Phases and Cyclic Agreement

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This paper proposes a cyclic agreement operation that establishes inter-phasal agreement relationships.

1. Introduction

The starting point of this paper is the demonstration in Legate (2003a,b) that all verb phrases are phases (in the sense of Chomsky1999, 2000, 2001), rather than only transitive verb phrases as is standardly claimed. In that work, I formulate three syntactic tests supporting the notion of a vP phase, from binding reconstruction effects, quantifier raising, and parasitic gap licensing, as well as a phonological test based on the Nuclear Stress Rule; I further demonstrate that these tests also identify passive, unaccusative, and raising verb phrases as phases. Indeed, although the standard claim has been that, among the verb phrases, only transitive vPs are phases, a number of previous analyses have required phases smaller than vP: Bobaljik & Wurmbrand's (2003) analysis of Italmen long distance agreement, both Holmberg's (2000) and Svenonius' (2000) analysis of Scandinavian impersonal passives, and McGinnis' (2003) analysis of symmetric applicative constructions.

Here I examine the consequences of passive, unaccusative, and raising vP phases for inter-phasal agreement relations, proposing that this is achieved through *Cyclic Agreement.* Section 2 presents the problem and the cyclic agreement solution. Section 3 outlines empirical evidence for cyclic agreement. Section 4 considers additional consequences of the proposal. Section 5 concludes.

2. Cyclic Agreement

If all verb phrases are phases, rather than only transitive verb phrases, we must confront the issue of how an agreement relationship is established between a licensing head and a DP in a prior phase. Consider for example the agreement relationship between finite T and a DP that remains within the verb phrase:

(1) There arrive ten trains into this station every day.

This agreement relationship is problematic in that the DP *ten trains* is within the

vP[1] phase, and thus will have been spelled out before T is merged, apparently rendering the agreement relationship between T and the DP impossible.

Sentences like (1) may receive a technical solution if we adopt the proposal in Chomsky (2001) that spellout of the vP phase is triggered by the insertion of the subsequent phase-head, i.e. the matrix C. Therefore, at the point at which T probes, material within the vP phase is still accessible and T may in fact enter an into agreement relationship with *ten trains* unproblematically.

However, this technical solution does not carry over to examples with a further level of embedding:

(2) There seem to have arrived ten trains into this station today.

In (2), at least two phases intervene between *ten trains* and the matrix T: the vP associated with the verb *arrive*, and the vP associated with the verb *seem*. Therefore, the agreement relationship between T and *ten trains* should indeed be impossible.

Here I would like to develop a solution to this problem that I first proposed in Legate (2003a). The idea is that agreement applies in a cyclic fashion,[2] through the intermediary of every intervening phase-defining head. Thus, in (2), *ten trains* agrees with the v associated with *arrive*, which in turn agrees with the v associated with *seem*,[3] which finally agrees with the finite T.

Let us consider this cyclic agreement in more detail, by first stepping back and looking at cases involving movement rather than cyclic agreement.

(3) Ten trains seem to have arrived into this station today.

Movement to a phase edge is standardly discussed as being triggered by an EPP feature added to ensure convergence. However, an EPP feature alone is insufficient; additional features are required to identify the correct element to be moved. Consider (4):

(4) Who did you give the book to?

In (4), a simple EPP feature would attract the closest phrase, either the VP headed by *give*, or the DP *the book*, both of which are closer to v than *who*. Yet *who* rather than any other phrase must be moved to the phase edge for it to be visible for subsequent movement to the specifier of CP. Therefore, the EPP

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1 I use vP here on the assumption that passive, unaccusative, and raising verb phrases are selected for by a (defective) v. Nothing hinges on this assumption.

2 In Legate (2003a) I refered to this as *Indirect Agreement*. Here I will refer to it rather as *Cyclic Agreement.*

3 Assumedly, the embedded nonfinite T also agrees with the v associated with *arrive*, so the derivation more precisely would involve agreement of the v associated with *arrive* with the embedded T, agreement of the embedded T with the v associated with *seems*, and then agreement of the v associated with *seems* with the matrix finite T. This extra step of agreement is not direclty relevant to the current discussion.

feature of v must co-occur with additional features to identify the correct goal.

My proposal is thus that these additional features may occur independently of the EPP feature. Consider in this light the derivation of (1). The v associated with *arrive* has unvalued phi features but no EPP feature. The unvalued phi-features on v agree with *ten trains.* Adopting the conception of agreement as the establishment of a hyperlink to a shared set of feature values, akin to the *unification* operation of GPSG/HPSG, (see Frampton & Gutmann 2000, Frampton, Gutmann, Legate, & Yang 2000), the v thus bears both the phi features and the unvalued case feature of *ten trains.* Subsequently, T is merged with unvalued phi features, and the ability to license nominative case. T enters an agree relationship with v; as a result of this operation, v, T, and *ten trains* bear the phi features orginally associated with ten trains and the nominative case feature originally associated with T.

