

Local agreement

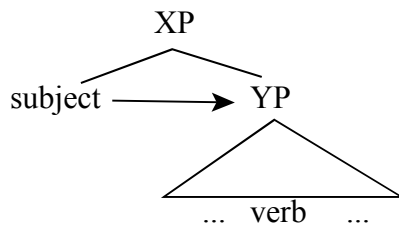
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1. Introduction

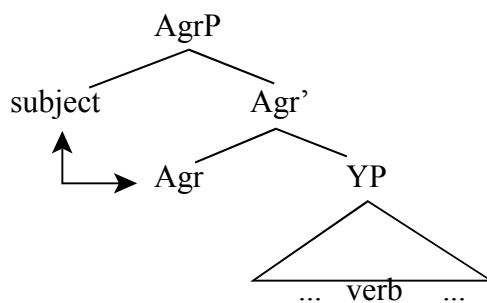
In this article I would like to explore the possibility that linguistic agreement, in particular subject-verb agreement, is always a relation between phrases, never a relation between a head and a phrase. More specifically, I am interested in the possibility of restricting the agreement relation to pairs of sisters:

- (1) *Agreement as a function of sisterhood*



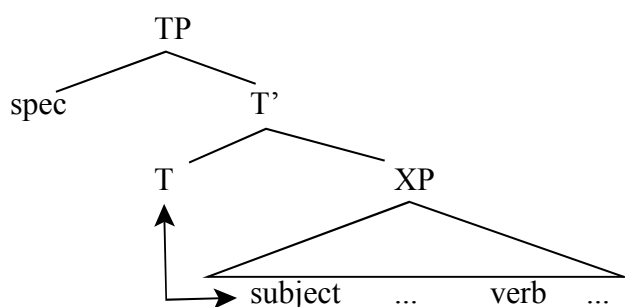
This would imply that the traditional view, according to which agreement is instantiated (almost by definition) in a relation between a head and a specifier (2), is mistaken, and I believe it to be mistaken because the specifier-head configuration is not sufficiently local. On this view, the subject occupies the specifier position of an agreement phrase AgrP and agrees with Agr representing the person/number features associated with the verb (which may be united with Agr through head movement at some point in the derivation):

- (2) *Agreement as a function of the specifier-head relation (Kayne 1989, Pollock 1989)*



More recently, Chomsky (1998) has proposed that the configurational relation relevant to agreement is not that between a head and its specifier, but that between a head T (for tense) and a phrase it c-commands (AGREE, see (3)).

(3) *Agreement as a function of c-command* ('AGREE'; Chomsky 1998)



The proposal presupposes that the subject originates in a position c-commanded by T, with movement to the specifier position of TP triggered by feature checking requirements having nothing to do with agreement. The relation between the subject and the verb is again an indirect one, as T is a projection of features of the verb. The proposal assumes that T hosts unvalued person/number features which receive a value through association with the subject under c-command.

This view of agreement by c-command is also incompatible with the approach to agreement I wish to pursue here. First, it continues to assume that agreement between the subject and the verb is mediated by a functional head (Tense or T), so that agreement is not a relation between phrases. Second, it entails a less than straightforward mapping of structure to dependency than the one envisioned here, where the subject — the nondependent — determines properties of its sister, rather than functioning as the target for a functional head looking to value its features (see section 6).

In earlier work (Zwart 1992) I have proposed to break down the specifier-head relation (2) into two more primitive relations: sisterhood and dominance. The idea was that phrases can only 'see' their sisters, and that specifiers can only be connected to the heads they appear to agree with indirectly, via the dominance relation which inevitably connects the specifier's sister to a head. This redefinition of specifier-head agreement was intended at the time as a technical refinement building in a stricter notion of locality. Crucially, it did not depart from the then (and now) current view that the element that specifiers need to agree with (albeit via transitivity) is the head, and, conversely, that the head needs to agree with an element in its specifier position. I now believe both assumptions to be incorrect.

More recently, the desirability to restrict local relations to sisterhood relations has been emphasized in work inspired by Epstein (1995), which takes dependency relations like c-command to be defined in terms of a bottom-up structure building operation, Merge. Merge takes two elements and joins them, yielding a syntactic constituent which may itself be input to the next operation Merge. Epstein (1995) shows that an element α c-commands all and only those elements that have already been merged at the point in the derivation where α is merged, i.e. α c-commands its sister β , as well as the elements contained in β (the terms of β). These findings take on added importance if Hauser, Chomsky, and Fitch (2002) are correct in arguing that the human faculty of language is uniquely defined by the capacity of recursion, and if Merge is the minimal structure building operation to be applied recursively. Since Merge yields the sisterhood configuration, the strongest hypothesis would seem to be that grammatical relations are defined over sisters.

My present suspicion is that agreement on a head is merely a consequence of the need (which may be parametrized) to spell out the agreement relation between sisters. In other words, the element agreeing with the subject in (1) is not the verb, but the phrase YP, which spells out the agreement relation on one of its terms (the verb). Moreover, I suspect that agreement between

phrases is a mere side-effect of a more contentful relation between the two phrases. For example, the agreement relation between a subject and a verb is a side-effect of the more contentful relation between a subject and its sister (that which it is a subject of). This relation may be marked on the dependent (YP in (1)), which can be formally expressed as a feature sharing operation between the subject and its dependent. This feature sharing operation takes the place of the feature checking operation of earlier approaches to agreement. On the view explored here, there is no requirement that the subject *check* its features with the features of any other element, and neither the verb, nor any functional head associated with the verb possesses any features that need to be checked with the features of the subject.

If I am correct, it follows that there is no need to establish a specifier-head agreement relation (2) or an AGREE-relation (3), and that the presence of agreement features on heads and on the elements in the specifiers of their projections cannot be a trigger for movement of either the head or the specifier. It would also follow that parametric variation not be expressed in terms of the ‘strength’ of these features, or in terms of their being uninterpretable at the interfaces (and, hence, the need to eliminate them before reaching those interfaces).

