Long Distance Agreement in Relative Clauses

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1. An observation

In English, the verb of a relative clause agrees with respect to the features [NUMBER] and [PERSON] with the "head noun" (henceforth HN) that is modified by the relative clause. (1) and (2) illustrate this for appositive relative clauses (see Akmajian (1970, 154)) and cleft constructions (see Ross (1970, 251), Akmajian (1970, 153)), respectively. All examples involve a first or second person pronoun as HN, which makes the question decidable as to whether syntactic person agreement has applied or not (assuming that third person agreement can also be the default).[1] Similar facts can be observed for French (cf. Jespersen (1927, 90)). For reasons of space, we confine ourselves to English here.

(1) a. I, who am tall, was forced to squeeze into that VW
b. *I, who is tall, was forced to squeeze into that VW
c. We, who are tall, were forced to squeeze into that VW
d. *We, who is/am tall, were forced to squeeze into that VW

(2) a. It is I who/that am responsible
b. *It is who/that is responsible
c. It is we who/that are responsible
d. *It is we who/that is/am responsible

In this article, we argue that the agreement facts in (1) and (2) are a theoretical challenge under the following two assumptions: (a) agreement is restricted by the strict version of the Phase Impenetrability Condition (PIC, see Chomsky (2000); (b) relative pronouns in English are underspecified for both [PERSON] and [NUMBER]. We argue that the challenge can be addressed appropriately if agreement applies cyclically and involves feature sharing.

Before we illustrate the challenge in section 2., we briefly present our assumptions about the structure of relative clauses. We take it that relative clause constructions (RCCs) and cleft constructions (CCs) are structurally very similar (see Schachter (1973), Chomsky (1977)). Both involve a CP that (a) is introduced by a C-element or a relative pronoun (RLP), (b) contains a gap (sometimes filled by a resumptive pronoun, RSP), and (c) modifies a HN:

(3) . . . HN [$_{CP}$ {RLP/C} . . . {gap/RSP} . . .] . . .

We refer to the CP in (3) as the relative clause (RC), independently of whether it is part of a RCC or a CC.[2] A RC that modifies a (pronominal) HN is merged as the complement of the HN (see Smith (1964), Chomsky (1965)). As for the internal structure of RCs, we follow Chomsky (1965, 1977), Ross (1967), and many others in assuming that the gap within the RC is the result of movement of a (possibly phonetically empty) *wh*-RLP to SpecC.

[1] Two remarks about the examples in (2) are in order. First, there is considerable variation as to person (but not number) agreement in English clefts. Akmajian (1970) discusses three dialects, only one of which shows person agreement (and which is also the dialect mentioned by Ross (1970)). We are exclusively concerned with this dialect here. Second, according to Akmajian (1970, 151, footnote 3), *who* and *that* are interchangeable in clefts with human antecedents; we found that some speakers have a slight preference for *who* in this case.

[2] Within the domain of RCCs, we are concerned with appositive RCs only (as opposed to restrictive ones). The reason is that restrictive RCs hardly combine with first or second person pronouns for independent reasons, which makes it impossible to investigate person agreement in this context.

2. The challenge

We now briefly illustrate why and under which assumptions the agreement facts in (1) and (2) are a challenge. At this point, we avoid the discussion of technical details concerning the operation Agree, which, following Chomsky (2000, 2001), we assume to perform agreement. They are addressed in subsequent sections.

To begin with, it is often assumed that agreement is an asymmetrical relation: some element β has the potential to adopt different values of a feature [F]. β then seeks for another element γ from which it can receive the actual value of [F]: agreement. It is another common assumption that agreement is subject to locality conditions. Thus suppose that β and γ can only agree if γ is accessible for β. A precise notion of accessibility is based on the theory proposed by Chomsky (2000, 2001). The idea is that CP and vP are special categories, which are called phases. Phases are subject to the (strict version of the) PIC (see Chomsky (2000, 108)), which defines the domain in which γ is (in)accessible for β.

(4) *Phase Impenetrability Condition*
If γ is dominated by a phase P, then γ is inaccessible from outside P (for some β) unless γ is in the edge domain of P.

(5) *Edge domain*
γ is in the edge domain of P iff a. or b. hold.
a. γ is a specifier of P.
b. γ is the head of P.

Suppose that β is the head within the RC that hosts the features for verbal subject agreement. Following Chomsky (1957) (and much subsequent literature), we assume this head to be T. Then, a plausible candidate for γ in (1) and (2) is the subject RLP *who* (or, for that matter, the phonetically empty RLP in the case of *that*-RCs). *Who*, being the external argument, is merged in Specv. Although T is separated from *who* by the vP-phase, *who* is still accessible for T because *who* occupies the edge domain of v (see (4) and (5-a)). Therefore Agree between T and *who* should be able to apply (see (6)) and, consequently, there is no challenge.

(6) HN [$_{CP}$ ... T ... [$_{vP}$ RLP ...]] ...
Agree

However, there is the following reason to doubt that *who* can really transmit appropriate values for the feature [NUMBER] to T. To begin with, *who* in English also leads the life of an interrogative pronoun. Crucially, in its interrogative use, it cannot trigger number agreement; rather, the verb is always in the singular (which, presumably, is the default), see (7).

(7) a. Who is asleep?
b. *Who are asleep?

This is unexpected if relative *who* and interrogative *who* are the same lexical element and if it is *who* that triggers plural agreement in RCs.

There could, in principle, be two homophonous instances of *who*, one being employed in relative clauses the other in interrogative clauses. Relative *who* would be specified for [NUMBER] while interrogative *who* would lack this specification. We think, however, that this not the right way to account for the above asymmetry for the following reason. Namely, it can be observed that in German CCs and RCCs, just as in English, there is obligatory number and person agreement (the latter being confined to plural contexts, see section 5.3.).

This is illustrated by the contrasts in (8) and (9), which involve RCs that are introduced by the *d*-RLP *die*.[3,4]

(8) a. weil ihr es seid, die die ganze Arbeit macht
since you.2.PL it are, REL the whole work do.2.PL
'since it is you who do all the work'
b. ??weil ihr es seid, die die ganze Arbeit machen
since you.2.PL it are, REL the whole work do.3.PL

(9) a. Ihr, die immer Ärger macht, habt mir gerade noch gefehlt
you.2.PL REL always trouble make.2.PL have me PART yet lacked
'You, who always cause trouble, are the last thing I need'
b. *Ihr, die immer Ärger machen, habt mir gerade noch gefehlt
you.2.PL REL always trouble make.3.PL have me PART yet lacked

Next, similar to English *who*, German *d*-pronouns also fulfill another function in the grammar: they act as demonstrative pronouns. In this function, they do not trigger person agreement: the verb is always marked third person (again, plausibly the default), see (10-a,b).

(10) a. Die haben ein Problem
DEM have.3.PL a problem
'They have a problem'
b. *Die habt ein Problem
DEM have.2.PL a problem
'You have a problem'

In order to account for the facts in (8), (9), and (10), one would have to assume two homophonous instances of *die*, too, with only the RLP *die* being specified for [PERSON]. The problem is that this misses the generalization that in both English and German it is the relative variant of the homophonous pair that is specified for [NUMBER] (or [PERSON]) while the interrogative (or demonstrative) variant is unspecified. It would be preferable to have a theory of number and person agreement in RCs that captures this generalization.

Our hunch is that the above mentioned homophonies are not accidental. Rather, we would like to hypothesize that in both cases the same lexical item is involved, which is not specified for [NUMBER] or [PERSON].[5] Of course, if *who* lacks [NUMBER] and [PERSON] to begin with, then it cannot provide any values for the instances of these features on T. Consequently, the question arises as to where these values come from.

Chomsky (1995, 228)) introduces the condition in (11), which prevents features (or their values) from being "conjured up" out of thin air.

(11) *Inclusiveness Condition (IC)*
The derivation can only consume elements that have been taken from the lexicon before the begin of the derivation.

Thus, given the IC, it follows that the source of the feature-values on T of the RC must be present in the structure. We can think of two scenarios. Either, there is an empty RSP that

[3]Elements that introduce RCs are glossed as REL, thus comprising both RLPs and RC-complementizers.

