

Merge and Move: *Wh*-Dependencies Revisited

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In this article, we argue that, under current conceptions of the architecture of the grammar, apparent *wh*-dependencies can, in principle, arise from either a movement or a base-generation strategy, where Agree establishes the syntactic connection in the latter case. The crucial diagnostics are not locality effects, but identity effects. We implement the base-generation analysis using a small set of semantically interpretable features, together with a simple universal syntax-semantics correspondence. We show that parametric variation arises because of the different ways the features are bundled on functional heads. We further argue that it is the bundling of two features on a single lexical item, together with the correspondence that requires them to be interpreted apart, that is responsible for the displacement property of human languages.

Keywords: relatives, movement, base generation, syntax-semantics interface, Scottish Gaelic

1 Introduction

Since Chomsky 1977, it has been generally assumed that there is a deep unity to a certain subset of \bar{A} -dependency constructions and that there are clear diagnostics that allow us to pick out this set. Chomsky (p. 86) gives the following:

The rule of *wh*-movement has the following general characteristics:

- (a) it leaves a gap
- (b) where there is a bridge, there is an apparent violation of subjacency, PIC [Propositional Island Constraint] and SSC [Specified Subject Condition]
- (c) it observes CNPC [Complex NP Constraint]
- (d) it observes *wh*-islands

These are diagnostics for a class of constructions formed by a movement rule, and, in fact, a special kind of movement involving categories specified as [+*wh*]. Of course, as time has passed, some of these diagnostics have lost their relevance (specifically, the PIC and the SSC

Earlier versions of this article were presented at GLOW (Amsterdam 2002), The Displacement Conference (Tromsø 2002), and the “On *Wh*-Movement” Conference (Leiden/Utrecht 2002). We are very grateful to the audiences at these conferences, as well as to Bob Borsley, Miriam Butt, Noam Chomsky, Richard Kayne, Peter Svenonius, and two anonymous reviewers for important comments and discussion. We also wish to thank the students and staff of Sabhal Mòr Ostaig, Skye, for their help in acting as consultants, answering questions, and arranging interviews with native speakers. This research was partially supported by the British Academy, grant APN:6341.

were folded into binding theory); others are no longer so clear-cut as they once were (e.g., given the existence of *pro*, a phonologically empty gap can't be taken to be diagnostic of movement *per se*). At least until recently, though, the locality aspects of Chomsky's diagnostics for *wh*-movement have remained.

However, given a framework like that of Chomsky 2001b, even locality effects can no longer be assumed to be diagnostic of movement versus nonmovement constructions. This is because the operation *Agree*, which applies between features of heads in a structure, must itself be constrained by some theory of locality. The syntactic operation *Move* is parasitic on *Agree*, so it is not possible to use locality as a diagnostic for whether syntactic movement has taken place. This is because any locality effect can be construed as deriving from constraints on the *Agree* operation (which is a necessary precursor to movement), rather than on the *Move* operation itself (see also Boeckx 2003).

In fact, in a theory that accepts the existence of *pro* and posits the syntactic operation *Agree* (constrained by locality), it is not possible to rule out a base-generation approach to apparent \bar{A} -displacements.¹ Such an approach would look schematically as follows:

- (1) the [song [_{CP} that_F you were listening to *pro*_F]]

Here the complementizer *C* bears some feature (call it *F*) that enters into the *Agree* relationship with a matching feature on a *pro*. This is enough to establish the dependency. Once this dependency is established, appropriate semantic rules can interpret the feature *F* on *C* as an \bar{A} -binder and *pro* as the bound variable. Since *pro* is phonetically null, there is a "gap"; since *Agree* is constrained by locality (it can only match features that are close enough to each other), we see locality effects.

