Agree and Merge*

Milan Rezac, University of the Basque Country (UPV-EHU)
mrezac@chass.utoronto.ca

Abstract: I develop the Compositional Theory of Movement CTM, decomposing Move into fully independent Merge and Agree (Chomsky 2000). CTM needs a missing link ensuring α Merged in [Spec, HP] λ-binds only the goal Γ of Agree by H. This link is Agree-valuation of H's φ-features, which identifies the variable within H' for Predicate Abstraction. Fully independent of CTM, copy-deletion and Binding Theory determine when Γ is a copy and when a pronominal goal, yielding movement and copy-raising respectively. Γ as *pro* in an Ā-position yields Tough Movement. If H lacks features, α is predicted to freely λ-bind any variable, giving broad subject constructions.

Keywords: Merge; Agree; Movement; Copy Raising; Tough Movement; Copy Theory

1 The Compositional Theory of Movement

Chomsky (2000:101-2, 2001, 2004) proposes the *Compositional Theory of Movement* CTM:

(1) CTM: Movement is not a primitive; it is a composition of (at least) the basic structure-building operation Merge and the dependency-forming operation Agree.

Chomsky (2000:124, 126) also construes Agree as an operation that does not represent the interpretable features of the goal at the position of the target, as in Chomsky 1995:272ff., but rather one which values uninterpretable features which are then deleted (immediately or at the phase-level, Chomsky 2000:131, 2004). Agree dependencies are thus formed phrase-structurally "at a distance," and have no representation at LF. The reasons for this change lie in the inertness of φ-agreement for any principles that might refer to it, for example binding, scope, or control, as shown in Lasnik 1999:chapters 6, 8 from paradigms such as (2).[1]

(2) a Several runners$_i$ seem to each other$_i$ t_i to be likely to win the race.
b *There seem to each other$_i$ to be several runners$_i$ likely to win the race.

CTM is conceptually attractive; as Chomsky (2004) points out, reducing displacement to Merge and Agree gives a suitably minimalist account for the existence of displacement: it does not exist, except as a sequencing of two independent operations, which could only be blocked by stipulation.

However, CTM faces a problem that does not arise if dependency formation unitarily involves movement, as in the Attract-F approach. Consider raising in (3)a. Agree values the φ-probe of the matrix T from the T'-internal *she*, and Merge adds the independent object *she* as the non-thematic [Spec, TP]. I assume Merge [Spec, TP] must follow Agree by T at the T' level

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[1] Replicated by Jónsson (1996:209) for Icelandic and Polinsky and Potsdam (2001:620) for Tsez.

when the complement of T is added, because the phrase-marker is constructed cyclically, and operations at T' contained in TP thus precede operations at TP by the Earliness Principle (Rezac 2003). The problem is the linking up of Agree and Merge: how does Merge, in base-generating matrix [Spec, TP], know to add an object (i) identical to and (ii) interpretively linked to the DP identified by φ-Agree. The two steps, Agree and Merge, are after all independent, and the results of Agree are lost by LF. CTM suggests (3)b should converge, with Case, agreement, and the EPP satisfied as in (3)c, and interpretability of the matrix subject in a non-thematic position assured by variable binding. Depending on the exact story of how Case is assigned in (4)a and (4)b, we might even expect (4)c.

(3) a She$_i$ seems ~~she~~$_i$ to have left.
b *Kate$_i$/every anthropologist$_i$ seems [[her$_i$ conclusions] are promissing].
c To Kate$_i$/every anthropologist$_i$, it seems [[her$_i$ conclusions] are promissing].

(4) a There seems [to be [a story about her] in Ursula's new book].
b [A story about her] seems [to be *t* in Ursula's new book].
c *Kate$_i$/everyone here$_i$ seems [to be [a story about her$_i$] in Ursula's new book].

These problems do not arise if syntactic dependencies always involve movement, the Attract-F approach of Chomsky 1995, where some interpretable subset of the goal is represented at the target at LF. The displaced object can only be identical to some subset of the original goal, which also makes interpretive linking trivial. The problem only arises because Agree-valued features delete and Merge is an independent step. Short-term derivational memory to link them up thus seems implicit in CTM.

At the same time, the non-identity predicted by CTM is met in *copy-raising* CR structures (5), where the non-thematic matrix subject is interpretively linked to a lower pronoun. These structures support the reduction of structure-building in movement to Merge, which is ultimately free to Merge anything, such as an expletive or a DP different from the one it is linked to. Like movement, CR relies on Agree with its locality for the identification of the goal, blocking (5)b. I justify these conclusions in section 2, arguing that both constructions equally instantiate CTM. Thus the non-identity predicted by CTM is correct, but CR faces the same linking problem as movement. Finally, it must be determined how CTM distinguishes copy-raising (5)a from raising (2)a, as well as from the impossible (3)b, (4)c.

(5) a The shoe$_i$ seems like [it$_i$'s on the other foot].
b *The other foot$_i$ seems like [the shoe's on it$_i$].

This paper develops CTM to resolve these problems, and demonstrates its consequences in unifying various constructions with movement as Agree-Merge sequences, while independent principles differentiate their spell-out and interpretation. Section 3 addresses the core problem of linking a DP Merged in a non-thematic position to the goal of independent Agree. The proper result is obtained by changing the interpretation of non-thematic DPs in Heim and Kratzer 1998 to use φ-features to determine variable names, which Agree transfers. Section 4 shows that independent principles, namely the copy-deletion algorithm and Binding Theory, derive the differences between movement and copy-raising, which turn on whether the Merged DP is to be linked to a copy or a pronoun. Sections 5 and 6 show that CTM thus developed directly predicts

the properties of DPs base-generated as sisters to non-agreeing predicates, so-called *broad subjects*, and the class of operator predication structures where a non-thematic DP is linked to an Ā-pronoun, *tough movement* constructions. Section 7 addresses extension to movement structures not given separate consideration here, and concludes.

2 A-movement and copy-raising

Both A-movement and copy-raising involve interpretively linked DPs, the higher λ-binding the lower (section 3). A-movement gives rise to reconstruction effects for quantifiers, which I take to follow from the copy-theory of movement (Chomsky 1995:chapter 3, Sauerland 1998, 2004, Fox 2000, 2002).[2] CR can be demonstrated to require a quantificational subject to be interpreted in the matrix [Spec, TP]. A-movement thus links copy-identical DPs, while in CR a DP links to an *e*-type object, a pronoun.

CR is studied for English in Rogers 1971, 1972, 1974ab, Heycock 1994:272ff., Potsdam and Runner 2001, Asudeh forthcoming; cf. Moore 1998 for Turkish, Branigan and MacKenzie 2001, Bruening 2001 for Algonquian, Artiagoitia 2001 for Basque. Their relevant properties seem identical (Rezac 2004a:chapter 3); I will keep to English. CR involves a non-thematic DP in [Spec, TP] of a raising verb linked to an overt pronominal variable in the next lower clause, as in (5)a:

(6) a $[_{TP}\ \underline{DP}_i\ [T_{\varphi i}\ \ldots\ [_{CP}\ [_{TP}\ \text{pronoun}_i\ \ldots\ ]]]]$ CR
b $[_{TP}\ \underline{DP}_i\ [T_{\varphi i}\ \ldots\ (*[_{CP})\ [_{TP}\ \text{pronoun}_i\ \ldots\ ]]]]$ A-movement

Potsdam and Runner (2001), expanding on Rogers's work, show that as in raising DP_i in CR is not selected by its matrix verb; [Spec, TP] here can be an expletive as in (7)a, and DP_i can be an idiom chunk as in (5)a and (7)b, (7)c.[3]

(7) a %There looks like there's gonna be a riot.
b %The shit appears as though it's going to hit the fan very soon.
c %Exception seems like it was taken to the recounting of votes.

Numerous tests indicate that CR cannot reconstruct for quantifier scope (Heycock 1994, Potsdam and Runner 2001), while A-movement in general can (cf. Boeckx 2001, Sauerland 2003, von Fintel and Iatridou 2002). (8)a has the readings (8)b and (8)c, the latter resulting from interpretation of the quantifier in the lower copy below the intentional operator of *seem*. The subject in English CR has unambiguous scope above the matrix verb, as in (9) from Potsdam and Runner 2001, lacking the latter reading.

(8) a Two people$_i$ seem t_i to have won the lottery. 2 <> *seem*
b It seems that two people have won the lottery. *seem* > 2
c Two people are such that they seem to have won the lottery. 2 > *seem*

(9) a Two people$_i$ seem like they$_i$ have won the lottery. **seem* > 2, 2 > *seem*

[2] Setting aside NP-contained anaphora, where there seem good reasons to seek a logophoric alternative.
[3] While there is speaker variation in acceptability, a set of speakers find this perfect; it is their idiolects that are relevant; see n. 8 on non-CR constructions which resemble it.

b =Two people are such that they seem like they have won the lottery. 2 > *seem*
c ≠It seems like two people have won the lottery. *seem* > 2

The evidence of this paradigm is very specific: there is no copy of the DP subject below *seem* in CR, as there is in raising. That rules out not only base-generation within the embedded clause, but also at its edge but still below *seem*.

