

## *The Anaphor Agreement Effect: further evidence against binding-as-agreement*

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### 1. A very brief overview of the AAE

- The *Anaphor Agreement Effect* (henceforth, *AAE*):
  - an avoidance of  $\varphi$ -feature agreement with anaphors  
~ or ~
  - an avoidance of anaphors in positions targeted by  $\varphi$ -feature agreement

- Example:

- (1) a. **Hún<sub>k</sub>** sagði [að **sig<sub>k</sub>** vantaði peninga].  
**she.NOM** said that **REFL(ACC)** lacked.SBJV money  
(Icelandic)  
'She<sub>k</sub> said that she<sub>k</sub> lacked money.'
- b. **Sigga<sub>k</sub>** telur [að mér líki **hún<sub>k</sub>/\*sig<sub>k</sub>**]  
**Sigga** thinks that me.DAT likes.SBJV **she.NOM/\*REFL(NOM)**  
'Sigga thinks that I like her.' [Maling 1984:216–217]
- the embedded verbs in (1a–b) assign quirky case (ACC and DAT, respectively) to their subjects;
  - in quirky-subject clauses, it is the *object*, rather than the *subject*, that controls agreement
    - ⇒ the refl. *sig* is grammatical in the subject position of such clauses (as shown in (1a))
    - ⇒ and ungrammatical in the object position of such clauses (as shown in (1b))

- Internal to Icelandic, it looks like one could also capture the effect in terms of case — as a ban on nominative anaphors
- ✦ But as pointed out by Woolford (1999), *inter alia*, this fails to generalize cross-linguistically:<sup>1</sup>
  - it is common for languages with case-marking but no agreement to allow nominative anaphors
- (2) **sensei<sub>k</sub>-ni(-wa)** **zibun<sub>k</sub>-ga** wakar-ani-i (Japanese)  
**teacher-DAT(-TOPIC)** **self-NOM** understand-NEG-PRES  
'The teacher<sub>k</sub> does not understand themselves<sub>k</sub>.'  
[Shibatani 1977:800, via Woolford 1999:263]
- An important caveat:
  - this cross-linguistic story requires *a ban on null agreement*
    - as argued, on independent grounds, in Preminger (2019)
  - if Japanese is allowed to have phonologically-null agreement with the nominative, we lose our explanation for why an anaphor is bad in (1b) but good in (2)
    - they'd both involve agreement with the nominative *in the syntax*, with Japanese just happening not to expone this at PF
- ⇒ the explanation for the contrast in the acceptability of a nominative reflexive would be lost
- ✦ *Keep this in mind...*

### 2. What this talk is & isn't about

- The AAE seems to suggest that anaphora and  $\varphi$ -agreement interact with each other quite closely
- ✦ That, in turn, has been occasionally taken as support for the view that anaphoric binding reduces to  $\varphi$ -agreement
  - see, e.g., Reuland (2011:261–262)
- Now, there is plenty of evidence *unrelated to the AAE* showing that anaphoric binding does not reduce to  $\varphi$ -agreement

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<sup>1</sup>Also relevant here is that in Icelandic dative-nominative ECM constructions, pronominal disjoint-reference effects (i.e., Condition B effects) seem to covary with whether or not the nominative infinitival subject has been agreed with (see Taraldsen 1995, Murugesan et al. 2017). This is equally unexpected if the AAE is a case-theoretic ban on nominative anaphors.

- One such source of evidence concerns directionality: anaphoric binding transmits values **DOWNWARD** in the structure
  - from a c-commanding binder to a c-commanded bindee
- Whereas  $\varphi$ -agreement only ever transmits values **UPWARD** in the structure
  - from a c-commanded goal to a c-commanding probe
    - see, e.g., Keine & Dash (2018), Polinsky & Preminger (2017), Preminger (2013) and Preminger & Polinsky (2015)
    - but see also Bjorkman & Zeiljstra (2018), who inadvertently provide a fairly strong argument against **DOWNWARD**-valuation in  $\varphi$ -agreement —
      - by making explicit the vast and problematic set of assumptions that would be required to support such a theory<sup>2</sup>

⇒ *The idea that anaphora is underpinned by  $\varphi$ -agreement flies in the face of what we know about the structural properties of the two relations.*

- Another source of evidence that anaphoric binding does not reduce to  $\varphi$ -agreement concerns the ban on null agreement
  - I've argued in Preminger (2019) that there is generally no such thing as null  $\varphi$ -agreement
    - i.e., syntactic agreement in  $\varphi$ -features that is not exponed—either as “pure” agreement or as clitic doubling—simply does not exist
  - and, as noted above, such an assumption is *independently* necessary in order for the AAE to even be statable, cross-linguistically
- But it is a truism that anaphora exists where no overt exponence of  $\varphi$ -agreement is found
  - e.g. there are many languages where there is no overt  $\varphi$ -agreement
  - but those languages still have anaphoric binding

⇒ *The idea that anaphora is underpinned by  $\varphi$ -agreement requires assumptions (viz. the existence of null agreement) that make the AAE unstateable in the first place.*



- Today, I'd like to present a different kind of argument against a reduction of anaphora to  $\varphi$ -agreement
  - also from the AAE
- I will do this by taking a careful look at what a reductionist theory entails for accounts of the AAE.