How, then, can we distinguish between such a derivation and one involving movement? The core difference is whether the bottom of the dependency is occupied by a *pro* or a trace. On the assumption that traces are simple copies (Chomsky 1993), we expect to see what we will call *identity effects* in a movement derivation, but not necessarily in a base-generation derivation.²

Identity effects arise when the apparently displaced element appears to have an identical copy in the gap position. For example, if it can be shown that the syntactic features of the putatively displaced constituent and its trace are exactly the same with respect to selection, agreement, and case, then we might conclude that there is a copy of the displaced item in a lower position. On the other hand, if we find anti-identity effects (i.e., there are obligatory differences in selection,

¹ A reviewer suggests that it would be possible to rule out base generation by stipulating that the predicate formation via λ -abstraction necessary for the semantics of relative clauses can only result from *Move/Remerge*. However, this particular stipulation runs into serious empirical problems: many languages (e.g., Modern Irish) have relative clauses where the foot of the relative dependency is a resumptive pronoun inside an island. Thus, any stipulation that seeks to rule out λ -abstraction in the absence of *Move/Remerge* cannot allow for the establishment of these dependencies. See section 5 for further discussion.

² A reviewer points out that this is reminiscent of the discussion in the literature comparing left dislocation structures with topicalization (Cinque 1990). However, as we will show, the cases we discuss are more subtle because they seem to have some of the properties (nonidentity effects) of resumption structures while still obeying certain locality constraints.

etc.), then a movement derivation is less likely to be correct, since we will then need to motivate special rules to deal with the mismatches.

Another type of identity effect is semantic: does the putative trace have the semantic interpretation of the displaced element, so that it behaves semantically in identical fashion? Obvious constructions that might provide evidence here are idioms and reconstruction phenomena.

In this article, we will show that some \bar{A} -dependencies that appear to arise from movement are, in fact, cases of base generation. We will argue that both movement and base generation are strategies made available by Universal Grammar (UG) for constructing \bar{A} -dependencies, and that both may leave a gap and display locality effects. They are predicted, however, to have different properties with respect to identity effects. The line we are taking, then, crucially differs from work in monostratal theories, which seek to eliminate movement as a component of the analysis of all \bar{A} -dependencies (see, e.g., Gazdar et al. 1985, Pollard and Sag 1994, Kaplan and Zaenen 1989).

Given this basic empirical point, we then develop a theory of how the syntactic dependency between the two components of the base-generated structure is constructed and how the constituent parts of the structure contribute to its interpretation. We show that such a theory can be very constrained, making use only of features that are independently motivated by the semantics of the construction, and providing an architecture for relating the syntax and semantics that eschews special rules of interpretation such as Fox's Trace Conversion rule (Fox 2002). The theory accounts straightforwardly for locality and agreement differences between resumptive pronoun structures and other base-generation structures and provides a new perspective on why true displacement phenomena exist alongside base-generation structures.

2 Questions and Relatives in Scottish Gaelic

Much of the initial argumentation we will develop comes from Scottish Gaelic, a Celtic language related to Modern Irish, spoken natively by about 60,000 people. In this section, we lay out some background facts about \bar{A} -dependencies in this language, which will serve as a basis for discussing whether these dependencies are base-generated or involve displacement.

Gaelic is a VSO language in both root and embedded clauses, as seen in (2).

- (2) Thuirt Iain gun do cheannaich thu leabhar an diugh.
 said Iain that buy-PAST you a book today
 'Iain said that you bought a book today.'

The complementizer seen in the embedded clause here (*gun*) is one of a number of preverbal particles. Others include *an*, which introduces positive *yes/no* questions and embedded questions (3)–(4); *cha*, which introduces matrix negation (5); and *nach*, which introduces negative *yes/no* questions and embedded negation (6)–(8).

- (3) An robh thu sgith?
 C-Q be-PAST you tired
 'Were you tired?'

- (4) Dh'fhaighnich e an robh thu sgith.
ask-PAST he C-Q be-PAST you tired
'He asked if you were tired.'
- (5) Cha robh mi sgith.
C-NEG be-PAST I tired
'I wasn't tired.'
- (6) Nach robh thu sgith?
C-Q, NEG be-PAST you tired
'Weren't you tired?'
- (7) Thuirt Iain nach do cheannaich thu leabhar an diugh.
said Iain C-NEG buy-PAST you a book today
'Iain said that you didn't buy a book today.'
- (8) Dh'fhaighnich e nach robh thu sgith.
ask-PAST he C-Q, NEG be-PAST you tired
'He asked if you weren't tired.'