The same conclusion can be drawn from the fact that CR but not raising results in individual-level predication (Heycock 1994:293f., cf. Doron and Heycock 1999). A bare noun subject in CR can only get a generic interpretation, not an existential one, which the subject of a stage-level predicate could.

(10) a #Snow sounds/seems like it's falling on the mountain.
b Snow seems to be falling on the mountain.
c Snow sounds like it must be a strange thing: hexagonal ice crystals falling out of the sky?
(Heycock 1994:293-4)

Kratzer (1995) and Diesing (1992:chapter 2) argue that the availability of an existential reading for bare nouns depends on binding by the existential closure operator of clausal partition theories. This operator is located somewhere between T' and VP. The absence of an existential reading for individual level predicates is taken as evidence that their subjects, unlike those of stage-level predicates, do not reconstruct below [Spec, TP]. The result transfers to CR: there is no copy of the matrix subject where it could be bound by the existential closure operator, as there is in A-movement.

This difference stands in contrast to the identical locality restrictions shared by CR and A-movement. A-movement is restricted to the closest DP accessible to the φ-system (Rizzi 1990, McGinnis 1998); this results from the locality of φ-Agree, which can be divorced from the movement phenomenon if the EPP is independently satisfied:

(11) a Three linguists$_i$ seem [*(to) John] [t_i to have left].
b There seems [*(to) John] [to have left three linguists].

Interestingly, CR obeys the same locality, as concluded by Ura (1998), Potsdam and Runner (2001). The contrast in (5) illustrates that the matrix subject in CR may only be linked to a pronoun in the next lower [Spec, TP]. (12) is a further illustration; Moore (1998:173ff.) shows the same for parallel CR in Turkish, Artiagoitia (2001) for Basque. As in raising, the matrix position may be filled by an expletive. Groat (1997:122f.) shows that there is then agreement

with the subject of the embedded clause, (13).[4] (13) thus exemplifies pure φ-Agree in a cross-clausal form, which likewise cannot cross matrix φ-interveners.[5]

(12) *Tabs$_i$ seems like [John was saying [they$_i$'re being kept on Kate]].

(13) a Why do/*does there seem as if there are problems with this analysis?
b Why do/*does there seem as if there are tabs being kept on Kate?

The locality of φ-Agree thus determines the DP to which the matrix subject in CR is linked. This correctly predicts that CR, like raising in (11)a, is restricted to verbs with no matrix arguments visible to the φ-system (cf. Branigan and MacKenzie 2001:405, 399n14, Rezac 2004a:136f).

φ-locality also provides the likely culprit behind the domains of φ-Agree, namely whether it is cross-clausal (underpinning CR if followed by Merge) or clause-bounded (underpinning movement). I assume agreeing (finite, control) clauses are CPs while raising complements are TPs (Rizzi 1997, Chomsky 2001). Therefore, φ-Agree in structures like (11) cannot cross a CP, and φ-Agree in structures like (12), (13) necessarily crosses one. In both types of structures the embedded CP is a complement of the matrix verb; for CR in particular, non-D-linked Ā-extraction from the CP is fine (Asudeh 2002, cf. (i) of n. 5). That leaves properties of the C-system as the difference between clauses opaque and transparent to φ-Agree, *seem that TP* vs. *seem like TP*.[6]

I propose to follow the hypothesis proposed by Polinsky and Potsdam (2001) for Tsez: the permeability of clauses to φ-Agree depends on whether they are headed by a complementizer that blocks it. Their implementation is in terms of head-government; instead, I suggest that C(P)s which block φ-Agree bear lexically specified default φ-features (cf. Picallo 2002). φ-Agree always obligatorily takes place with the closest goal, and can reach a CP complement if there are

[4] Speakers seem to fall into three groups. First, there are those who have obligatory agreement in simple declarative analogues of (13) (Groat 1997:122 and n. 53). Second, there are those who, at the stylistic level which permits these constructions, require singular agreement with post-verbal subjects in general, either just in expletive constructions, or also in locative inversion (cf. Schütze 1997:136ff.); cf. also Fiorentino and Trentino (Brandi and Cordin 1989), and Den Dikken 2001, Chomsky 2000:128, 148n88, Chomsky 2004 (text opposite to note 44 of 2001 ms.) for theoretical options. An intermediate group of speakers shows the contrast between examples with and without a preverbal *there*; the former, but not the latter (13), allows singular agreement with a plural associate, apparently attracted by the preverbal *there*.

[5] I ignore here the problem posed by such construction for the for the hypothesis that Case deactivates a DP for further Agree; see Polinsky and Potsdam 2001, Branigan and MacKenzie 2001, Bruening 2001. English CR demonstrates this cannot be related to Ā-movement, as Branigan and MacKenzie and Bruening propose in different forms. The contrast in (i) (cf. Asudeh 2002) vs. (iia) (based on Chomsky 1981:311) shows that the embedded subject in not in an Ā-position, nor can a null operator linked to the pronoun be posited, unlike in tough movement constructions where such OP blocks other Ā-movement. A phase-edge effect is also unlikely for English cross-clausal agreement. Either the Activity Condition is wrong, Carstens (2001, 2003), Bhatt (2002), or φ-Agree is with the valued features of the next lower C/T, Rezac (2004a:199ff).

(i) How intelligent does Kate seem like she is *t*?

(ii) a *How intelligent$_1$ is John$_2$ easy [OP$_2$ to think of / regard e_2 as t_1]?
b How intelligent$_1$ is it easy [to think of / regard John as t_1].
c ?John$_1$ is easy [OP$_1$ to think of / regard e_1 as very intelligent].

[6] Heycock (1994:295-8) ties the difference between *seem like* and *seem that* to the fact that *like* is a preposition (Maling 1983); Potsdam and Runner (2001) propose that [$_{PP}$ P IP] complements are not phases while [$_{CP}$ C IP] ones are.

no matrix arguments (a raising configuration). It is blocked by C if C has φ-features, barring Agree into finite clauses (super-raising); it continues otherwise, giving cross-clausal agreement (or CR). In English, the CP goal in the former case triggers the insertion of the *it*-expletive, in the latter the *there*-expletive. This difference can be implemented by giving C interveners a special designated φ-set (cf. Lasnik 1999:136).[7] A somewhat different approach would restate the φ-intervention of C just proposed directly in terms of whether CP is really a structure headed by *it* or not, [$_{\alpha}$ it CP], where *it* serves as the intervener and displaces under Agree to [Spec, TP] (Rosenbaum 1967:chapters 1, 2, Moro 1997:173ff., Anagnostopoulou 2003:187). The CP in *seem like TP* may thus control Agree or not, while in *seem that TP* always does; if and only if the CP is transparent does φ-Agree take place with the embedded [Spec, TP]. The virtues of this approach are allowing the proper variation in cross-clausal φ-Agree and delimiting it by a well known mechanism, intervention; straightforwardly determining *it/there* distribution; and maintaining that the φ-Agree of T is obligatory in English.

The following summarizes the properties of A-movement and CR:[8]

(14) A-movement and CR

a General distribution: H with a φ-probe which identifies a goal Γ for φ-Agree may Merge in non-thematic [Spec, HP], if projected (EPP), a DP which is interpretively linked to Γ.

b A-movement is restricted to a copy-and-deletion relation between [Spec, HP] and the goal of H's φ-Agree, giving rise to reconstruction; CR is restricted to linking [Spec, HP] to an overt pronominal variable as the goal of H's φ-Agree.

c CR occurs when the goal for the φ-probe of H is within a different CP, A-movement occurs otherwise.

d A φ-probe is blocked by φ-accessible interveners, including certain complementizers, which yields the typical clause-boundedness of φ-Agree.

I show how (14)b follows from (14)c due to independent principles in section 4. In the meanwhile, CTM predicts the existence of CR, which manifests non-thematic Merge separated from effects of copy-deletion that obscure movement. The two are otherwise identical. For both, the same problem now arises: why is base-generation in [Spec, HP] dependent on the goal identified by the φ-Agree of H?[9]

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[7] Anagnostopoulou (2003:334n68) adds a strong argument: ?**It was told Mary that John is intelligent* is straightforwardly ruled out if *it*-insertion is dependent on Agree with the CP because *Mary* is an intervener.

[8] The English CR construction discussed here must be kept carefully distinguished from a thematic use of the same matrix verbs, which shows no locality restrictions on the pronoun linked to the matrix subject, in fact does not even need a pronoun (i), and correspondingly cannot tolerate idiom chunks as in (5)b, (ii), or expletives, (iii); see particularly Rogers 1974b, Potsdam and Runner 2001 for a careful demonstration of this conclusion and the latter for an isolation of the extra interpretation being assigned in (iv) vs. CR (v). The theta-role being assigned seem to be of the same kind as that available to subjects of individual level predicates (Diesing 1992:25-6). The general availability of pseudo-CR in English suggests that the same solution is applicable to other cases of CR seemingly not restricted by locality (Kipsigis, Massam 1985:190ff.) and Passamaquoddy (Bruening 2001:275ff.), in both cases contrasting with locality-obeying cross-clausal φ-Agree (by *v*) in those languages.

(i) That apartment$_1$ looks like you must have a wonderful view (from it$_1$).