It does not necessarily follow that views on the architecture of the clause currently assumed (though not without being challenged), displaying a regular alternation of specifiers (phrases) and heads, need to be modified. There may still be sufficient empirical evidence to suggest that these views are correct, or, at least, productive. This article, then, if there is any substance to the approach contemplated in it, raises the question what motivates the appearance of (functional) heads, if agreement or more generally feature checking requirements cannot be held responsible for their existence.

The article has the following contents. Section 2 presents the basic properties of subject-verb agreement relevant to the discussion in this article. Section 3 presents the two standard approaches to agreement, involving the specifier-head relation and the AGREE (c-command) relation, with some attention to the question of why these configurations were considered to be meaningful in this domain. Section 4 then describes cases of multiple target and multiple controller agreement, which are straightforwardly analyzed if the relation relevant to agreement is sisterhood, but less so under the standard conceptions of subject-verb agreement. Section 5 sketches a number of phenomena related to the morphological realization of agreement, supporting the idea that the verb is not directly involved in subject agreement. Finally, in section 6, the proposal regarding subject-verb agreement is placed within the context of a general theory of dependency as a function of Merge.

2. Basic properties of subject-verb agreement

We speak of subject-verb agreement when the form of the verb varies in accordance with the value of a feature of the subject, as in English (4):

- (4) a. John loves Mary
 b. John and Bill love Mary

The subject DPs *John* and *John and Bill* in (4) have a [person] and [number] feature, with the feature values <3, singular> for *John* and <3, plural> for *John and Bill*, and the verb *love* has a form *loves* used when the subject is <3, singular> and a form *love* used elsewhere.

It is important to realize that the features [person] and [number] are inherently present on noun phrases (DPs), in the sense that the feature values assist in reference regardless of syntactic context. In contrast, the features [person] and [number] appear on verbs only in the context of

subject-verb agreement, and have no referential function (outside the phenomenon of pluractionality, where verbs take on derivational morphology to refer to iterated or frequent events; cf. Corbett 2000, chapter 8). Hence there is a need to distinguish between inherent and relational features, the latter apparently present only to mark a dependency.

It follows that subject-verb agreement is inherently asymmetric (Corbett 2003:118, *pace* Chung 1998:178). There is a clear division between an antecedent (or controller, on which the relevant features are inherent) and a dependent (or target, where the features are relational). This conclusion is remarkably at odds with the dominant view in the typological literature, which (following Nichols 1986) describes the subject as the dependent in the subject-verb agreement relation. In this tradition, however, dependency is defined in terms of selection (among other criteria), and no distinction is made between the subject *qua* external argument of the verb/predicate and the subject *qua* grammatical function at the clause level. We take the distinction between argument roles and grammatical functions to be well-established (a subject may be an internal argument, as in passive constructions, or an argument of a more deeply embedded predicate, as in raising constructions), and subject-verb agreement appears to be sensitive to grammatical functions rather than argument roles. In other words, a subject may show agreement with a verb that does not select the subject as one of its arguments. Another problem associated with the idea that the subject is a dependent in the subject-verb agreement relation is that consistent ‘dependent-marking’ languages (according to the definition of Nichols 1986) standardly display ‘head-marking’ grammar when it comes to subject-verb agreement. A definition of dependency in terms of inherent vs. relational features does not suffer from these problems: no connection with predicate-argument relations is presupposed, and subject-verb agreement is expected in consistently dependent-marking languages (see Zwart 2004a for more fundamental discussion of this point).

Equally important seems to be the generalization that the predicate in the vast majority of the world’s languages follows the subject (the only sizeable group of exceptions being constituted by consistent VSO languages). I take this observation to suggest that dependency in grammar is universally coded in linear order, with the dependent following the antecedent. We return to this generalization in section 6.

Subject-verb agreement does not require adjacency between the subject and the verb. In fact, the verb may be directly right adjacent to the subject (5a), following the subject at greater distance (5b), or even precede the subject (5c).

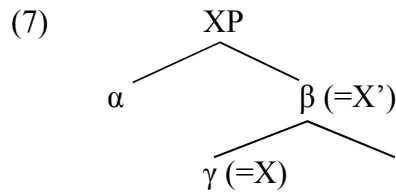
- (5) a. SUBJ (*XP) V
 b. SUBJ (XP) V
 c. V SUBJ

These cases may cooccur in a single language, as illustrated in (6) for Dutch.

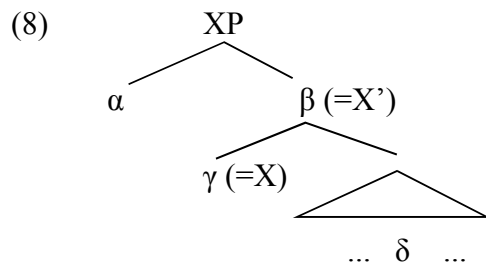
- (6) a. Jan kust Marie
 John kiss-3SG Mary
 ‘John kisses Mary.’
 b. ..dat Jan Marie kust
 that John Mary kiss-3SG
 ‘..that John kisses Mary.’
 c. Waarom kust Jan Marie ?
 why kiss-3SG John Mary
 ‘Why does John kiss Mary?’

Since the order of subject and object remains constant in (6), it is reasonable to suppose that the pattern is explained by some amount of mobility of the verb (verb movement).

The relevance of these observations to the basics of subject-verb agreement is the following. Suppose a language had only the pattern in (5a/6a), where the verb is right-adjacent to the subject, as pictured in (7), where α = the subject and γ = the verb.



In that case it would be impossible to tell whether subject-verb agreement is a relation between α and γ directly, or between α and β , spelled out on γ . Suppose, however, that the language only has the pattern in (5b/6b), pictured in (8), where δ = the verb.