The final preverbal particle, and the one we will be mainly concerned with, is *a*, which introduces relative clauses.³

- (9) an leabhar a cheannaich thu an diugh
the book C-REL bought you today
'the book that you bought today'
- (10) am program a bha thu ag èisdeachd ris
the program C-REL be-PAST you listening to
'the program that you were listening to'

Relative clauses and *wh*-questions in Gaelic appear to involve the same basic structure.⁴ For example, *wh*-questions employ the relative complementizer rather than the *yes/no* one.

- (11) *Cò an robh sgith?
who C-Q be-PAST tired
'Who was tired?'

³ The finite auxiliary or verb also displays particular inflection depending on whether the C particle is a relativizing particle, is absent, or is an overt complementizer. We ignore this in the glosses.

⁴ Note that relative clauses in Gaelic cannot be formed by using *wh*-pronominals, like the English relative pronouns *who*, *what*, and so on.

- (i) *an duine cò (a) dh'fhàg mi
the man who (that) leave-PAST me
'the man who left me'

We return to the absence of relative pronouns in Gaelic in section 6.

- (12) Cò a bha sgith?
 who C-REL be-PAST tired
 'Who was tired?'

Cleft structures also make use of the relative complementizer. The following example uses the copula *is* in a reduced form, together with a pronominal element *e*, to introduce the focus of the cleft, which is then followed by a clause introduced by the relative complementizer:

- (13) 'S e Iain a bha sgith.
 it's Iain C-REL be-PAST tired
 'It is Iain that was tired.'

We can make sense of the morphological commonalities between relatives, *wh*-questions, and clefts by assuming that the relative clause is basic and that clefts and *wh*-questions are built up from relative clauses plus some extra material. This is transparent for clefts, which are introduced by the copula + pronoun cluster. This same copula + pronoun cluster is also found in equatives (see Adger and Ramchand 2003 for detailed discussion of this construction).

- (14) 'S e Daibhidh an tidsear.
 it's David-NOM the teacher
 'David is the teacher.'

When the subject of an example like (14) is a *wh*-element, the result looks as follows:⁵

- (15) Ø Cò an tidsear?
 it's who the teacher
 'Who is the teacher?'

In this example, the copula + pronoun cluster is null, either because some morphosyntactic operation has deleted it, or because it has a null [+wh] version. The fact that (15) is a *wh*-question corresponding to (14) demonstrates independently, then, that the copula is null in *wh*-questions. Examples such as those in (15) bear all the features of *wh*-questions and are hence selected by interrogative predicates and have question meanings; all that distinguishes them from questions in English is that they can only be formed on the basis of copular constructions.⁶

This now motivates an analysis of *wh*-questions, in general, as also being based on a copular structure, but in these cases the rightmost element that provides the semantics of the predicate is a relative clause, rather than a DP. *Wh*-constructions in this language are then essentially clefts. The structure for a *wh*-question corresponding to the declarative cleft in (13) is (16).

⁵ Unlike in English, where adjectives and adverbial phrases are barred from the focus position of a cleft, Gaelic allows the clefting of all nonfinite constituents. We leave these aside here, concentrating on the DP cases.

⁶ A reviewer asks about *wh*-question complements to nominals. These appear to be awkward in Gaelic (as they are in many dialects of English), and they require some kind of paraphrase. We leave the syntax of these complements for another occasion.

- (16) Ø Cò a bha sgith?
 who C-REL be-PAST tired
 ‘Who was tired?’

This analysis immediately accounts for why the preverbal particle found in Scottish Gaelic *wh*-questions is the same one that is found in the more obvious cases of relative clauses, and not the same one that is found in yes/no questions. The syntax-semantics mapping that we assume here is roughly that in (17); see Adger and Ramchand 2003 for a detailed discussion of how this mapping is derived.

- (17) copula [*wh*-phrase] [relative clause]
 Ø ‘dè am program’ ‘a bha thu ag èisdeachd ris’
 ‘Which program has the property that you were listening to it?’

We will adopt the idea, then, that the relative clause is the “core” \bar{A} -dependency in Gaelic and that *wh*-questions are formed roughly in the way just suggested. We provide further evidence for this in the next section.

