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Abstract: The Ibibio language displays an anti-agreement effect (AAE), in which ϕ -feature agreement on the verb is suppressed in subject questions—even when the *wh*-phrase remains in situ. I discuss why this fact is problematic for existing theories of the AAE. I then suggest that the AAE arises when the deletion process that applies to copies in a movement chain removes the ϕ -features of a copy along with its semantic features. This formulation applies equally well to overt and covert *wh*-movement. It also generalizes to explain why quantified subjects don't trigger an AAE in Ibibio, whereas subjects in negative clauses do.

Keywords: anti-agreement effect, copy deletion, phi-features, *wh*-in-situ, negation

1. Introduction

Since Ouhalla 1993, the so-called anti-agreement effect (AAE) has become reasonably well-known to generative linguists. This effect can be characterized as follows: many languages that normally show agreement with an NP in a designated position—most often the subject position—eschew that agreement when the position is occupied by the trace of a *wh*-movement. (1) is a canonical example of this phenomenon in Berber:

- (1) a. T-zra tfruxt Mohand.
 FsS-see girl.Fs Mohand
 ‘The girl saw Mohand.’
- b. Man tamghart ay y-zri-n Mohand? (*t-zra)

which woman.Fs C see(PART) Mohand (FsS-see)

‘Which woman saw Mohand?’ (Ouhalla 1993:479)

(1a) contains an ordinary subject in the postverbal position that is normal for subjects in Berber. This subject necessarily agrees with the verb in person, number, and gender. (1b) is similar, except that the third person feminine subject is an interrogative phrase that has undergone *wh*-movement to the Spec, CP position. In this sentence, it is impossible to have feminine singular agreement morphology on the verb. Rather, the verb must appear in the so-called participle form (*y-zri-n*), a form that does not vary with the ϕ -features of the moved subject. This is a paradigmatic instance of the AAE.

Despite the relative familiarity of this effect, there is little consensus about what theoretical principles rule out agreement in a sentence like (1b), and none of the existing proposals has become mainstream. In this article, I wish to show that the minimalist notion of traces—that they are copies of a moved NP that undergo a deletion process (Chomsky 1993)—provides the basis for a better account of the AAE. The crucial data comes from Ibibio, a Niger-Congo language spoken in Southeastern Nigeria (Essien 1990). (2) illustrates the AAE in Ibibio: when the subject is a *wh*-phrase, as in (2b), the normal third person singular subject agreement (*a-* in (2a)) is impossible and a special agreement morpheme (*i-*, with high tone) must be used (see also Essien 1990:162-163).¹

(2) a. Okon á-ke-dia ekpaŋ.

Okon 3sS-PAST-eat porridge.

‘Okon ate porridge.’

b. Anie í-k-i-dia ekpaŋ? (*a-ke-dia)

who I-PAST-I-eat porridge

‘Who ate porridge?’

What is new and important about anti-agreement in Ibibio is that it is triggered even by *wh*-phrases that remain in situ. Leaving *wh*-phrases in situ is a normal way of asking questions in Ibibio; a clear example is the object question in (3a). Object *Wh*-phrases can also be fronted, but only if the focus particle *ke* comes between the fronted *wh*-phrase and the rest of the sentence, as in (3b). This focus particle is also used when non-*wh*-NPs are fronted for reasons of focus in Ibibio (see Urua 1997:192-195).

(3) a. A-ke-yem anie?

2sS-PAST-seek who

‘Who did you look for?’

b. Anie *(ke) a-ke-yem? (compare: Emem ke n-yem.)

Who FOC 2sS-PAST-seek

Emem FOC 1sS-seek

‘Who is it that you looked for?’

‘It’s Emem that I’m looking for.’

Given that the *wh*-phrase in (2b) is in the normal word order position for the subject in Ibibio, an SVO language, and that the focus particle *ke* required in (3b) is absent in (2b), the possibility arises that (2b) is an instance of *wh*-in-situ as well. Although this example is inherently ambiguous as to whether the subject has moved in string-vacuous fashion or not, examples with embedded clauses like (4) and (5) are clearer. The embedded question in (4) contains an overt +*wh* complementizer, and the *wh* subject must follow it:

(4) Okon a-ke-bip mme anie i-di-di? (*...anie mme i/a-di-di)

Okon 3sS-PAST-askC(+wh) who I-FUT-come

who C(+wh) I/3sS-come

‘Okon asked who will come.’

This strongly suggests that the *wh*-phrase subject is in Spec, TP, just as ordinary subjects are. Nevertheless, the verb in (4) must bear the anti-agreement prefix *i-*, and cannot have normal third person agreement. That the *wh*-phrase is in-situ is even clearer in (5).

(5) Okon a-kere ke anie i-di-dep ebót mkpóŋ? (*a-ya-dep)

Okon 3sS-think C(-wh) who I-FUT-buy goat tomorrow

‘Who does Okon think will buy a goat tomorrow?’

Here the question word in the subject position of the embedded clause has scope over the sentence as a whole, making it a direct question. Nevertheless, the +*wh* subject remains in the specifier position of the embedded TP, after the complementizer and before the finite verb. Again the embedded verb must be the anti-agreement form. Thus, *wh*-in-situ triggers the AAE in Ibibio, just as overtly moved *wh*-phrases do in Berber.²

This fact is significant because existing accounts of the AAE do not predict that it should be found in examples like (4) and (5), as I review in section 3. Some new idea about the nature of the AAE is thus needed. In section 4, I propose that the AAE should be seen as a consequence of how deletion applies to the copies in a movement chain within a framework like that of Bobaljik (2002) and Fox and Nissenbaum (1999). In particular, I propose that in Ibibio ϕ -features are deleted along with the semantic features of a copy of an NP, whereas in Berber they are deleted along with phonological features, and in English they are not deleted at all. Finally, I show that this view can also be extended to explain the surprising fact that an AAE also appears in negative clauses in Ibibio (section 5). Before engaging these theoretical issues, however, I must defend the claim that *i-* is an exponent of anti-agreement, and not simply a special kind of ϕ -feature agreement.

