C-agreement: Feature inheritance or feature insertion?

Eric Fuß, IDS Mannheim
Ghent, 17.10.2012

1. Introduction

• **C-agreement (C-AGR)** in Bavarian (and many other non-standard varieties of Germanic): the subject’s ϕ-features are reflected not only on the verb, but also on C₀ (or some head of a split-C structure):¹

(1) a. ob-st du noch Minga kumm-st 
   whether-2SG you to Munich come-2SG
   ‘...whether you come to Munich’

b. ob-ts ees/ihr noch Minga kumm-ts
   whether-2PL you.PL to Munich come-2PL
   ‘...whether you (pl) come to Munich’

• **Basic research questions:**
  (i) How are the relevant inflectional features structurally represented?
  (ii) How are these features licensed/valued?

• **Traditional syntactic analysis:** C-AGR is a reflex of T(INFL/AGR)-to-C movement (Hoekstra & Marácz 1989, Zwart 1993, 1997).

• **Recent minimalist reinterpretation of the C-T dependency:** T inherits its feature content (ϕ-features) from the phase head C before agreement with the subject is established (Chomsky 2004, 2008 and subsequent work).

• To account for C-AGR, Chomsky (2012), adopting proposals by Ouali (2006, 2008), assumes that C may keep a copy of the ϕ-set transferred to T, which then initiates a separate Agree operation targeting the subject’s ϕ-set (see also Carstens 2003, van Koppen 2005, Haegeman & van Koppen 2012).

• **This paper:**
  (ii) In the relevant varieties,
      a. C-AGR does not involve a dependency between C and the subject, but rather between C and the finite verb/T.
      b. C-AGR results from the post-syntactic insertion of valued agreement features (= a copy of T’s ϕ-set).

2. In favor of a post-syntactic analysis

2.1 A conceptual problem

• Richards (2007) argues that the logic of phase-driven derivation requires that all uninterpretable features (uF) of C must be eliminated from the syntactic computation (via feature inheritance and subsequent Transfer/Spell-out) as soon as they have been valued.²

• Richards’ argument that C must pass all its uFs down to T raises obvious questions about the validity of Agree-based approaches to C-AGR.

2.2 Adjacency effects

• Observation: In a number of C-AGR-varieties, the presence of an (scrambled) XP which intervenes between C₀ and the subject blocks the availability of complementizer agreement (cf. e.g. Ackema & Neeleman 2003, 2004 on the East Netherlands variety Hellendoorn):³

(2) dat/*datt-e [op den wärmsten dag van’t joar]  
that/that-1PL on the warmest day of-the year  
wiej tegen oonze wil ewärkt hebt.  
we against our will worked have  
‘that on the warmest day of the year we have worked against our will’

• At least for a subset of speakers, similar adjacency effects can be observed in Bavarian:

(3) dass(?? -sd) [bei dem Brachdwedda] seibsd du in den Biargoadn gehsd  
that(-2SG) in this splendid weather even you to the pub go-2SG  
‘that even you go to the pub in this splendid weather’

---

² “By the PIC [Phase Impenetrability Condition], phase heads are not spelled out at the same time as their complements, and therefore uF on the phase head is not transferred until the phase following the phase in which it is valued, denying Value-Transfer simultaneity [...]. Consequently, the derivation is doomed if valued uF remains on the phase head. The only way to overcome this fatal flaw and ensure that uF on C/v” is indeed valued as part of Transfer is for C/v”’s uF to be transmitted onto the category that is transferred, namely, the complement (T/V).” (Richards 2007: 569)

³ According to Haegeman & van Koppen (2012) no such adjacency effect can be observed in West Flemish. Other varieties such as Frisian always require strict adjacency between the (inflected) complementizer and the subject. That is, violations of the adjacency requirement lead to ungrammaticality and not to non-inflected complementizers (Germen de Haan, p.c.).
• Adjacency effects raise problems for syntactic accounts of C-AGR:
  i. The presence of an intervening XP should not block T-to-C movement;
  ii. Carstens’ (2003) analysis in terms of Agree+intervention (intervening adverbials are taken to bear a Case feature that identifies the adverbial as a possible goal for C’s $\varphi$-set) also faces problems. In particular, it seems to (wrongly) predict that adverbials that intervene between $T_0$ and the base position of the subject should block the realization of (regular) subject-verb agreement:

\[
[T' T [\text{np adv} [\text{np subject} ... ]]]
\]