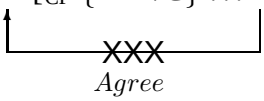
[4]For some reason, the contrast (with plural HNs, cf. section 5.2.) is much clearer in RCCs than in CCs. Some speakers are even indecisive about which form to chose in a CC. We abstract away from this here.

[5]To be precise, we assume that English *who* is not specified for either of these features while German *die* is not specified for [PERSON] but is specified for [NUMBER] (see section 5.3.).

occupies the subject gap in the RC and that is equipped with the appropriate features. Or, alternatively, the feature values come from the HN. Let us, for the moment, we leave open which of these two scenarios is to be preferred (but see section 4., where the resumption-based theory is rejected) and rather turn to the question as to whether they can account for the agreement facts in (1) and (2).

Consider first the hypothesis that it is the HN that provides the values for the Φ-features on T. While the HN is outside of the CP-phase (the RC), T is inside. Moreover, T is not in the edge domain of the CP-phase. Thus, the PIC in (4) prevents a direct Agree-relation between T and the HN, see (12).

(12) HN $[_{CP}$ {RLP/C} ... T ...] ...



We conclude that if the HN is supposed to be the source of the agreement at hand, then a theoretical problem arises.

If the values of T come from an empty subject-RSP, there is no such problem. Like the RLP (recall (6)), the (hypothesized) RSP is merged in Specv, where it is PIC-accessible for T inside the RC. Admittedly, this does not yet establish agreement between the HN and T. Since the feature values of the RSP and those of the HN are chosen independently from each other, it must be ensured that they coincide; usually, this is achieved by agreement. And although both T and the RSP are within the RC, the HN is not. Again, agreement between the HN and the RSP (and, by transitivity, the HN and T) appears to run against the PIC (as was the case with (6)).[6]

To conclude, provided the strong version of the PIC in (4) and under the assumption that English RLPs lack [PERSON] and [NUMBER] the agreement facts in (1) and (2) pose a theoretical challenge.

3. More theoretical background

Before we present our proposal as to how the agreement facts can be accounted for while maintaining the PIC, we present more of the theoretical background that we make use of. As the discussion proceeds, some of these assumptions are altered. If further assumptions are needed, they are introduced on the fly.

Chomsky (2000, 2001), assumes that agreement applies between two features (or sets of features), which are called probe and goal, respectively. Crucially, the probe enters the derivation unvalued; it receives its value by establishing Agree with a valued goal. Following a convention by Heck and Müller (2006), we write an unvalued feature [F] as [F:□] and a feature [F] with value ω as [F:ω]. In what follows, we refer to the nodes that bear probe and goal as the probe- and goal-category, respectively.

The operation Agree is then defined as in (13).

[6] It can be argued that anaphoric agreement between a pronoun and its antecedent differs from syntactic agreement (like, for instance, agreement between the subject and T); see also section 5.4. If the relation between the HN and a RSP of a RC is one between antecedent and anaphor, and if antecedent-anaphor agreement is not subject to the PIC, then, of course, no PIC-problem arises for the resumption based theory. See, however, section 4.2. for an argument why one cannot generally assume the presence of an (appropriate) RSP in the contexts where long distance agreement of the type in (1) and (2) holds.

(13) *Agree*

A probe-category β establishes Agree with a goal-category γ iff a.-e. hold.

a. β bears a (possibly improper) subset of uninterpretable unvalued Φ-features[7] ([Φ:$\square$]).
b. γ bears a matching set of interpretable valued Φ-features ([Φ:ω]).
c. β c-commands γ.
d. γ bears unvalued [CASE:$\square$] (γ is still "active").
e. There is no alternative goal α, that intervenes between β and γ.

As a consequence of Agree, the hitherto unvalued probe(s) receive a value from the lexically valued goal(s); the unvalued case-feature on the goal-category becomes valued, too. All unvalued features must become valued if the derivation is to succeed.

Turning to the order of the derivation, we take it that structure building operations (Move, Merge, Agree) apply cyclically, that is they obey the Strict Cycle Condition (see (14); Chomsky (1973); Perlmutter and Soames (1979)), and derivationally from bottom to top (see Chomsky (1995, 2000, 2001)).

(14) *Strict Cycle Condition (SCC)*

If Σ is the current root of the phrase marker, then no operation can take place exclusively within Ω, where Ω is properly dominated by Σ.

This said, we turn to our proposal as to how the facts in (1) and (2) should be accounted for, that is, how we think that the apparent gap in agreement locality should be bridged.

4. Bridging the gap

4.1. Cyclic agreement

Suppose for the moment that the Φ-features of T of the RC receive their values from the HN via Agree. Since Agree between T and the HN cannot be established in a direct way (see section 2.), T's Φ-features have to reach a position where they are accessible from outside the CP-phase: the edge domain of the RC. To this end, suppose, following Legate (2005), that agreement can apply cyclically. For the case at hand, this means that in a first step T agrees with C, thereby transmitting its Φ-values onto it; in a second step, agreement between (the now valued) C and the HN determines whether the acquired Φ-values of C and the (lexically fixed) Φ-values of the HN coincide.[8]

These assumptions require some modifications of the standard definition of Agree in (13). Consider the second step of cyclic agreement between the HN and C. To this end, suppose that the C-head of a RC bears the same set of agreement features as T does (see Platzack (1987), Carstens (2003), Chomsky (2008); cf. also Haider (1993)). First, (13-c) states that the probe must c-command the goal. This implies that the HN must be the probe-category, while C is the goal-category. Second, according to (13-a) [Φ] on the probe-category is unvalued and uninterpretable while, according to (13-b), [Φ] on the goal-category is valued and interpretable. Under the present assumptions, it is the other way round: the Φ-features

[7] Usually, Φ is a shorthand for the set that comprises the features [PERSON], [NUMBER], and [GENDER], see Chomsky (1981). In the present context, we only explicitly consider [PERSON] and [NUMBER] as there is no (overt verbal) gender agreement in English.

[8] We have not yet specified how agreement between Φ-features proceeds if the Φ-sets of both probe- and goal-category are already valued (as would be the case in the second step of cyclic agreement). Such a state of affairs receives a rather natural interpretation under the view that agreement is feature sharing (cf. section 4.3.).

on the HN, the probe-category, are valued and interpretable, while the Φ-features of C, the goal-category, are unvalued and uninterpretable. We therefore assume that whether a feature is semantically interpretable or not does not bear on the issue as to whether it counts as probe or goal (see also Pesetsky and Torrego (2007), Sternefeld (2008)). All that matters is whether the feature is valued: a probe must be an unvalued feature. We thus take it that [CASE:□] on the HN triggers the relevant Agree-relation between the HN and C. If [CASE:□] on the HN is the probe, then there must be a matching goal [CASE:ω] on C (with ω = nominative in English). Similar to the assumption (mentioned below (13)) that Agree between Φ-features automatically triggers valuation of [CASE:□] on the goal-category, we now assume that Agree between case features leads to automatic valuation of [Φ:□] on the goal-category (provided that there is an appropriate [Φ:ω] on the probe-category). Finally, we ignore the "activity condition" in (13-d) (see also Carstens (2001, 2003), Nevins (2004)).

Yet, even with these modifications in place there still remains a problem. Assume that the derivation reaches the stage where the C-head of the RC has just been merged. As T enters the derivation with unvalued Φ-features, it cannot pass any Φ-values onto C, which could then be matched against the values of the HN's Φ-features, leading to (indirect) agreement between the HN and T. Note that there is an alternative derivation that involves downward cyclic agreement: first the HN values the (hitherto unvalued) Φ-features on C, which is possible as the HN enters the derivation with valued Φ-features; second, the valued Φ-features on C value those on T. However, the latter step of this derivation is blocked by the SCC; again, (indirect) agreement cannot be derived.

4.2. Resumption

At this point, it appears as if the scenario that involves a RSP within the RC instead of a gap (see section 2.) has the advantage: namely, if the RSP has valued Φ-features, then it is able to pass these values on to T. T in turn can then value the Φ-features on C; finally, C can agree with the HN.