(ii) *His bite$_i$ sounds like his bark is worse than it$_i$.

(iii) *There seems like John expects there to be an election.

(iv) He$_i$ seems like Kim just dumped him$_i$ ≠ It seems like Kim just dumped him

(v) He$_i$ seems like he$_i$'s ill = It seems like he's ill

[9] In the literature on CR, Potsdam and Runner (2001) suggest theta-role transmission by Agree, which I eschew.

3 Interpreting non-thematic positions and Agree

3.1 Predicate Abstraction

A DP in a thematic position is interpreted by composing with its sister, (the projection of) the lexical entry of which has a corresponding λ-abstract, as in (15).

(15) Lexical entry for *love*: [[love]] = $\lambda x \in D_e.\lambda y \in D_e.y$ **loves** x

A DP_i in non-thematic positions is interpreted by being sister to a derived predicate, that is a λ-abstract which is introduced not by a lexical entry but by an interpretive rule or.[10] The λ-operator binds a variable x_i which is itself either in a thematic position, or ultimately linked to one. For brevity, DP_i *λ-binds* x_i (Reinhart 2000), for which I have used DP_i is *linked* to x_i earlier.[11]

In (8)a *such that* is translated as λx_1 at LF by a special assumption, here derived in section 6, where x_1 can be any variable in the scope of λ. In (8)b and (8)c however, it is A-movement which must determine that when the sister of *the girl* is translated as a derived predicate, the λ-abstract introduced must bind x_1 from which *the girl* has moved, not x_2.

(16) a The $girl_1$ $such_1$ that the hobbit thought $she_{1/2}$ came *t* late into $her_{1/2}$ house.
b The $girl_1$ is not believed by $her_{1/2}$ friend to have come $t'_{1/*2}$ from here.

Therefore, Heim and Kratzer (1998:109ff.) build the introduction of the triggers for λ-abstraction directly into the singulary transformation Move. In the syntax, Move maps β and a designated subconstituent α within in as in (17), where β is converted to a structure γ sister to α, where γ properly contains β', that is β with α replaced by the *e*-type object t_i (trace/variable), and the index *i* which identifies t_i as the open variable for α within β'.

(17) Move maps $[_\beta \ldots \alpha_i \ldots]$ to $[\alpha\ [_\gamma\ i\ [_{\beta'} \ldots t_i \ldots]]]$

Theta-roles as construed in Heim and Kratzer 1998 are not the kinds of things that can be featurally transmitted, but rather the result of interpretation in configurations which differentiate them through syntactic decomposition: see Kratzer 1996, Hale and Keyser 2003.

[10] Here in speaking of a DP I really mean an *e*-type DP for simplicity. Like an *e*-type DP (i), a quantifier must also compose with its sister turned into a λ-abstract (type ⟨e,t⟩) (ii); however, while the λ-abstract in (i) takes an *e*-type DP as an argument, it is the generalized quantifier denoted by a quantified DP (type ⟨⟨e,t⟩,t⟩) which takes the λ-abstract (⟨e,t⟩) as an argument. In the interpretation, each member of the set of *e*-type individuals that the generalized quantifier quantifies over, for example *most students*, gets substituted into the variable bound by the derived predicate's λ-abstract. Although the function-argument relationship is different in the two cases, the issues addressed in this section, mapping a constituent with an Agree-identified gap to a derived predicate, are exactly the same in both cases.

(i) $DP_{\langle e\rangle}$: DP $\lambda x[\ldots x\ldots]_{Pred}$ ⇒ […DP…]
(ii) $[Q\ DP]_{\langle\langle e,t\rangle,t\rangle}$: QP $\lambda x[\ldots x\ldots]_{Pred}$ ⇒ Q(DP)(Pred)

[11] The exposition of interpreting non-thematic positions follows Heim and Kratzer (1998); the idea is widely shared, for example Dowty, Wall, and Peters 1985, and predication theory, Williams 1980, 1994 and earlier work cited therein, Rothstein 1983, Browning 1989, Heycock 1994, Koeneman and Neeleman 2000.

This structure is interpreted by Predicate Abstraction in (18)a, which leads to the interpretation of the index as a λ-operator binding a variable corresponding to index, and an indexed trace as the corresponding bound variable. Functional Application (18)b composes the derived predicate β' with its sister α, which substitutes α into variable bound by the λ-abstract, in the case of both derived and of lexical λ-abstracts like (17).

(18) Interpretive rules

a Predicate Abstraction (PA): Let α be a branching node with daughters β and γ, where β dominates only a numerical index i. Then, for any variable assignment, a, $[\![\alpha]\!]^a = \lambda x \in D_e.[\![\gamma]\!]^{a[x/i]}$. (Heim and Kratzer 1998:186)

b Functional Application (FA): If α is a branching node and {β, γ} the set of its daughters, then, for any assignment a, α is in the domain of $[\![\ ]\!]^a$ if both α and β are, and $[\![\beta]\!]^a$ is a function whose domain contains $[\![\gamma]\!]^a$. In this case, $[\![a]\!]^a = [\![\beta]\!]^a([\![g]\!]^a)$. (Heim and Kratzer 1998:105)

Consider how these tools apply in (19), provided that the lexically-specified interpretation of the atoms *John* is '**John**', *left* is 'λx.x **left**.'

(19)	a	$[\![[_{TP}$ John $[_{T'}$ 1 $[_{T'}$ T $[_{VP}$ left $t_1]]]]]\!]$	Syntactic movement output
	b	[**John** [1 [[λx.x **left**] x_1]]]	LF input and lexical translation
	c	[**John** [1 [x_1 **left**]]]	FA (thematic interpretation)
	d	[**John** λx.[x_1 **left**]$^{a[x/1]}$]	PA
	e	**John left**	FA

Adopting the copy theory for traces does not modify any of the essentials. Suppose we have the copy-theoretic structure *Every girl*$_i$ *left* ~~*every girl*~~$_i$. This would be incorrectly interpreted as 'For every girl, every girl left.' Fox (2002) therefore proposes that copies are interpreted as definite descriptions, with the quantifier of the copy replaced by *the*, and are linked to the corresponding quantifier by having attached to them the predicate λy(y=x) '**is identical to** x' where *x* is the variable name (index):[12]

(20) Trace Conversion (Fox 2002:67)

a Variable Insertion: (Det) Pred → (Det) [Pred λy(y=x)]

b Determiner Replacement: (Det) [Pred λy(y=x)] → the [Pred λy(y=x)]

These convert *Every girl*$_i$ *left* ~~*every girl*~~$_i$ to *Every girl* x_i, *left the girl identical to* x_i, which receives the desired interpretation: 'For every girl x, the girl (identical to) x left.'

The variable name or index introduced by Variable Insertion (20)a must be the same as that introduced by Move (17); one way to ensure this is to have Variable Insertion as part of Move itself as in (17), but as in (17) this is counter-cyclic and violates inclusiveness. Minimalism would thus question the introduction variable names here. However, it is imperative that syntax code the dependency between a constituent which is to be interpreted as a derived predicate and a particular variable within it, since it is the properties of the syntactic derivation (for example

[12] Where Determiner Replacement applies and whether it is obligatory or not (cf. also n. 14) depends on what happens when the quantifier in a lower rather than higher copy is to be interpreted, for which the higher copy might be deleted; see Sauerland 1998, 2004 for an extensive discussion.

locality), rather than just the availability of binders and variables in their scope at LF, which determines which DP λ-binds which variable. In *Every girl seems to her$_{1/2}$ friends to have left* $t_{1/*2}$, constraints on syntactic dependencies determine that *every girl* must λ-bind *t*, and λ-binding of *her* is accidental, depending on the whether the name (index) of *her* when picked from the lexicon happens to be the same as that of *t* (see Reinhart 2000 for discussion). Consider the more complex example (21)a, assuming *Kate* is the contextually salient *the girl*.

(21) a The girl did not see every girl. (on the reading *every* > *not*) =
b [every girl λx_1 [$_{TP}$ the girl λx_2 [not [$_{vP}$ the girl x_2 saw the girl x_1]]]] ≠
c Every girl did not see the girl. =
d [every girl λx_2 [$_{TP}$ the girl λx_1 [not [$_{vP}$ the girl x_1 saw the girl x_2]]]]

The variable names chosen here are those determined by movement. If they were freely chosen by Variable Insertion, we lose the distinction between x_1 and x_2. (21)a could receive either the reading (21)b 'For every girl, the girl (Kate) did not see her,' or (21)d 'Every girl did not see the girl (Kate).' Only the former is available. So it must be the syntactic movement step itself which introduces indices/variable names: A-movement of *the girl* necessarily determines that the copy that is left will be *the girl* x_2 λ-bound by *the girl* x_2, and QR of *every girl* determines that its copy is named *the girl* x_1 λ-bound by the quantifier *every girl* x_1. In sum, the syntactic derivation partially fixes operator-variable pairings at LF and this must be represented for example by indices, with accidental lexical choices of the names of pronouns determining the rest. However, it does remain desirable to formulate both the mechanism behind movement and Variable Insertion in such a way that they do not introduce extraneous elements and counter-cyclically modify structure. I will now propose that this is the use of φ-Agree and interpretable φ-features.