2.3 Backward gapping
• Observation: In Bavarian, complementizer agreement becomes less acceptable if the finite verb is subject to (backward) gapping; relevant examples are fine when the complementizer does not carry inflection:

4

\[
(5) \begin{align*}
a. \text{[dass-sd du noch Minga] und [dass da Hans that-2sG you to Munich and that the Hans noch Truchtlaching geht]} \\
to \text{Truchtlaching go-3sG}
\end{align*}
b. \text{[dass-∅ du noch Minga] und [dass da Hans noch Truchtlaching geht]}
\]

• Under the common assumption that gapping is to be analyzed in terms of PF-deletion (Ross 1970), the data in (5) show that
  (i). the realization of C-AGR can be affected by post-syntactic operations (ellipsis/gapping);
  (ii). the availability of C-AGR seems to depend on the presence of an overt finite verb.
• These facts are difficult to account for if it is assumed that complementizer agreement is established by a syntactic Agree mechanism that accesses the subject’s $\varphi$ set.

2.4 Comparative deletion
• These preliminary generalizations are corroborated by data from comparatives.
• In comparatives, C-AGR leads to ungrammaticality if the finite verb is elided, cf. (6b). The sentence becomes acceptable when C bears no inflection, cf. (6c):

\[4 \text{ It appears that these facts are subject to a considerable amount of speaker variation. Generally, it seems however, that the absence of the finite verb renders C-AGR less acceptable.} \]
(6) a. D’Resl is gresser [als wia-st du bist]  
the-Resl is taller than as-2SG you are  
‘Resl is taller than you are.’  
b.*D’Resl is gresser [als wia-st du]  
the-Resl is taller than as-2SG you  
c. D’Resl is gresser [als wia du]  
the-Resl is taller than as you  
(Bayer 1984: 269)

• Again, it appears that it is the presence/absence of the inflected verb which is crucial for the availability of complementizer agreement.

Conclusions:

(i) Agreement between the complementizer and the subject cannot be implemented in terms of a checking/Agree relation between C₀ and the subject – neither in the syntax nor at PF. OTHERWISE one would expect examples such as (5a) and (6b) to be fully grammatical.

(ii) In some way, the inflection found in the C-domain is mediated by/parasitic on the presence of the finite verb.

(iii) The facts in (5) and (6) suggest that C-AGR is established post-syntactically: Gapping and comparative deletion are standardly analyzed as the result of post-syntactic operations that delete material in the second clause:

(7) dass (?-sd) du noch Minga geht und dass da Hans that 2SG you to Munich go-2SG and that the Hans noch Truchtlaching geht to Truchtlaching go-3SG

(8) D’Resl is gresser [ als wia (*-st) du bist]  
the-Resl is taller than as-2SG you (are)

• If licensing of C-AGR were to take place in the syntax, no interaction with PF-deletion of the finite verb would be expected: the finite verb would be present throughout the whole syntactic derivation, being subject to deletion only after the structure has been transmitted to the post-syntactic components of grammar.

---

5 Cf. Ackema & Neeleman (2004) for an analysis of C-AGR in terms of a PF feature checking rule which applies if C and the subject are part of the same prosodic phrase.

6 This analysis is in line with the observation that across Germanic, there are no languages with C-AGR but without verbal agreement, while there are many languages that exhibit verbal agreement in the absence of C-AGR (Hoekstra and Smits 1999). Thus, it seems that cross-linguistically, the availability of C-AGR is dependent on the overt realization of verbal agreement morphology.
3. A post-syntactic account of C-AGR

- **Background**: realizational model of grammar (Distributed Morphology (DM), Halle & Marantz 1993):
  i. The morpho-phonological component (called *Morphological Structure*, henceforth MS) operates post-syntactically;
  ii. The syntactic computation manipulates bundles of abstract morpho-syntactic features (such as [+pl] or [+past]), which are realized by the post-syntactic insertion of phonological exponents (so-called Vocabulary Insertion);
  iii. The structure derived in the syntax can be modified by the post-syntactic insertion of inflectional heads/features (this mechanism is often used to account for case and agreement phenomena (Marantz 1992, Halle & Marantz 1993, Embick 1997, Halle 1997, Noyer 1997, Harbour 2003, Bobaljik 2008).