Interestingly, CCs and appositive RCs in English do not exhibit weak crossover (WCO) effects (see Lasnik and Stowell (1991, 715-716); see also Postal (1993, 550-554) and Adesola (2006) on CCs in French and Yoruba, respectively). Moreover, it has been observed that RSPs void WCO effects in other contexts (see Safir (1984) on English; Sells (1984, 253), Shlonsky (1992, 460) on Hebrew; Postal (1993, 553) on French; see also Safir (2004, 114-121)). This independently suggests that CCs and appositive RCCs involve a RSP.

There is a complication, though. Adger (2008) argues for the existence of two different types of RSPs. One motivation for the distinction is that in some languages RSPs repair island violations while in others they do not. The latter type of RSPs are called "bare" RSPs by Adger (2008). Moreover, Adger argues that the inability to repair island violations goes hand in hand with the RSP's inability to trigger Φ-agreement. As a consequence, Adger's (2008) theory, which relates these two facts, is based on the assumption that bare RSPs lack Φ-features (the absence of WCO effects in CCs and appositive RCCs is not affected by this).

Against this background, consider the CCs in (15).

(15) a. *It is I who Mary made the claim that am responsible
b. *It is I who Mary knows the person that claims that am responsible
c. *It is I who Mary wonders why am responsible
d. *It is I who that am responsible is highly probable

All examples in (15) are strongly ungrammatical. (15-a,b) involve violations of a CNPC-island (an argument clause in (15-a), a relative clause in (15-b)); (15-c) violates a *wh*-island;

and (15-d) violates a subject island. Apparently, none of these violations can be repaired by a (hypothesized, empty) non-bare RSP (see also Perlmutter (1972, 90) and Postal (1993, 554, footnote 19) on the ungrammaticality of island violations in French RCs).[9] This suggests that if CCs in English involve RSPs, then these must be bare RSPs. But if so, then one cannot expect them to value the Φ-features of T: according to Adger (2008), bare RSPs lack Φ-features to begin with.[10]

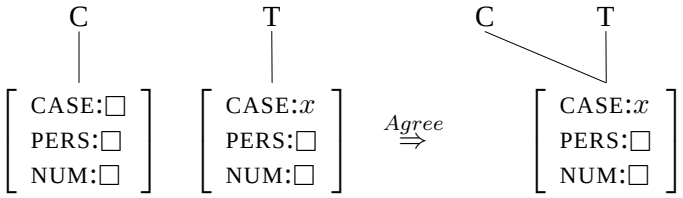
It thus seems as if we were back to square one: one the one hand, there is evidence that there is no source of Φ-feature values within the RC (such as a non-bare RSP) that could pass them onto C via cyclic agreement, where they become accessible from outside the RC; on the other hand, the SCC prevents an analysis that involves downward cyclic agreement, passing the Φ-values from the HN via C onto the T-head of the RC.

4.3. Feature sharing

We can make some headway on the problem if we assume that agreement is feature sharing (see Gazdar et al. (1985), Pollard and Sag (1994), Frampton and Gutman (2000), Legate (2005), Pesetsky and Torrego (2007)). The idea is that a probe β and a goal γ coalesce into one single feature (matrix) if they enter into an Agree relation. In order to be able to fully exploit this idea, we now assume that Agree can be established even if γ does not provide any value for β (that is, effectively, no valuation takes place). All that is required for Agree to apply place is that an unvalued probe finds a matching goal (valued or not).

To illustrate the idea, consider again a stage of the derivation where the C-head of the RC has just been merged. Suppose that the feature matrix of T equals the feature matrix of C (modulo their being valued or not); then Agree leads to coalescence of the two matrices into a single one, associated with both categories. This is shown by the representation in (16), which is reminiscent from auto-segmental phonology.[11] Agree values [CASE:□] on C.

(16)



In principle, every feature in C's matrix could have served as the probe that triggers Agree and coalescence of the matrices in (16). We take it, however, that it is sufficient for there to be one probe (i.e., an unvalued feature) on the probe-category in order for all features of the probe-category to coalesce with the features of the goal-category.

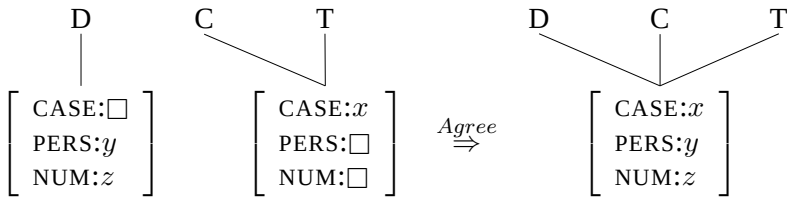
Next suppose the derivation reaches the stage where the RC is complete and merges with the HN. The relevant configuration is shown in (17), where D represents the HN (for the time being, the RLP is ignored, but see section 5.2.).

[9] (15-a,b,d) also involve *that*-trace effects; note, however, that the ungrammaticality of these examples is stronger than one would expect if only *that*-trace effects were at stake.

[10] Adger (2008) argues for the absence of Φ-features from bare RSPs on semantic grounds. This opens up the possibility that bare RSPs have (valued) Φ-features after all, albeit uninterpretable ones. (This would, however, leave unaccounted for why the bare RSPs identified by Adger do not trigger agreement, in contrast to the bare RSPs hypothesized for (1) and (2).) Although this strikes us as an interesting alternative, we cannot pursue it here for reasons of space.

[11] The resulting feature matrix in (16) is no longer part of one lexical item. In a sense, Agree dissociates feature matrices from lexical items and places the resulting matrix on another level of representation; from there, it can be connected with different positions of the phrase marker.

(17)



As C is in the edge domain of the RC, it is accessible for the HN. The unvalued case feature of the HN triggers Agree with the valued case feature of C. This leads to coalescence, thereby valuing [CASE:□] on the HN, the Φ-features on C, and, crucially, also the Φ-features on T. As a result, the gap in locality is bridged without violating the PIC. The problem presented in section 2. is thus solved. Note that valuation of the Φ-features on T does not violate the SCC: the operation in question does not exclusively affect CP or TP (or, for that matter, positions outside the phrase marker exclusively associated with CP or TP); the probe is on the D-head, and thus DP is affected as well. This solves the problem that came up in section 4.1.

The proposal derives without further ado why there is no number agreement in English interrogatives with *who* while there is such agreement in RCs with *who* (see section 2.): *who* lacks [NUMBER], and it is only in RCs, not in interrogatives, that the C/T-complex can inherit a number value from an antecedent, namely the HN.

The analysis, however, comes at a certain price. Namely, it is incompatible with the hypothesis of cyclic spell-out (see Bresnan (1971), Uriagereka (1999), Chomsky (2001)), at least in its most radical form. In this theory, T, being the complement of the phase head C, has already undergone spell-out at the point where it receives its Φ-values. Consequently, there should be no overt agreement on T, contrary to fact. It is possible to avoid this conclusion by subscribing to the view that the morphology applies post-syntactically (see Halle and Marantz (1993); cf. also Chomsky (2000, 119), Chomsky (2001, 10)).[12,13]

4.4. Additional evidence

Note that the HN in (17) (indirectly) receives the value for its case feature from the T-head of the RC (via coalescence with the C-head). As case agreement with T results in nominative, the HN should be marked nominative. The prediction is borne out for (1) and (2). Two relevant examples with the nominative marked HN *I* are repeated in (18).

(18) a. I, who am tall, was forced to squeeze into that VW
b. It is I who/that am responsible

As for (18-a), it is not surprising that the HN bears nominative since it figures as the subject of the matrix clause, where it receives nominative from the matrix T-head anyway. However, this is not the case for (18-b). In fact, it has been observed that post-copular DPs in English must appear in the objective, arguably the default case in English (see Schütze (2002, 235)); this is illustrated by the contrast in (19).

(19) a. It was us
b. *It was we

[12]Of course, no such issue arises in a resumption-based theory.

[13]One might try to maintain cyclic spell-out by assuming that spell-out of the complement of a phase head P does not apply unless the next higher phase head is introduced. But this assumption makes it impossible to derive the strict version of the PIC (which we assume here) from cyclic spell-out, i.e., to keep up the idea that syntactic inaccessibility of some element α is the result of α's having been sent to spell-out.

As (18-b) shows, a structure like (19-b), which involves a nominative form, is possible in a CC. This suggests that CCs have another source for the nominative available that is not available for other post-copular DPs. Under the present analysis, this source is the C/T-head of the RC.