A question arises as to the morphological realization of the nominative case feature on *ten trains* (which of course is not overtly visible in English, but can be in languages with richer case morphology). Since *ten trains* is spelled out before the agree relationship with T is established, how does the morphology succeed in realizing the correct case morphology? A number of possibilities arise. One is a return to a prior conception of features in which features may be uninterpretable, rather than unvalued. Thus, the DP *ten trains* would enter the derivation with a valued but uninterpretable case feature; if this value is the same as that assigned by the case assigner (here nominative), the derivation converges. If however the wrong feature value is inserted, when the v phase head agrees with T, a feature mismatch will occur and the derivation will be cancelled.[4]

A second possibility that appears promising is that the morphology has access to prior phases. When the (lowest) vP phase in (1) and (2) is spelled out, the morphology receives a DP, *ten trains*, without a case feature. At this point it may plausibly insert the form of the DP bearing the morphological default case, or realize the DP without case morphology. On a subsequent phase, when the finite T that licenses nominative case on *ten trains* is spelled out, this DP now bears nominative case features. Recall that agreement is conceived as a hyperlink to a set of feature values. Thus, the feature values of *ten trains* is updated as a result of the syntactic agreement relationship between v and finite T at a later phase, because this agreement relationship alters the feature values that *ten trains* links to. The morphology may then repair the material on the previous phase, giving *ten trains* nominative case morphology as required.[5]

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[4] See Legate (2002) for an argument that in such a system in fact all features that are relevant in the syntax are uninterpretable at LF. This not only resolves certain technical difficulties in the syntax, and seems more accurate semantically, but also eliminates the perceived problem that [± interpretable] is a feature of a feature and thus undesireable. If all morpho-syntactic features are by definition uninterpretable at LF, this problem vanishes.

[5] On a similar point, see Legate (2003b) and Adger (2003) for analyses that require the phonology to access and modify prior phases for the Nuclear Stress Rule in English and Scottish Gaelic respectively. This seems unavoidable given the existence of

Allowing the morphology access to prior phases seems independently necessary, given cases in which a single morphological word appears to contain morphemes from more than one phase (see Henderson 2003 for recent relevant discussion regarding verbs in Swahili).

Cyclic agreement thus solves the apparent problem with unaccusative vP phases like in (1) and (2) by indirectly establishing the agreement relationship between finite T and a DP in a previous phase. However, the cyclic agreement operation has broader application than case and agreement. It has clear applications for example in A'-constructions without movement (e.g. wh-in-situ).

If the cyclic agreement proposal is on the right track, we would like to see cases involving overt morphological relatization of this agreement on intervening phase-defining heads. I turn to this issue in the following section.

3. Morphological Agreement

If indeed long-distance agreement is achieved through cyclic agreement mediating between a licensing head and a DP in a prior phase, we expect this agreement relationship to be potentially morphologically realized. Here I mention a couple of examples from the literature which seem amenable to such an analysis.

3.1 Celtic Relativization

Recent analyses of certain Celtic relativization patterns have converged on the idea that they do not involve movement (see for example Adger & Ramchand 2001, Rouveret 2002). However, they do appear to involve cyclic agreement. Rouveret (2002) independently proposes a cyclic agreement operation for relativization strategies in Irish and Welsh that is similar to the present analysis.[6] Adger & Ramchand (2001) demonstrate that a Scottish Breton relativization strategy does not involve movement. However they also show that in long-distance relativization, each complementizer must be morphologically realized as the relative complementizer *a*:[7]

(5) An duine **a** thuirt e **a**/*gun bhuaileas e
the man C.**REL** said he C.**REL**/***that** strike he
`The man that he said he will hit'

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prosodic domains larger than the phase.

6 An interesting aspect of Rouveret's work is the suggestion that strong island effects may be accounted for through the agreement relationship, rather than movement of an abstract element. On the assumption that island-inducing heads cannot participate in cyclic agreement, the relationship between an in situ element (in this case a resumptive pronoun) and an agreeing head (the relative complementizer) would not be established, resulting in ungrammaticality.

7 Data from Adger & Ramchand (2001:9).

Furthermore, they note (ftn 2) that the verbs also appear in a special relative form:[8]

(6) an duine a **bhuaileas** e
the man C.REL hit.**REL** he
`the man that he hit'

Thus, Scottish Gaelic relatives overtly morphologically mark both the cyclic agreement relationship with both the phase-defining heads C and v, on the complementizers and on the verb respectively.

3.2 Passamaquoddy

A second example of morphologically realized cyclic agreement comes from Bruening's (2001) description of focus in Passamaquoddy. Here we'll consider examples involving association with the *tehpu* `only'. Bruening demonstrates[9] that focus may either involve movement or in situ association with *tehpu* `only'.