One of the striking things about the languages of the Celtic group is the (relatively) large number of distinct complementizer particles they possess, with the distinct semantic and distributional properties discussed above. The fine-grained lexical distinctions within the C category have been used in the past to construct an argument for the reality of successive-cyclic movement (McCloskey 1990, 2002). For example, take the following three-way contrast:

- (18) Thuir sinn *gun* do sgrìobh i an leabhar.
 say-PAST we that write-PAST she the book
 ‘We said that she wrote the book.’
- (19) Dè *a* thuir sibh *a* sgrìobh i?
 what C-REL say-PAST you C-REL write-PAST she
 ‘What did you say that she wrote?’
- (20) *Dè *a* thuir sibh *gun* do sgrìobh i?
 what C-REL say-PAST you that write-PAST she
 ‘What did you say that she wrote?’

In (18), we find the embedding complementizer *gun*. However, if an \bar{A} -dependency reaches into the embedded clause, the complementizer that introduces it cannot be *gun*—instead, it must be *a*. McCloskey (1990, 2002) used analogous data in Irish to motivate the idea that *wh*-movement takes place successive-cyclically and that it stops off at the edge of each intermediate CP, triggering the complementizer alternation. The crucial step in this argument is that movement and locality are tightly tied together, an assumption we wish to reexamine for the reasons outlined in the introduction. We will argue, instead, that these data and others like them derive from the way that locality constraints affect syntactic dependencies between independently base-generated items and not from the Move operation itself.

The argument sketched above, that the Celtic complementizer alternation is an overt manifes-

tation of a deep property of movement—namely, its strict cyclicity—allowed proponents of this view to say that Irish simply provides overt evidence for the kind of derivation that is also found in English. Chomsky (2001b) suggests that English utilizes exactly the same syntactic resources as Irish to construct *wh*-dependencies, but that it simply neglects to manifest these syntactic (in fact, featural) properties morphologically. In contrast, we will argue that the two languages are fundamentally different in a way that is driven by the properties of the lexical resources at their disposal.

We have taken some time to establish the distribution of the complementizer *a* in Scottish Gaelic, because an explicit analysis of its featural properties and its effect on the semantic combinatorics lies at the heart of the proposal. In what follows, we will establish more firmly the conclusion that *wh*-questions are formed from relatives in this language and that neither involves movement in its derivation.

3 (Non)identity Effects

As mentioned in the introduction, neither the existence of a gap nor the appearance of locality effects is a reasonable diagnostic for movement, given the theoretical assumptions of recent versions of minimalism that posit an Agree operation. One might naturally wonder whether the question of movement versus nonmovement doesn't simply dissolve in such a framework, with no principled diagnostic differences being detectable. However, this is not the case: there is still an important distinction to be made. This is because, under the copy theory of movement, there is empirical content to the distinction between movement and Agree: if movement involves copying (or, alternatively, Rmerge; see Bobaljik 1995, Starke 2001, Gärtner 2002, Epstein et al. 1998, Chomsky 2001a), then the *same* element is located in more than one place within the hierarchical structure. However, if a dependency is constructed via Agree, then two *distinct* elements enter into the relation. In clear cases of movement, we expect to find evidence for the existence of “identity” effects that would be explainable if multiple copies of the same element were available in different positions. On the other hand, if Agree links features of two distinct items, we would expect to find no such “identity” effects, but rather evidence that two distinct categories are involved. In what follows, we show that Gaelic relatives and *wh*-questions show anti-identity effects, strongly suggesting that there is no copy at the base of the dependency.

The first argument turns on the notion of selection. If \bar{A} -dependencies are movement, then it should be possible to put the putatively displaced element back into the trace position. This turns out not to be the case for Gaelic. Take, for example, a *wh*-question like (21) involving a predicative structure.

- (21) Dè an seòrsa tidsear [a tha annad]?
 what the sort teacher C-REL is in + you
 ‘What sort of teacher are you?’

If the *wh*-expression *dè an seòrsa tidsear* ‘what sort of teacher’ has been moved from lower in the clause, then it should be possible to put a non-*wh* version of this expression in an appropriate position. This prediction is, however, incorrect.

- (22) *Tha *tidsear math* annad.
 is teacher good in + you
 for ‘You are a good teacher.’