3.2 Φ-Agree for indices

As these tools stand, they are inadequate for the interpretation of CR structures, where (i) the matrix subject is manifestly base-generated rather than "moved," and yet (ii) it λ-binds a variable identified by the locality of φ-Agree. If CTM holds, (i) and (ii) underlie movement as well. I will argue for a proposal inspired by Browning's (1989) use of agreement in predication theory:[13]

(22) a The index or variable name which enters into Variable Insertion as an integer value of the variable assignment function at LF is the interpretable φ-features of DPs.
b It is φ-Agree rather than Move which transmits the index of a predicate variable to the label of a derived predicate.

(22)a goes partly beyond what is required; indices could be a special feature of their own, which are always transmitted by any instance of Agree through the *Free Rider Principle* discussed in section 7. The assumption that indices are φ-features is possibly a simplifying assumption, though not without some intuitive and historical appeal; I return to it in section 7. Further for convenience, I will designate a feature [ix] and treat it as a special φ-feature, beside [person] and [number].

[13] Cf. also Adger and Ramchand, forthcoming, for a similar proposal using Agree to determine operator-variable pairs, though in a sense in reverse, valuing variables from λ-operators.

(22) is implemented as follows:[14]

(23) a Assumptions about [ix]: [ix] is unvalued on φ-probes, but is valued and interpretable on DPs, thus parallel to for example [number].
b Variable Insertion (modified):
(Det[$_{\varphi}$…ix=x_n…]) Pred → (Det[$_{\varphi}$…ix=x_n…]) [Pred λy(y=x_n)]

By (23)a, Agree involves the valuation of the unvalued feature [ix] as in (24).

(24) Agree maps [$_{HP}$ $H_{[ix]}$ … $DP_{[ix=n]}$ …] to [$_{HP}$ $H_{[ix=n]}$ … $DP_{[ix=n]}$ …]

Agree alone now yields a syntactic representation where the index of its goal is represented at the top of the constituent which triggers it, so (24) replaces (17) with the advantage of allowing the interpretation of CR subjects, as well as "moved" DPs under CTM in general. With a trivial change to (18)a, Predicate Abstraction could apply to (24) and use valued φ-features as the index of the variable bound by λ.[15] However, this raises two problems. First, something special must be said about expletive subjects, which are not interpreted by PA, although their sister is an agreeing predicate. Second, Agree-valued uninterpretable φ-features are assumed to delete at some point and not to reach the interpretive component, where PA applies.

I will pursue a different approach where it is the index of the DP that identifies which variable it λ-binds in the derived predicate to which it is sister (cf. Williams 1980:205ff., Browning 1989:22ff., 53ff.). PA can be formulated as in (25); it is now only triggered by DPs with an interpretable index, which reasonably excludes expletives.[16] Thus a T' sister to an expletive will simply not undergo PA and the expletive gets ignored, as desired. I return in section 5 to showing that (25) where the subject triggers PA leads to correct predictions in yielding the properties of so-called broad subject constructions.

(25) Predicate Abstraction Rule (PA) (modified): Let α be a tree dominating two sub-trees, β and γ, such that β has an index feature [ix=i]; then for any variable assignment a, $[\![\alpha]\!]^a$ = $\lambda x \in D_e.[\![\gamma]\!]^{a[x/i]}(\beta)$.

However, adopting (25) requires a mechanism to ensure specifier-head agreement between the derived predicate H', whose head H has the Agree-valued φ-probe identifying the variable within H' by (24), and the DP Merged into [Spec, HP]. Although such agreement is not implemented in Chomsky 2000 et seq., it seems to be needed independently for CR in (26). Here, *no one* must trigger singular agreement under base-generation in matrix [Spec, TP], although it may bind either a singular or plural variable, so the relevant goal of φ-Agree in the search-space of the matrix T is either singular or plural. Independent evidence for the spec-head matching

[14] No problem arises when Variable Insertion (modified or not) applies to DPs that happen to be free: it simply converts *she*$_7$ or *Kate*$_7$ into the equivalent *she*$_7$ *identical to* x_7 and *Kate*$_7$ *identical to* x_7.

[15] Predicate Abstraction Rule (PA), modified (non-final): Let α be a syntactic constituent such that label(α) has the valued φ-feature index [ix*=i]. Then for any variable assignment a, $[\![\alpha]\!]^a = \lambda x \in D_e.[\![\alpha]\!]^{a[x/i]}$.

[16] PA can be now be triggered not only by DPs in non-thematic positions, but also by a DP that is sister to a lexical predicate *x Pred*: [[the NP_i]] λx.[x Pred]], which necessarily composes in the Heim and Kratzer system by FA without PA, would now also have the option of $\rightarrow_{PA}$ [[the NP_i]] λy.[λx.x Pred]$^{a[y/i]}$]. But this is harmless, and if desired ruled out as vacuous quantification.

phenomenon is the existence of agreeing expletives in Czech and Finnish, (27), discussed in Rezac 2004a:chapter 4.[17]

(26) a No one$_i$ seem*(s) to be in their$_i$ place.
b No one$_i$ seem*(s) like he$_i$ is / they are$_i$ in the room.

(27) Vona/*von tam přišla Katka/ňáká holka.
EXPL.3.SG.F/*3.SG.M there came Kate.3.SG.F/some-3.SG.F girl.3.SG.F
'Kate came there.' / 'There came there a girl.' (Czech)

The descriptive generalization required is (28), which yields similar consequences to Williams's (1980) indexing rules for predication.

(28) *Match Condition*: if Merge(α, β), then for any φ-feature F, the value of F on the label of α and the label of β do not differ.

The Match Condition could be elevated to the status of a property of Merge (cf. Zwart 2004), taking cue from the discussion the idea that selection is analogous to a probe-goal relation (Chomsky 2000:134), that a "[t]here is a similar but distinct agreement relation, Concord, involving Merge alone" (Chomsky 2001:42n6).[18]

An appealing alternative is to suppose that Merge of [Spec, TP] which satisfies the EPP of T implies a φ-Agree relation between [Spec, TP] and T. Cyclic construction of the phrase-marker requires that the φ-probe of T be valued from a T'-internal goal if there is one at the T'-level, and Merge of [Spec, TP] follows (Rezac 2003). At that point φ-probe of T is valued but not yet deleted, and so could be held to be active and probe [Spec, TP] when added. Because it is already valued, it can only match DPs non-distinct in value. Such relationship between the φ-probe of T and [Spec, TP] may be required anyway for nominative Case assignment, and which thus fails if the DP has a distinct φ-value, deriving the Match Condition.

Here is a brief example of how the system works in the case of movement, now a descriptive label only for an instance of the CTM; the mapping label *Syntax* is the sequence of the independent operations Agree, Merge, Trace Conversion, and the seventh element in the variable assignment function, *a*(7), is '**Kate**.'

(29)

	$[T_{[\varphi\text{-}]}\ [_{VP}$ left $Kate_{[\varphi=3sg,ix=7]}]]$
$\rightarrow_{Syntax}$	$[Kate_{[\varphi=3sg,ix=7]}\ [T_{[\varphi=3sg,ix=7]}\ [_{VP}$ left $[Kate_{[\varphi=3sg,ix=7]}$ identical.to $x_7]]]]$
$\rightarrow_{Feature\ deletion}$	$[Kate_{[\varphi=3sg,ix=7]}\ [T\ [_{VP}$ left $[Kate_{[\varphi=3sg,ix=7]}$ identical.to $x_7]]]]$
$\rightarrow_{PA}$	$[\![Kate_{[\varphi=3sg,ix=7]}]\!]\ [\lambda x.[[[_{VP}$ left $[Kate_{[\varphi=3sg,ix=7]}$ identical.to $x_7]]]\!]^{a[x/7]}]$
$\rightarrow_{Lexical\ entries}$	**Kate** λx.[[λy.y **left**] [**Kate identical.to** x]]$^{a[x/7]}$
$\rightarrow_{FA}$	**Kate** λx.[**Kate identical.to** x **left**]]$^{a[x/7]}$

[17] The following abbreviations are used in the glosses: 1/2/3 person, I, II, … noun gender classes, A absolutive, ASP aspect, C complementizer, D dative, E ergative, EXPL for expletive, F feminine, FV final vowel of Bantu verbs, M masculine, N nominative, NMLZ nominalizer, NEG negation, NT neuter, PL plural, PRES present, PRT participle, PST past, SG singular, TOP topic; ~~strikethrough~~ indicates copy-theoretic deletion.

[18] Cf. Chomsky's (2000:122, 2001:10) treatment of the EPP as an uninterpretable selectional feature, and the use of Agree to implement c-selection by Collins (2002), Adger (2003).

$\rightarrow_{FA}$ **Kate identical.to Kate left**
= **Kate left**

Thus φ-Agree transfers the indices used in Predicate Abstraction to the top of the constituent which PA translates as a derived predicate, and the mechanism behind the Match Condition makes sure that the non-thematic subject of the predicate have the same φ-values. All DPs base-generated by Merge in a non-thematic position as sister to a predicate whose head/label undergoes φ-Agree will show the core property of A-movement and CR: the goal to which the DP is interpretively linked is identified by φ-Agree. This resolves the linking problem of CTM, and explains the φ-locality of CR.[19] CTM is the derivational sequence of fully independent Agree and Merge. Cyclicity provides the order Agree > Merge. The short derivational memory gluing Agree and Merge in CTM are the valued φ-features of T/T', sister to [Spec, TP], which restrict what can Merge into [Spec, TP] by the Match Condition.