3.1 A hybrid model of agreement

- **‘Canonical’ subject-verb agreement**: T’s set of uninterpretable/unvalued $\varphi$-features (a result of feature inheritance) is valued by an Agree operation accessing the subject’s set of interpretable $\varphi$-features (Chomsky 2004, 2008):

  \[
  [CP \ldots [TP \varphi T \ldots [vP subject \ldots ]]]
  \]

- **Complementizer agreement**:
  i. C-AGR is established by post-syntactic mechanisms.
  ii. C-AGR does not involve a checking relation with the subject.
  iii. C-AGR depends on the presence of the inflected verb.

- **Implementation**:
  i. C-AGR results from post-syntactic feature insertion.
  ii. Feature matching between C and the subject does not take place directly, but is mediated by another $\varphi$-set that has been valued in the syntax (via Agree):

  \[
  C-AGR \text{ as feature insertion}
  \]

  C-AGR is established during the post-syntactic computation by:
  i. a copy operation that targets (a subset of) T’s $\varphi$-set (valued in the syntax);\(^7\)
  ii. an operation of feature insertion that adds $\varphi[T]$ to C’s feature content.

- This mechanism ensures feature identity between the $\varphi$-sets in T and C (which both reflect the $\varphi$-feature content of the same argument; but see section 4 below for other possibilities).

---

\(^7\) See Bayer (1984) for a related idea. In contrast to the present proposal, however, Bayer assumes that the relevant copy operation takes place in the syntax. See also Sternefeld (2007: 208f.) for an analysis based on the intuition that C-AGR involves a dependency between C and the $\varphi$-set of the finite verb.
3.2 Adjacency effects and sensitivity to ellipsis

3.2.1 Lack of C-AGR in comparatives/gapping

• Elided elements are marked for deletion in the course of the syntactic derivation (cf. e.g. den Dikken 2012); they are therefore invisible for operations that apply at MS (including Vocabulary Insertion and the licensing of post-syntactically inserted ϕ-sets):

(11) \[ [\text{CP} \ldots [\text{TP} \nu^+\nu^+\text{TP}] \ldots [\ldots]] \]

invisible for operations at MS

3.2.2 Adjacency effects

• **Assumption 1**: The copy/insertion procedure giving rise to the presence of ϕ-features on C operates in a strictly local fashion, requiring *structural adjacency* between C\(^0\) and T\(^0\) (cf. e.g Halle & Marantz 1993 and Embick & Noyer 2001):

(12) **Locality of feature insertion**
The post-syntactic insertion of ϕ-features can target a functional head X only if X is *structurally adjacent* to a functional head Y hosting a (valued) ϕ-set.

(13) **Structural adjacency**
A head X is structurally adjacent to a head Y iff

(i) X c-commands Y
(ii) There is no head Z that
(a) is c-commanded by X and
(b) c-commands Y.

• According to (13), a head X is structurally adjacent to the head Y of its complement. Hence, C-AGR can only be inserted as a copy of T’s ϕ-set if T is locally c-commanded by C.

• **Assumption 2**: Scrambled XPs do not adjoin to IP/TP but occupy the specifier of a functional projection above TP that is only projected if it serves to implement certain information-structural distinctions (cf. Frey 2004, Grewendorf 2005; see Jayaseelan 2001, Belletti 2002, and Haeberli 2002 for related proposals).

• **Illustration**: in (14) the scrambled XP is located in the specifier of a projection (simply labeled FP), the head of which disrupts structural adjacency between C\(^0\) and T\(^0\). As a result, the insertion of C-AGR is blocked:

(14) \[ *[\text{CP} \ C^0+\text{AGR} \ [\text{FP} \ [\nu^0 \ [\ldots]] \text{subj}\.] \text{TP}\] \nu^0+\text{TP}+\text{AGR}]]]]]
4. C-agreement ≠ T-agreement

- Cases where C-AGR differs from verbal agreement: general problem for all approaches that analyze C-AGR in terms of a dependency between C and T (cf. e.g. Haegeman & van Koppen 2012).

4.1 Double agreement

- “Double agreement” in the context of 1PL in certain Bavarian varieties:
  (i) Embedded clauses: Different agreement formatives on the verb and the complementizer;
  (ii) Main clauses/V2: C-AGR replaces “regular” verbal agreement:

  (i5) a. wem-ma mia noch Minga kumm-an when-1PL we to Munich come-1PL ‘...when we come to Munich’
b. Gem-ma mia noch Minga? go-1PL we to Munich ‘Are we going to Munich?’