2. The *í*-Prefix as a Non-Agreement Form in Ibibio

The alternative to saying that verb forms prefixed with *í*- in sentences like (2b), (4), and (5) are non-agreeing forms, and hence instances of the AAE, would be to say that the *+wh* feature of interrogative phrases counts as a special kind of φ -feature in Ibibio. If *+wh* were a φ -feature, its presence on the subject could affect the realization of agreement on T in exactly the same way that the presence of a plural feature on the subject does (see O’Herin 2002 for an analysis of this kind for Abaza). If that were true, then it would be misleading to say that the contrast between (2a) and (2b) is an instance of the AAE, and the puzzle posed by (4) and (5) would disappear.

Some preliminary evidence against this null hypothesis comes from the fact that all interrogative subjects in Ibibio trigger *í*-morphology on the associated verb, regardless of whatever other φ -features they might have. (6a) shows that third person plural subjects trigger a distinct form of agreement from third person singular subjects in Ibibio (*é*- instead of *á*-). Nevertheless, (6b) shows that a third person plural interrogative subject triggers exactly the same *í*- morpheme on the verb as that shown in (2b).

- (6) a. Uwak owo e-ke-di.
many people 3pS-PAST-come.
‘Many people came.’
- b. Owo ifaŋ i-k-i-di? (*e-ke-di)
people how.many I-PAST-I-come
‘How many people came?’

There is thus no overt agreement with the plural feature on the subject in (6b), consistent with the claim that *i-* is an invariant, nonagreeing form. Nor can a subject *wh*-phrase trigger second person agreement, even when it is arguably second person:

- (7) Anie ketu ndufo i-k-i-yem ebot odo?
 who among you.PL I-past-I-see goat the
 ‘Which of you were looking for the goat?’

The *i-* prefix is thus used with all *+wh* subjects regardless of their (other) ϕ -features. This doesn’t prove that *+wh* is not a ϕ -feature in Ibibio, but it is consistent with that view.

Further reason to say that *+wh* is not simply a ϕ -feature in Ibibio comes from comparing *wh*-phrases with logophoric pronouns. Like *wh*-phrases, a logophoric pronoun in subject position triggers a special kind of agreement the verb in Ibibio, as shown in (8). The agreement with a logophoric pronoun is segmentally the same as (anti-)agreement with a *wh*-phrase, but it has low tone (like the 1pS prefix), not high tone.³

- (8) Okon á-ké-bò ké ìmɔ ì-yèm èmèm.
 Okon 3sS-PAST-say that LOG I-see Emem
 ‘Okon said that he (Okon) is looking for Emem.’

At first glance, it is tempting to give a unified analysis for the presence of “special” agreement in both (9) and (2b) (ignoring the tone difference). But additional data confirm that a unified analysis is not warranted. Logophoric pronouns in object position also overt trigger agreement on the verb, much as first and second person pronouns do in Ibibio. In contrast, *wh*-phrases in object position do not trigger overt agreement.⁴

- (9) a. Okon a-ke-bo ke Edem a-k-i-yem ìmɔ.
 Okon 3sS-PAST-say that Edem 3sS-PAST-I-see LOG

‘Okon said that Edem was looking for him (Okon).’

b. à-ké-yem anie? (*a-k-i-yem)

2sS-PAST-*seek* who

‘Who did you look for?’

Moreover, when a logophoric pronoun is used as the possessor of the subject of a clause, the verb shows normal *a*-agreement with the subject as a whole ((10a)). In contrast, when the possessor of the subject is a *wh*-phrase, special *i*-agreement appears on the relevant verb, as shown in (10b).

(10) a. Okon a-ma-bo ke ebot imo a-ma-kpa

Okon 3sS-PAST-*say* that goat LOG 3sS-PAST-*die*

‘Okon said that his (Okon’s) goat died.’ (*i-ma-i-kpa)

b. Ebot anie i-k-i-kpa? (* a-ke-kpa)

goat who I-PAST-I-*die*

‘Whose goat died?’

The best way to account for these patterns, I claim, is to say that logophoric pronouns really do bear a special ϕ -feature in Ibibio—perhaps a fourth value of the person feature, parallel to but distinct from first, second, and third person pronouns. On this view, a paradigm of agreement markers in Ibibio is given in (11).

(11)	Subject	Object	Subject	Object
1sg	n’-	n-	1pl	i-
2sg	à-/ú-	u-	2pl	è-/i-
3sg	á-	Ø-	3pl	é- Ø-
+LOG	i-	i-		

This view easily accounts for the data in (9a) and (10a). Since logophoric pronouns have a special set of ϕ -features, it is not surprising that they trigger a distinctive form of object agreement in (9a), as well as a distinctive form of subject agreement. Indeed the subject marker and object markers are homophonous, as is often the case in Ibibio. It is also expected that the special ϕ -feature [+LOG] does not percolate from the possessor to the possessed DP as a whole in a phrase like *ebot imɔ* (goat LOG) ‘his/her own goat’ to trigger the λ form of subject agreement on the verb in (10a). This is parallel to the fact that the plural feature doesn’t percolate from the possessor to the possessed DP as a whole in an English phrase like *the children’s pony* (*The children’s pony is/*are sick*).