### 3. Reductionist theories in the harsh light of the AAE

Some utility definitions:

- (3) Let  $F_\varphi$  be the formal process or relation that values the  $\varphi$ -features on a functional head using the  $\varphi$ -feature values found on one or more DPs.
  - e.g. Chomsky's 2001 *Agree* — or, for those who prefer a theory of  $\varphi$ -agreement that actually works, Preminger's 2014  $\text{FIND}_\varphi$
- (4) Let  $\text{DP}[A]$  be the anaphor, and let  $\varphi(\text{DP}[A])$  be the  $\varphi$ -features borne by  $\text{DP}[A]$  at a given stage of the derivation.
- (5) Let  $\text{DP}[B]$  be a potential binder, and let  $\varphi(\text{DP}[B])$  be the  $\varphi$ -features borne by  $\text{DP}[B]$  at a given stage of the derivation.
- (6) Let  $H^0$  be the  $\varphi$ -probe that putatively agrees with  $\text{DP}[A]$  (i.e., the  $\varphi$ -probe that, if  $\text{DP}[A]$  were replaced with a non-anaphoric nominal  $\alpha$ , would enter into  $F_\varphi$  with  $\alpha$ ).

#### 3.1. $\varphi$ -(in)completeness

- Foundational assumptions for this approach:
  - anaphors are referentially dependent
  - referential dependence is syntactically represented by  $\varphi$ -feature deficiency
- Immediately, we need to recognize two logical possibilities:

<sup>2</sup>To name one example, Bjorkman & Zeiljstra's (2018) proposal requires that all  $\varphi$ -agreement include a *checking* component alongside *valuation*—an assumption that we know is false (see Preminger 2011, 2014).

- (i)  $\varphi$ -deficiency is a matter of ‘unvaluedness’
    - that is, anaphors can, structurally speaking, carry the full range of  $\varphi$ -feature values that other DPs carry
      - they just happen not to, *at the derivational stage* at which they are targeted for  $\varphi$ -agreement
    - i.e.,  $\varphi(\text{DP}[A]) \neq \varphi(\text{DP}[B])$  when  $F_\varphi(H^0, A)$  applies
      - and changes yielding  $\varphi(\text{DP}[A]) = \varphi(\text{DP}[B])$  occur only later in the derivation
  - (ii)  $\varphi$ -deficiency is a matter of inability to carry  $\varphi$ -feature values at all
    - i.e.,  $\varphi(\text{DP}[A]) \neq \varphi(\text{DP}[B])$  throughout the course of the derivation
- While logically possible, it seems clear that we can dismiss (ii) outright
    - since it is the case that anaphors in many languages show the full range of  $\varphi$ -feature distinctions available to other DPs in the language

- ⇒ Case in point: even if it is true that *some* anaphors are categorically unable to carry (some)  $\varphi$ -features —
- this fails as an explanation of the AAE, inasmuch as the AAE applies to the class ‘anaphors’
    - and that class undeniably includes expressions that show the full range of  $\varphi$ -distinctions available in their language
  - So this brings us back to (i): anaphors lack  $\varphi$ -features *at the derivational stage* at which they are targeted for  $\varphi$ -agreement
    - which leads us to...

**INTERLUDE:** *What if ‘anaphor’ is not a natural class?*

- The inference just drawn, as well as others I will be drawing in this talk, only goes through if ‘anaphor’ is a natural class
  - otherwise, it is unsound to carry over conclusions from one member of the class to the others
- And there is a growing body of work suggesting that there are in fact different types of anaphors (see, e.g., Sundaresan to appear)
- That said, different types do not yet imply that ‘anaphor’ is not a natural class (cf. ‘plosive’)
- In fact, if it is not, then the AAE is (definitionally) an epiphenomenon
  - and couldn’t possibly provide support for a reduction of anaphora to  $\varphi$ -agreement (or for anything else, for that matter)
- And so, my work here would, in some sense, be done!
- I will continue to assume there is a natural class ‘anaphor’
  - **WORKING DEFINITION:** those nominal elements whose reference is necessarily dependent on another nominal in the sentence

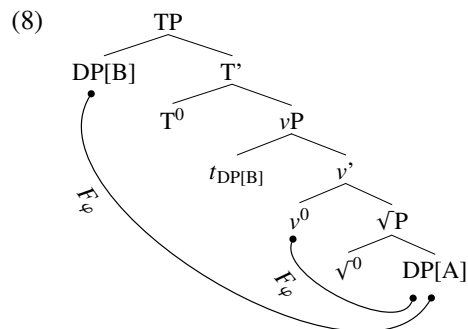
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(Handout continues on next page.)*

3.2. (timing-based approach to AAE)  $\wedge$  (binding-as-agreement) =  $\perp$

- As already noted, a timing-based approach to the AAE requires the following to hold:

(7) NECESSARY CONDITION FOR TIMING-BASED ACCOUNTS OF THE AAE  
 $\varphi$ (DP[A])  $\neq$   $\varphi$ (DP[B]) when  $F_\varphi(H^0, DP[A])$  applies

- I will now demonstrate that (7) is incompatible with a reduction of anaphora to  $\varphi$ -agreement
- If the reduction of anaphora to  $\varphi$ -agreement holds, then, by hypothesis,  $F_\varphi$  (e.g. *Agree $_\varphi$* ) underpins anaphoric binding, as well
- In order to follow along with the next part, it may be useful to envision a rather straightforward anaphoric binding scenario —
  - binding of a reflexive direct object by its clausemate subject, in a language with  $\varphi$ -agreement between  $v$  and the direct object