- Proposal/double agreement: The insertion of different agreement formatives can be treated as an instance of contextual allomorphy:
  (i) The insertion procedure may be sensitive to the insertion context e.g., other features present at the insertion site (cf. the realization of strong/weak adjectival inflection in German);
  (ii) Double agreement can be captured by assuming that the relevant phonological exponents are specified for additional features that relate to the insertion context (e.g., T and C’s categorial features):

  (i6) a. [+T, +1, +1PL] ↔ /-an/ verbal agreement
  b. [+C, +1, +1PL] ↔ /-ma/ C-AGR

- Diachronic extension to V-AGR (cf. Fuß 2005): The exponent of C-AGR cannot be used to realize regular verbal agreement as long as it carries an additional specification related to C (this follows from the Subset Principle, Halle 1997); extension to V-AGR contexts can be attributed to the loss of the C-specification.

---

8 C-AGR with 1PL (and double agreement) seems to be most wide-spread in Lower Bavarian dialects (cf. e.g. Bayer 1984, Kollmer 1987, Wiesinger 1989, Weiß 1998, 2005).


10 C-AGR-dialects without double agreement (e.g., most varieties of Bavarian): Either there is only a single set of agreement exponents which can be used to realize both C-AGR and V-AGR, or the exponents realizing C-AGR and V-AGR happen to be completely homophonous.
4.2 First conjunct agreement

- **First conjunct agreement (FCA):** Some C-AGR-varieties exhibit another instance of “double agreement” where the complementizer agrees with the first conjunct of a complex coordinated subject, while the verb agrees with the coordinated subject as a whole (cf. van Koppen 2005, 2006; Haegeman & van Koppen 2012).

- **FCA in Bavarian:** The complementizer agrees with the first (2SG) conjunct of a coordinated subject, while the verb exhibits 2PL agreement (the result of resolution, i.e., a morphological operation combining the φ-sets of the two conjuncts).

(17) dass-sd [ du und da Hans] noch Minga geh-ts
    that-2SG you.SG and the Hans to Munich go-2PL
    ‘that you and Hans are going to Munich’

- However, while all speakers I consulted accept (17), judgements seem to vary (fully grammatical/??/*) concerning the possibility of agreement with the whole coordinated subject (resolution):

(18) %dass-ts [ du und da Hans] noch Minga geh-ts
    that-2PL you.SG and the Hans to Munich go-2PL
    ‘that you and Hans are going to Munich’

- **Adjacency requirement:** If the 2nd person pronoun is the second conjunct of a complex subject, the complementizer must appear in its uninflected form:

(19) dass (*-st) [ da Hans und du] noch Minga kumm-ts
    that 2SG the Hans and you.SG to Munich come-2PL
    ‘that Hans and you are coming to Munich’

---

11 I am indebted to Josef Bayer, Günther Grewendorf and Helmut Weiß for sharing their intuitions on FCA in Bavarian.

12 In many cases, agreement with coordinated subjects is subject to language-specific rules: (i) agreement with one of the two conjuncts; (ii) a combination of the respective phi-sets (so-called “resolution”, cf. Corbett 1983, 2000). Resolution typically leads to plural agreement and favors agreement with 1st/2nd person (although there are some exceptions; for example, some speakers prefer 3pl agreement in examples like dass-sd du und da Hans noch Minga geh-ts/geng-an).

13 According to van Koppen (2005: 47), there are at least some speakers who consider C-AGR (2pl) to be marginally acceptable here. The adjacency effect also shows up in matrix/inversion contexts: While FCA is generally impossible in subject-initial clauses, the verb preferably agrees with the first conjunct of an inverted subject:

(i) [ Du und da Hans] hoab-ts/*hoa-st an Hauptpreis gwunna.
    you and the Hans have-2PL/have-2SG the first.prize won
    yesterday have-2SG/have-2PL you and the Hans the first.prize won
• Ineffability effects: For certain combinations of subjects, there do not seem to exist fully well-formed candidates. E.g., coordination of 2pl+1sg subjects generally leads to more ‘mixed’ results (although FCA should in principle be possible):

(20) a. % dass-ts [ihr/ees und I] noch Minga miaß-n
that-2PL you.PL and I to Munich must-PL
b. */?? dass-ts [ihr/ees und I] noch Minga miaß-ts
that-2PL you.PL and I to Munich must-PL

• The realization of FCA/C-AGR is subject to cross-linguistic variation:
  (i). FCA is obligatory (Tegelen Dutch, Bavarian A)
  (ii). FCA is impossible (i.e., C-AGR = T-AGR/resolution; Lapscheure Dutch, van Koppen 2005)
  (iii). Both FCA and T-AGR/resolution are possible (Bavarian B).