(7) a. **Nihtol** **tehpu** kisapem-ac-il
that.OBV only rely.on-3CONJ-PARTOBV
`He's the only one she can rely on.'

b. Mali **tehpu** kesi-iyw-ac-il **Piyel**-ol
Mary only IC.like-have-3CONJ-PARTOBV Piyel-OBV

ma=te=apc wen-il
NEG=EMPH=again someone-OBV
`Mary only likes PIYEL, no one else.'

The in situ focus construction is interesting for our purposes in its agreement properties. Bruening demonstrates that it involves agreement with the focused DP (when this DP is 3rd person) on every verb between the DP and *tehpu.* In the following examples the agreement has been bolded.

(8) a. Tehpu kisi-wicuhkem-uk-**il** Piyel kespahl-ac-**il**
Only PERF-help-1CONJ-PARTOBV Piyel IC.wash-3CONJ-PARTOBV

'-temis-ol.
3-dog-OBV
`I only helped Piyel wash HIS DOG.'

b. Tehpu kesiciy-uk-**il** wisukiluwohehtw-ac-**il**
only IC.know.TA-1CONJ-PARTOBV make.angry-3CONJ-PARTOBV

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[8] Although they state that this is true of all verbs in clauses with the complementizer *a*, in (5) they gloss the verb `hit' as relative, but not the verb `said'.

[9] All Passamaquoddy data from Bruening (2001), pages 222-228.

Maliw-ol.
Mary-OBV
`I only know that he made MARY mad.'

This agreement is plausibly the morphological realization of a cyclic agreement relationship between *tehpu* and the focused DP.[10]

3.3 Blackfoot

A third example of morphologically realized cyclic agreement comes from Blackfoot.[11] In Blackfoot, a topical DP in an embedded clause may[12] trigger agreement on higher verbs. This is illustrated in the following examples.

(9) a. **kits**-íksstakk-a omá n-oxkó-wa m-áxk-itáp-aapiksistaxsi
2OBJ-want-3SUBJ my 1-son-3 3-might-toward-throw

kiistóyi omí pokón-i
you DET ball-4
`My son wants to throw the ball to/at you'

b. nits-íksstata-**wa** n-áxk-ssksinoa-**xsi m**-aníst-sskonata'psspi
1-want-3 1-might-know-3 3-manner-strong
`I want to know how strong he is'

Furthermore, in Blackfoot there is good reason to believe that cyclic agreement rather than covert movement is implicated.[13] The agreement may be triggered by one DP in a conjoined structure:

(10) nits-íksstata-**wa n-oxkó-wa** ki niistówa
1-want-3 1-son-3 and I

n-áxk-a'po'takss-innaani

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[10] Bruening analyses in situ focus as involving covert movement. On the analysis of covert movement as movement at LF (rather than overt movement with lower copy pronunciation), this is potentially problematic in having an operation at LF affecting the morphology at PF. On the cyclic agreement analysis this issue does not arise, since cyclic agreement occurs in the overt syntax. Bruening uses island restrictions to support the covert movement analysis, but see footnote 6.

[11] The Blackfoot data come from Frantz (1978), as cited by Polinsky (2003).

[12] Although the cyclic agreement is only optionally morphologicaly realized on intermediate clauses (Frantz 1978: 103-5, cited in Polinsky (2003:288).

[13] Polinsky analyses the Blackfoot construction as involving a null R-expression in the matrix clause, which she assumes will not trigger a Condition C violation with the coindexed DP in the lower clause. Unfortunately, she does not demonstrate that Condition C effects between two R-expressions are absent in Blackfoot. Furthermore, the cyclic agreement analysis does not require positing a null R-expression.

1-might-work-1PL
`I want my son and myself to work.'

If movement were involved, (10) would be in violation of the coordinate structure constraint. On an agreement analysis no such difficulty arises.

3.4 Kashmiri/Hindi-Urdu

The final construction considered is found in Kashmiri and Hindi-Urdu. This also involves agreement between an embedded DP[14] and higher verbs. Examples from Kashmiri (11a) and Hindi-Urdu (11b) follow.

(11) a. Raam-an **che** hameeSI **yatshImut** [panInis necivis khAAirI
Ram-ERG be.PRES.**F** always wanted.**FPL** self.DAT son.DAT for

koori **vuchini**]
girls see.INF.**FPL**
`Ram has always wanted to see girls for his son.'

b. Shahrukh-ne [tehnii **kaaT-nii**] **chaah-ii** **thii**.
Shahrukh-ERG branch.F cut.INF.**F** want-PFV.**F** be.PST.**F**
`Shahrkh had wanted to cut the branch.'