- On the reductionist view, the following must be true of  $F_\varphi$ :
  - $F_\varphi$  is able to apply countercyclically
    - changing (valuing) the features on a syntactic object, e.g. DP[A], long after that object is no longer near the root of the tree
    - at most, one could envision a demand whereby the *supplier* of the relevant values, e.g. DP[B], must be near the root of the tree
  - $F_\varphi$  does not treat the verb phrase (VP/vP/VoiceP/<whatever>) as a relevant locality boundary
    - whether this is because the verb phrase is never a phase (Keine 2017; see section 5.1); or because  $F_\varphi$  is actually composite, and mediated by intervening functional heads (it makes no difference for our current concerns)

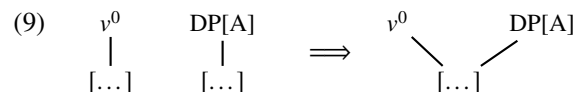
- Now here's where the rubber meets the road:
  - if  $F_\varphi$  is countercyclic,  $v^0$  should be able to probe DP[A] *after* the latter's features have been valued by DP[B]
    - $\Rightarrow$  premise (7) is false
  - even if we add the assumption that at least one of the operands of  $F_\varphi$  must be near the root of the tree —
    - then at the point that DP[B] is merged, if  $v^0$  still lacks  $\varphi$ -features, DP[B] should value it
    - in fact, because  $v^0$  and vP are one and the same object (*Bare Phrase Structure*; Chomsky 1994):
      - DP[B] would have to value  $v^0/vP$  and not DP[A], at least initially; anything else would violate minimality
    - $\Rightarrow$  again, showing that premise (7) is false
  - at best, this hypothesis predicts that anaphors would *never* show  $\varphi$ -feature-matching with their antecedents, but the proximate  $\varphi$ -probes would behave as though they did (which is obviously incorrect)  $\Rightarrow \perp$

- QUESTION: Could the problem be *phases*...?
  - perhaps all of the above does happen, but  $v^0$  has already been spelled out by the time DP[B] tries to value its  $\varphi$ -features
  - and that's why we never see valuation of  $v^0/vP$  by DP[B]
- ANSWER: To the extent that this is true of  $v^0$ , it is also true of DP[A]
  - $\Rightarrow$  falsely predicting that anaphors could never exhibit  $\varphi$ -feature-matching with their binders  $\Rightarrow \perp$

(To put this another way: a reduction of anaphora to  $\varphi$ -agreement requires assumption (ii), above, and so phases are not a possible explanation for what's going on here.)

- Finally, I've been assuming that the relevant copy of DP[B] is the one in [Spec,TP]
  - to give the timing story its best chance at success
- If the relevant copy is the one in [Spec,vP], things are *at least* as bad (and possibly worse) for the timing story
  - since there is even less time between the merger of  $v^0$  and DP[A] and the merger of DP[B]

- But wait! Things actually get *even worse* for the reductionist view —
  - if  $F_\varphi$  is supposed to underpin  $\varphi$ -agreement, then there's a few other things we know about it:
    - $F_\varphi$  does not “check features”;
    - nor does  $F_\varphi$  “copy” features values from one head to another;
  - rather,  $F_\varphi$  creates a feature-sharing structure
    - wherein multiple syntactic nodes become linked to a single feature structure



(Andrews 1971, Frampton & Gutmann 2000, 2006, Gazdar et al. 1985, Pesetsky & Torrego 2007, Pollard & Sag 1994, Preminger 2017, a.o.)

$\Rightarrow$  meaning **any** subsequent  $\varphi$ -values associated with DP[A] will, automatically and unavoidably, show up on  $v^0$  as well

- All in all, it's clear that there's overwhelming reason to reject a timing-based account of the AAE, when coupled with a reduction of anaphoric binding to  $\varphi$ -agreement

### 3.3. Timing without reductionism

- A *super-duper important caveat*: the contradictions noted above only obtain if we insist on reducing anaphoric binding to  $\varphi$ -agreement

$\Rightarrow$  If we accept that anaphoric binding is a **formally separate process** —

- which is counter-cyclic and DOWNWARD-valuing

— and unrelated to  $\varphi$ -agreement —

- which is cyclic and UPWARD-valuing

— then we can maintain premise (7) (repeated here)

- and derive the AAE from it

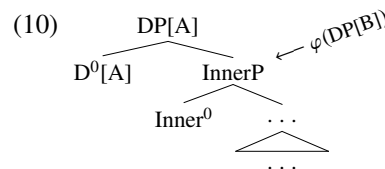
(7) NECESSARY CONDITION FOR TIMING-BASED ACCOUNTS OF THE AAE  
 $\varphi(\text{DP}[A]) \neq \varphi(\text{DP}[B])$  when  $F_\varphi(H^0, A)$  applies

- By the time we are done, I will have argued that this is not quite the right approach to the AAE, either

- nevertheless, it is a logical possibility;
- but only if we accept that  $\varphi$ -agreement and anaphoric binding are formally distinct, as detailed above.