If DP_i λ-binds DP_j, this imposes serious limitations on their differences; for example, they cannot be incompatible descriptions, and DP_j cannot be a quantifier. However, nothing requires identity, and so it still remains to resolve the identity problem of CTM: in movement, why is the goal of φ-Agree a copy of the DP which λ-binds it. This must be done in such a way as to allow and require a pronoun rather than a copy to be λ-bound in CR, (30), and to correctly predict the distribution of CR and movement. I turn to this next.

(30) a Kate$_7$ seems like [she$_7$/*Kate$_7$/*~~Kate~~$_7$ left] *CR*
b Kate$_7$ seems [~~Kate~~$_7$/*she$_7$ to have left] *Movement*

4 Copy theory

Movement involves an additional step not present in the CTM: deletion of lower copies under identity with the re-Merged copy. However, deletion is not present in the other instantiation of CTM, CR, which must use overt pronouns as goals rather than deleted copies; neither CR nor movement can λ-bind overt definite descriptions. Since under CTM the derivation, Agree and Merge, does not provide the relevant distinction between movement and CR, it must be sought in the representation. The obvious place to look is the structure between the two linked DPs; there is a CP boundary in CR but not in movement. This is a factor to which independent constraints are sensitive, so the difference should reduce to them: namely, copy-deletion and the Binding Theory.

[19] The theory predicts (i) to be possible with the same mechanism as (ii), just as it and others predict the classical trouble-maker (iii). Bošković (2002:196f.) shows (iii) cannot be due to the Merge over Move preference as in Chomsky 2000:104. Technical devices might be at hand in systems where a φ-probe can be partially affected when passing an expletive but still continue undeterred, cf. Chomsky 2000:148n48. I suspect a real account is closer to Bresnan and Mchombo's (1987:568-9) account of **Mary ate what it was that Fred cooked* vs. *What was it that Fred cooked*, where the relativization → focus → relativization sequence imposes incompatible semantic requirements on the pivot of these operations. The semantic hallmarks of expletive constructions, namely the definiteness effect and that the associate be new information, target *three anthropologists* in (i); (i) and (iii) are barred if movement to [Spec, TP] endows a non-expletive subject with an incompatible semantic property, for example *aboutness* as proposed by Rizzi (2004).
(i) *There seem(s) like three anthropologists at the conference.
(ii) There seem like there are three anthropologists at the conference.
(iii) *There seem three anthropologists to be at the conference.

Chomsky (1995:202-3, 252-3) proposes to identify the copy-deletion mechanism Δ with the destressing and optional deletion that yields ellipsis, explored in Tancredi 1992.[20] Δ is also presumably responsible for the fact that the Binding Theory does not apply between copies, otherwise Conditions B and C would make copy theory impossible; assume therefore that Δ renders the object α to which applies invisible for the Binding Theory.[21] Some properties of Δ are illustrated by the paradigm:

(31) a who$_i$ [$_{TP}$ ~~who~~$_i$ seems ~~who~~$_i$ to have left ~~who~~$_i$]
b she$_i$ saw her$_j$/*~~her~~$_j$
c she$_{Case=nominative}$ left ~~she~~$_{Case=?}$
d he$_i$ seems to have left ~~he~~$_i$/*he$_i$ before he$_i$/*~~he~~$_i$ met her
e he$_i$ said that Nolwenn saw him$_i$/*~~him~~$_i$
f he$_i$ saw himself$_i$/*~~he~~$_i$
g he$_i$ seems like he$_i$/*~~he~~$_i$ is about to leave

Δ is triggers the obligatory deletion of α under c-command by an identical α' (31)a, where identity includes interpretable including the index, since we get (31)b, but not uninterpretable features which don't count, (31)c (cf. Chomsky's (2000:126) definition of an MLI).[22] The boundary conditions on Δ are the following. (i) α and α' must be in the same *command unit* in the sense of Uriagereka 1999a:252, so that α is not properly contained in an adjunct or specifier w.r.t. α, (31)d.

(32) Command unit (cf. Kayne's (1983) *g*-projection): the maximal object formed by a sequence of *monotonic* Merge operations, each of which assembles one simplex object with another object, as distinct from a *non-monotonic* application of Merge which joins two complex and thus independently assembled objects.

(ii) Δ appears to apply only if the two copies do not receive separate theta-roles, (31)e, (31)f. (31)f has a ready explanation in the theory of Condition A developed by Reinhart and Reuland (1991, 1993), Reuland (2001), which requires the lower of two linked coarguments to be an anaphor rather than a pronoun, so that in (31)f the ungrammatical version has no input. CR adds further evidence about the domain of Δ within command units, because Δ fails to apply if α, α' are separated by a CP boundary in (31)g: so (ii) is replaced by (iii): Δ deletes α under c-command by identical α' within the command unit of α provided a CP boundary does not

[20] See Nunes 2001 for a different approach to Δ. At first sight it seems to me it could be compatible with the approach presented here, for it is not really dependent on copies (p. 306n6).
[21] This is not a general property of non-overtness; *pro* is subject to the Binding Theory. Another function of Δ may be to nullify the uninterpretable features on the copy such as Case, as discussed later in this section.
[22] In Chomsky 1995:chapter 4, deletion is limited to copies by the fact that each syntactic object inserted into the tree has a distinct numeration index, and only movement as a unitary operation, or the special operation Copy in Nunes 2001, can duplicate a numeration index. This numeration index has nothing to do with the interface requirement of operator-variable dependencies; furthermore it crucially relies on the numeration device, whose major empirical support, the Merge-over-Move paradigm, is eliminated by Bošković (2002:196f.), suggesting a simpler view without numerations as in Collins 1997, Frampton and Gutmann 1999, 2004. CR shows that application of CTM does not necessarily result in automatic deletion, requiring conditions on Δ to be spelled out. Numeration indices have been used to distinguish (31)a from (31)e, (31)f, but as the following discussion shows, independent factors do so.

intervene. This accounts correctly for all instances of traditional Ā-movement, which always stops off in [Spec, CP], and A-movement, which does not cross CPs.[23] Thus we reach (33).

(33) Δ: α is deleted under c-command by identical α', if (α, α') are contained within the same command unit and not separated by a CP.

Clearly, a principled explanation of (33) is needed, but it is not the main purpose here. Uriagereka's (1999a) theory of multiple spell-out offers one for the relevance of command units; a command unit is spelled out separately from the larger structure where it is added and its internal structure is opaque to the computational system afterwards. The phase theory of Chomsky (2000, 2001, 2004) may offer an answer for the relevance of the CP. I present an alternative at the end of this section. What is important now is that properties of Δ are such as they are: it applies following (33), and it bleeds Conditions B and C. These facts suffice to determine exactly the distribution of copies and pronouns. Let's walk through these consequences with a general structure that subsumes both movement and CR: a DP base-generated in [Spec, HP] of a predicate H' whose head/label H/H' has undergone φ-Agree with a goal in it.

Consider first movement structures, (34)a. One possible source for this structure is (34)b; *Kate*$_7$ is base-generated as the argument of *come*, and an exact copy is Merged in [Spec, TP] under the Match Condition. Δ applies obligatorily, bleeding Conditions B and C. In the remaining examples Δ is inapplicable because of lack of identity. Suppose as in (34)c the base position is a pronoun and Merge adds a full DP; Condition B systematically rules out such structures. A subset of the structures ruled out by condition B might be thought to allow a Condition A type anaphor, as in (34)d, but that is not a possibility because there is no coargument to bind the anaphor and thus satisfy its deficiency.[24] Finally, consider choosing a different full DP, as in (34)e, with Variable Insertion supplying the appropriate variable to be bound by PA. The result violates Condition C, unless the DP is identical to the subject as in (34)b, and then undergoes Δ.[25]

(34) a Kate came.

b	Kate$_7$ came ~~Kate$_7$~~ $\rightarrow_{\text{Interpretation}}$ Kate$_7$ came	*Δ obligatory*
c	Kate$_7$ came she$_7$ $\rightarrow_{\text{Interpretation}}$ =b	**Condition B*
d	Kate$_7$ came herself$_7$/SE$_7$ $\rightarrow_{\text{Interpretation}}$ =b	**Anaphora distribution*
e	Kate$_7$ came Ms. Neave$_7$/the girl$_7$	**Condition C*

Consider now why Δ does not apply to CR structures and why pronouns are required in the lower clause. As in movement, the matrix subject and DP it is linked to have the same index, yet Δ obligatorily applies in raising (35)a and not CR (35)b. The difference is the CP boundary in

[23] In fact, it seems that both A and Ā-movement always pass through [Spec, *v*P]: Fox 1999, 2000, Sauerland 2003.

[24] For *self*-anaphora whose deficiency is semantic and which require a distinct argument from the pronoun they contain, as in Reinhart and Reuland 1991, 1993, this is clear. For SE anaphora questions remain.