5. Extending the analysis

5.1. Person agreement and case

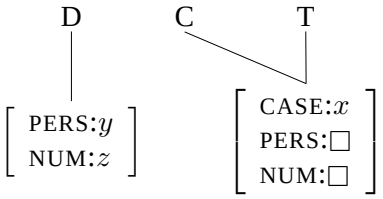
The HN of a subject RC[14] is not necessarily marked nominative. This is obvious for RCCs because it is not exclusively subjects that can be modified by (subject) RCs; it less obvious but also true for CCs in English (see (20-d)). Interestingly, as observed by Akmajian (1970, 154) and by Ross (1970, 251), person agreement breaks down in contexts where the HN is not marked nominative, see (20-a,c).[15] (Number agreement is addressed in section 5.2.)

(20) a. *He had the nerve to say that to me, who have made him what he is today
b. He had the nerve to say that to me, who has made him what he is today
c. *It is me who am responsible
d. It is me who is responsible

Me is both an objective case form and a default case form in English. Suppose that in (20-d) *me* realizes the default case that is spelled out on a nominal that has not undergone any case agreement in the syntax (see Schütze (2002)). This presupposes that nominals need not undergo case agreement. Suppose therefore, again following Schütze (2002), that nominals may enter the derivation with or without [CASE:□]. Only if they bear [CASE:□], must they establish Agree with a case valuing head; otherwise, they receive a default marking in the morphology.[16]

Consider (20-d) first. The configuration is the same as the one in (17), except that the the HN receives default case in the morphology (D lacks [CASE:□]). This is shown in (21), which depicts the situation after the HN has merged with the RC (again, we ignore the RLP).

(21)



Obviously, there is no probe on the HN. Agree cannot be established and the HN cannot transfer its Φ-feature values onto C. At the point where the next higher phase head v is merged, it becomes inevitable that [PERSON:□] on C (and, due to coalescence, T) cannot

[14]To preclude misunderstanding, the term "subject RC" denotes a RC whose subject is relativized, not a RC modifying a subject.

[15]See also de Vries (2002, 228-229) on this effect in Dutch. In French, if a RC modifies a personal pronoun, then the strong form of this pronoun must be chosen: *moi* 'I', *toi* 'you', etc. (cf. the weak forms *je* 'I', *tu* 'you', etc.). These strong forms actually look like oblique case forms. Yet, as mentioned in section 1., French RCs also exhibit long distance agreement with respect to [PERSON] and [NUMBER] of the type familiar from English. This seems to run against the nominative restriction that can be observed in English. Note, however, that one can argue that the forms *moi*, *toi*, etc. are actually the strong versions of nominative forms in present day French: real oblique forms must be accompanied by the preposition *à* 'to').

[16]Such nominals must then be identified by some other mechanism in order to escape the case filter. We leave open here what this mechanism is in the present context.

be valued via Agree, because C becomes inaccessible, due to the PIC. We therefore assume that, at this point and as a last resort, [PERSON:□] on the C/T-complex receives the default value, which is third person. (We address the fate of [NUMBER:□] on C/T in section 5.2.)

Turning to (20-b), it is clear that the HN combines with the RC before its case feature had a chance to be valued by the preposition. There are three possible scenarios: either (a) the HN lacks [CASE:□] and receives the morphological default marker; or (b) [CASE:□] remains unvalued until P is merged and is then valued objective;[17] or (c) [CASE:□] establishes Agree with C, thereby receiving nominative from and transferring person and number values to it.

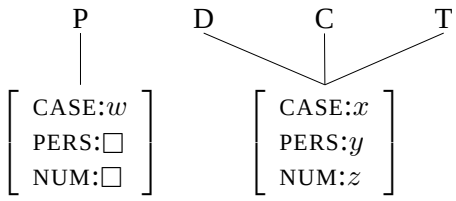
Consider the first two scenarios first. In both of them, there is no Agree-relation between the HN and C: in (a), [CASE:□] is lacking completely; in (b), the case-probe is retained. As a consequence, D cannot transfer the value of its person feature onto C (analogous to what was the case in (20-d)). In both scenarios, [PERSON:□] on C/T receives, as a last resort, the default value when the next higher phase head is merged (as in (21)).

Next consider scenario (c). Ultimately, the corresponding derivation results in (22).

(22) *He had the nerve to say that to I, who have made him what he is today

Since (22) is ungrammatical, it has to be shown that the derivation that leads to it is blocked. (23) is a partial representation of the phrase marker after P has merged with the HN.

(23)



Under the assumption that unvalued features are not tolerated (modulo the remark in footnote 17), the ungrammaticality of (22) is derived if it turns out that (at least one of) the Φ-probes of P in (23) cannot be valued.[18] It is clear that the valued case feature on P cannot act as a probe, thus triggering the necessary transfer of Φ-values from D to P. But the question is why [PERSON:□] (or [NUMBER:□]) on P cannot establish Agree with D.

At this point, we need to resort to the extra assumption in (24), which blocks valuation of [PERSON:□] on P.[19]

(24) *Restriction on person agreement*
Valuation of [PERSON:□] requires coalescence of [CASE] within the same matrix.

The features [CASE:w] and [CASE:x] in (23) cannot coalesce because they bear different values. But then it follows from (24) that [PERSON:□] on P in (22) cannot be valued by Agree. If there is no other way to value [PERSON:□], this causes the derivation to crash.

This reasoning raises the question as to why [PERSON:□] on P cannot receive a default value. Recall that this was assumed to be possible for [PERSON:□] on C in (20-d). What distinguishes [PERSON:□] on C in (20-d) from [PERSON:□] on P in (22) is that for the latter

[17] The scenario requires that a case probe need not be valued immediately; otherwise, [CASE:□] on the HN would always establish Agree with C. This is a departure from the view that features must be valued as early as possible (see Chomsky (1995, 233); it is, however, still compatible with the idea that spell-out applies phase-wise.

[18] This presupposes that P bears Φ-features to begin with. We assume that the Φ-features on P are abstract in English, the lack of overt Φ-agreement (as opposed to certain Celtic languages) being a matter of spell-out.

[19] In a sense, (24) is the mirror image of the idea that case valuation requires the presence of a person feature (see Chomsky (2001) on the inability of participles to value [CASE:□]).

there is, in principle, an accessible goal in the c-command domain of the probe (namely [PERSON] on D), which cannot be made use of because of (24); in contrast, the former is a probe for which no goal whatsoever is available in the c-command domain. For lack of better understanding, we therefore stipulate that default valuation is an option for unvalued Φ-features if and only if no goal is available.[20]

Obviously, the same fate awaits [PERSON:□] on P in scenario (a). The only scenario that converges is therefore scenario (b). This derives the lack of person agreement in (20-b).

5.2. Number agreement and Λ

We have not yet explained what happens to [NUMBER:□] on C in non-nominative contexts as (20-b) and (20-d). Recall, that it cannot be valued by an Agree operation triggered by [CASE:□] on the HN because the HN either lacks [CASE:□] or retains it for Agree with a higher case-assigner. Now, Akmajian (1970) observes that [NUMBER:□] does not receive a default value in this context, in contrast to [PERSON:□]. (25) illustrates this for CCs and RCCs.[21]

(25) a. He had the nerve to say that to them, who have made him what he is today
b. *He had the nerve to say that to them, who has made him what he is today
c. It is them, who have made him what he is today
d. *It is them, who has made him what he is today

We can draw two conclusions from this. First, there must be another probe present on the HN in (25-c) (cf. the representation in (21), which referred to (20-d)). This probe establishes Agree with C, thereby transferring the number value of the HN onto C (and, due to coalescence, T). Second, number agreement in (25-a,c) is not prone to the restriction in (24), i.e., it is not dependent on [CASE] (cf. the derivations of (20-b) and (20-d)). In this way, (24) accounts for the generalization that, cross-linguistically, person agreement is more fragile than number agreement (see Bhatt (2005), Boeckx (2006), Baker (2008)): if no case feature is available or if the case features on the probe- and goal-category bear different values, person agreement breaks down while number agreement, as we show shortly, remains unaffected.