### 3.4. Encapsulation

- Given that we cannot maintain a timing-based account of the AAE while reducing anaphoric binding to  $\varphi$ -agreement —
  - let us consider an alternative, which I'll refer to as *encapsulation*
- Suppose that the anaphor does enter into  $F_\varphi$  with DP[B] —
  - but that the constituent whose  $\varphi$ -features are consequently valued is only a proper *subpart* of DP[A]



$\Rightarrow$  When probed from the outside, DP[A] will appear to lack the relevant  $\varphi$ -feature values transmitted from DP[B]

- since those will reside on InnerP (and/or Inner<sup>0</sup>), and be inaccessible from the outside

• But now notice:

If anaphoric binding reduces to  $F_\varphi$  (= the reductionist hypothesis) —

$\Rightarrow$  it follows that InnerP, and not DP[A], is what bears the binding index

$\Rightarrow$  and, consequently, it follows that the binding index on anaphors does not c-command out of DP[A]

• **This is a testable prediction:**

- (11) a. John<sub>i</sub> expects Mary to outdo him<sub>i/k</sub>.  
 b. John<sub>i</sub> expects himself<sub>i</sub> to outdo him<sub>k/\*i</sub>. [Norvin Richards, p.c.]

- ex. (11a) does not induce a disjoint-reference effect on the pronoun
  - meaning *John* is too far away from the pronoun to enter into a binding relation

$\Rightarrow$  the cause of the disjoint-reference effect in (11b) must be the reflexive anaphor, *himself*

- but this could only be the case if the binding index on *himself* resided on the outermost projection of the anaphor
  - in contradiction to (10)
- ⇒ The encapsulation hypothesis might be right (in fact, I will argue shortly that it is) —
  - but only if the  $\varphi$ -features of the anaphor and its binding index are not linked to one another
  - i.e., only if the reduction of anaphoric binding to  $\varphi$ -agreement is incorrect.



Here's another argument to the same effect —

- Consider reflexives in Basque
  - These have the structure in (12):
- (12) [PRON.GEN N D]
- where PRON.GEN is a (strong or weak) possessive pronoun, and N is the noun *buru* (“head”)
- (in line with a common crosslinguistic strategy of forming reflexives from possessed body-part nouns)
- (13) a. <pro<sub>2pl.ERG</sub>> [ zeuen buru-a ] saldu d-∅-u-zue  
2pl(strong).GEN head-ART<sub>sg</sub>(ABS) sold 3A-sgA-√-2plE  
‘Y’ all have given yourselves away’  
(lit.: ‘Y’ all have sold y’ all’s head.’)
- b. <pro<sub>2pl.ERG</sub>> [ zuen buru-a ] saldu d-∅-u-zue  
2pl(weak).GEN head-ART<sub>sg</sub>(ABS) sold 3A-sgA-√-2plE  
‘Y’ all have given yourselves away’  
(lit.: ‘Y’ all have sold y’ all’s head.’) [Artiagoitia 2003:620]
- NB:** both examples are also possible with a plural head noun (*buru-ak* “head-ART<sub>pl</sub>(ABS)”; Artiagoitia 2003:621)
- cf.: *The plastic surgeons gave each other a new nose / new noses.*

- As the ABS agreement morphology in *exx.* (13a–b) makes clear, Basque obeys the AAE:
  - Basque reflexives don’t exhibit “true”  $\varphi$ -agreement;

- they are agreed with as 3sg expressions regardless of the  $\varphi$ -features of their referent or antecedent
    - the relevant sentences are in fact all ambiguous with a (usually nonsensical) reading where they are literally about someone’s body-part, *head*
  - Under a view that assumes that  $F_\varphi$  underpins anaphoric binding:
    - these facts entail that the binding index associated with this reflexive binding relation cannot reside at the level of the outermost DP —
      - since the  $\varphi$ -features of the antecedent *are* tracked by the reflexive, but not at the level of the outermost DP
    - instead, the binding index must reside on the  $\varphi$ -bearing subpart of the reflexive, i.e., on PRON.GEN
  - But this is incongruous:
    - the possessor in these Basque examples is pronominal, not anaphoric;
    - it is the kind of expression that is subject to Condition B of the binding theory, not Condition A
  - Consider:<sup>3</sup>
- (14) Mirandek<sub>i</sub> [ bere<sub>i</sub> buru-a ] hil z-∅-u-en  
Mirande.ERG 3sg.GEN head-ART<sub>sg</sub>(ABS) killed 3A.3sgE-sgA-√-PAST  
‘Mirande killed himself.’  
(lit.: ‘Mirande killed his head.’) [Artiagoitia 2003:621]
- (15) Peio<sub>i</sub> erran d-∅-u-∅ [ bere<sub>i</sub> zakurra hil dela ]  
Peio.ERG say 3A-sgA-√-3sgE his dog.ART<sub>sg</sub>(ABS) die AUX.that  
‘Peio<sub>i</sub> said [that his<sub>i</sub> dog died].’ [western dialects; Artiagoitia 2003:626]
- ⇒ Placing the binding index on the possessor in (14) would render it entirely mysterious that:
- the possessor in (14) **requires a local antecedent**;
  - while the one (15) **does not**.<sup>4</sup>

<sup>3</sup>Thanks to Karlos Arregi, Aitor Lizardi Ituarte, and Juan Uriagereka, for helpful discussion.

<sup>4</sup>See Amiridze (2003) for related observations about Georgian.