[25] Condition C cannot be obviated in examples like *Kate$_7$ came the girl$_7$* in the same way it can be under focus in *Kate$_7$ saw the GIRL$_7$*. Whatever solution is adopted for the latter case, it seems it could be stated to refer to what differentiates these two examples, for example different theta roles in the latter.

CR, which blocks both Δ and Condition B. Choices than a pronoun are blocked as the lower DP in CR by Condition C as above, (35)c.[26]

(35) a She$_7$ seems like she$_7$/*~~she~~$_7$ is about to leave *Δ and Condition B*
b She$_7$ seems to be *she$_7$/~~she~~$_7$ about to leave *Δ/ Condition B blocked*
c She$_7$ seems like *the girl$_7$/~~the girl~~$_7$ is about to leave. *Condition C; Δ blocked*

There is a very simple theme running throughout this explanation of the movement-CR difference. Δ is required in the domain (33), and prevents Conditions B and C from applying. Within this domain, Condition A requires anaphora if an argument is coindexed with a higher coargument, eliminating certain inputs to Δ. Application of Conditions B, C, with their suspension under Δ, determines where copies are required and where they are not allowed. The interpretive differences between CR and movement in section 2 arose from the distribution of copies, and are thus accounted for. CR and movement both equally instantiate CTM's Agree + Merge, modulo these independent factors. The next two sections demonstrate two other cases as instances of CTM, broad subjects and Tough Movement.

I now return to (33) to suggest an alternative account. Suppose Case assignment renders Δ inapplicable. Independently, a DP properly embedded in a distinct command unit such as a complex left branch or an adjunct always turns out to always have a local Case assigner within that command unit. The assumption that Case blocks Δ then unifies (31)d, (31)e, (31)g, and fits in with Reinhart's and Reuland's treatment of Case and anaphora in (31)f.[27] However, it requires that Ā-Agree nullify the Δ-blocking effect of Case in (31)a; but in the Ā-system it may instead be Ā-Agree positions that cannot delete, which in (31) blocks deletion while Condition C blocks the overt variant.

(36) *Which book$_i$ did John wonder ~~which book~~$_i$/which book$_i$ Mary liked.

To flesh out the picture, assume (i) that a φ-probe F can but need not value Case under F-valuation by its goal Γ; (ii) that as suggested in section 3.2 for the Match Condition (28), a probe on H can Agree with α [Spec, HP] even if already valued from Γ within H'; (iii) valued Case is required for spell-out of α except if α is deleted by Δ; (iv) valued Case blocks Δ. Either Γ or α or both can receive Case; the highest copy must get Case because it cannot undergo Δ. If both α and Γ get Case a violation of Condition B or C will arise, (31)d, unless the distance between Γ and α spans a CP and Γ is a pronoun, (31)g. Crucially for (31)a, Case must stop blocking Δ of α when α enters the Ā-system. Assume following Chomsky (2000:128) that Ā-goals have an uninterpretable feature [wh], analogous to Case, which is valued under Ā-Agree. (36) indicates that the system works as with Case: [wh] may be valued or not, the highest copy of a *wh*-phrase must have it valued, while a lower copy generally cannot because Ā-movement never skips CP boundaries and Condition C would obtain. We reach (37).

[26] **Kate$_i$ seems like the girl$_i$ is about to leave* is ungrammatical, but not as severely as **Kate$_i$ came the girl$_i$*. However this is as predicted; the former sentence has a pseudo-CR possibility, where *Kate* and *the girl* get two different theta-roles, and so unlike the latter it allows the same kind of Condition C amelioration as *Kate$_i$ saw the girl$_i$* or *Kate$_i$ said that the girl$_i$ left*; cf. n. 25.

[27] The domain of the distribution of copies appears to be closely related to the domain of applicability of Conditions B the Binding Theory (which Δ bleeds), something with the GB treatment of A-copies as Condition A anaphora captured closely; see Rezac 2004a:160ff. This agrees well with Reuland's (2001) Case-based approach to Condition B.

(37) Δ: α is deleted under c-command by identical α'; Δ is blocked if Case, except if α is a match to Ā-Agree, or [wh] of α has been valued.

(37) looks complicated, but it seems to me that it pursues the right intuition, and its derivation from minimalist guidelines simply depends on a better understanding of exactly the right situation to be singled out as special: what happens when an object transitions from the A to the Ā system, whether the highest copy gets Case in this situation, how a *wh*-phrase passes the Case filter and whether it has an analogous licensing requirement (Levin 1983, 1984, Brody 1984), whether A-position copies of *wh*-phrases already have the *wh*-portion with [wh] (Williams 2003, Svenonius 2004, and references therein). The complexity of (37) evaporates if the blocking of Δ by valued Case disappears under Ā-movement because Case is not and to allow Ā-movement cannot be assigned in that situation, [wh] and Case being the same XP-licensing feature.

To conclude this section, I wish to briefly consider the status of pied-piping under the CTM, a phenomenon that relies on the properties of goals and may thus seem difficult to capture. Chomsky (1995:262-5) proposes this is an interface requirement, particularly at the PF interface; Chomsky (2001:23-4) argues that α can only pied-pipe if α has phonological features. Pied-piping of left branches and adjuncts follows from Uriagereka's (1999a) theory of multiple spell-out driven by linearization requirements of the PF interface. Chomsky (1998:125), Ochi (1999), Uriagereka (1999b), Kennedy and Merchant (2000:111ff.), Lasnik (2001, 2002) pursue the idea that pied-piping is a repair mechanism for spelling out structures which result from feature displacement under Attract-F. Chomsky (2000:123, 2001:10) suggests uninterpretable features of the goal (e.g. Case) determine the amount pied-piped.

Keeping to the CTM framework where Merge of α in [Spec, HP] is fully independent of properties of the goal Γ, we can restate the basic intuitions as constraints on copy-deletion under identity, which is pursued below. Properties of the Γ determine the minimal/maximal constituent containing it that can be deleted under some notion of phonological cohesion. For example in Chomsky's (1995:263) example *whose NP*, deletion of Γ=*who* in [*who* [$_{D'}$ *'s*$_{D}$ NP] produces an illegitimate object, and *who's* (*whose*) is not a constituent, so that *whose NP* is the minimal deletable object. Since deletion must take place under identity to some higher α, the minimal size of the latter is determined to be α=*whose NP*. Case could play the role of what determines how much can delete, for example by being abstractly a property of [D NP] but not D alone in English.

5 Merge without Agree: Broad subjects

In both movement and CR, the target of base-generation is sister to a head with a probe, leading to obligatory interpretation of the base-generated DP in the variable identified by Agree. Doron and Heycock (1999) discuss *broad subject* DPs, which are internal to the C' unlike left dislocation and yet λ-bind any free variable. Here I consider how such constructions are predicted by the system developed in section 3.

This system entails that Agree via the Match Condition should not restrict λ-binding for a DP that is sister to a constituent whose head does not Agree for an index. Such DPs should still be interpretable by Predicate Abstraction as it is formulated in (25), because it is a DP that triggers

PA, provided it has an index corresponding to some variable in its scope. This predicts the two different syntax-semantics mappings in (38).

(38)	Syntax	Semantics after Predicate Abstraction
a	$[_{HP}\ DP_{i/*j}\ [_{H'}\ H_{ix=i} \dots x_{\varphi=i} \dots x_j \dots]]$	DP $\lambda x.[\![H']\!]^{a[x/i]}$
b	$[_{HP}\ DP_{i/j}\ [_{H}\ H_{no\ ix} \dots x_i \dots x_j \dots]]$	DP $\lambda x.[\![H']\!]^{a[x/i]}$ or DP $\lambda x.[\![H']\!]^{a[x/j]}$

Interestingly, (38)b is not predicted to be even possible if PA relies on the index of the predicate, whether introduced by Agree as here or by movement as in Heim and Kratzer 1998. It is therefore support for this approach that constructions (38)b exist, and seem to depend on the existence of non-thematic DPs as sisters to non-agreeing predicates.

Doron and Heycock (1999) identify the relevant construction, the broad subject construction, in Japanese, Hebrew, and Arabic:

(39) a hind-un ʔaT-Tulla:b-u_1 yuqa:bilu-una-ha t_1 *Arabic*
hind.F-N the-students.M-N meet.3.M-PL-her
'The students are meeting Hind.'
b ʔal-bayt-u ʔalwa:n-u-hu za:hiyat-un
the-house-N colours-N-its bright-N
'The house has bright colours.'