But if logophoric pronouns are correctly analyzed as having a special ϕ -feature, *wh*-phrases cannot naturally be analyzed in the same way, or there would be no principled account of the contrasts in (9) and (10). The absence of overt object agreement in (9b) suggests that + *wh* pronouns have (at most) the normal third person ϕ -features in Ibibio. The use of \acute{r} - rather than *a*- in (2b), (4), and (5) is then an instance of the AAE, not attributable to the presence of a special ϕ -feature. Moreover, given that \acute{r} - in interrogative clauses is a manifestation of the AAE, its appearance in (10b) is not unexpected, the way it would be in an analysis in terms of ϕ -features. We know that a +*wh* possessor must often pied-pipe the entire possessed DP along with it to Spec, CP (e.g., English: *Whose goat did you find?*, not **Who did you find ‘s goat?*). Assuming that this happens in Ibibio too, then the subject as a whole is part of an A-bar chain in (10b),

and anti-agreement is expected on the verb (see Ouhalla 1993:494n.12 for a similar analysis of the AAE in Turkish). The systematic contrasts between logophoric pronouns and *wh*-phrases thus show that *i*- is agreement with a *wh*-trace, not with a special φ -feature.⁵

Another possible interpretation of these facts, suggested by an anonymous reviewer, is that *i*- is a special form of agreement with NPs that are interpreted as bound variables. This might account for its use with both +*wh* subjects and logophoric subjects (depending on one's analysis of logophoricity). Evidence against this alternative view is the fact that when a normal pronoun is interpreted as a variable bound by a *wh*-phrase in a higher clause, that pronoun triggers normal *a*- agreement on the verb, not special *i*- agreement:

(12) Emem a-ke-dɔkkɔ anie ke aɲe a-ya-kpa? (*i-ya-i-kpa)

Emem 3sS-past-tell who that he 3sS-FUT-die

'Who_i did Emem tell that he_i will die?'

Ibibio is different in this respect from Abaza, in which not only *wh*-phrases but also the pronouns that they bind trigger a special form of agreement (O'Herin 2002:271). It is clear, then, that *i*-agreement is used with *wh*-operators and the traces that they bind in the syntactic sense, not with subjects that are bound variables in the semantic sense.⁶

Finally, it is worth noting that the special *i*- form of the verb is also found in certain relative clauses. (13a) shows that when the object is extracted by relativization, normal third person agreement appears on the verb. In contrast, (13b) shows that the special *i*- form of the verb is used when the subject NP is extracted by relativization.

(13) a. Ami m-ma-kit ebot se Okon á-ke-dep. (*i-k-i-dep).

I 1sS-PAST-see goat that Okon 3sS-PAST-buy

‘I saw the goat that Okon bought.’

b. Ami m-ma-kit ebot se í-k-i-ta udia. (*a-ke-ta)

I 1sS-PAST-see goat that I-PAST-I-eat yam

‘I saw the goat that ate the yams.’

This is what we expect: anti-agreement should be found in the full gamut of A-bar extraction constructions, as Ouhalla (1993) showed for Berber.⁷ Notice also that the relativized subject is not in-situ in (13b); rather (assuming a head-raising analysis of relative clauses) it has raised to a position before the relative complementizer, unlike the *wh*-phrase in (4). This supports my claim that the AAE in Ibibio is found whenever a subject undergoes A-bar movement, regardless of whether that movement is overt (as in relative clauses) or covert (as in at least some interrogatives).

We can now turn to the theoretical significance of this observation.

3. Some Previous Accounts of the Anti-Agreement Effect

The key challenge for most theories of the AAE is to explain what goes wrong with a structure like (14a) in languages like Berber. The idea is that if one can rule out this structure with agreement, then another structure without the agreement will be required.

(14) a. ... [CP NP_i+*wh* C [TP e_i Agr_i+T ...]] (see (1b))

b. ... [CP C [TP NP_i+*wh* Agr_i+T ...]] (see (4))

The question under consideration here is whether the proposals that have been made to rule out (14a) can also be used to rule out a structure like (14b), where the *wh*-phrase remains in situ, as is necessary to capture the patterns we have observed in Ibibio. In the interests of space, I keep discussion of other aspects of previous proposals to a minimum.

3.1 Ouhalla 1993

Ouhalla's (1993) leading idea about the AAE was that problems arise in (14a) because of conflicting requirements that are placed on the empty category in the subject position. Languages that manifest the AAE are languages that have agreement rich enough to license *pro*-drop, according to Ouhalla. The rich agreement in (14a) is in the right local configuration to license *pro* in the subject position, so the empty category in this position must be *pro* and not a pure *wh*-trace. This *pro* counts as a resumptive pronoun, given that it is locally bound by a *wh*-operator. But a general property of pronouns is that they are subject to an anti-locality effect (Condition B of the binding theory), such that they cannot be bound by an antecedent that is too close. The antecedent in Spec, CP in (14a) is too close, so the structure is ruled out, according to Ouhalla. In contrast, when rich agreement is suppressed on T, the empty category in subject position is not locally identified as *pro*. Therefore it can be an ordinary *wh*-trace, which has no intrinsic anti-locality condition associated with it, and the structure is acceptable.

Whatever advantages of Ouhalla's account may have for (14a), it is a non-starter for (14b) in Ibibio. The reason is simply because there is no empty category in the Spec, TP position when the *wh*-phrase remains in situ. Hence there is no question of whether the empty category is identified as a pronominal or as a trace. There is no place for a pronominal subject to be generated, and hence nothing to induce a local binding violation. Indeed, Ouhalla (1993:512-515) explicitly assumes that in-situ *wh*-phrases must trigger normal agreement in his account of agreement in subject questions in Arabic and Turkish. Therefore, his account does not work for the AAE in Ibibio.