## 4. Interim Summary

- We have seen that the AAE provides circumstantial evidence against the reduction of anaphoric binding to  $\varphi$ -agreement
    - by rendering untenable a *timing*-based approach to the AAE (straightforward logical incompatibility)
    - and by rendering untenable an *encapsulation*-based approach to the AAE (evidence from English)
  - And we have seen that the AAE also provides direct evidence against such a reduction (evidence from Basque)
- ⇒ Any proposal that assumes such a reduction (Kratzer 2009, for example) is necessarily wrong.

✦ This leaves us with two fairly pressing questions:

- (i) What accounts for the AAE?\*
- (ii) What accounts for  $\varphi$ -feature-matching between the reflexive and its binder?\*

\*Now that we've seen that anaphoric binding most certainly does not arise via  $F_\varphi$

## 5. Whence the AAE?

### 5.1. Against a timing approach more generally

- As noted in section 3.3, the results to that point were compatible with a theory of the following kind:
    - (i) anaphoric binding and  $\varphi$ -agreement have nothing to do with one another; *and*
    - (ii) the AAE arises because of cyclicity
      - in particular, the  $\varphi$ -probe probes the anaphor *before* the latter has received its  $\varphi$ -features
- ✦ But notice, now, that given the results of section 3.4, this is at best a kind of “conspiracy”:
- we wouldn't expect the  $\varphi$ -features on the Basque reflexives —
    - buried, as they are, in the DP-internal possessor
  - to be accessible from the outside
    - even if they made it there “in time” for  $\varphi$ -probing

### There's more:

- **First**, Keine (2017) shows—quite convincingly, in my mind—that the verb phrase (e.g. vP) never constitutes a phase
  - In a nutshell, the argument is as follows:
    - both the licensing of *wh*-in-situ and long-distance agreement (LDA) in Hindi are disrupted by even a single intervening CP boundary
- (16) \* siitaa-ne soc-aa [CP ki ravii-ne kis-ko dekh-aa ]  
Sita-ERG think-PERF.M.SG that Ram-ERG who-ACC see-PERF.F.SG  
*Intended*: ‘Who did Sita think that Ravi saw?’  
[Mahajan 2000:319, via Keine 2017:182]
- (17) laṛkō-ne soc-aa/\*-ii [CP ki monaa-ne ghazal  
boys-ERG think-PERF.M.SG/\*-PERF.F.SG that Mona-ERG ghazal.F  
gaa-yii thii ]  
sing-PERF.F.SG be.PERF.F.SG  
‘The boys thought that Mona had sung ghazal.’  
[Bhatt 2005:776, via Keine 2017:181]
- but they can cross an unbounded number of verb-phrase peripheries (e.g. in cases of infinitival embedding)
- (18) a. tum [inf. kyaa kar-naa ] jaan-te ho?  
you what do-INF.M.SG know-IMPF.M.PL be.PRES.2PL  
‘What did you know to do?’ [Dayal 1996:23, via Keine 2017:183]
- b. ? raam [inf. [inf. kyaa khaa-naa ] phir-se shuruu kar-naa  
Ram-ERG what eat-INF.M.SG again start do-INF.M.SG  
] caah-taa hai?  
want-IMPF.M.SG be.PRES.3SG  
‘What does Ram want to start to eat again?’ [Keine 2017:183]



(19) a. raam-ne [inf. bhains ke aage *biin* bajaa-nii ]  
Ram-ERG buffalo in.front.of flute.F.SG play-INF.F.SG  
caah-ii  
want-PERF.F.SG  
'Ram wanted to do something futile.' (*idiomatic*)

[Keine 2017:179]

b. ? raam-ne [inf. [inf. bhains ke aage *biin* bajaa-nii ]  
Ram-ERG buffalo in.front.of flute.F.SG play-INF.F.SG  
shuruu kar-nii ] caah-ii  
start do-INF.F.SG want-PERF.F.SG  
'Ram wanted to start to do something futile.' (*idiomatic*)

[Keine 2017:180]

- o crucially, the examples in (18–19) involve the relevant relation (*wh* or LDA) crossing multiple transitive verb-phrase boundaries:
    - two transitive verb phrases in each of (18a, 19a), and three transitive verb phrases in each of (18b, 19b)
  - o by itself, this might suggest an analysis involving A-movement of the *wh*-phrase/ LDA-target
    - since A-movement can escape (some) infinitives, but not (most) finite clauses
  - however, Keine has cleverly selected, in the *wh*-element *kyaa* and in the idiomatic chunk in (19), elements that are independently known to resist movement
    - even short, clause-internal scrambling (see Keine 2017:182–183, Bhatt & Keine to appear for details)
- ⇒ the relations in question are bona fide in-situ relations  
 ⇒ CP is a phase, but a verb-phrase (e.g. *vP*)—even a transitive one—is not
- **Second**, we know that  $\varphi$ -agreement is (to a limited degree) counter-cyclic
    - o in that an instance of  $\varphi$ -agreement that would fail on a strictly cyclic derivation can be rescued by a later operation in the same phase:

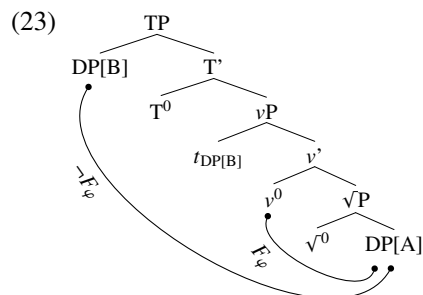
(20) [Einhverjum stúdent]<sub>1</sub> finnast *t*<sub>1</sub> tölvurnar ljótar  
some student.DAT find.PL computers.the.NOM ugly  
'Some student finds the computers ugly.'