In this situation, it is still possible to maintain that subject-verb agreement involves a relation between α and β , spelled out on δ , but not (as easily) that it involves a relation between α and γ . Similarly, then, with languages like Dutch which feature both (5a) and (5b). Finally, the case of (5c)/(6c) need not detract from the idea that subject-verb agreement involves a relation between α and β , since nothing excludes that δ , the element spelling out the relation between α and β , has a life of its own requiring it to move to a position to the left of the antecedent α .

In other words, it would appear that the generalization that covers all instances of subject-verb agreement is the one that defines subject-verb agreement as the expression, on a term of the dependent, of a dependency relation between an antecedent and its sister. Parametric variation may then be formulated in terms of whether the relation between α and β in (8) is spelled out on an element at the edge of the dependent, γ , yielding the impression of a specifier-head relation, or on some other term of the dependent, δ .

3. Standard approaches to agreement

3.1 Specifier-head agreement

The idea that agreement involves specifier-head configurations is probably due to Kayne's (1989) discussion of past participle agreement in Romance, and received a strong boost after the publication of Pollock's (1989) article on the layered structure of IP (the functional domain associated with tense and agreement). Kayne discussed the contrast in (9), where the past participle agrees with a displaced internal argument (9a), but not with an internal argument in situ (9b), and proposed the structure in (10) for (9a), in which agreement is defined locally between (a trace of) the displaced element and an empty AGR(ement) head.

- (9) a. Paul les a repeintes
 Paul them has repainted-F.PL
 ‘Paul repainted them.’
- b. Paul a repaint(*es) les chaises
 Paul has repaint(-F.PL) the chairs
 ‘Paul repainted the chairs.’

(10) Paul les_i a [e]_i AGR_i repeintes [e]_i

The leftmost empty element and the element marked AGR were subsequently considered to instantiate a specifier-head agreement relation, providing the model for the description of all types of agreement relations in the functional domain in the years to come.

As Kayne notes, the specifier-head agreement relation in (10) is itself modeled on the then current description of finite verb agreement, where the subject and the finite verb (auxiliary in English) are taken to be in a specifier-head configuration in IP (AgrSP):

- (11) a. John has seen Mary
 b. John_i [_{INFL} has]_i seen Mary

As noted elsewhere by Kayne (Kayne 2000:195), it is not so clear that *John* and *has* in (11) are in a local specifier-head configuration, because the two can be separated by adverbs:

(12) John probably has not seen Mary

Assuming adverbs to be either adjoined to maximal projections, or, with Cinque (1999), to be located in the specifier position of a designated AdverbPhrase (AdvP), it follows that *John* must be in the specifier position of a different functional head than the one occupied by *has*:

(13) [_{FP} John F [_{AdvP} probably ADV [_{FP} [_F has] [not seen Mary]]]]

Thus, the parallel treatment of past participle agreement and finite verb agreement, which is in itself desirable, does not automatically lead to a model in which all agreement involves local specifier-head configurations.

This raises the question of whether the situation of English, where the verb need never be adjacent to the subject it agrees with, could not be described in terms of a specifier-head configuration established in covert syntax (at LF). But there are several problems with that idea.

First, since relational agreement features are not relevant to interpretation, verb movement for agreement purposes could not be triggered at LF. Secondly, since relational agreement *is* relevant at PF, verb movement for agreement purposes should in fact have been triggered earlier (cf. Chomsky 1995: 385 fn 50). Thirdly, there is reason to believe that the lexical verb is contained in a VP which has itself moved to a specifier position. Consider this final argument in more detail.

As noted by Cinque (1999:178 fn 57) and Koster (2000), the position of manner adverbs in English (cf. (14a)), in conjunction with the obligatory verb-object adjacency, suggests that the entire VP has been displaced to the left (14b).

- (14) a. John did it *fast*
 b. John [_{VP} did it]_i fast *t_i*

Given our current understanding of phrase structure, this implies that the VP is sitting in a specifier position (we ignore the possibility that the verb and its complement have each been moved individually, as nothing can intervene between the two). There is reason to believe that this would impede movement of the lexical verb (which we know does not take place in English). Head movement is subject to the strictest conditions of locality, so we would expect it to obey the Condition on Extraction Domains of Huang (1982), prohibiting displacement out of non-complements. This suggests that head movement at LF of the lexical verb out of a shifted VP to a position closer to the subject would not be allowed by locality conditions on movement. This, too, argues against covert movement of the verb in English in order to establish a specifier-head configuration with the subject.

In all, then, it seems that English simply has subject-verb agreement at a distance. Subject-verb agreement in English, then, can hardly serve as a model for the general specifier-head agreement relation introduced in connection with past participle agreement in French (cf. (10)).

However, continuing on Kayne's lead, that past participle agreement and finite verb agreement should be treated alike, another approach suggests itself. Consider the possibility that a displaced internal argument (*les* in (9a)) is in some sense to be regarded as the 'subject' of the past participle, and that this subject relation is spelled out morphologically in the form of concord. We then expect the agreement marking to appear on the participle (since no other candidate is available). Crucially, the internal argument of the participle can only be interpreted as the participle's subject if it is displaced and merged to the projection of the participle ('externalized'). Thus, if agreement spells out the subject relation, it is expected to occur in (9a) but not in (9b).

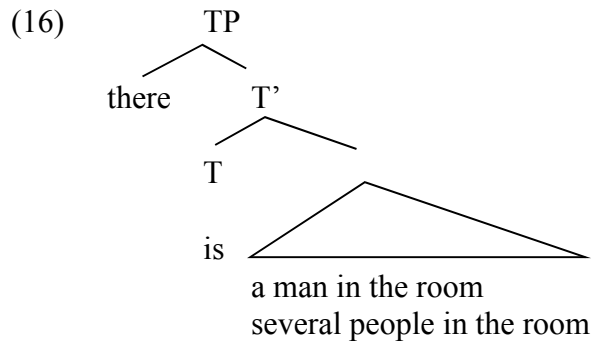
All of this leads to the conclusion that, even though agreement, like all grammatical relations, must be strictly local (ideally applying between sisters only), the element on which agreement with the subject is spelled out may be quite far removed from the subject (as long as it is contained in the subject's sister).