The probe on the HN that enables valuation of C's [NUMBER:□] still needs to be identified. To this end, recall that the agreement facts discussed here arise in RCs. A hallmark of RCs is that they denote an open proposition. In the semantics, this is often represented by a λ-operator that has scope over the RC and binds a variable inside it. We follow Adger and Ramchand (2005) in assuming that this λ-operator is the denotation of an interpretable Λ-feature on C. Suppose now that Λ has an index as its value. This index is interpreted as the binding index. If Λ on C enters the derivation unvalued (i.e. as [Λ:□]), it must acquire a value. This is done by establishing Agree with the RLP, which bears an uninterpretable but valued variant of Λ. Finally, suppose that the HN comes equipped with an uninterpretable but unvalued variant of Λ. This, we would like to suggest, is the probe in question.

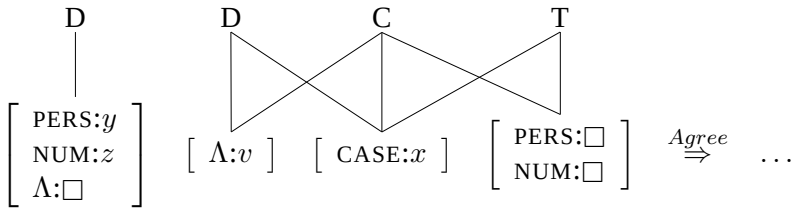
[20] The intuition behind this stipulation is that the mechanism that provides a default value for a hitherto unvalued Φ-feature is "unaware" of (24).

[21] For some reason, number agreement is optional with the copula *be*, see (i). We ignore this here.

(i) a. It is us who are responsible
b. ?It is us who is responsible
c. It is them who are responsible
d. ?It is them who is responsible

The partial representation of (25-c) at the point of the derivation where the HN has just merged with the RC thus looks as in (26). As before, the HN, represented by the leftmost D in (26), lacks [CASE]. The second D from the left in (26) represents the RLP.[22]

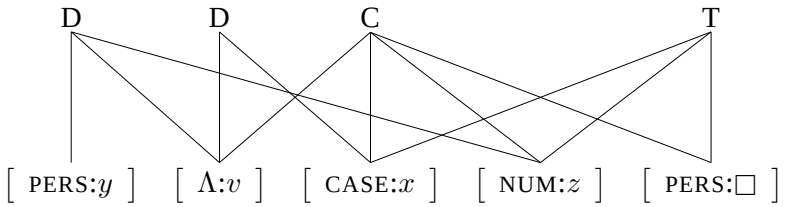
(26)



Recall that it was argued in section 2. that the English RLP does not bear any Φ-features. The only relevant feature it bears is the valued Λ-feature (and perhaps [CASE], but see section 5.3.), which it shares with C through Agree. Thus, the RLP cannot value [PERSON:□] on C. Furthermore, we assume that [PERSON:□] remains unvalued for the moment: C, which is associated with [PERSON:□], is accessible from outside the RC. Thus, there is still a chance that [PERSON:□] receives a value via Agree; as a consequence, no default value is assigned yet.

In the next step, [Λ:□] on the HN probes for [Λ:v]. As [Λ:v] is associated with C and C is associated with [NUM:□], the value of [NUM] on the HN can value [NUM:□] on C. The resulting structure is shown in (27).

(27)



[PERSON:□] in (27) cannot be valued by the HN due to lack of [CASE:□] on the HN (see (24)). Thus, when the next higher phase head is merged, [PERSON:□] on C/T receives the default value. To summarize, there is no person agreement between T and the HN in (27): they do not associate with the same person feature; but there is number agreement: both the HN and T associate with [NUMBER:z].

5.3. Person agreement and number

As mentioned in section 2., German also exhibits person and number agreement in RCs. Examples that involve CCs and RCCs are given in (28-a,b) and (28-c,d), respectively.[23,24]

(28) a. weil ihr es seid, die die ganze Arbeit macht
since you.2.PL it are, REL the whole work do.2.PL
'since it is you who do all the work'

[22]Note that [CASE] is separated from [PERSON] and [NUMBER] in (26) (as opposed to (21)). The reason is that the D that represents the RLP associates with [CASE] but not with [PERSON] and [NUMBER]. This feature split is without consequence here, but it will become important in section 5.3.

[23]As first and third person plural are syncretic in the German verb inflection, person agreement in the plural in German can only be observed with second person.

[24]In fact, German speakers often slightly prefer RCs that contain an overt resumptive pronoun in these contexts (which is barred from third person contexts). This pronoun is fully specified for Φ-features and thus answers the question as to where T in the RC receives its Φ-values from in a trivial way. In what follows, we ignore this variant.

b. ??weil ihr es seid, die die ganze Arbeit machen
since you.2.PL it are, REL the whole work do.3.PL
c. Ihr, die immer Ärger macht, habt mir gerade noch gefehlt
you.2.PL REL always trouble make.2.PL have me PART yet lacked
'You, who always cause trouble, are the last thing I need'
d. *Ihr, die immer Ärger machen, habt mir gerade noch gefehlt
you.2.PL REL always trouble make.3.PL have me PART yet lacked

As is the case for person agreement in English, person agreement in German is prone to restriction (24). This is illustrated by (29).[25]

(29) a. *Ich will euch, die immer Ärger macht, nicht mehr sehen
I want you.2.PL.ACC REL always trouble make.2.PL not more see
'I don't want to see you, who always cause trouble, anymore'
b. ?Ich will euch, die immer Ärger machen, nicht mehr sehen
I want you.2.PL.ACC REL always trouble make.3.PL not more see

However, in contrast to English, person agreement in German is confined to plural contexts. To our knowledge, this has gone unnoticed in the literature. (30) shows relevant contrasts.[26,27]

(30) a. *weil du es bist, der die ganze Arbeit machst
since you.2.SG it are REL the whole work do.2.SG
'since it is you who do all the work'
b. weil du es bist, der die ganze Arbeit macht
since you.2.SG it are REL the whole work do.3.SG
c. *weil ich es bin, der die ganze Arbeit mache
since I it am REL the whole work do.1.SG
'since it is I who do all the work'
d. weil ich es bin, der die ganze Arbeit macht
since I it am REL the whole work do.3.SG

The account of these facts is ultimately based on the observation that German *d*-RLPs inflect for [NUMBER] (and, irrelevant in the present context, [GENDER]), in contrast to English RLPs. Thus, we have (in the nominative) *der, die, das* for masculine, feminine, and neuter in the singular, and *die* for all three genders in the plural. It is our hunch that this difference between English and German is responsible for the difference in person agreement.[28]

However, the account is somewhat indirect and requires re-thinking the role of [CASE] in RLPs. To begin with English, suppose that the *who* that appears in English subject RCs is not

[25] As the post-copular DP in German CCs is always nominative and since nominative is also the default in German, restriction (24) can only be illustrated with RCCs.

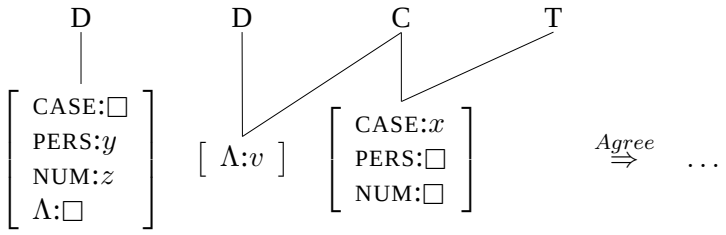
[26] The contrasts in singular contexts are strikingly clear, as opposed to plural contexts (see footnote 4).

[27] The dependency of person agreement on plural also emerges in Spanish CCs with the RLP *quien*. Moreover, in Spanish overt person agreement is more pervasive due to the lack of the syncretism that occurs in German, see footnote 23. Here and in what follows, we refrain from presenting the relevant Spanish examples for reasons of space.

[28] The Spanish RLP *quien* 'who.SG' also has a plural form: *quienes* 'who.PL'. And, as mentioned in footnote 27, Spanish also shows the restriction for person agreement to plural contexts. By contrast, French, which lacks the plural restriction in person agreement, also lacks an (overt) plural specification on the RLP.