The failure of simple substitution is surprising under a movement account where the “same” item is syntactically present in both locations. Our account of relative dependencies in Gaelic (see the next section for details) will involve a distinct item, a pro at the base position of the dependency. The construction under discussion appears to be an idiomatic locution that requires such a pronominal as subject, when the inflected prepositional form (*annad* in this particular example) is used as the predicate. We do not propose a full analysis of the construction here, since there are many complications that go beyond the scope of this article. The important point for us is that the selectional requirements can be stated coherently in an analysis where the head and the foot of the dependency are distinct lexical items with different distributional properties, but would require extra stipulations if the head and the foot were simply copies.

A second argument of the same type rests on definiteness agreement between a preposition and its complement. In Gaelic, a number of prepositions agree with their complement for definiteness (Adger 2000, Adger and Ramchand 2003).

- (23) ri tidsear
 with-INDEF teacher
 ‘with a teacher’
- (24) *ris tidsear
 with-DEF teacher
 ‘with a teacher’
- (25) ris an tidsear
 with-DEF the teacher
 ‘with the teacher’
- (26) ris na tidsearan
 with-DEF the-PL teachers
 ‘with the teachers’
- (27) *ri an tidsear
 with-INDEF the teacher
 ‘with the teacher’

On the assumption that *wh*-questions involve movement in this language and that movement leaves a copy, we might expect definiteness agreement to appear on Ps that have been stranded by *wh*-movement. However, this is not the case, as the following contrast shows: the in-situ case (28) displays definiteness agreement, while in the putatively moved case (29), although the *wh*-expression is clearly definite (viz., the definite article), the stranded preposition does not show agreement (see Adger and Ramchand 2002 for further discussion, evidence that the *wh*-expression is definite, and more examples).

- (28) Chuir thu am peann anns a'bhocsa.
 put-PAST you the pen in-DEF the box-DAT
 'You put the pen in the box.'
- (29) Dè am bocsa a chuir thu am peann ann/*anns.
 which the box C-REL put-PAST you the pen in-3SG/*in-DEF
 'Which box did you put the pen in?'

We turn to further examples of this kind of effect from other languages in section 4. Briefly, under our analysis, the *pro* at the foot of the dependency is a lexical item that lacks ϕ -features. It is this pronoun that conditions the form of the preposition, not the features on the element at the head of the dependency.

The distribution of Case marking makes the same point. Present participles mark their complement with genitive Case (if the complement is a definite DP, and the register is fairly formal).

- (30) Bha thu a'geàrradh na craoibhe.
 be-PAST you cutting the tree-GEN
 'You were cutting the tree.'

However, in a *wh*-question, the apparently displaced *wh*-element is always nominative.

- (31) Dè a' chraobh a bha thu a'geàrradh?
 which the tree-NOM C-REL be-PAST you cutting
 'Which tree were you cutting?'
- (32) *Dè na craoibhe a bha thu a'geàrradh?
 which the tree-GEN C-REL be-PAST you cutting
 'Which tree were you cutting?'

The nominative Case here on the *wh*-element is unsurprising under the base-generation account because this syntactic position in the copular cleft construction is always nominative in Scottish Gaelic (see (14)).

Of course, in each of these cases it might be possible to add extra stipulations to the system so that Case or definiteness features are deleted on the traces of *wh*-expressions. However, that would simply amount to unnecessarily complicating the system to maintain the movement approach.

There is also evidence from idiom interpretation that disfavors a movement account. On the assumption that idioms require their component parts to be local at LF (Chomsky 1993), a movement approach should allow reconstruction and hence *wh*-movement of parts of idioms. However, what we find instead is that idioms lose their idiomatic reading in constructions based on relative clauses.

- (33) Bidh e a'toirt sop às gach seid.
 be-FUT he taking wisp from each bundle
 'He's not a very concentrated or focused person.'

- (34) 'S ann às gach seid a bhitheas e a'toirt sop.
 it's from each bundle C-REL be-FUT-REL he taking wisp
 *'He tries his hand at *everything*.'
 OK 'It's from every bundle that he has taken a wisp.'