(21) það finnst/\*finnast [einhverjum stúdent] tölvurnar ljótar.  
EXPL find.SG/\*find.PL some student.DAT computers.the.NOM ugly  
'Some student finds the computers ugly.'

(22) Hverjum<sub>1</sub> hafa<sub>2</sub> strákar<sub>3</sub> *t*<sub>2</sub> virst *t*<sub>1</sub> *t*<sub>3</sub> vera gáfaðir?  
who.DAT have.PL boys.the.NOM seemed be.INF intelligent  
'Who did the boys seem intelligent to?'  
[Holmberg & Hróarsdóttir 2003:999–1000, 1010]

- crucially, the intervention-ameliorating movement in (22) (chain 1) is C<sup>0</sup>-related movement
  - thus, the amelioration of intervention in (22) is, to a limited degree, counter-cyclic (given that agreement happens in Icelandic at TP)

- **Now**, let's put the last two pieces together:
    1. there is no phase boundary verb-phrase level (VP/*vP*/VoiceP)
    2. an instance of  $\varphi$ -agreement that would fail can be repaired by operations that happen later in the same phase
- ⇒ Anaphoric binding, if it truly transferred  $\varphi$ -features from the binder to the anaphor, could feed successful agreement with the anaphor (at least in the maximally local case, where binder and anaphor are in the same CP)



- This shows that a timing-based approach to the AAE is wrong *even if anaphoric binding and  $\varphi$ -agreement are formally distinct(!)*

## 5.2. In search of an account of the AAE: encapsulation again

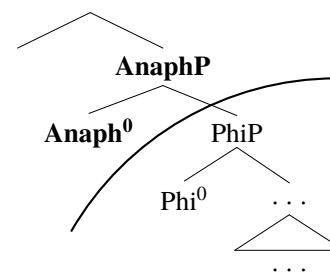
- Let's step back for a moment and ask, in a fairly theory-neutral way:
  - *What is it that a theory of the AAE needs to deliver?*
- It needs to deliver an avoidance of (24a) and (24b) holding of a single XP:

- (24) a. XP bears an anaphoric index.  
b. XP has been target for  $\varphi$ -agreement.

It strikes me that a likely account here is one that appeals to substantives:

- Let us call the kind of elements that bear anaphoric indices *AnaphPs* (which may or may not, in the end, unify with more familiar projections);
- And let us call the kind of elements that bear  $\varphi$ -features *PhiPs* (which, again, may or may not, in the end, unify with more familiar projections).
- Let us furthermore suppose that the case of Basque is indicative of something systematic, in that:
  - **AnaphP is structurally higher than PhiP** (when both are present)
- This state of affairs should sound familiar to any practicing syntactician
  - it is par for the course to assume that certain substantives cannot “cohabit” on a single head
  - for example, syntactic verbs (say,  $v$  or  $V$ ) are not—perhaps ever—the kinds of things that bear tense;
    - that is the purview of a separate syntactic object, namely T/Infl
  - this is not to be confused with the fact that the  $v/V$  and T/Infl often end up spelled out as part of the same morphological complex;
  - that much, in fact, is going to be true for many cases of AnaphP and PhiP, too (though not in Basque)
  - this is precisely why the attempt to unify binding with agreement was not self-evidently moribund from the get-go:
    - when two things are frequently spelled out in the same morphological complex, it takes extra work to show that they are separate projections (cf. Emonds 1970, 1976 on Infl vs.  $V$ )
- All that is required to derive the AAE, then, is the assumption that AnaphP (when present) is syntactically opaque
  - on a par with, say, PPs and all non-nominative/non-absolutive cases in many languages (Demirok 2013)

(25)



- Now, at this juncture, you might think to yourself: “Well now this is a pretty ad hoc solution to the problem.”
- One thing that can be said in response:
  - given our current results, it seems to be the only remaining contender
- But more interesting, in this regard, is recent work by Middleton (2018):
  - Middleton has looked at 86 languages (from 13 language families)
    - specifically, at the forms used to convey the following four meanings:

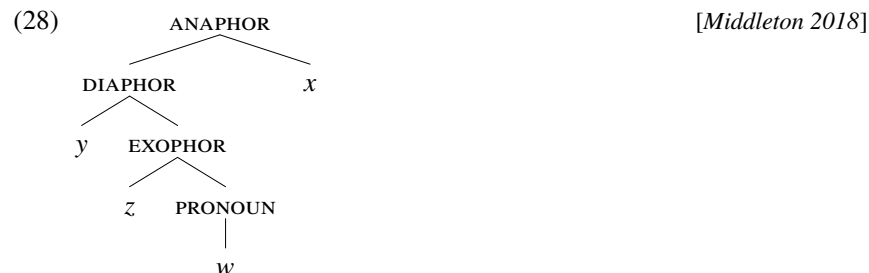
- (26) a. “ANAPHOR”  
Diana  $\lambda x (x \text{ thinks that only Charles } \lambda y (\underline{y}) \text{ loves } (\underline{y}))$
- b. “DIAPHOR”  
only Diana  $\lambda x (\underline{x}) \text{ thinks that Charles } \lambda y (y \text{ loves } (\underline{x}))$
- c. “EXOPHOR”  
only Diana  $\lambda x (x \text{ thinks that Charles } \lambda y (y \text{ loves } (\underline{z})), (\underline{z}) = \text{Diana})$
- d. “PRONOUN”  
only Diana  $\lambda x (x \text{ thinks that Charles } \lambda y (y \text{ loves } (\underline{z})), (\underline{z}) \neq \text{Diana})$