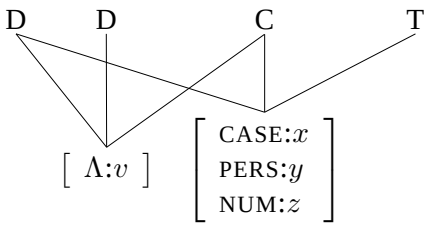
a RLP but rather the C-head of the RC (see Pesetsky and Torrego (2008)).[29,30] Instead, the RLP in subject RCs in English is, we now assume, empty and always lacks [CASE:□]. Under these assumptions, the appropriate representation of an English RC that has just combined with its HN is not the one given in (26) (where it was still assumed that the RLP bears [CASE:□]); rather, it looks like (31).[31]

(31)



Crucially, since the RLP in (31) lacks [CASE], [CASE] can (and must, see footnote 31) show up in the same feature matrix as [PERSON] and [NUMBER] (which would be impossible if the RLP had [CASE] because it lacks [PERSON] and [NUMBER]). Applying Agree to (31) results in (32), which reflects the usual person and number agreement between the HN and C (and, due to coalescence, T).

(32)



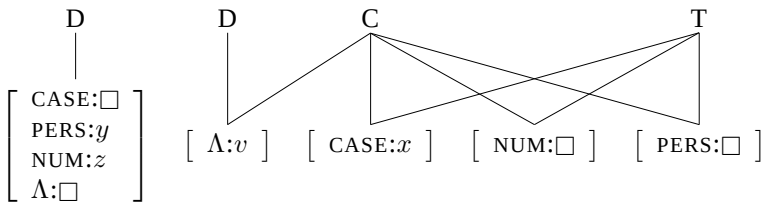
Returning to the difference between English and German, note that the default case in German is nominative. As already mentioned, we follow Schütze (2002) in assuming that default case spells out the case ending of a nominal that lacks a case feature in the syntax. Now, RLPs in German are marked for case, just as other pronouns are. What we would like to claim now is that, in certain cases, this is merely a morphological reflex and that in the syntax, RLPs in German often lack [CASE:□]. In particular, we claim that this is the case for plural *d*-RLPs

[29]The difference between *who* and *that* would be that *who* agrees with the HN in animacy.

[30]One may wonder whether this assumption undermines the argument from section 2. that RLPs in English lack [NUMBER]. It does not. The argument involved the idea that *who* is a pronoun in both relative and interrogative contexts. If *who* in RCs is a C-head, then, in this context, there is presumably an empty RLP, which might be argued to be specified for [NUMBER], after all. However, this does not affect the argument that one has to account for the generalization that RLPs (no matter whether empty or not) are more specified than interrogative pronouns. A situation similar to that in English arises in French, where interrogative *qui* 'who' does not trigger number agreement, while relative *qui* (which Kayne (1976) argues to be a C-head) does.

[31]Note that (i) represents the same state of affairs as (31). We presuppose that there are principles which economize on the number of association lines or on the number of feature splits and which therefore prevent Agree from generating (i) to begin with. This assumption is, perhaps, not an innocent one, but it is crucial for the account to come.

(i)

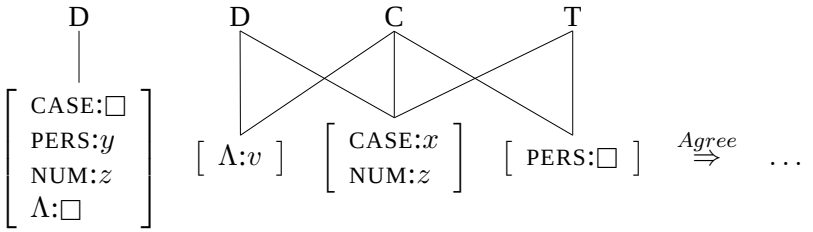


in German. To this end, suppose that *d*-RLPs get their case feature assigned by the lexical redundancy rule in (33).

(33) *Lexical redundancy rule for German*
If *d*-RLP α bears [NUM:sg], then α bears [CASE:□].

It follows from (33) (and the idea that (33) is the only source for [CASE:□] on *d*-RLPs) that all *d*-RLPs that lack the specification [NUM:sg] also lack [CASE:□]. Thus, plural *d*-RLPs lack [CASE:□] and receive their form *die* as a default at spell-out. Note that (33) does not distinguish between accusative and nominative or between genders. Consequently, *die* is the only form throughout the plural for both cases and all genders.[32]

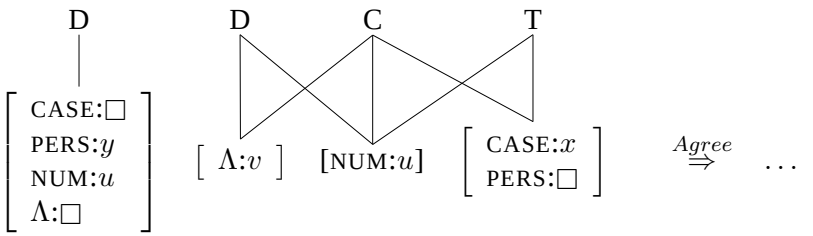
Against this background, consider the case of a singular HN (where singular = z) that combines with a RC whose RLP is in the singular, too (see section 5.4. on number agreement between the HN and the RLP). The relevant configuration before application of Agree is given in (34).

(34)


Importantly, [PERSON:□] in (34) is separated from [CASE], as opposed to what was the case in English, see (31). The reason for this is that the the RLP (represented by the second D-node from the left in (34)) is associated with [CASE] and [NUMBER]: it is singular, by assumption, and thus, by (33), also bears a case feature. But the RLP cannot be associated with [PERSON] because RLPs generally lack [PERSON]. It is this split of [PERSON] and [CASE] that gives us a handle on approaching the plural effect in person agreement.

Namely, the lack of person agreement now follows without further ado from the restriction in (24): [PERSON:□] in (34) is separated from [CASE]. As a consequence, valuation of [PERSON:□] would not result in coalescence of [CASE] in the same matrix; but this contradicts (24).[33] [PERSON:□] on T therefore receives the default valued third person.

Next consider a context where the HN and the RLP are in the plural (where plural = u). Recall that, due to (33), this means that the RLP lacks [CASE:□]. As usual, we enter the derivation after the HN and the RC have merged, yet before Agree has applied:

(35)


[32]The genitive and dative forms of *d*-RLPs are not spelled out as *die*, though. We have nothing to say about this here, except that it might owe to dative and genitive being non-structural cases in German.

[33]Note that if the RLP in (34) were not associated with [CASE], then [CASE] would group with [PERSON], to the exclusion of [NUMBER]; this is why we need the lexical redundancy rule in (33), which introduces [CASE] in precisely this context.

As in English (cf. (31)) [PERSON:□] and [CASE] share the same matrix in plural contexts. The reason is that in this context the RLP lacks [CASE:□] (due to (33)). Thus, comparing (35) with (34) we can see that [CASE:□] has "changed sides" from [NUMBER] to [PERSON]. It follows that (24) does not block person agreement from applying in (35).

To sum up, person agreement in English in general and in German in singular contexts particularly differ because German RLPs bear [CASE:□] in singular but not in plural contexts; in contrast, empty RLPs in English lack [CASE:□] altogether. Thus, Agree within the RC potentially creates different feature structures for English and German, depending on the value of [NUMBER] on the German RLP. If [PERSON:□] and [CASE] share the same matrix (as in English), then (24) is respected and Agree can value [PERSON:□] on C/T on a later Agree-cycle; if they do not (as in singular contexts in German), then person agreement is blocked. Due to the lack of [CASE:□] on the *d*-RLP in plural contexts in German, the feature structures in this context are sufficiently similar to those in English to allow for person agreement.

5.4. Anaphoric agreement

We have not yet addressed the question as to how number (and gender) agreement between the RLP and the HN in German come about. In the representations (34) and (35), the values for [NUMBER] of the HN and the RLP are uniformly z or u. However, this does not follow from anything so far. In principle, these number values are chosen independently from another. However, (36) shows that there is obligatory number agreement between the HN and the RLP in German. (Note that the ungrammaticality of (36-a) does not depend on the Φ-values on T of the RC: any verb form would lead to ungrammaticality here.)