One can imagine a variant of Ouhalla's basic idea that might fare better on the *wh*-in-situ structure. One might reasonably say that rich agreement on T is itself intrinsically pronominal, as has been suggested by many people. Then there could be an incompatibility between the quantificational, nonreferential nature of the +*wh* subject and the intrinsically pronominal nature of the rich agreement, such that the two cannot be linked—something akin to the weak crossover effect, where *wh*-phrases cannot be the immediate antecedents of pronouns (e.g., **?Who_i does his_i mother love*). The problem with this alternative is that it does not capture the fact that non-interrogative quantified subjects do not trigger an AAE in Ibibio, as shown in (6a) (see also (22)). Since *wh*-phrases and quantified NPs are both nonreferential, they typically pattern alike for purposes of weak crossover and related phenomena. Hence, it is unlikely that any plausible generalization of the weak crossover condition will capture the contrast between (6a) and (6b) in Ibibio. There is thus little or nothing to be gained by saying that agreement in Ibibio introduces a pronoun into the structure, either directly or indirectly.

3.2 Richards 2001

Richards (2001) presents a different idea about the nature of the AAE. He proposes that no chain can have two positions with strong (overt-movement-causing) features. The reason is that, on his conception, a strong feature is essentially an instruction to PF that says that the link of the chain in its specifier must be pronounced. The strong C in a structure like (14a) insists that the *wh*-phrase be pronounced in Spec, CP, while the strong T insists that the *wh*-phrase be pronounced in Spec, TP. General considerations imply that a phrase cannot be pronounced twice, so PF gets contradictory instructions and a structure like (14a) crashes. Richards assumes that the nonagreeing T of an AAE

structure is a T with a weak EPP feature. In that case, C is the only head with a strong feature, and there is no contradiction when it comes time to spell out the chain.

This idea also clearly fails to generalize to the *wh*-in-situ structure in (14b). When the *wh*-phrase stays in situ, the +*wh* feature of C must, by hypothesis, be weak. Therefore, the T feature can perfectly well be strong, realized as agreeing T, without causing any ambiguity as to where the moved NP is spelled out. Nevertheless, (14b) is bad with full agreement in Ibibio. Furthermore, we can see by inspection that the subject has raised to Spec, TP in examples like (4) and (5), because it comes to the immediate left of the finite verb in T. Hence there is no evidence for Richard's assumption that non-agreeing T is a T without a strong EPP feature in Ibibio.

3.3 Phillips 1998

Phillips (1998) suggests that the real cause of the AAE is the fact that the verb does not have to raise to T in sentences with a *wh*-trace in subject position, because (in contrast to a *pro* subject) the *wh*-trace doesn't need to be licensed by agreement. Since the verb does not raise to T in a structure like (14a), by hypothesis, it cannot pick up agreement features from T. Therefore the verb does not bear rich agreement (see also Ouhalla 2005:676).

Unlike the first two proposals, Phillips's suggestion might in principle be extended to the *wh*-in-situ construction in (14b).⁸ There is a more basic problem with it though: there is good evidence that the verb does in fact raise to T in AAE sentences in Ibibio, just as it does in other sentence types. First compare the sentences in (15).

(15) a. Okon a-yem ke Emem á-di.

Okon 3sS-want NEG Emem 3sS-come

'Okon wants Emem not to come.'

- b. Emem i-di-di-ghe
 Emem I-FUT-come-NEG
 ‘Emem will not come.’

The embedded clause in (15a) is a subjunctive clause, which either has no T at all, or has a weak T with no morphological exponent. In this clause, negation comes before the verb. In contrast, (15b) is a matrix indicative clause with a strong overt T node (*di* ‘future’). In this clause, the verb root appears adjacent to the overt T and before the negative marker. This suggests that the verb moves past negation to T in (15b), a movement triggered by this T’s strong substantive features. (Compare the contrast in English between the subjunctive *I insist that you not be rude*, in which *be* does not raise past negation to T, and the indicative *You were not rude*, in which *be* does raise.) With this in mind, consider the negative interrogative sentence in (16).

- (16) Owo ifaŋ mm-i-di-di-ghe?
 people how.many PERF-I-FUT-come-NEG
 ‘How many people will not come?’

This is the sort of sentence in which the AAE is observed, and indeed the verb does bear the anti-agreement prefix *i-*, not *é-* (3pS). Nevertheless, verb movement takes place, as shown by the fact that the verb appears next to T and before negation, just as in (15b). Thus, verb raising to T is required in Ibibio even when the subject is a *wh*-phrase, and this cannot be the source of the AAE in this language.

3.4 Schneider-Zioga 2007

The last proposal about the AAE that I consider here is a recent one by Schneider-Zioga (2007), proposed for Kinande, a language related to Ibibio. Schneider-Zioga claims that

preverbal subjects in Kinande are usually dislocated from the Spec, TP position, into the left periphery of the clause (see also Baker 2003), as shown in (17a).

- (17) a. ... [CP C [TopP Okon_i Top [TP pro_i Agr_i+T]]
 b. ... *[CP Who_i C [TopP t_i Top [TP pro_i Agr_i+T]]

Schneider-Zioga then attributes the ungrammaticality of a structure like (17b), with subject extraction, to Grohmann's (2003) Anti-Locality Hypothesis: a phrase cannot move from one position to another within the same local domain. In this case, movement is banned from one position in the left periphery of the clause to a second position in the left periphery of the same clause. Suppressing agreement on T fixes the problem because (similar to Ouhalla's view) non-agreeing T does not license *pro*, hence it does not cause dislocation of the subject. When T is weak, the subject occupies Spec, TP, and it can move to Spec, CP from there without violating Grohmann's condition.

Schneider-Zioga's proposal may also have problems with *wh*-in-situ in Ibibio. If *wh*-phrases do not (need to) move to Spec, CP in this language, then nothing forces the too-short movement shown in (17b). All things being equal, the +*wh* NP should be able to remain in the Spec, TopP position shown in (17a), just as it can remain in other positions in Ibibio. (And indeed Schneider-Zioga claims that in-situ *wh*-phrases do not trigger the AAE in Kinande.)