The *broad subject* is the first nominative *hind-un* 'Hind', while the regular or *narrow subject* is the second nominative *ʔaT-Tulla:b-u* 'the students'. The narrow subject controls the φ-probe of T and may undergo A-movement to [Spec, TP]. The broad subject is a DP in an A-position structurally higher the narrow subject. Doron and Heycock argue that broad subjects are base-generated in [Spec, TP], because they can receive an accusative under ECM predicates, bind a subject-oriented reflexive in the narrow subject, be a controlled PRO, appear in clauses where topics and left dislocation are disallowed, and need not receive a topic or focus interpretation.[28] What these properties show more exactly is that the broad subject is not part of the C-system; the rest depends on what the options for other subject positions are, either specifiers of dedicated heads (Cardinaletti 1997) or multiple specifiers of T (Doron and Heycock 1999).[29]
In either case, two crucial properties established by Doron and Heycock correlate for broad subjects: (i) they cannot control the φ-probe of T, which is always controlled by a narrow subject; (ii) there is no reconstruction for quantificational properties (scope, existential interpretation, etc.) within T', entailing base-generation in the surface position and only an *e*-type, not copy-theoretic, representation within T'; (iii) the *e*-type variable bound by the broad subject may be anywhere, for example within the narrow subject as in (39)b shows. (ii) differentiates broad subjects from movement and makes them like CR; (i) and (iii) differentiate them from both movement and CR.

The correlation of (i) and (iii) is exactly the predicted configuration (38)b: the sister of a broad subject does not have a φ-probe, so its index is not restricted by the Match Condition, and may be accidentally identical to any variable in its scope. If broad subjects are in specifiers of

[28] A property of broad subjects I cannot explain is that they apparently cannot be idiom chunks.
[29] The availability of broad subjects cannot be related to the availability of multiple specifiers of T; Icelandic allows the latter (Chomsky 1995:section 4.10, Richards 2001:73ff.) but not the former. This may suggest a dedicated head for broad subjects.

dedicated heads, this follows immediately. If they are rather in the outer specifiers of T, I need to assume that the particular projection of the T that is sister to the broad subject lacks the φ-probe that has been valued from the lower narrow subject. The required result, that valued features do not project, is independently argued by Rezac 2002, Béjar 2003:187, and Abels 2003:60. (40) gives the bare phrase structure representation, where the crucially φ-less label is underlined.

(40) {T, {broad subject, {$\underline{\text{T}}$, {narrow subject, {$T_{\varphi=i}$, …}}}}}

Does (ii) follow as well? A CR subject cannot have a lower copy-theoretic representation because the copy-deletion algorithm Δ cannot span the CP boundary between it and the DP to which it is linked, (33). If the blocking role of the CP boundary in (33) follows from phase theory for example, broad subjects must be outside this boundary; (33) could be reformulated to refer to the highest T projection with a valued φ-probe, which fits well with the suggestion in Chomsky (2000:131, 2004) that phase spell-out be relativized to the occurrence of Agree. On the other hand, the derivation of (33) from the fact that a DP with valued Case assigned cannot be subject to Δ suggested at the end of section 4 accounts for (ii) immediately: all DPs within the T projection that contains the narrow subject have had Case assigned.

Ā-structures formed with resumptive pronouns also offer the syntax-semantics mapping in (38)b, in contrast to that in (38)a which I assume for movement-formed relatives (cf. section 7). (41) gives examples from Breton: (41)a, which contains the variable inside an island (there is no preposition stranding) can make use only of the resumptive strategy, while (41)b has the choice of either the movement or the resumptive strategy as indicated. The English translation offers the more marked resumption strategy of English, marked by *such that*.

(41) a N'eus den_i (ha) na ve diarvar kement-se evitañ$_i$. *Breton*
NEG-is person C NEG is doubtless this for-him
'There is no one such that this is not certain for him.' (Elies-Abeozen 1991:35)
b an nor_i (hag) a vo ret prennañ (anezhi$_i$)
The door C C will.be necessary to.close it
'the door (such) that it will be necessary to close (it)'

The way resumptive structures fit into the system is straightforward, assuming McCloskey's (2002) analysis for Irish. In the case of a movement-formed relative, C has an Ā-probe, and I assume an index feature which is valued by Ā-Agree as a free rider (section 7); the head or relative pronoun Merged as sister of the relative CP has its index feature restricted to this value by the Match Condition. Predicate Abstraction yields (38)a. For resumptive relatives, C has probe at all, and the Match Condition is inapplicable. The head can have any index feature, yielding (38)b.

In sum, CTM as developed predicts that DPs base-generated in non-thematic positions will be interpreted in a position identified by the φ-Agree of their sister predicate if it has the index φ-feature, and will freely bind a variable if it does not. This correctly distinguishes regular/narrow from broad subjects, and allows resumptive alongside movement-formed relatives.

6 Agree with an Ā-goal: Tough movement

Polinsky and Potsdam (2001) for Tsez, and Branigan and MacKenzie (2001), Bruening (2001) for Algonquian, show that φ-Agree with a goal in an Ā-position is possible, provided such a goal is itself capable of φ-Agree in its own clause. I follow Rezac's (2004a:chapter 3) elaboration of Polinsky and Potsdam's hypothesis that the possibility of such φ-Agree reduces to φ-locality, as discussed in section 2: if a verb has no φ-accessible arguments, its T will Agree with the closest φ-set in the next lower clause, whether this is in an Ā-position or on one of the heads of the C-system.[30] Thus considering for example Tsez with the clausal architecture in (42), φ-Agree of the matrix T is predicted to take place with the closest of a *wh*-phrase, an overt C, a topic, or finally a low nominalizing head that I put in Fin^0. Polinsky and Potsdam show this is correct; two examples are given in (43).

(42) $[_{CP}$ wh $[_{C'}\ C^0\ [_{TopP}$ topic $[_{Top'}\ Top^0\ [_{FinP}\ Fin^0\ [_{TP}$ S O V]]]]]]

(43) a eni-r [už-ā magalu-n/gon b-āc'-ru-łi] b/*r-iyxo
mother-D boy-E bread.III.A-TOP III-eat-PST.PRT-NMLZ] III/*IV -know
'The mother knows the boy ate the bread.' (Polinsky and Potsdam 2001:610)
b eni-r [šebi y-āk'i-ru-łi] y-iy-x-ānu
mother-D wh.II.A II-go-PST.PRT-NMLZ II-know-PRES-NEG
The mother does not know who [of the women] left. (Polinsky and Potsdam 2001:638n20)

We expect such constructions in English as well, provided locality is satisfied (cf. Massam 1985:190ff.): a predicate with no φ-accessible arguments selects a clausal complement which uses Ā-movement to bring a goal to its edge beyond any φ-interveners. The typical raising predicates like *seem* and *be expected* do not select complements that have Ā-movement; but the expected properties seem to fit well *tough movement* TM constructions:

(44) a The $books_i$ are easy (for Kate) to convince people to want e_i/*them.
b It is easy (for Kate) to convince people to want these books/**e*.

I adopt the conclusions in (43) about TM.

(45) Tough movement properties and structure
a The TM trigger (*easy*) takes only a CP as an internal argument, which may be either a full CP with no Ā-movement (44)a, or a subjectless CP with Ā-movement of a null operator OP from an internal gap it its top (44)b (Chomsky 1977, 1981:204f., 309ff., Browning 1989:chapter 2).
b Only in the latter case, the matrix [Spec, TP] be can filled by a non-expletive DP, the TM subject, which is not selected by the matrix verb and interpreted in the OP-identified gap (Berman 1973, Lasnik and Fiengo 1974, Chomsky 1981:204ff., Brody 1993, Heycock 1994:250ff.).
c The null operator in question is a special Ā-element, *pro* in an Ā-position (Browning 1989:54f., cf. Chomsky 1982, Cinque 1990).

[30] I remain agnostic on whether phase-edges are at all relevant, Branigan and MacKenzie 2001, Bruening 2001, Svenonius 2004, and whether φ-Agree violates the Activity Condition or not, see n. 5.

d In contrast to Browning (1989:64ff.) and Heycock (1994:254ff.), I assume OP-movement terminates in the CP rather than reaching up into the AP, since it create Ā-islands for other Ā-movement out of the CP only (46)a, not for that of the matrix experiencer argument (46)b (Rezac 2004b):

(46) a *How intelligent$_2$ is John$_1$ easy [OP$_1$ to think of / regard e_1 as e_2]
b For how many people$_2$ is everyone$_1$ easy t_2 [OP$_1$ PRO to ignore e_1]

This yields the structure (47) for TM (44)a:

(47) The books$_1$ are [$_{AP}$ easy [$_{CP}$ OP$_1$ PRO$_{arb}$ to convince people to read t_1]].

The core issues of TM are (i) the linking problem, how is the TM subject linked to the OP/gap chain, and (ii) the correlation problem, what determines the one-to-one correlation between a non-expletive TM subject and selection by the TM trigger of a CP with an (OP-bound) gap, barring the starred versions of (44). The development of the CTM in the previous section solves both problems.

φ-Agree should be possible with an Ā-goal unless blocked by an intervener. Like most clauses in English, the clausal complement of TM triggers when TM does not occur has a C that intervenes for higher φ-Agree and triggers *it* insertion, call it C$_φ$, as discussed in section 2; this gives (44)b. OP-movement either by-passes this barrier as in Tsez, or else the C associated with OP, C$_{OP}$, has no φ-features. Therefore, the φ-features carried on OP from the gap are accessible to matrix φ-Agree, and the Match Condition requires Merge of a subject matching the index feature of the gap, giving TM (44)a. Without OP-movement, either C$_{OP}$ is a C$_φ$, or PRO counts as the φ-intervener, blocking (48)c. PRO itself cannot be the goal, because it is obligatorily controlled by the matrix experiencer whether overt or covert (Epstein 1984), and further λ-binding by the matrix subject would trigger Condition B or C, (48)d. The only case lacking a principled explanation is why the transparent C clauses found in CR cannot serve as the clausal complement of TM triggers, to give (48)e; this needs to be handled by selection, as must be in general both the distribution of both these clauses (available to *seem* but not *be likely*), and of C$_{OP}$ itself to explain why *impossible* but not *possible* is a TM trigger (Brody 1993:8-9).