(36) a. *weil wir es sind, der die ganze Arbeit machen
since you.2.PL it are REL.SG the whole work do.1.PL
'since it is we who do all the work'
b. weil wir es sind, die die ganze Arbeit machen
since you.2.PL it are REL.PL the whole work do.1.PL

The brute force solution to this problem is to assume that the RLP bears [NUMBER:□], which receives its value by Agree with the HN, just as the C/T-complex of the RC.

However, this solution makes it impossible to resort to the lexical redundancy rule in (33) in order to determine whether the RLP bears [CASE:□] or not. Recall that (33) makes reference to the number value of the RLP. Of course, at the point of the derivation where the hypothesized [NUMBER:□] of the RLP is valued by the HN, the RLP has already been introduced into the derivation. That is, insertion of [CASE:□] would have to apply after the derivation has started, in violation of IC in (11). But if it is impossible to make use of the redundancy rule in (33), then either the hypothesized correlation between [NUMBER] and [CASE:□] on RLPs must remain completely accidental or the lack of person agreement in singular contexts in German remains unaccounted for.

Fortunately, there is reason to believe that number agreement between the HN and the RLP has a source that is different from the one responsible for agreement between the HN and the C/T-complex of the RC. If so, then this means that the present theory need not account for the former type of agreement (and, in fact, should not be expected to do so). The precise mechanics of this independent agreement can thus be ignored for the purpose of this

article. The following argument for this view can be found in Sternefeld (2006, 382-384).[34]

To begin with, it is clear that there must be an independent mechanism that ensures number and gender agreement between an anaphoric pronoun and its antecedent. The question is whether RLPs are anaphoric and, hence, subject to this mechanism (which could then be held responsible for agreement between the HN and the RLP). If RLPs are semantically empty, then they cannot be anaphora because anaphora receive as their denotation the reference from the antecedent. In fact, it is standardly assumed for restrictive RCs that RLPs have no denotation (except, perhaps, the identity function). In the present context, however, we are concerned with appositive RCs and CCs. For the former, it is quite plausible to assume that their RLPs are indeed referential. As such, they are subject to the agreement rule that operates on anaphora. For CCs this is perhaps less obvious. We simply assume here, without further argument, that they share this property with appositive RCs.[35]

We conclude that even without specifying how exactly gender and number agreement between the HN and the RLP proceeds, it is justifiable to assume that this agreement can be ignored for the purpose of the present discussion.

6. Copula agreement

CCs in English and German also differ with respect to agreement with the copula of the cleft: in English, the copula agrees with the expletive *it* (i.e., it is valued [PERSON:3] and [NUMBER:sg]); in German, the copula agrees with the HN. This is illustrated in (37) and (38), respectively.[36]

(37) a. It is you who are responsible
b. *It are you who are responsible

(38) a. weil du es bist, der mich versteht
because you.2.SG it be.2.SG REL me understands
'because it is you who understands me'
b. *weil du es ist, der mich versteht
because you.2.SG it be.3.SG REL me understands

At first sight, this suggests the following correlation: if the HN agrees with the T-head of the RC, then it does not agree with the matrix T. The correlation makes sense under the standard view (see (13-d)) that a goal-category γ can enter into Agree with a probe-category if γ still bears [CASE:□]. Once its case feature is valued, γ cannot enter Agree. This is Chomsky's (2000) activation condition.

Although this view is certainly attractive in that it correlates the difference in copula agreement with the difference in person agreement with T of the RC, it is not compatible with the claim that there *is* person agreement in German (and Spanish) RCs in the context of a plural HN (see section 5.3.). Notably, in these cases there is also agreement with the copula, see (39) for German.

[34] In contrast to the domain of verbal agreement in German, there is also overt gender agreement between the HN and the RLP in German. Note that this is not indicative of the hypothesized difference between the agreement relations under discussion: although there is no (overt) gender agreement on C or T in German, this is the case in certain Bantu RCs (see, for instance, Zeller (2004)).

[35] The sheer fact that CCs involve RCs that easily combine with pronouns of first or second person already suggests that they are not interpreted restrictively but rather appositively.

[36] Again, French patterns with English in this respect while Spanish CCs behave like CCs German.

(39) a. weil ihr es seid, die die ganze Arbeit macht
since you.2.PL it be.2.PL, REL the whole work do.2.PL
'since it is you who do all the work'
b. *weil ihr es ist/sind, die die ganze Arbeit macht
since you.2.PL it be.3.SG/be.3.PL, REL the whole work do.2.PL

Also, in English RCCs, the HN still agrees with the matrix T-head if it is the subject of the matrix clause, see (40).

(40) a. I, who am tall, am forced to squeeze into that VW
b. *I, who am tall, is forced to squeeze into that VW

This is unexpected if the ability of the HN to enter into Agree depends on an unvalued case feature and if the HN has already spent its [CASE:□] on the embedded C/T-complex.

We therefore do not adopt the activation condition here. As a consequence, though, we must offer an alternative account of the copula facts. To this end, suppose that English CCs have the partial structure and derivation in (41).

(41) a. $[_{vP}$ it BE HN $[_{CP}$ REL ...]]] → (Merge T)
b. $[_{TP}$ T $[_{vP}$ it BE HN $[_{CP}$ REL ...]]] → (Move *it*, Move copula)
c. $[_{TP}$ it_2 BE_3 $[_{vP}$ t_2 t_3 HN $[_{CP}$ REL ...]]] → ...

The expletive *it* is merged in Specv (see Richards (2007)) while the HN is (within) the complement of v. As a consequence, the goal-category *it* is closer to the probes on T than the HN and thus triggers agreement with the copula (at the same time blocking agreement between the HN and the copula; see (13-e)). Later, the expletive raises to SpecT.

In contrast, we assume that in German CCs the expletive *es* is not merged as the external argument; rather the HN is. The RC is merged as the complement of an empty D (similar to a free RC, cf. Grosu (1994)), whose projection is (within) the complement of v. The RC then undergoes extraposition and the empty D is spelled-out as *es*.[37] The structure and derivation of German CCs thus look like (42) (subject raising being optional in German; see Grewendorf (1989), Diesing (1992), Müller (2000)).

(42) a. $[_{vP}$ HN $[_{DP}$ D $[_{CP}$ REL ...]] BE] → (Merge T, Move copula)
b. $[_{TP}$ $[_{vP}$ HN $[_{DP}$ D $[_{CP}$ REL ...]] t_3] BE_3] → (Move CP)
c. $[_{TP}$ $[_{vP}$ HN $[_{DP}$ D t_4] t_3] BE_3] $[_{CP}$ REL ... $]_4$ → (spell-out D as *es*)
d. $[_{TP}$ $[_{vP}$ HN $[_{DP}$ es t_4] t_3] BE_3] $[_{CP}$ REL ... $]_4$ → ...

Note that the HN in (42) is closer to the matrix T than the empty D-head. Therefore, T agrees with the HN, not with *es*.

We have to leave open why the structure of English and German CCs differs.[38] But there is some independent evidence for the structure we hypothesize for German CCs. Weak pronouns in German show up in the Wackernagel domain in a strict order. Müller (2001) argues that this order reflects the order in which they are merged. Now, it turns out that the HN and the expletive pronoun *es* in a CC are subject to a similar order restriction, see (43).

[37] We have to leave open why, generally, extraposition of free RCs in object position does not trigger *es*-insertion in German.

[38] French patterns with English in that it shows copula agreement with the expletive (*ce* in French) while Spanish patterns with German (but there is no overt expletive in Spanish CCs). There is indeed evidence that Spanish CCs with *quien* must be analyzed as involving a free RC (basically because non-free RCs cannot involve *quien*, except for contexts with pied-piping).

(43) a. weil ich es bin, der hier die ganze Arbeit macht
since I it am, REL here the whole work do.3.SG
'since it is me who does all the work here'
b. *weil es ich bin, der hier die ganze Arbeit macht
since it I am REL here the whole work do.3.SG

The contrast in (43-a,b) suggests that the HN *ich* 'I' is merged higher than (and thus to the left of) the D spelled out as *es* 'it', in agreement with the assumptions made above.[39]

7. An alternative: head raising

There is an alternative analysis to the one presented in this article: the head raising analysis of RCs (see Brame (1968), Schachter (1973), Vergnaud (1974), Kayne (1994) among others). Under this analysis, CCs and RCCs involve raising of the HN out of the RC to a position immediately preceding it. Since a subject HN is merged within the RC, it stands in a local relation to the T-head of the RC and can thus value the Φ-features of T, thereby respecting the PIC.