3.2 AGREE

The mechanism of subject-verb agreement by c-command ('AGREE') proposed by Chomsky (1998) is apparently designed to deal with agreement in expletive constructions of the type in (15):

- (15) a. There is a man in the room
b. There are several people in the room

Here, the form of the verb *is/are* varies in accordance with the [person]/[number] features of *a man/several people* further to the right (the 'associate'). It is assumed that the expletive *there* occupies the structural subject position, a specifier position associated with the functional head T (tense), which contains *is/are* and c-commands the constituent *a man/several people in the room*:



T is related (via c-command) to the associate DP *a man/several people*, licensing its case and checking its agreement features. The mechanism presupposes that T hosts a set of unvalued [person]/[number] features, which are valued by the relation of T with the associate.

From our perspective, the idea that T hosts [person]/[number] features is curious. Agreement features on T could only be relational, but T itself only serves to mediate between the associate and the verb, which only *happens* to occupy T in (15): in other constructions, like (17), the verb is not taken to occupy the T-position, and T stands alone, determining the morphology of the verb via c-command:

- (17) a. There T seems to be a man in the room
 b. There T seem to be several people in the room

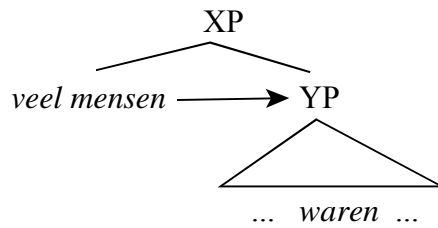
What is special about the case of expletive constructions is that what appears to be the dependent (the verb) precedes the antecedent (the associate). But a derivational approach to dependency relations requires us to ask whether the order dependent-associate applies throughout the derivation.

If we look at comparable constructions in Dutch, we note that there may indeed be a stage in the derivation of expletive constructions where the associate precedes the verb. Consider the pair of sentences in (18).

- (18) a. Er waren veel mensen in de tuin
 there be:PAST.PL many people in the garden
 ‘There were many people in the garden.’
 b. ..dat er veel mensen in de tuin waren
 that there many people in the garden be:PAST.PL
 ‘..that there were many people in the garden.’

The independent clause (18a) is comparable to English (15b), with plural agreement on a verb preceding the associate. But embedded clauses in Dutch are taken to involve less verb movements than independent finite clauses. In particular, the verb, which occupies a VP-external position in (18a) is taken to still occupy a VP-internal position in embedded clauses like (18b)(Den Besten 1977, Zwart 1993). It follows that the verb in (18b) is a term of a sister of the associate *veel mensen* ‘many people’:

(19)



The position of the verb in (18a), preceding the associate, may then be described as comparable in relevant respects to the position of the verb in (6c): the term of YP spelling out the agreement relation between *veel mensen* and YP in (18b)/(19) may be forced to move to the left of *veel mensen* by factors independent of subject-verb agreement. Crucially, once the agreement relation is forged at some point in the derivation, it cannot be undone by additional operations.

The Dutch counterpart to the more complicated construction (17) has essentially the same properties:

- (20) a. Er schijn-en veel mensen in de tuin te zijn
there seem-PL many people in the garden to be:INF
'There seem to be many people in the garden.'
- b. ..dat er veel mensen in de tuin schijn-en te zijn
that there many people in the garden seem-PL to be:INF
'..that there seem to be many people in the garden.'

In the stage of the derivation represented by the embedded clause (20b), the associate *veel mensen* 'many people' is merged to the constituent YP = *in de tuin schijnen te zijn* 'seem to be in the garden', which has as one of its terms the verb *schijnen* 'seem' which spells out the agreement relation between the associate and its dependent YP (cf. (19)).

These facts from Dutch lead us to suppose that in English expletive constructions, too, the associate is at some point in the derivation merged with a constituent containing the agreeing verb (*is/are* in (15), *seem/seems* in (17)), perhaps via the leftward Thematization/Extraction operation proposed by Chomsky (2001:20). At any rate, we may conclude that for Dutch, the AGREE mechanism is not needed to account for subject-verb agreement in expletive constructions. Since any deviation from the simple system of agreement as a function of sisterhood must be well-motivated, it would seem that the facts of English still require more analysis.

The mechanism of agreement via c-command has since shown its use in the description of the typologically rare 'cross-clausal agreement' phenomenon (Polinsky and Potsdam 2001, Branigan and MacKenzie 2002). In these cases, a verb selecting a complement clause shows agreement with an argument contained within the complement clause (example from Polinsky and Potsdam 2001:584):

- (21) enir użā **magalu** bāc'ruŋi **b-ixyo** (Tsez)
mother boy bread.III.ABS ate III-know
'The mother knows the boy ate the bread.'

In the example in (21), the matrix verb *bixyo* 'knows' shows noun class agreement with the object of the embedded clause *magalu* 'bread'. Polinsky and Potsdam (2001) observe that this cross-clausal agreement takes place only when the embedded clause object is a topic, which they take to imply that the object moves to the edge of the embedded clause covertly, a position from

which it would be accessible as a target in the AGREE relation with the matrix verb (assuming the phase-based theory of locality of Chomsky 2001). On these assumptions, then, cross-clausal agreement would be another instance of agreement via c-command (3).

