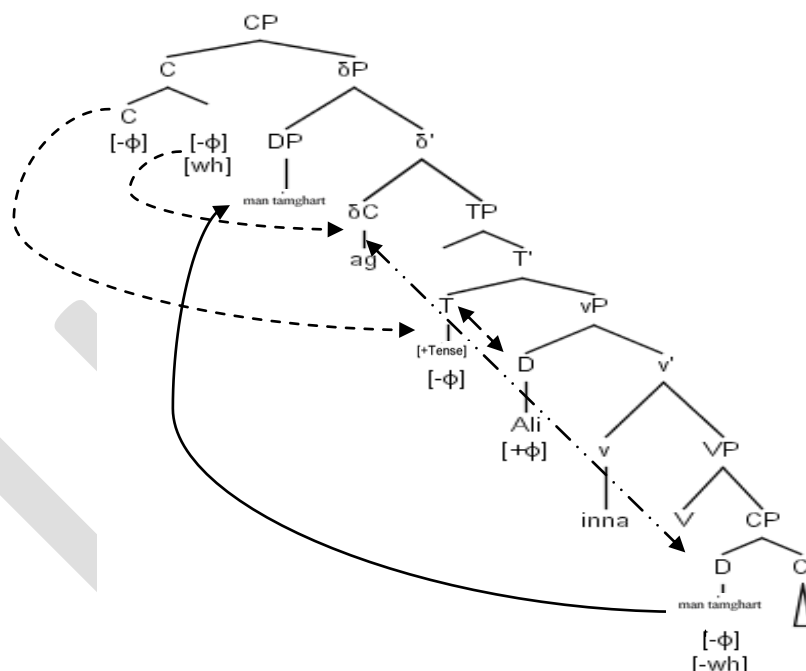
Ouali has rightly observed that an agreeing complementizer is different from a non-agreeing complementizer (Ouali, 2008, p. 171). Based on my analysis an agreeing complementizer is characterized as δ -C. Since FI is obligatory, C cannot keep its features and should transfer them down to the closest head. δ -C inherits the unvalued ϕ -features and the valued wh-feature of C. Based on my argument a head that inherits features from another head cannot transfer them again to yet another head. Thus, T remains inactive since it does not receive any unvalued features from any head. A probe-goal relation takes place between δ -C and the DP as it is the closest active goal in the derivation. Since δ -C is ϕ -complete, it can value u-case of the DP - δ -C and DP value their unvalued features. The DP then moves to occupy Spec- δ -C. The derivation converges

at this stage; the DP stays in Spec- δ -C because C has already been deleted by transferring its features to δ -C.

AAE takes place since T does not agree with the DP; T with its +Tense feature remains inactive throughout the derivation. The analysis does not contradict Ouali's (2008) argument but it rejects the idea that C keeps its features. In this sense, AAE fits the frame of FI.

The analysis can be extended to answer the question why AAE has no effect in embedded clauses². I argue that in Anti-AAE constructions, the C head contains two sets of the same features (a claim supported by Ouali (2008)); each set targets a different syntactic head. The first targets δ -C while the second targets T. Even though the assumption here sounds similar to SHARE, it has radical changes to Ouali's (2008) proposal in that Agreement, AAE and Anti-AAE all can be reduced to one mechanism Donate. How does Donate account for Anti-AAE in light of MFI? See the derivation (23) below.

(23)



The analysis shows that the main C head contains two sets of features. The head uses only one mechanism which is Donate (FI). The mechanism works as follows. First, the head transfers its features to the relevant heads below. Then probing takes place bottom up. The T head probes first for its goal. The closest active DP is valued. In this case *Ali* – it is an active goal by virtue of having u-case. Once the head and the DP are valued they become inactive leaving the ground for the upper head to probe for the remaining active goal/s in the derivation. At this stage, the closest active goal is the DP *man tamghart*. Feature valuation guarantees that the unvalued features be

² For simplicity, I would refer to this linguistic phenomenon as Anti-AAE.

valued and only then the embedded DP moves to occupy Spec δ -C. The derivation converges and the phases are sent to the PF component.

6. Conclusion

In this article, I have suggested a new approach to account for Agreement and Anti-Agreement in Berber. I have argued that Ouali's (2008) proposal is useful to account for A, AAE and Anti-AAE. However, it overlooks one of the basic tenants of FI, the obligatoriness of FI. This made him propose three mechanisms to account for A, AAE and Anti-AAE. These mechanisms include DONATE, a mechanism by which features are transferred without leaving a copy, KEEP, a mechanism in which the C head keeps its features without transference and SHARE, a mechanism that allows a head to transfer some features and keep a copy of the transferred features. I have proposed that the three mechanisms can be reduced to one. Under MFI, I argued that Donate only can give adequate and satisfying analysis of A, AAE and Anti-Agreement. The mechanism can be summarized as follows.

Donate	C > T	T AGREE Spec-vP	A in simple declarative constructions
Donate	C > δ -C	δ -C AGREE Spec-vP	AAE in local subject extraction
Donate	$\left\{ \begin{array}{l} C > T \\ C > \delta\text{-C} \end{array} \right\}$	$\left\{ \begin{array}{l} T \text{ AGREE Spec-vP} \\ \delta\text{-C AGREE Spec-CP} \end{array} \right\}$	Anti-AAE in embedded clauses

From a biolinguistic point of view, it is more economical for numeration to be generated for a single process to capture Agreement relations in Berber that assuming that three processes are in collaboration to achieve such a purpose. Thus, MFI can also be extended to capture Agreement relations under one umbrella.

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