- and what she shows is:
  - the four forms that each language uses for the four most-embedded nominal expression in (26a–d) are subject to a **no-discontinuous-syncretism** constraint
    - e.g. English is ABBB (*herself, her, her, her*)
    - but no language is, e.g., ABCA

- moreover, some languages show **transparent containment** in their morphology
  - e.g. Peranakan Javanese of Semarang (PJS; Cole et al. 2007):<sup>5</sup>

- (27) a. **ANAPHOR**: *awake dheen dhewe*  
 b. **DIAPHOR/EXOPHOR**: *awake dheen*  
 c. **PRONOUN**: *dheen*

- from these two facts (the absence of discontinuous syncretism, and the existence of transparent containment) —
  - it follows that the only system that could capture these facts is one that involves structural containment
    - see Bobaljik (2012) and Bobaljik & Sauerland (2018) for detailed discussion



- now, wherever my PhiP is, it is clearly *at least* as low as Middleton’s PRONOUN
  - given that pronouns can be, and are, agreed with
- and my AnaphP is at least as high as Middleton’s DIAPHOR

⇒ We therefore have converging evidence for the kind of structure in (25), above

- where the anaphoric layer is distinct from, and higher than, the phi-bearing layer

## 6. Whence $\varphi$ -matching?

- Given everything said in this talk so far:
  - it cannot be that anaphors match the  $\varphi$ -features of their binders due to syntactic  $\varphi$ -feature agreement (what I have called  $F_\varphi$ )

⇒ How does  $\varphi$ -feature-matching between anaphor and binder come about?

- HERE’S A SKETCH OF AN ANSWER:  
it comes about in the meaning component
    - via the meaning contribution of  $\varphi$ -features
    - in particular, let’s take as a starting point the presuppositional theory of  $\varphi$ -feature meanings (as in Heim & Kratzer 1998)
  - Let  $Z(S)$  be a function from a set of  $\varphi$ -features  $S$  to the set of individuals for which  $\llbracket S \rrbracket$  is defined
    - roughly:  $Z(S)$  returns the set of individuals that the  $\varphi$ -set  $S$  “refers to”
  - Now, if a DP bears a set of  $\varphi$ -features  $S$ :
    - the interpretation assigned to the DP is in  $Z(S)$  (definitionally)
- ⇒ Consequently, if an anaphor bears index  $i$ :
- the individual  $g(i)$  (where  $g$  is the assignment function) must fall within the set identified by  $Z(S)$
  - E.g. if the antecedent carries plural  $\varphi$ -features, and bears index  $i$ , then:
    - any bindee bearing index  $i$  will only be interpretable if its set of  $\varphi$ -features  $S$  carves out a set of individuals that includes  $g(i)$ 
      - i.e., plurals
  - This generally ensures that pairs of expressions bearing the same syntactic index will bear the same sets of  $\varphi$ -feature values.

- Now, at this juncture, you might be saying to yourselves:  
“But what about  $\varphi$ -features that *aren’t* interpreted (pluralia tantum / grammatical gender on inanimates / etc.)?”

<sup>5</sup>*awake* literally means “body” in PJS.

- These are actually not problematic on the present approach:
  - if  $S = \{\text{PLURAL}\}$ , then *by the definition just given*,  $\llbracket \text{“scissors”} \rrbracket \subset Z(S)$ 
    - and similarly for grammatical gender on inanimates
- QUESTION: Doesn't this run counter to the notion of “interpretation function” in the first place?
  - after all, features like plural on pluralia tantum or grammatical gender on inanimates don't seem to be “interpreted” in the usual sense
- ANSWER: Whatever our intuitions on this matter are, these conclusions are forced on independent grounds
- Example:
 

(29) Speaker A “Where are the scissors?”  
Speaker B “They are right here.”

  - consider the expression *they* in Speaker B's utterance
  - it would be logically incoherent to speak of a syntactic relation (*Agree*,  $F_\varphi$ , whatever) holding between this expression and the expression *the scissors* in Speaker A's utterance
  - that is because:
    - syntactic relations are grammatical entities;
    - a grammar is, by definition, a mental object;
    - and minds are, by definition, confined to individual speakers.

⇒ for *they* to refer to *the scissors* in this instance:

  - it must be the case that  $S = \{\text{PLURAL}\} \rightarrow \llbracket \text{“scissors”} \rrbracket \subset Z(S)$  (as just suggested)
- The same is true for grammatical gender on inanimates:
  - in Kinyarwanda, for example, if one is pointing to a pair of doors, one can say:
 

(30) *ir-a-kingu-ye*  
4SUBJ-PAST-OPEN-PRFV  
‘They are open.’ (‘They have been opened.’)