Even if the Grohmann's Anti-Locality Hypothesis applies to covert *wh*-movement, Schneider-Zioga's proposal is not very promising for Ibibio. The reason is that there is no evidence that the preverbal subject has been dislocated into a Spec, TopP position in this language. For example, indefinite NPs can occupy the preverbal subject

position in Ibibio, unlike in Kinande; examples can be found in (22a) and (24a,c) below. Furthermore, the preverbal subject cannot come before a focalized phrase in Ibibio:

(18) *Okon, mkpɔŋ ke a-ke-dep ebot.

Okon yesterday FOC 3sS-PAST-buy goat

‘(As for) Okon, yesterday he bought a goat.’

This suggests that the subject cannot occupy a Spec, TopP position in a Rizgian articulated left periphery, but only the normal Spec, TP position. If that is so, then Grohman’s anti-locality condition should not prevent the subject from moving to Spec, CP, either overtly or covertly.

4. The AAE as Grammatical Feature Deletion in Chains

The challenge, then, is to develop an approach to the AAE that groups *wh*-in-situ along with overt *wh*-movement and not with quantified NPs, given that the first two trigger the AAE in Ibibio, but the latter does not.

The first step down this road, I suggest, is to adopt the proposal of Bobaljik (2002), Fox and Nissenbaum (1999), and others that covert movement is fundamentally the same process as overt movement from the point of view of the syntax. The only difference between the two is whether the phonological features are deleted on the lower copy of the moved noun phrase (overt movement) or on the higher copy (covert movement). In this framework (unlike in previous theories, in which covert movement is movement at LF, after spell out), covert movement happens early enough to affect morphological processes such as agreement. This allows us to maintain the view that the AAE concerns the special agreement properties of traces of A-bar movement, with “trace of A-bar movement” now understood as “lower copy in an A-bar chain”. On this

understanding, the “trace” can be an overt NP, whenever the higher copy deleted rather than the lower one. Thus the overt *wh*-movement in a relative clause like (13b) can have the same agreement properties as the covert *wh*-movement in a subject question like (4) or (5), since the two have almost the same representation at the relevant stage:

- (19) a. [_{CP} <goat> C [_{TP} <~~goat~~> Agr-T+eat [_{VP} ... yam]]] (= (13b))
 b. [_{CP} <~~who~~> C [_{TP} <who> Agr-T+eat [_{VP} ... porridge]]] (= (2b))

Now why might copies in movement chains not trigger agreement in the same way that similar NPs do when they are not in movement chains? The obvious reason would be that they do not have ϕ -features, so there is nothing for the T to agree with. Subject agreement on T must then be realized (if at all) as an invariant, default agreement form. And why would copies in movement chains not have ϕ -features, when unmoved NPs do have such features? The simplest answer would be that the ϕ -features are deleted—ideally by the same copy deletion rule that we know applies to chains anyway. For the overt movement case in (19a), this is straightforward: copy deletion applies to remove both the phonological features and the semantic (quantificational, +*wh*) features of the lower copy. It is natural to say that the ϕ -features of the lower copy are also removed, as part of this general process of deletion. This gives rise to the AAE.

Copy deletion applies in a more nuanced way in the *wh*-in-situ construction in (19b). Here deletion removes the phonological features of the higher copy and the semantic (+*wh*, quantificational) features of the lower copy. What happens to the ϕ -features in this situation, when deletion is distributed over different copies in the chain? I claim that this is governed by a parameter. We get the desired result if we posit the

following principle, which applies to Ibibio but not Turkish or English, which have different distributions of anti-agreement effects.⁹

- (20) Φ -features are deleted along with semantic (scope-defining) features on copies in a movement chain.

The intuition behind (20) is that ϕ -features are more closely bundled with semantic features than they are with phonological features in Ibibio. As a result, whenever the semantic features of the lower copy in chain are deleted, the ϕ -features are deleted along with them, giving the AAE. This is independent of how deletion applies to the phonological features of the chain—whether they are deleted on the higher copy or the lower copy. Given this, fuller versions of the structures in (19) are shown in (21), and default agreement is inserted on T in both. In this way, the generalization that both overt and covert *wh*-movement trigger the AAE can readily be captured from this perspective.

- (21) a. [_{CP} <goat> C [_{TP} <goat> Agr-T+eat [_{VP} ... yam]]] (= (13b))
 +Wh +wh /i/
 [3rd, sg] [3rd, sg]
- b. [_{CP} <who> C [_{TP} <who> Agr-T+eat [_{VP} ... porridge]]] (= (2b))
 +Wh +wh /i/
 [3rd, sg] [3rd, sg]

I must emphasize that, although this proposal is constructed out of ideas that are current in the minimalist literature, they are used in a nonstandard way in at least one crucial respect. Copy deletion (at least of phonological features) is normally assumed to happen in PF, whereas agreement takes place in the narrow syntax, according to Chomsky (2000, 2001). Given these standard assumptions, copy deletion should not be able to bleed the normal process of agreement the way I assume it does in (21). Well, so much the worse for standard assumptions. One of the theoretical implications of the

Ibibio data, I suggest, is that copy deletion and agreement must take place in the same component of the grammar, so that they can interact: either copy deletion happens in the narrow syntax, or agreement happens in PF (on this option, see Bobaljik to appear). I lean toward the first option, but the exact implementation is not crucial here. The precise relationship between syntax and the interface levels of PF and LF is a matter of intense investigation these days; I suggest that the AAE in Ibibio and other languages is another set of facts to be taken into account in arriving at the correct conception of these matters.

Now let us consider more carefully the contrast between *wh*-in-situ and quantified subjects in Ibibio: *wh*-in-situ triggers the AAE, but quantified subjects do not (see (6)). At first this seems surprising, given the standard assumptions that the two are semantically similar, and quantified noun phrases also move covertly, by QR. But a closer look shows that there is no contradiction. Fox (2000) distinguishes two kinds of QR, an obligatory kind that repairs type mismatches, and an optional kind that shifts scope relations. QR never needs to apply to subjects to repair type mismatches; quantified subjects (of type $\langle\langle e, t \rangle, t \rangle$) can be interpreted in situ. Moreover, there is no evidence that subjects in Ibibio ever undergo QR to shift their scope: as far as I can tell, quantified subjects in Ibibio never take scope higher than where they appear. Compare, for example, the two sentences in (22).