It is, however, not clear that standard subject-verb agreement should be modeled after cross-clausal agreement. There are a number of differences: cross-clausal agreement is generally optional, while standard subject-verb agreement is obligatory; cross-clausal agreement appears to be A'-agreement (i.e. agreement with a particular quantificational or discourse-sensitive element, in this case a topic), while subject-verb agreement is not; cross-clausal agreement is restricted in type (gender in Tsez), whereas subject-verb agreement is not so restricted (it is to be noted that noun class agreement in some Dagestanian languages, like Hunzib, exists side by side with ordinary subject-verb agreement: the former follows absolutive alignment, whereas the latter follows accusative alignment, cf. (24)); and finally, standard subject-verb agreement is strictly local. It might be, then, that the proposal advanced here applies to local agreement only, whereas other mechanisms are involved with nonstandard, nonlocal types of agreement. We leave this for further study.

4. Some comparative aspects of subject-verb agreement

Both current conceptions of subject-verb agreement (in a specifier-head configuration or via c-command) take the phenomenon to involve a bi-unique relation. We observe, however, that a subject may trigger agreement on more than one category (section 4.1) and that a verb may spell out agreement with more than one antecedent (section 4.2). Both phenomena are easily described within the framework pursued here. Multiple-target agreement is just a variation on standard lexicalization patterns of the agreement relation. Multiple-source agreement occurs where a single element is required to spell out two dependencies at a time, yielding matching effects.

4.1 Multiple target agreement

It is well-known that the subject in Bantu languages may trigger agreement on a variety of elements (in the so-called compound tenses). The following is an illustration from Swahili (Carstens 2003:395; Bantu languages show noun class agreement, with the noun classes glossed here in subscript):

- (22) Juma a-li-kuwa a-ngali a-ki-fanya kazi
 Juma₁ SU₁-PAST-be SU₁-still SU₁-PROG-do work
 'Juma was still working.'

In a specifier-head analysis of agreement, this would require successive movement of the subject to specifiers of a number of agreement phrases; this would predict special properties of Swahili syntax associated with the movement process, of which I am not aware.

In an AGREE analysis, there would have to be a number of functional heads looking for the subject to value their features. The problem here would be that feature valuation of T is supposed to go hand in hand with case licensing of the subject, and that T can only target a noun phrase with unlicensed case features. In other words, the subject can only be targeted once, which entails that agreement can only be realized once.

On our approach, the Bantu multiple agreement could simply be described as multiple spell-out of the dependency in (23):

(23) [Juma] ↔ [alikuwa angali akifanya kazi]

This requires a theory of dependency marking, some of which is discussed in section 5.

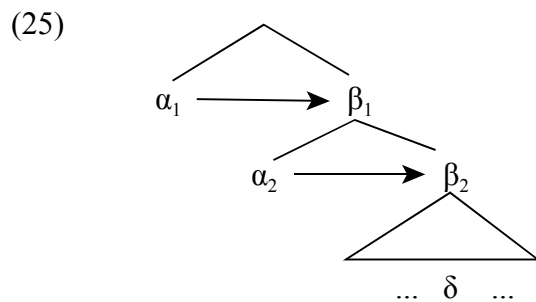
4.2 Multiple source agreement

An obvious case of multiple-source agreement is provided by Hunzib, where the verb agrees in [person] with the subject (whether ergative or absolutive), and in [noun class] with the absolutive (whether subject or object)(data from Van den Berg 1995:83):

- (24) a. mə b-ok'o.l-čə heɽe
 2SG IV-gather-PRES:1/2 walnut₄:ABS
 'you gather nuts'
- b. oɽu-l b-ok'o.l-∅ heɽe
 DEM:OBL-ERG IV-gather-PRES walnut₄:ABS
 '(s)he gathers nuts'

These and other cases where a verb expresses agreement with both the subject and the object can be described without too many problems in the current approaches to agreement. In the specifier-head approach, the verb can be assumed to move through (or be otherwise associated with) the functional heads involved in agreement with the subject and the object. In the c-command approach, a single head (T) may be probing for various target noun phrases to get its features valued (assuming locality problems can somehow be solved).

In the agreement by sisterhood approach suggested here, multiple-source agreement involves a configuration like (25), with two antecedents α_1 and α_2 and two corresponding dependents β_1 and β_2 , and an element δ contained within both β_1 and β_2 spelling out both dependencies.



In the Hunzib examples in (24), α_1 is the subject, α_2 the absolutive, and δ the verb (which may end up in between α_1 and α_2 as a result of head movement).

In these examples, the two antecedents each contribute different features (α_1 [person] and α_2 [noun class]), so that no conflict arises. However, when the two antecedents contribute different values of the same features, we expect matching effects to show up if the agreement relations are spelled out by a single element. I believe that this is instantiated in the well-known Kimball-Aissen facts illustrated in (26)(Kimball and Aissen 1971, Kayne 2000):

(26) the people who Clark think-(s) are in the garden

Speakers who accept (26) with *think* apparently allow the <plural> value of *who* to interfere with

the agreement relation between the (<singular>) subject *Clark* and the verb *thinks*. A cyclic (derivational) approach to these facts was already suggested by Kimball and Aissen (1971:242). On our terms, the analysis involves the establishment of two dependencies as in (25), and hence two feature sharing events. The question is why the feature <singular> of α_2 (*Clark*) is not taken to conflict with the feature <plural> of α_1 .

As can be observed, *think* is a matching <+singular, +plural> form as long as we are willing to ignore the feature [person]. The absence of a matching effect when the subject is a pronoun, which is inherently marked for [person], illustrated in (27), suggests that the Kimball-Aissen effect is indeed the result of assigning an unmarked [person] feature to the subject (or, alternatively, of sharing an unmarked [person] feature in the dependency relation of the subject and its sister).

(27) the people who she think-*(s) are in the garden

It follows that when the subject is <plural> and the wh-phrase <singular>, the only acceptable verb form is the plural *think* (*thinks* is not a matching <+singular, +plural> form):

(28) the man who the girls think-*(s) is in the garden

Kayne (2000) pursues an analysis of these facts while adhering to the concept of agreement via a specifier-head configuration of the subject with a functional head AGR. The analysis ascribes the optionality in (26) to the different movements the functional head AGR may undergo: lowering to V would yield the inflected verb *thinks*, whereas raising of AGR to C would leave in V the bare infinitive *think*. However, the Kimball-Aissen effect shows up in C as well as in V, as can be seen in wh-questions where the auxiliary moves to C:

- (29) a. Which girls do/does the boy think should be invited ?
 b. * Which girl do/*does the boys think should be invited ?