    - but the agreement marker in (30) is *ir-* because (plural) *doors* are a member of class 4 (rather than class 2, 6, 8, etc.)
    - ⇒ it must be the case that  $S = \{\text{CLASS 4}\} \rightarrow \llbracket \text{“doors (pl.)”} \rrbracket \subset Z(S)$  (again, as just suggested)
- Crucially, this mechanism seems sufficient to account for  $\varphi$ -feature matching between anaphors and their binders
  - given that both the anaphor and its binder carry the same index  $i$ :
    - it follows that  $g(i) \in Z(S_{\text{anaphor}})$  and  $g(i) \in Z(S_{\text{binder}})$
  - assuming that  $\varphi$ -features create, at a reasonable approximation, a partition over the members of the domain of individuals:
    - it follows from this that  $S_{\text{anaphor}} = S_{\text{binder}}$
- Perhaps this mechanism can ultimately be subsumed under, say, Elbourne's (2013) view of pronouns as definite descriptions, or Merchant's (2014) view of them as the residue of ellipsis;
  - but this is immaterial for our current purposes;
- All that matters for us here is that we know for sure that the mechanism in question is not syntax.
  - Just to drive this point home, that  $\varphi$ -feature-matching does not implicate syntax *even for* “uninterpreted” features like grammatical gender etc. — consider:
 

(31) No linguist who has purple pants looks silly in them/\*it.

(32) a. kol exad [e-yeʃ] l-o maxberet [e-ya-sim]  
every one that-EXIST DAT-3sgM notebook<F> that-3sgM.FUT-put  
ot-a/\*ot-o ba-tik (Hebrew)  
ACC-3sgF/\*ACC-3sgM in.the-case  
‘Everyone who has a notebook<F>, put it.F/\*it.M in your bag.’

b. kol exad [e-yeʃ] l-o max[evon] [e-ya-sim]  
every one that-EXIST DAT-3sgM calculator<M> that-3sgM.FUT-put  
ot-o/\*ot-a ba-tik  
ACC-3sgM/\*ACC-3sgF in.the-case  
‘Everyone who has a calculator<M>, put it.M/\*it.F in your bag.’

    - these are instances of Donkey Anaphora; that is:
      - on the relevant reading, the underlined expressions covary
      - and that is despite the absence of c-command (in either direction) between the covarying expressions
      - as well as the fact that the antecedent is buried inside a relative-clause Complex NP island, inside a Subject Island

- this is proof positive that  $\varphi$ -features such as those borne by pluralia tantum, or grammatical gender on inanimates, can be transmitted by a non-syntactic mechanism
  - since a syntax that can relate two expressions in the absence of any c-command or locality holding between the two is no syntax at all
- again, whether this dissolves into something more general —
  - e.g. pronouns as definite descriptions (Elbourne 2013), or pronouns as the residue of NP ellipsis (Merchant 2014);
  - or needs to be handled in terms of the interpretation function itself, as in the sketch above;
- it doesn't matter for our present interests
  - all is crucial is the observation that syntax is not what's responsible.
- This echoes certain aspects of Dowty & Jacobson 1988; except that they're patently wrong about  $\varphi$ -agreement proper —
  - $\varphi$ -agreement is sensitive to case (Bobaljik 2008, *a.o.*); it is subject to a kind of minimality that can be *ameliorated* by A-movement (see exx. (20–21), repeated here); etc. etc.<sup>6</sup>

(20) [Einhverjum stúdent]<sub>1</sub> finnast t<sub>1</sub> tölvurnar ljótar  
 some student.DAT find.PL computers.the.NOM ugly  
 'Some student finds the computers ugly.'

(21) það finnst/\*finnast [einhverjum stúdent] tölvurnar ljótar.  
 EXPL find.SG/\*find.PL some student.DAT computers.the.NOM ugly  
 'Some student finds the computers ugly.'

- properties which binding, crucially, doesn't share
  - binding doesn't care about case
    - in fact, the ability of Icelandic dative subjects to bind subject-oriented anaphors is one of the most striking pieces of evidence that they are indeed subjects (see Zaenen et al. 1985, among many others)
  - nor can A-movement of an intervener ameliorate minimality violations in binding:

(33) a. John seems to Mary *t* to like her/\*herself.  
 b. John seems to her<sub>k</sub>/\*<sub>i</sub> to like Mary<sub>i</sub>.

- A-moving the downstairs subject out of the way does not allow the experiencer in (33a) to bind the downstairs reflexive
- this, even though the experiencer is generally able to bind into the infinitive, as the disjoint-reference effect in (33b) attests

- I think it's fair to say that no semantic account could capture the kind of minimality effects associated with  $\varphi$ -agreement
  - therefore, there's no hope in going "full Dowty & Jacobson"

## 7. Conclusion

- We have seen that the Anaphor Agreement Effect (AAE) does not speak in favor of a reduction of anaphoric binding to  $\varphi$ -agreement
  - contrary to previous claims in the literature
- And, in fact, militates quite strongly against such a reduction
- We have seen that timing-based and encapsulation-based theories are outright incompatible with a reduction of anaphoric binding to  $\varphi$ -agreement
- And we have seen that a timing-based approach doesn't work even if we assume that anaphoric binding and  $\varphi$ -agreement are *separate*
- Having ruled out a reductionist approach, I presented a non-reductionist, encapsulation-based account of the AAE
  - which seems to converge with some recent findings from morphology (Middleton 2018)
- Finally, I discussed the source of  $\varphi$ -feature-matching between anaphors and their binders
  - suggesting that it requires little more than what is independently necessary to negotiate matching  $\varphi$ -features on pronouns across different utterances (and speakers)
    - as well as in the absence of c-command (in Donkey Anaphora)

<sup>6</sup>See Preminger (2014:129–175) for a more comprehensive discussion.

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