(22) a. Owo a-ma-bo ke afit ebot e-ma-e-kpa.

person 3sS-PAST-saythat all goat 3pS-PAST-3pS-die

‘Someone said that every goat died.’

$\exists x$ person(x) [x said that [$\forall y$ goat (y) [y died]]]

Not: $\forall y$ goat (y) [$\exists x$ person(x) [x said that [y died]]

- b. Afit owo e-ke-bo ke anie i-k-i-kpa?
 all person 3pS-PAST-say that who I-PAST-I-die
 ‘Who did every one say died?’
 Wh x person (x) [\forall y person (y) [y say that [x died]]]

In (22a), the subject of the embedded clause is a quantified NP. It must be read as taking scope only over the embedded clause; it cannot take wide scope with respect to the indefinite subject of the matrix clause. Its semantic/quantificational features are thus in the lower Spec, TP position. Its ϕ -features are also there, so it triggers normal third person plural agreement on the embedded verb. In contrast, the subject of the embedded clause is a *wh* NP in (22b). This NP does take scope over the matrix clause, making the sentence as a whole a direct question. It also scopes over the quantified subject of the matrix clause, so that (22b) is understood as a simple question, and cannot have a pair-list interpretation. Therefore, the *wh*-phrase’s semantic features must be in Spec, CP of the matrix clause, not in Spec, TP of the embedded clause. As a result, its ϕ -features are also in Spec, CP, and not in Spec, TP. There are thus no ϕ -features in the specifier of the lower TP for the lower T to agree with, and the realization of agreement is the default *í*. (22) thus shows that there is a correlation between the scope of an NP and the type of agreement it triggers on T, just as we expect given (20).

5. AAE in Negative Clauses

There is one additional pay-off to this way of looking at the AAE in Ibibio. Unlike other approaches, it can make sense of the striking fact that anti-agreement morphology is also found in negative clauses in Ibibio, as shown in (23) (see also Essien 1990:80-81).

- (23) a. Okon í-k-i-yem-me ebot odo. (*a-ke-yem-me)

Okon I-PAST-I-look-NEG goat the

‘Okon was not looking for the goat.’

b. ɔmmɔ: í-k-i-di-ghe (*e-ke-di-ghe)

they I-PAST-I-come-NEG

‘They did not come.’

There is no A-bar movement, covert or overt, in these examples. Hence it is not obvious why the same default high tone *í-* form of agreement should also be used in this context.

These examples do, however, have something in common with the *wh*-in situ examples: in negative sentences too there is a mismatch between the visible position of the subject and its semantic scope. This can be seen rather clearly when the subject is an indefinite NP or quantified NP, as in the examples in (24).¹⁰

(24) a. Udia i-sine-ke k-e:kpat.

yams I-be.in-NEG LOC-bag

‘There are no yams in the bag.’ ($\neg [\exists x (\text{yam } x) [x \text{ is in bag}]]$)

b. Afit owo i-k-i-dia-gha ekpaŋ.

all person I-PAST-I-eat-NEG porridge.

‘Not all of the people ate porridge.’ $\neg [\forall x \text{ person } (x) [x \text{ eat porridge}]]$

c. Owo ndomo ke:t i-k-i-di-ghe.

person any at.all I-PAST-I-come-NEG

‘Nobody at all came.’ ($\neg [\exists x (\text{person } x) [x \text{ came}]]$)

These examples show that the subject of a negative clause in Ibibio takes narrow scope with respect to negation, even though the subject appears overtly in Spec, TP, higher than negation. This interpretation seems to be obligatory: (24a) cannot, for example, mean

that there is a yam that is not in the bag. (24c) also shows that a negative polarity item is licensed in the subject position of a negative clause in Ibibio, unlike in English.

In fact, the subject *is* part of a movement chain in these sentences too, given standard assumptions: it moves from Spec, vP (below negation) to Spec, TP (above negation), to satisfy an EPP feature of T. We need to ask, then, how copy deletion applies to this movement chain. The word order, with the subject coming before the verb raised to T, shows that phonological features are deleted on the copy in Spec, vP and retained on the copy in Spec, TP. But the scope facts in (24) show that semantic features are deleted on the higher copy and not the lower one. (20) then implies that the ϕ -features on the higher copy in Spec, TP are also deleted. Agreement on T thus shows up in its default form, realized as *i-*. The representation of (24b) is given in (25).¹¹

(25) [TP <all person> AGR+T+eat [NEG [vP <all person> v [vP <eat> porridge]]]
 ~~$\forall x \dots$ [3pl]~~ /i/ $\forall x \dots$ [3pl]

In one sense, the structure in (25) is the exact opposite of the *wh*-in-situ structure in (21b): in (25), it is the higher copy that retains its phonological features but not its semantic features, whereas in (21b) it is the lower copy that does this. But from another perspective, the two structures are very similar. In both, a copy of the subject appears in Spec, TP for purely formal syntactic reasons (to satisfy the EPP feature of T), even though this copy does not correctly represent the semantic scope of the NP (it is too high in the negative sentence, and too low in the question). Therefore, the semantic features must be deleted on the copy in Spec, TP in both structures. Since ϕ -features delete along with semantic features in Ibibio, T has no ϕ -features to agree with in either case. The result is a similar AAE in both *wh*-in-situ and negative sentences.