The strength of this argument depends of course on there not being other ways of ruling out the idiom interpretation in these constructions independent of movement per se. A more interesting argument can be constructed from Condition C reconstruction effects. Reconstruction leading to Condition C violations indeed happens in Gaelic in certain sentence types. Consider the following example:

- (35) 'S toil leam [[am peann t_i] aige] ge-tà [a bha Iain
 copula liking with-1SG the pen at-him however C-REL be-PAST Iain
 a'sgriobhadh leis]_i.
 writing with
 'I like his pen that Iain was writing with.'
 impossible with *his* = *Iain*'s, OK otherwise

In this example, a relative clause has been postposed from the object DP to a position outside that DP, as shown by its position with respect to the sentential adverb. Coreference between the pronoun and the DP in this example is impossible, suggesting that the relative clause has reconstructed into the position of its trace, where the prepositional element *aige*, which inflects for the ϕ -features of the possessor, c-commands the R-expression *Iain*, leading to the violation.⁷

This structure contrasts with *wh*-questions. In (37), the *wh*-expression containing the R-expression has, on a movement account, originated as the object of the clause and is hence c-commanded by the pronominal subject *e* 'him'. However, coreference between the pronoun and the R-expression is perfect, suggesting that no reconstruction takes place. This can be clearly seen in the following contrast:

- (36) Cheannaich e an dealbh de dh'Iain an dè.
 bought he the picture of Iain yesterday
 'He bought the picture of Iain yesterday.'
 impossible with *he* = *Iain*

⁷ The literature on reconstruction from extraposition sites is too complex for us to do justice to here (but see Taraldsen 1981, Williams 1974, Büring and Hartmann 1997, Fox and Nissenbaum 1997). It seems clear, however, that there is considerable variability in the English judgments (see Büring and Hartmann 1997:sec. 3.2), especially with regard to possible differences between complement extraposition and adjunct extraposition. Fox and Nissenbaum (1997) seem to predict that relative clause extraposition such as in the Gaelic example (35) should not give rise to Condition C effects, while Büring and Hartmann (1997) cite contradictory data from German, while acknowledging variability. The Gaelic data show that, at least for this language, the "extraposition" of an adjunct is reconstructible and cannot be given an account in terms of late Merge of adjuncts (Fox 2002). The point we make here is simply that there are some clear constructions in Gaelic where Condition C effects arising from reconstruction can be observed, and that these contrast with the apparent *wh*-movement constructions. More detailed work needs to be done on this point before any firm conclusions can be drawn about what sort of distinctions and correlations might be expected crosslinguistically. We thank an anonymous reviewer for bringing this set of issues to our notice.

- (37) [Dè an dealbh de dh'Iain] a cheannaich e an dè?
 what the picture of Iain C-REL bought he yesterday
 'Which picture of Iain did he buy yesterday?'
 OK with *he* = *Iain*

On a movement account, something special has to be said about why some movements, such as relative clause extraposition, reconstruct, while others don't. On the base-generation approach to these constructions, \bar{A} -movement reconstructs in general, but *wh*-questions in this particular language do not, because they do not actually involve movement.⁸

The effects we have demonstrated indicate a lack of identity between the very top of the relative dependency (the overt DP) and the foot. So far, we have not ruled out an analysis where movement relates the foot of the dependency to a nonovert element in the specifier of CP (a null operator analysis). We return to this option and argue explicitly against it in section 6.

We have shown that Gaelic displays a number of nonidentity effects in *wh*-questions and have proposed that this follows from the fact that the apparently displaced element does not, in fact, originate in an argument position of the lower predicate. We will adopt this approach for relatives too (see section 6 for justification). In the next section, we outline the theoretical tools that will allow us to build an analysis consistent with these observations.

4 Base Generation and Agree

4.1 Theoretical Assumptions

As Fox (2002) points out, under a Move (or Rmerge) theory of \bar{A} -dependencies, a rule of LF interpretation is required to "translate" a syntactic object containing two identical copies into a semantically differentiated relation. Fox's postulated Trace Conversion rule does precisely this: the higher copy is interpreted as the operator and the lower copy is interpreted as the variable.

With Trace Conversion together with λ -abstraction, the structures created by Move/Rmerge are interpretable.