Moreover, on the analysis of Continental West-Germanic complementizer agreement of Zwart (1993), where complementizer agreement is taken to be the effect of AGR-to-C raising, we are led to believe that movement of AGR to C does not lead to infinitive morphology on the verb (example from East-Netherlandic, Van Haeringen 1958):

(30) ..dat-te wy speul-t / *speul-n
 that-PL we play-1PL / play-INF

It is not clear how the Kimball-Aissen facts should be handled in the AGREE approach to subject-verb agreement. More specifically, it is not clear how in (26) valuation of the [person]/[number] features of the T associated with *think* (through its c-command relation to the subject) should be affected by the features of *who* — which, at the relevant point of the derivation, is the subject of the embedded clause, an element which is not reported to yield similar effects (nor should it, since the embedded subject has its case-features licensed, which should make it invisible to the probe T on Chomsky's assumptions):

(31) Clark think-*(s) the people are in the garden

Another case of multiple-source agreement is arguably instantiated by Standard Arabic defective verb agreement in Verb-Subject orders (cf. Aoun, Benmamoun and Sportiche 1994):

- (32) a. Subject-Verb ʔal-ʔawlaad-u naamuu / *naama
the-children-NOM slept:3.M.PL / *3.M.SG
- b. Verb-Subject naama l-ʔawlaad-u
slept:3.M.SG the-children-NOM

Both: ‘The children slept.’

As can be seen, when the verb precedes the subject, it gets a default 3SG realization. This effect is absent when the subject is a pronoun (33), suggesting that [number] is somehow more prominent on pronouns than on nonpronominal noun phrases (perhaps because [number] is an intrinsic feature of pronouns; Aoun et al. 1994:209, Bahloul and Harbert 1992:23).

- (33) a. hum naamuu / *naama
they slept:3.M.PL / 3.M.SG
- b. naamuu / *naama hum
slept:3.M.PL / 3.M.SG they

Both: ‘They slept.’

We may then follow the analysis of Aoun et al (1994), suggesting that the verb in the Verb-Subject constructions is in INFL (T), not in C, and that the subject position in those cases is occupied by an empty expletive (Aoun et al 1994:200f argue against empty subjects with a full set of features, not against empty expletives). Since expletives have a default [number] feature with value <singular>, the facts follow if default [number] overrides nonintrinsic [number] (i.e. [number] on nonpronominal noun phrases), but not the intrinsic [number] on pronouns.

If so, the Verb-Subject orders again show the dependencies in (25), with α_1 = the empty expletive and α_2 = the subject noun phrase, and δ is the verb contained within the two sister constituents of α_1 and α_2 . The verb, then, is forced to spell out the conflicting [number] features of the expletive and the subject, and settles the conflict depending on whether the [number] features of the subject are intrinsic or not. (With [gender], no conflict arises, assuming expletives to lack a gender feature.)

Again, the agreement via c-command (AGREE) approach seems ill-equipped to deal with this kind of phenomenon. Since expletives, on the analysis of Chomsky (2001), are inserted in the specifier position of TP in order to satisfy the requirement that clauses have a subject (the ‘EPP-requirement’), they are not c-commanded by T and should not affect the valuation of the [number] feature of T. (And if no expletive is assumed, it is unclear why the ordering of the subject and the verb should matter, since only T, not the verb, is directly involved in the agreement relation.)

One suspects that many more such multiple-source agreement phenomena could be found. (Another potential case is that of Icelandic defective agreement in constructions with quirky case subjects discussed in Sigurðsson 2000.)

5. The realization of agreement

The phenomena discussed in the previous section (multiple spell-out, matching effects) raise the question of how agreement, viewed as a dependency relation between sisters, may be spelled out.

We can treat this question only briefly here.

First, if agreement is the expression of a dependency between the subject and its sister, we expect a range of elements to be eligible for spell-out of the features involved. And although the verb (or an auxiliary) is by far the most common carrier of agreement features, other patterns do occur. Not uncommon is the expression of agreement by a personal pronoun, arguably a phrasal clitic, as in the Khasi dialects discussed in Nagaraja (1997: 349, 352, 355; glosses adapted based on Rabel 1961; in (34a), *sa* is a definiteness marker used with the future tense, and *ya* a marker preceding objects):

- (34) a. *Standard Khasi*
 u briew **u** n sa p̄in-yap ya u bseñ
 3SG.MASC man he will DEF cause-die OBJ 3SG.MASC snake
 ‘The man will kill a snake.’
- b. *Bhoi variety*
 u bru laʔ p̄ən-yəp **u** u psñ
 3SG.MASC man PAST cause-die he 3SG.MASC snake
 ‘The man killed a snake.’
- c. *Nongtung variety*
 u bru p̄inyap psəñ **u**
 3SG.MASC man cause-die snake he
 ‘The man killed a snake.’

The examples show agreement expressed by a third person singular masculine pronoun *u* appearing in various positions in different varieties of Khasi: between the subject and the auxiliary (34a), after the main verb (34b), or after the object (34c). The variable placement of the agreement marker across Khasi dialects indicates that agreement may be expressed by an element loosely associated with the predicate (i.e., not an inflectional affix to the verb). On our view, *u* in each variety illustrated in (34) spells out the [person]/[gender] features which the subject ‘the man’ shares with its sister. Agreement phenomena of this type are expected if agreement is a feature sharing relation between sisters. It is not uncommon to think of agreement by inflection as originating with the pronoun agreement type illustrated in (34) (e.g. Givón 1976).