The subject must of course raise from Spec, vP to Spec, TP in affirmative clauses in Ibibio as well as in negative clauses. All subjects are thus part of some kind of movement chain. Why then doesn't one get *i*-type agreement with all subjects, even in examples like (2a)? The logic of my analysis says that it must be the copy in Spec, TP that is semantically interpreted whenever there is no negative head in the clause. This recalls Fox's (2000) view that quantifier lowering applies only when it affects the relative scope between two scope-sensitive items. Negation is a scope-sensitive item, so its presence triggers "quantifier lowering", here understood as deletion of semantic features on the higher copy of the chain. When there is no scope-bearing operator like negation in the structure, issues of relative scope don't arise, and it is more economical to retain the semantic features (and hence ϕ -features) on the copy that is pronounced—the one in Spec, TP. (This is essentially the Minimize Mismatch principle of Bobaljik (2002:251).)¹²

Finally, consider again a negative subjunctive clause like the one shown in (26).

(26) Okon a-yem ke Emem á-di. (=15a)

Okon 3sS-want NEG Emem 3sS-come

'Okon wants Emem not to come.'

Recall that the embedded clause in this example either has no T at all, or it has a T that lacks substantive features. We saw in section 3.3 that, as a result, there is no trigger for verb movement past negation in this clause. It is also apparent that such clauses lack a trigger for moving the subject NP to Spec, TP, higher than negation. The subject thus stays in Spec, vP, below negation. The NP *Emem* in (26) is thus in a chain with only one member. Copy deletion doesn't apply, and the one copy is pronounced, interpreted, and bears ϕ -features. As a result, there is no AAE in this example: the subject triggers full

agreement on the verb (in this case v , or some other low functional head—all Ibibio examples have agreement with the subject on the verb as well as on T; see note 1). Anti-agreement is thus not an inevitable consequence of having negation in Ibibio. Rather, the AAE appears if and only if there is a substantive T above negation whose EPP feature triggers movement of the subject. Such a T creates a mismatch in where the phonological features are and where the semantic features are, and *that* results in an AAE.

6. Conclusion and Typological Remark

In this article, I have argued that anti-agreement effects arise in Ibibio whenever the ϕ -features of a subject in Spec, TP are deleted by the general process of chain reduction. This happens when and only when (a) the subject is part of a nontrivial movement chain, and (b) the subject is interpreted in a different position from where it is pronounced. In *wh*-in-situ examples, the scope of the subject is higher than where it is pronounced; in negation examples, the scope of the subject is lower than where it is pronounced. In both situations there is a mismatch, and this is what leads to the AAE in this approach.

It remains to be seen more fully how this approach generalizes to other languages. The statement in (20) about how ϕ -features are deleted in Ibibio is probably only one option made available by Universal Grammar. Other languages could have different principles that govern where ϕ -features are deleted, just as they have different principles regulating where phonological features are deleted (e.g., languages with *wh*-in-situ as opposed to languages with overt *wh*-movement). The variation should be quite limited however. It is clear why phonological features must be deleted on every copy in a movement chain but one: economy principles of pronunciation want to realize the NP only once, ordered in an unambiguous way with respect to the other words of the

sentence. It is also clear why semantic features must be deleted on every copy in a movement chain but one: only one copy properly represents the NP's scope. But it is plausible to think that copies of ϕ -features, as purely formal elements relevant only to the narrow syntax, are relatively innocuous. If so, then they will never be the special targets of deletion, but are only deleted when they are caught in the cross-fire as deletion targets of other features of the same NP. We might thus expect only the following range of options to be attested:

- (27) a. Φ -features are deleted along with semantic (scope-defining) features on copies in a movement chain (Ibibio), *or*
- b. Φ -features are deleted along with phonological features on copies in a movement chain (Turkish, Kinande), *or*
- c. Φ -features are not deleted on copies in a movement chain (English, Lokaa, etc.)

(27a) is the Ibibio value of this parameter, the implications of which have been explored throughout this article. If a language chooses the (27b) value, then traces of overt *wh*-movement will cause an AAE, but in-situ *wh*-phrases will not. That is true for Turkish on the analysis of Ouhalla (1993), and for Kinande on the analysis of Schneider-Zioga (2007). This system also predicts that languages like Turkish and Kinande should not show an AAE in negative sentences with quantifier lowering, the way Ibibio does, and that is correct. Finally, if a language chooses the (27c) value, it will have no AAE at all. More generally there will be no anomalies in agreement triggered by *wh*-movement, overt or covert, scope reconstruction, or the like. That is true for English, Lokaa (a cousin of Ibibio and Kinande), and many other languages. This conception thus gives a

rather simple and accurate typology of the different types of AAE-patterns that are known to exist at this point.¹³

Notes:

* The data from Ibibio used in this paper represent the judgments of Willie Udo Willie, a native speaker-linguist. He has my profound thanks for all his help. The research reported here grew out of discussions in a field methods class held at Rutgers University in the spring of 2006; I thank the participants of the seminar for their input, especially Akin Akinlabi and Carlos Fasola. Thanks also to José Camacho, Ken Safir, and two anonymous reviewers for their comments. Remaining errors are my responsibility.

Examples are presented in a broad phonetic transcription. Tone is important in the language, but I have generally left it unmarked, except for a few cases in which it is crucial to distinguishing one agreement morpheme from another. Abbreviations used in the glosses include the following: 1sS, first singular subject agreement; 2sS, second singular subject agreement; 3pS, third plural subject agreement; 3sS, third singular subject agreement; AAE, anti-agreement effect; C, complementizer; FOC, focus head; FUT, future tense; Fs(S), feminine singular (subject); I, the prefix *i-*, anti-agreement form; LOC, locative; LOG, logophoric pronoun; NEG, negation; PART, participle; PAST, past tense; PL, plural; SG, singular.

¹ A fascinating fact about Ibibio is that subject agreement appears twice in forms with an overt tense marker, once before the tense prefix and once between it and the verb (see, for example, the lower clause in (22a), and Essien 1990:80-82, 89). This is not evident in most of my examples, because the second agreement is deleted by phonological rules that

resolve vowel hiatus; see Willie 2007 and Baker and Willie 2007 for examples, analysis, and discussion. The fact that the anti-agreement morpheme *i*-undergoes this doubling in examples like (2b) confirms that it is a kind of (default) agreement marker, not some other sort of morpheme altogether (such as an infinitival marker).