Unlike Blackfoot, however, this construction is only allowed when the embedded clause is nonfinite, and may involve restructuring. On the present analysis, this indicates that although the phase-defining head v may bear the features that trigger this agreement in the syntax, the phase-defining head C may not. Thus, cyclic agreement is stopped at the CP phase in Kashmiri and Hindi-Urdu.

3.5 Impoverished Agreement

In the previous sections we have seen diverse phenomena which seem to involve morphological realization of cyclic agreement relationships. This lends support to the cyclic agreement proposal for the simpler cases of inter-phasal agreement between finite T and an in situ object of an unaccusative verb in English.

However, long-distance agreement is often found to be more impoverished than apparent specifier-head agreement. This is potentially problematic under the analysis of movement in Chomsky (1999, 2000, 2001). In this theory, agreement (i.e. the Agree operation) uniformly applies between the head and the element in situ. The distinction between a movement versus in situ

[14] Data from Bhatt (2003). Bhatt shows that when the long-distance agreement is present, the embedded DP that triggers the agreement may scope either in the matrix clause or in the embedded clause (indicating the construction need not be associated with covert movement). Without the agreement, the embedded DP may only scope in the embedded clause.

derivation lies in the presence versus absence of an EPP feature on the head. Thus there appears to be no explanation for a distinction in agreement possiblities between a movement versus in situ derivation.

The present proposal provides a possible approach to this contrast. This is because on the present proposal, the agreement mechanisms used for movement versus in situ derivations differ. Consider an example:

(12) a. There arrive ten unicorns into the station today.
b. Ten trains arrive into the station today.

In (12a), the DP *ten unicorns* remains in situ in the VP *arrive*; the v associated with *arrive* agrees with the DP *ten unicorns*, and the finite T agrees with v. In (12b), on the other hand, given the Phase Impenetrability Condition, *ten trains* must move to the edge of the vP phase in order to undergo subsequent movement to the specifier of TP. Therefore, T agrees with the DP *ten trains* itself rather than v. We thus have a potential restatement of the generalization: agreement between a head and an XP is richer than between a head and another head that the XP has agreed with. In that the movement derivation involves a more direct syntactic relationship between the head and agreeing XP, it is perhaps plausible for this relationship to trigger richer agreement morphology.

4. Numerations

Finally, I would like to consider the infamous contrast in (13) that served as one motivation for phases and that is a potential problem for the present analysis:

(13) a. *There seems a man to be in the room.
b. There seems to be a man in the room.

On the standard assumption that nonfinite T does possess an EPP feature (but see Boskovic 2002), this contrast has been puzzling. It is unclear why the EPP feature of the embedded T could not be satisfied by raising of *a man* instead of insertion of *there*. As observed by Alec Marantz, we cannot simply claim that expletives must be merged as early in the derivation as possible due to the lack of a contrast between (14a) versus (14b) and (14c).

(14) a. There was circulated a rumour that someone was in the room.
b. There was circulated a rumour that there was someone in the room.
c. A rumour was circulated that there was somone in the room.

The crucial distinction between the case in (14) and the case in (13) is that (13) involves a nonfinite T, whereas (14) involves a finite T. The now-standard analysis runs as follows. A numeration is chosen for each phase. If at any point during the derivation, the EPP may be satisfied either by merge of *there* or by movement of a DP, merge is prefered as more "economical" (hence the slogan

"merge over move"). On Chomsky's assumption that only transitive vPs and CPs are phases, (13) is derived using a single numeration. Since this numeration contains *there*, it must be inserted to satisfy the EPP feature of the embedded TP. (14) on the other hand, consists of two phases, and thus two numerations--one for the embedded CP, and the other for the matrix CP. In (14a), the numeration for the embedded CP does not contain *there* (although the numeration for the matrix CP does), and so merge over move is not implicated. In (14b) and (14c), on the other hand, the numeration for the embedded CP does contain *there*, and so *there* must be inserted in the specifier of the embedded TP.

On this view, the contrast between (13) and (14) motivate the selection of a distinct numerations for CP phases, but not transitive vP phases. Indeed, evidence for distinct numerations for transitive vP phases has not been forthcoming. Thus, the merge over move analysis could be carried over straightforwardly to the present system, on the assumption that only CP phases trigger the formation of a distinct numeration.[15]

5. Conclusions

This paper has proposed a mechanism of cyclic agreement mediating between a licensing head and an element in a prior phase. The primary motivation was the agreement relationship between a finite T and an in situ DP, although examples of apparent morphological realization of cyclic agreement were also provided. Further research is needed to determine the full range of constructions that involve cyclic agreement mediating between phases.

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[15] It should be admitted, however, the merge-over-move analysis does not seem satisfactory, and an alternative solution is needed. Therefore, the need to restrict distinct numeration selection to CP phases on the current system to maintain the merge-over-move analysis may not be a relevant consideration.

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