More exotic is the phenomenon of Coahuilteco, where agreement with the subject is spelled out on the object (Troike 1981:663):

- (35) a. Dios tupo’-**n** naxo-xt’e’wal wako’
 god DEM-1AGRS 1PL:SU-annoy CAUS
 ‘We annoyed god.’
- b. Dios tupo’-**m** xa-ka’wa xo e ?
 god DEM-2AGRS 2SU-love AUX Q
 ‘Do you love god?’

As Troike shows, the agreement can be spelled out more than once, suggesting that this is not cliticization of the object agreement morpheme of the verb onto a preceding noun phrase (1981:663):

- (36) na-pa-xa'm a-p-sa' apa'-**m** ux^wa'l' tukwe'-**m** xa'-pa-ču' san
 1SG-soul DEM-2AGRS sky DEM-2AGRS 2SU-SUB-carry FUT
 '(that) you will carry my soul to heaven'

Facts like these might be taken to indicate that agreement is a relation between the subject and its sister, with language particular settings determining on which of the subject's sister's terms the agreement features are going to be spelled out. Significantly, the agreement relation in Coahuilteco is asymmetric in the sense that the subject never shows agreement with the object (Troike 1981:669).

This raises the question why the expression of subject agreement on other noun phrases is so limited. I believe that two considerations might be pertinent here. First, one might think that relational features are preferably spelled out on elements that do not carry the same features inherently. The Coahuilteco objects in (35) are remarkable in that they are inherently third person, and are additionally marked for first or second person. Since verbs have no inherent person or number feature, they are perfectly eligible for spelling out person/number agreement.

Second, one might reason that languages do in fact spell out the dependency of the sister's subject on a noun phrase, but use a different mode of expression for it, namely case. Importantly, the subject case (in nominative/accusative languages) is more properly characterized as a non-case, or, as Jakobson (1935) put it, a marker that betrays no dependency. Conversely, the accusative case is taken to mark dependency. While Jakobson took the accusative case to mark dependency of the object towards the verb, we, from our perspective, might say that the accusative case expresses the dependency relation between the subject and its sister on a noun phrase contained within the subject's sister.

To see this, consider the role of the accusative case in Dutch. Here, the accusative is a pure structural case, marking the grammatical function 'object' at the clause level, rather than a local dependency between a verb and its internal argument. This can be seen most clearly in 'exceptional case-marking' constructions like (37):

- (37) ..dat ik hem niet zag lopen
 that 1SG:NOM 3SG:MASC:ACC not see:PAST:SG walk:INF
 '..that I did not see him walk.'

In (37), *hem* 'him' is the external argument of *lopen* 'walk', and it is realized to the left of the matrix clause negation *niet* 'not', suggesting it is part of the matrix clause. On our view, there is a dependency between the subject *ik* 'I' and its sister, which is spelled out twice: as number agreement on the verb, and as accusative case on *hem*:

- (38) [ik] ↔ [hem niet zag lopen]

A crucial aspect of this approach to case is that the expression of dependency is sensitive to the organization of the morphological paradigm (in other words, that case realization is a PF-phenomenon): the dependent case can be used to mark dependency if it occurs in opposition to the default case. We also predict, then, that case-marking will not be available as a dependency marking device as soon as the subject has an inherent case (e.g. the quirky case of Icelandic and the ergative case in ergative languages). In these cases, the object shows the unmarked case (nominative in Icelandic, absolutive in ergative languages). (See Yip, Maling and Jackendoff 1987 for discussion of such effects, and Nash 1995 for the idea that ergative is an inherent case.)

Another question related to the spell-out of agreement concerns the order of agreement morphemes. As Baker (1985) shows, object agreement morphemes tend to be closer to the verb

stem than subject agreement morphemes—actually a matter of principle for Baker, but a mere tendency if we take typological surveys such as Julien (2000:364) to be representative. On our view, this ties in with the generalization that subjects tend to be in a structurally higher position than objects. Adopting a derivational view of the grammar, with an operation Merge building structure from the bottom up, this means that the object is merged to the structure at an earlier stage in the derivation than the subject, and that the dependency relation between the object and its sister is forged before the dependency relation between the subject and its sister is. If the verb then happens to spell-out both dependencies in its morphology, we can describe the unmarked morpheme order as the one that reflects the order in which the dependencies are created.

One type of agreement realization is quite unexpected from the perspective adopted here, namely the complementizer agreement phenomenon of many Continental West-Germanic dialects, illustrated in (30). The problem here is that the complementizer is not (at any point in the derivation) a term of the subject's sister. In previous work, I have argued that complementizer agreement reflects movement of a functional head AGR to C (Zwart 1993), or covert verb movement to C (Zwart 2001). The former approach is no longer available under the assumptions entertained here, and the latter somewhat suspect in its capitalizing on covert operations. My present suspicion is that complementizer agreement is a secondary process, where the complementizer takes on morphology on analogy with the form of the inverted auxiliary when followed by a clitic (a theory proposed by Goeman 2000):

(39) *East Netherlandic*

- | | | | | |
|-------------------------------|-------------|---------|---------|------------------|
| a. no inversion: | wy | wil-t | | |
| | we | want-PL | | 'we want' |
| b. inversion with clitic: | wil-le | | wy | |
| | want-PL:INV | | we | 'we want' |
| c. complementizer with clitic | dat-te | wy | wil-t | |
| | that-PL | we | want-PL | '..that we want' |

Cases of complementizer agreement where the subject is not a clitic would then have to be the result of a generalization of the pattern. As Goeman notes, this hypothesis explains the morphology of those cases of complementizer agreement where the complementizer agreement morpheme is not identical to the subject agreement morpheme, as illustrated in (30).