² An anonymous reviewer asks if (4) and (5) could be analyzed as having an overt but “short” instance of A-bar movement, in which the *wh*-phrase lands in a Spec, FocusP, lower than Spec, CP. I cannot rule out this alternative with absolute certainty, but there is no evidence for it. In non-string-vacuous instances of focus movement, there is an overt focus head *ke*, as shown in (3b), and no such focus head is possible in (4) or (5).

³ Tone is phonemic in Ibibio. Not only are lexical roots distinguished by their tone patterns, but so are agreement prefixes. For example, second person subject markers are segmentally identical to third person subject markers, but they bear different tones, as shown in (11). The phonological difference between logophoric agreement and anti-agreement is just as great.

⁴ An anonymous reviewer asks why there isn't an AAE in sentences like (9b) or (3), with the +*wh* object triggering a special default form of object agreement. My answer is that all non first or second person objects in Ibibio trigger the same \emptyset form of object agreement (see (11)), regardless of their other ϕ -features. This can be analyzed as the default form of object agreement in the language. Then it is not surprising that an NP that has no ϕ -features at all also occasions the use of this morpheme.

⁵ Another possible indication that *i*- is not ϕ -feature agreement with a +*wh* NP in Ibibio is that it does not license pro-drop of the +*wh* subject. Thus **i-k-i-dia ekpan?* (I-PAST-I-

eat porridge) is not a possible alternative form of (2b). Ibibio differs in this respect from Abaza, a language that does have ϕ -feature agreement with *wh*-phrases (O’Herin 2002).

⁶ Possibly also relevant is the fact that quantified subjects in Ibibio trigger normal agreement, not the special *i*- form (see (6) and (22)). If these quantifiers undergo QR, leaving behind a trace that is interpreted as a bound variable, the alternative under consideration might expect T to show *i*- type agreement with the subject, contrary to fact. Ibibio is different in this respect from Kilega, in which the quantifier meaning ‘every’ does trigger the same special agreement as *wh*-phrases do (Kinyalolo 1991:26).

⁷ There is another kind of relative clause in Ibibio, which shows normal third person agreement with the subject, even when the subject is the head of the relative. The difference between this kind of relative clause and the one illustrated in (13) is the position of the complementizer: it is in the usual pre-TP position in (13), but shows up as a suffix on the verb in the other kind of relative clause. In Baker 2007, I claim that the verb moves through T into C in the second kind of relative clause. From its derived position in C, T can agree with the copy of the relativized NP in Spec, CP, rather than with the copy in Spec, TP. The copy in Spec, CP is semantically interpreted and retains its ϕ -features; hence the verb shows normal ϕ -feature agreement in this case.

⁸ Whether this extension would work or not depends on the details of why the verb must move to T in a language like Berber when the subject is an overt NP (rather than a *pro*), and hence whether this trigger is also present when the subject is an in situ *wh*-phrase.

⁹ See Baker, Aranovich, and Golluscio 2005 for a similar proposal, applied to the traces of noun incorporation. They argue that ϕ -features are deleted on the trace of noun

incorporation in some languages but not others. The idea that something similar underlies Ouhalla's AAE was tentatively suggested in passing in that article.

¹⁰ I assume that definite NPs such as those in (23) either are not scope-bearing elements, or they are always assigned a widest scope interpretation for reasons that have nothing to do with syntactic chain formation.

¹¹ One might ask why T cannot agree downward with the copy of NP in Spec, vP in a structure like (25), as is permitted by Chomsky's (2000, 2001) theory of Agree. I assume that the answer is that agreement is parametrically fixed to only probe upward in Ibibio, as in most other Niger-Congo languages; see Baker In Press chapter 5 for extensive discussion. The verb in a negative clause does still agree with a first or second person subject pronoun; I assume that this is because of the influence of speaker and addressee operators in CP (see Baker In Press chapter 4), which restore the deleted features in Spec, TP; see Baker 2007 for some discussion.

¹² Two points remain unexplained in this sketch. First, it is not clear why "quantifier lowering" of the subject under negation is obligatory in Ibibio, whereas it is optional in English. Second, it is not clear from the perspective of Fox (2000) why even definite, non-quantified subjects must reconstruct into the Spec, vP position in negative sentences in Ibibio, even though they don't seem to interact scopally with negation. I leave these facts about the semantic interpretation of Ibibio sentences unexplained.

One might expect that other types of verbal morphology could also trigger "quantifier lowering" of the subject, and hence anti-agreement—especially modal elements like 'may' or 'must'. I have not found any other relevant verbal affixes,

however; the modal notions in Ibibio are expressed by higher verbs that do not permit NP-raising.

¹³ Of course, (27) is not the only determinant of exactly where one will see an AAE in a given language. At a minimum, there will also be factors that determine which copy of a movement chain is pronounced, and which is interpreted; these then determine where the phi-features are in the ways defined in (27). Some of this variation is very familiar—for example the fact that question words remain in situ (the lower copy is pronounced) in Turkish, but question words do not remain in situ in Berber, nor do related nominals in Turkish (the higher copy is pronounced). Given that in Turkish phi-features are deleted along with phonological features ((27b)), this means that Turkish has an AAE in relative clauses but not in questions, whereas the AAE shows up in both contexts in Berber (Ouhalla 1993). There may also be crosslinguistic variation in which copy of a movement chain is interpreted—see note 12, pointing toward a difference in scope with respect to negation in Ibibio versus English—although much less is known about this. Any differences of this sort will also play a role in determining which constructions in a given language display an AAE and which do not, particularly in a language with the (27a) setting.

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