(48) a It is easy for the rich [C$_φ$ for the poor/PRO to read these books].
b The books$_1$ are easy (for Kate) [OP$_1$ C$_{OP(φ)}$ PRO to read e_1].
c *The books$_1$ are easy (for Kate) [C$_{(φ)}$ PRO to read them$_1$].
d *Kate$_1$ is easy (for her$_1$) [C PRO$_1$ to read the books].
e *The books$_1$ are easy (for Kate) [(like) they$_1$ were read t_1].

The correlation problem of TM is solved in the CTM because φ-Agree of T determines permissible [Spec, TP] objects by the Match Condition: C$_φ$ as a goal determines *it*, OP as a goal determines a DP that λ-binds OP.

C$_φ$ must also be responsible for ruling out (49)a, the analogue of which is fine in Algonquian and Tsez, (43)b, and derivatively (49)b, where it is unclear whether Condition C would apply between t_i and the next lower [Spec, CP] (Chomsky 1986) to force Δ. We can conclude either that C$_{OP}$, but not other C's that trigger Ā-movement, lacks φ-features, as discussed above; or that in English it is only OP that can escape a C$_φ$, perhaps because of its special status as a head that

makes it equidistant to $C_{OP\varphi}$ and its projections, or because OP is really pure Ā-Agree (Rezac 2004b).

(49) a *There were asked what things are there to do in Boston.
b *Which horses$_i$ t_i were asked/said which horses$_i$/~~which horses~~$_i$ Eorl saw t_i.
Intended: Of which horses was it asked/said whether Eorl saw them.

The semantics of TM (44)a is exactly like that of (copy) raising in the relevant respects. OP identified by matrix φ-Agree is λ-bound by the TM subject, giving (50) (*is easy* is to be lexically translated as 'λP.P **is easy**'). Thus CTM solves the linking problem.

(50) The books$_1$ λx_1[[$x_1$$\lambda x_2$[PRO to read x_2]] is easy]

Browning (1989:54f.) proposes that OP is *pro* (cf. Chomsky 1982, Cinque 1990). Given the TM syntax here, this explains why *there*-expletives are blocked in TM constructions (51) (Chomsky 1981:309, 318n30) simply through the definiteness effect.

(51) a *There is hard to believe *e* to have been a crime committed.
b It is hard to believe there to have been a crime committed.

The fact that OP is *pro* also has semantic consequences, because *pro* is an *e*-type object: the TM subject cannot reconstruct into OP or its clause for its non-*e*-type properties. The prediction is correct; the TM subject cannot reconstruct for scope or variable binding below the TM trigger or the *for*-phrase it selects (Postal 1974:224, 356, Lasnik and Fiengo 1974:544ff., Epstein 1989:651ff., Cinque 1990:194n39, Rezac 2004a:189f.).

(52) a Many people are easy to talk to *e*.
b =There are many people *x*, such that it is easy to talk to *x*.
c ≠It is easy to talk to a large group of people.
(Epstein 1989:651f.)

(53) a Her$_i$ work is hard to convince Judy$_i$/[every woman in the group]$_{*i}$ to share.
b The lyrics that she$_{*j}$ wrote were easy for [every woman in the group]$_j$ [to sing].
(Rezac 2004a:190)

The present approach adds a new prediction, because the TM subject is base-generated in the matrix [Spec, TP], in contrast to for example Browning 1989:chapter 2 where it is sister to the maximal (AP) projection of the TM trigger: reconstruction anywhere within the T' is barred. TM should thus pattern with CR on this; in particular, there should be no reconstruction below the existential closure operator, which should make the relationship between the TM subject and the rest that of individual-level predication. This is correct (cf. Heycock 1994:293-4); in particular TM subjects must be generic rather than existential (Lasnik and Fiengo 1994:544ff.), as discussed in section 2 for CR:

(54) a It was a pleasure to each a bunch of bananas; there are their skins.
b *A bunch of bananas was a pleasure to eat; there are their skins.

(Lasnik and Fiengo 1974:546)

Thus, the syntax and semantics of CTM succeed in accounting for the subject-gap correlation and linking problems of TM, although it leaves mostly untouched what may be called the selection problem, namely what constitutes a TM trigger and why does a CP with OP-movement have such properties as non-finiteness. This still seems a considerable step forward, given that the tools are independently necessary to implement CTM in the first place. CR and TM fall out as exactly parallel, except that in TM OP Ā-movement is required of the λ-bound variable so that it can escape the φ-barrier of its C or PRO, while in the CR the φ-probe accesses the closest A-position directly across a transparent CP.

7 Ā-movement and non-DPs

CTM should apply to Ā-movement as well; DPs in Ā-positions should be separately base-generated and λ-bind a variable identified by Agree of the head/label of their sister, which in this case is by an Ā-probe. It suffices to assume that the X^0 host of any probe that results in movement always has at least the unvalued index φ-feature [ix]. The *Free Rider Principle* proposed by Chomsky (1995:268-70, 275) then ensures that the Agree by any probe on a head/label H values all features on H which a goal can value.

(55) *Free Rider Principle*: All the probes of an X^0 must be valued from a goal matched by any of them if possible.

There is independent evidence that Ā-Agree can entail φ-Agree from the fact that φ-agreement separate from subject agreement sometimes shows up Ā-phrases, as in Kilega (Kinyalolo 1991, Carstens 2003). The verb, which raises into the C-system, registers two separate φ-sets: one controlled by the subject, one by the *wh*-phrase in an Ā-position:

(56) Bikí bi-b-á-kás-íl-é *pro* mwámi mu-mwílo?
VIII.what VIII.CA-II.SA-ASP-give-ASP-FV II.they I.chief XVIII-III.village
'What did they (those women) give the chief?' (Carstens 2003:408)

The Free Rider Principle predicts this; it suffices that C have unvalued φ-features as well an Ā-probe. It is a separate question to what extent Ā-probes always entail [ix] Agree. CTM predicts that if a head H with an Ā-probe have also an unvalued [ix] feature, non-thematic [Spec, HP] λ-binds the goal identified by the Ā-probe, otherwise it binds any variable in its scope, giving resumptive constructions as discussed in section 5.

The final issue to consider is the interpretation of non-DP arguments in non-thematic positions. English has numerous examples:

(57) a VP-fronting: [See Mary], John did *t*.
b CP-topicalization: [That John saw Mary], I know *t*.
c PP A-movement: [Over the plain] flowed the sunlight of morning.
d AP A-movement: [Sitting in the chair] was a woman.
e PP Ā-fronting [On which shelves] did Kate put the books *t*?

In some of these cases, namely predicate fronting, there is evidence that full reconstruction to the base-position is always required (Huang 1993, Heycock 1995), so the issue of interpretation in the derived position does not arise. This is expected if the predicate does not have interpretable [ix] to trigger PA; it ends up behaving like an expletive and it is its copy that is interpreted. However, for other cases such as PP Ā-movement there is clear evidence the full content of copies in non-thematic positions can be interpreted. Using the diagnostics developed in Fox 1999, the PP in (58) can reconstructed to the underlined position in (58)a for the indicated quantifier-variable binding, but not to the starred position where Condition C applies.

(58) a [To which question that his_i $teacher_j$ assigned] did every $student_i$ think ___ she_j wanted him to respond _*_ incorrectly?
b *[To which question that his_i $teacher_j$ assigned] did she_j think _*_ every $student_i$ wanted to respond _*_ incorrectly?

The desired result follows if argumental PPs have in these cases inherent [ix] like DPs, along the lines of Rizzi (1990) for referential indices. In all such cases it suffices that the DP complement of P reconstruct, so it may be that argumental P inherits or is transparent to its [ix] feature. However, this now falls under the familiar generalization that argumental P's are transparent in the sense that their DP complement can bind and take scope as if P were not present (e.g. Baltin and Postal 1996, Pesetsky 1995:172ff.).

For both Ā-movement and non-DP fronting, the full gamut of the phenomenon remains to be taken into account, for example predicate fronting for focus and reconstructible adverb and degree word movement. However, CTM extends straightforwardly to the core cases, giving reasons for optimism. Chomsky (2000 et seq.) argues that the dissolution of Move into Merge and Agree proposed by CTM is (one of) the best possible answer(s) to the conceptual problems posed by the existence of the displacement phenomenon, deriving it from the minimal toolkit the syntax has anyway, structure building and dependency formation. I have presented fully explicit version of CTM that correctly differentiates possible and impossible Agree-Merge sequences. It unifies movement phenomena, copy-raising, broad subject constructions, and Tough Movement, as non-thematic Merge on the backbone given by pure Agree, without reducing the differences between them which emerge from independent factors such as copy-deletion and the Binding Theory.

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