• Proposal/FCA:
  (i). Syntax: In the case of coordinated subjects, [&^0], the head of the whole coordinated subject, contains an ordered pair of \( \varphi \)-sets corresponding to the feature content of the two conjuncts DP1, DP2. This combined \( \varphi \)-set is accessed by an Agree operation initiated by T:

(21) 
```
  TP
  /\       \TP
  |       /\  
  vP     vP
     \   /  
  &P     &P
     \ /  
  DP1<\varphi1>, \varphi2>DP2<\varphi2>
```

(22) Result of Agree in the case of coordinated subjects: ordered pairs of \( \varphi \)-sets in T, e.g.,
  a. <[+2, -pl],[-pl]> (2sg + 3sg subject)
  b. <[+2, +pl], [+pl]> (2pl + 3pl subject)
  c. <[+1, -pl], [+2, -pl]> (1sg + 2sg subject)
  etc.

(ii). Resolution does not take place in the syntax, but at MS as part of the procedure inserting phonological exponents (resolution is subject to language-specific rules, which is typical of morphological differences between languages, see also fn. 12):
Resolution rules (Bavarian):

a. Unification of feature sets, i.e., \([A, B] \rightarrow [A, B]\)

b. \([+1, +2] \rightarrow [+1]\)

c. \([\alpha, \alpha/-\alpha] \rightarrow [+\alpha]\)

\(\text{(iii). FCA: The copy operation establishing C-AGR may target}^{14}\)

a) the complete \(\varphi\)-content of \(T\) (C-AGR = T-AGR/resolution, Lapscheure Dutch (van Koppen 2005))

b) the first \(\varphi\)-set of the ordered pair (FCA, Tegelen Dutch, Bavarian).

• Option b) is confined to cases where C is adjacent to the first conjunct.

• The fact that some speakers of Bavarian accept both FCA and resolution with C-AGR (Josef Bayer, p.c.) suggests that both (iiiia) and (iiib) may be optionally available in a single grammar.

5. Conclusions

• Cases where the realization of C-AGR is sensitive to post-syntactic processes such as gapping of comparative deletion suggest that C-AGR is established in the post-syntactic components of grammar.

• In the relevant varieties,
  
  i. C-AGR does not involve a (checking) relation between C and the subject.
     Rather, it seems to depend on the presence of the finite verb at MS/PF.

  ii. C-AGR is a morphological ornament, resulting from the post-syntactic insertion of \(\varphi\)-features (a copy of T’s \(\varphi\)-set) under structural adjacency with T.

• This approach is compatible with Richards (2007) theory of obligatory feature inheritance. However, C can regain its \(\varphi\)-feature content via feature insertion (a copy of T’s \(\varphi\)-set) at MS/PF.

• Inter-speaker variation: Evidence for the existence of different (syntactic vs. post-syntactic) types of C-AGR?

---

14 Cf. Bhatt & Walkow (2011) for the claim (Hindi) that agreement with only a single conjunct (i.e., absence of resolution) is a characteristic of post-syntactic/“phonological” agreement.
Appendix: External possessor agreement in West Flemish

- Haegeman & van Koppen (2012) discuss a particular construction in which the complementizer agrees with a dislocated possessor (die venten in (25)), while the verb agrees with the possessee (underen computer in (25)):

(25) ... omda-n die venten toen juste underen computer kapot was. because-pl those guys then just their computer broken was ‘...because those guys’ computer broke just then.’

- The fact that C-AGR and T-AGR reflect different feature values in examples like (25) (plural vs. singular) seems to suggest that complementizer agreement results from a separate agreement operation and cannot be reduced to a connection between C and T.

- Haegeman & Koppen (2012) present evidence that the raised possessor occupies an A-position above TP which they label SpecαP:

(26)

- In (26), C-AGR is established by an Agree operation between C and the possessor’s φ-set (in SpecαP), while regular verb agreement results from an Agree operation between T and the whole subject (headed by the possessee) in SpecvP.

- But note that this structure is also compatible with a post-syntactic analysis of C-AGR in terms of feature insertion if we assume that the relevant copy operation does not target T’s φ-set, but rather the φ-set of α (which enters into an agreement relation with the possessor in the syntactic computation).
References