This scenario is furthermore supported by an observation in Van Koppen (2003), where it is shown that complementizers may show first conjunct agreement (agreement with the first member of a coordinated subject), but inverted auxiliaries (or verbs) may not (examples from Tegelen Dutch, slightly adapted from Van Koppen's handout):

- (40) a. Ich dink de-s [doow en ich] ôs ken-ne treffe
 I think that-2SG you and I us can-PL meet:INF
 'I think that you and I can meet.'
- b. Ken-ne/*-s [doow en Marie] uch treffe ?
 can-PL/2SG you and Mary you:PL meet:INF
 'Can you and Mary meet ?'

If complementizer agreement is the result of analogy, one might expect overgeneralization to occur. The pattern in (40) seems to indicate just that: the complementizer takes on the form

required when followed by a second person pronoun, regardless of phrase structural constraints. (Note that this voids one of the arguments against an AGR-to-C analysis of the Kimball-Aissen facts discussed in section 4.)

6. Dependency as a function of Merge

I have argued in the preceding that subject-verb agreement is best described as a dependency relation between the subject and its sister, spelled out on one of the subject's sister's terminals. In this closing section, I would like to address some wider implications of this view of subject-verb agreement.

A question that arises at this point is why subject-verb agreement takes the form it does, with the subject sharing some or all of its inherent features with its sister, and not the other way around. One could imagine that the subject's sister has certain features inherently, perhaps having to do with tense or aspect or event type, which are realized by way of agreement on the subject. Yet this is not the common realization of subject agreement, if it exists at all (for example, in languages where noun phrases are marked for propositional tense, the subject is not singled out as the element marking tense agreement; Katrin Naude, personal communication).

I would like to suggest that subject agreement is realized the way it is because the computational system of human language invariably marks dependency as a function of Merge, in such a way that when an element α is newly merged to an existing derivation β , β is turned into a dependent of α . In other words, Merge is to be defined as an asymmetric operation creating a pair of sisters which encodes dependency uniformly and automatically (Zwart 2004b).

As noted above, a subject α , merging to a constituent β may be externalized from β . In that case the element that becomes the subject is a term of the element it eventually merges with. It follows that the subject merges with a constituent which was already present in the derivation. In other words, the subject's sister is 'old', in terms of the derivational history, whereas the subject is newly added (whether externalized or not). More generally, the 'old' element in the operation Merge is the current stage of the derivation. The 'new' element is the element being merged to the derivation. This allows us to characterize dependency provisionally in terms of the history of the derivation, as in (41):

(41) Merge turns the current stage of the derivation into a dependent.

The strongest hypothesis, then, would appear to be that all dependency relations are created by Merge, i.e. characterized by asymmetric sisterhood relations.

In this context it is perhaps interesting to return to the hypothesis advanced in Hauser, Chomsky, and Fitch (2002), according to which the faculty of language (in a narrow sense) is uniquely characterized by the capacity to perform recursive operations. Minimally, then, what seems to be needed in the characterization of the faculty of language is the iterative application of a structure generating procedure like Merge.

This hypothesis has been criticized by Pinker and Jackendoff (2003) as ignoring many aspects of natural language which cannot be ascribed to the ability to perform recursive operations. In this connection Pinker and Jackendoff mention agreement phenomena as a case in point. However, the question to ask is whether agreement can be described as a function of Merge, and we have argued here that subject-verb agreement certainly can. To be precise, we argued that subject agreement on the verb is just the morphological realization of a dependency relation which does not involve the verb directly, but rather the subject's sister, which contains the verb (at the relevant point in the derivation). We furthermore argued that this dependency relation

between the subject and its sister exists as a consequence of the application of the operation Merge, which determines the division of roles (dependent vs. nondependent) in a principled way (in terms of the history of the derivation, see (41)).

In other words, at least agreement, and perhaps other phenomena expressing dependency, may plausibly be regarded as a function of Merge. To appreciate this result in terms of evolutionary biology, we might ask the following question: supposing other species were to suddenly master, as the result of some evolutionary development, the ability to perform recursive operations (and, more pointedly, to apply them to communication), would we then expect the language of these species to develop agreement phenomena automatically, or would that require another evolutionary leap? If I am correct in this article, all it takes, in addition to Merge, to introduce agreement is the need and ability to mark asymmetries, i.e. to express information.

7. Conclusion

In this article I have argued that agreement, more particularly subject-verb agreement, is a relation between sisters, hence a function of the basic structure building operation Merge. Crucially, neither the verb nor any functional heads are directly involved in the agreement relation. The verb merely spells out the features involved in the agreement relation, by virtue of the circumstance that the verb is a term of the subject's sister (at the relevant point of the derivation). Functional heads are not seen to be relevant to the agreement phenomena studied here at all, except inasmuch as they serve a similar spell-out function as the verb (in the case of auxiliaries, for example).

It follows that agreement does not involve feature checking or elimination, but feature sharing, in an asymmetric fashion: a nondependent (the subject) shares a feature with the dependent, its sister. It also follows that verb movement cannot be described as related to the need to check or eliminate the features involved in subject-verb agreement (let alone to pick up the relevant affixes). If the verb is to be involved in agreement at all (which is not universally the case), it plays the role it plays by virtue of its being a term of the subject's sister. This resolves all kinds of problems having to do with verbs not occupying the head position of the projection hosting the subject in its specifier position in overt syntax (e.g. in embedded clauses in languages like Dutch/German and Mainland Scandinavian, or in English clauses more generally). Finally, the probe-goal system of agreement advocated in Chomsky (2001), involving agreement by c-command, is incompatible with the view of agreement advanced here, mainly because it crucially involves the subject as a dependent of a functional head T.

One consequence of the analysis of agreement advanced here is that subject-verb agreement is an instance of dependent marking, leading us to conclude that head inflection is not a reliable diagnostics for head marking of dependency relations (contra Nichols 1986; see Zwart 2004a for more extensive discussion). Another consequence is that, if subject-verb agreement may serve as the model dependency relation, a case can be made that dependency is a function of the structure building operation Merge, in the sense that every constituent (more precisely, every current stage of the derivation) is automatically turned into a dependent as soon as some other constituent is merged to it.

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