To our knowledge, the agreement facts discussed here have not been put forward as an argument in favor of the head raising analysis. This is surprising because, as pointed out, head raising provides a straightforward account for the facts.

Yet, at the moment we favor the present analysis over the head raising account for the following reasons. First, note that other connectivity effects that have usually been taken to motivate head raising (idioms, principle A effects, and variable binding; see (44-a-c), respectively) also emerge in the context of long relativization. This is shown in (45) for English (see also Salzmann (2006, 338-339) on RCs in Zurich German).

(44) a. The headway that John made was remarkable
b. The pictures of himself$_2$ that John$_2$ put on sale are unflattering
c. The relative of his$_2$ that no-one$_2$ should forget to invite is his mother

(45) a. The headway that Mary said that John made was remarkable
b. The pictures of himself$_2$ that Mary believes that John$_2$ put on sale are unflattering
c. The relative of his$_2$ that Mary said that no-one$_2$ should forget to invite is his mother

However, as observed by Morgan (1972, 284), person agreement in English RCCs breaks down in contexts of long relativization, see (46).

(46) a. *I, who John says the FBI thinks am an anarchist, will always be incoherent

[39] Note that a full DP subject (like *Fritz* in (i)) may appear on either side of *es* in a CC:

(i) a. weil es Fritz ist, der die ganze Arbeit macht
since it Fritz is REL the whole work does
'since it is Fritz who does all the work'
b. weil Fritz es ist, der die ganze Arbeit macht
since Fritz it is REL the whole work does

The reason for this is that subject raising is optional in German. In (i-a), *Fritz* is in Specv, which is below (and thus to the right of) the Wackernagel domain. In (i-b), *Fritz* is raised to SpecT, to the left of the Wackernagel domain. Weak subject pronouns cannot remain in situ but must undergo Wackernagel movement.

b. *I, who John says Martha believes the FBI thinks am an anarchist, may be losing my grip on banality

This is unexpected under a head raising approach: if the head is able to raise out of one CP, it should be able to raise out of another CP, too. In fact, this is what the connectivity effects in (45) suggest under the head raising analysis.

A PIC-based approach can account for the facts in (46) by assuming that the chain of cyclic agreement is broken at some point, which prevents long agreement from being established. Thus suppose that although C can enter into cyclic Agree with the T it embeds, it cannot enter into cyclic Agree with the next higher v. If so, then the Φ-values of the HN cannot be transferred onto the most deeply embedded C/T-complex of the RC in (46) because the higher C-head (which has received the relevant Φ-values of the HN) cannot agree with this C/T-complex across the phase boundary induced by the intervening vP.

Agreeing infinitives in Portuguese show a similar pattern. To begin with, infinitives in Portuguese that are embedded under verbs of perception, such as 'to see', obligatorily agree with their thematic subject, see (47) (from Perlmutter (1972, 88)).

(47) a. *Vi os cavalos correr
saw the horses run
'I saw the horses run"
b. Vi os cavalos correrem
saw the horses run.3.PL

As Perlmutter (1972) observes, this agreement breaks down if the agreement controller is supposed to probe into an infinitival RC, see (48).

(48) a. os cavalos que vi correr
the horses REL saw run
'the horses that I saw run'
b. *os cavalos que vi correrem
the horses REL saw run.3.PL

This follows in a PIC-based theory if the intervening vP boundary in (48) breaks the chain of cyclic agreement between the HN and the T-head of the ECM-infinitive. No such vP-boundary intervenes in (47). In contrast, it is unclear why head-raising (and thus long distance agreement) should be barred from applying in (48-b).

In this context, consider the examples in (49).[40]

(49) a. It is me who John says is sick
b. It is I who John says is sick

According to our analysis, *I* in (49-b) receives the value for its case feature from the embedded T-head (i.e., the T-head that is the clause mate of *John*).[41] The agreement on the embedded copula in (49) is third person (i.e., there is no person agreement), as expected in a context of long relativization. However, unlike person agreement, number agreement does not break down, see (50).

[40] Akmajian (1970) reports that (49-b) is not an option in his dialect II. In the dialect that is under investigation here (presumably Akmajian's dialect III), both variants are grammatical.

[41] Apparently, it does not matter that *John* has already valued its case feature against this T. This suggests an asymmetry: valuation of [PERSON] depends on case, but valuation of [CASE:□] does not depend on person.

(50) It is us who John says are sick

This is a surprise under the assumption that the lack of person agreement is a PIC-effect. The question is why number agreement should behave differently. Unlike what was assumed above (see section 5.1. vs. section 5.2.), here the asymmetry between number and person agreement cannot be attributed to the dependency of [PERSON] on [CASE]. We can think of two possibilities here. First, one may assume that RLPs in English bear a number feature after all (but no person), as opposed to what has been claimed in section 2. This move would leave unaccounted for the lack of number agreement in interrogatives with *who*. More importantly, though, it is incompatible with the derivation of the number effects presented in section 5.3. We therefore reject this possibility here. Second, it is possible to assume that although v (in English) does not bear [PERSON:□] it still bears [NUMBER:□]. That is, cyclic person agreement breaks down because there is a link missing in the person agreement chain at the vP-boundary. However, the agreement chain is complete with respect to [NUMBER].

The second reason why we voted against analyzing agreement in RCs in terms of head raising is that we find it rather hard to imagine how head raising can account for the nominative restriction (see section 5.1.) and the number effect (see section 5.3.). As for the nominative restriction, it would be straightforward to assume that a nominative marked subject can only raise to become the head of the RC if it can preserve its case, i.e., if it targets a position that also receives nominative. However, this is exactly what proponents of the head raising analysis generally deny because they assume that head raising also applies in contexts where the case of the HN is not identical with the case determined within the RC. Concerning the number effect, a naive approach would suggest that head raising only applies in plural contexts. Why this should be so remains an open question, though.

To summarize, although we have not shown that there are principled reasons why the head raising analysis should not be able to account for the agreement facts discussed here, it still seems to us that the complications that they involve can be approached more naturally by a theory that is based on Agree than by a movement-based theory.

8. Conclusion

At first sight, the type of agreement in RCs shown in (1) and (2) can be analyzed as local agreement of the garden variety type: the subject RLP, which is merged inside the RC, bears a local relation to the RC's T-head. As T is the locus of the (unvalued) Φ-features, the RLP can provide a value for these features: agreement.

In this article, we have argued against this view, claiming that RLPs in languages such as English and German (but also French and Spanish) lack [PERSON], and that RLPs in English (and French), as opposed to German (and Spanish), even lack [NUMBER]. We concluded that it must be the HN that provides the Φ-values in question. We then showed that this conclusion is incompatible with the strict version of the PIC. Finally, we made a proposal as to how one can maintain the strict version of the PIC and still account for the facts.

To this end, we assumed that agreement applies cyclically and involves feature sharing. The basic idea is that in a first step T and C establish Agree within the RC. This leads to coalescence of their Φ-features. In a second step, the HN values the features of C, which, being at the edge of the CP-phase, is accessible to the HN. Due to the coalescence on the previous Agree-cycle, this also values the Φ-features on T and therefore avoids a violation of the SCC. The theory requires that the morphology applies post-syntactically. We further proposed that the nominative restriction on person agreement owes to a constraint that requires valuation of [PERSON:□] to go hand in hand with coalescence of [CASE].

Because of the derivational nature of the approach, a feature structure that is the result of an Agree operation on an earlier cycle of the derivation serves as the input for later Agree-cycles. Since RLPs in German and English differ with respect to their featural make-up, the feature structures that result from their entering into Agree differ, too. Ultimately, this has an impact on person agreement: in German, person agreement is only possible in plural contexts while in English it is always possible. We argued that this can be derived by the same restriction on person agreement assumed to be responsible for the nominative restriction, provided that case on RLPs in German is a purely morphological phenomenon in plural contexts, as opposed to singular contexts.

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