- (11) which boy Mary visited which boy Trace Conversion
 which boy λx [Mary visited *the boy x*]

(Fox 2002:67)

⁸ It is difficult, in Gaelic, to construct an analogous argument involving Condition A reconstruction effects, since all anaphors in the language have a logophoric use.

- (i) An e e fhèin a choisinn an diugh?
 is it himself C-REL win-PAST today
 'Was it him that won today?'

It is true that examples involving *wh*-expressions containing anaphors are slightly degraded, but they are easily interpretable.

- (ii) ?Dè am fear de na peannan aige fhèin, a bha Iain, a'sgrìobhadh leis?
 which one of the pens at himself C-REL be-PAST Iain writing with-3M.SG
 'Which one of his own pens was Iain writing with?'

We assume that the anaphor here is behaving logophorically, rather than being bound by the subject after reconstruction. In fact, coreference between the anaphor and the subject is only available when the discourse context is right, confirming this perspective.

Under the analysis we will propose here, the two parts of the dependency are independent lexical items that are base-generated separately. To implement the necessary syntactic connection, a link must be established between them via the usual syntactic operations. Thus, the problem is the converse of the semantic differentiation mechanisms required on the movement account: here, we have to establish a *syntactic* connection between the two parts of the dependency. Fortunately, the base-generation account can appeal to the independently needed mechanism of Agree, together with the idea of feature valuation. The intuition behind the implementation we offer here is that one independent lexical item will have a featural composition that requires it to be “checked” or paired with another complementary lexical item in the course of the syntactic derivation. The resulting well-formed syntactic representation will be straightforwardly interpreted at the LF interface without a construction-specific “translation” rule.

First, we lay out the basic assumptions that we make about our general framework. Our approach falls within the Minimalist Program (specifically, these are a version of the ideas in Chomsky 2000, 2001a,b), but we adopt a particular set of choices about the nature of features and their interactions. First, following especially the proposals in Chomsky 2001a, we adopt the position that checking is just valuation of an unvalued feature: uninterpretable features are actually just features that need to be valued before interpretation. We differ from Chomsky, however, and follow Pesetsky and Torrego (2001) in further claiming that there are no purely uninterpretable features (see also Svenonius 2002). In our terms, this means that there are no features that are inherently uninterpretable: either they are already interpretable at the interface, or they start off uninterpretable (unvalued) and become interpretable via valuation in the course of the derivation.⁹ This means that we allow in our analysis only those features that have a semantic motivation. We will assume that the valuation operation takes place under Agree (essentially, feature matching constrained by the Phase Impenetrability Condition). The valuing of unvalued features is what forces certain syntactic items to be dependent on others for their successful deployment within a derivation.

The next stage of constructing an analysis requires determining what the specific features involved should be. The minimal view is that the features required should be just those needed by the semantics to create the relevant relationship. The core construction under consideration is relativization, which we assume at least involves constructing a predicate in the semantics. This means that we need some syntactic feature that the interface will be able to interpret as predicate abstraction (see Heim and Kratzer 1998). We will call this syntactic feature Λ .¹⁰ We also need a feature that the interface will interpret as being the position that is abstracted over, the variable position. In practice, this is going to be some pronominal form, since a pronoun is the substitutional

⁹ In recent work, Pesetsky and Torrego (2004) utilize both checking and valuation as distinct syntactic mechanisms. This move seems to be motivated by the need to delete certain checked features at the interface. In our system, deletion is not required, essentially because of our appeal to interface conditions on semantic coherence. See the discussion immediately below.

¹⁰ Rizzi (1990) proposes the existence of a complementizer feature [+pred] whose interpretation is similar to that of our Λ -feature. We think that the idea of a syntactic feature with this interpretation is an important shared intuition, but it plays a different role in our account: whereas Rizzi’s [+pred] feature is part of a typology of complementizers, our Λ -feature may also appear on other lexical items (see section 7.2).

resource a language has for fully specified DP positions. In our view, what pronouns have in common is that they are always referentially dependent, whether on a discourse antecedent, a syntactic antecedent, or an assignment function required by connection to an operator. For this reason, we assign all pronouns the feature *ID* (to evoke the intuition of ‘‘identification’’). Further, the *value* of the *ID*-feature is different depending on whether that pronoun’s referent is identified by the usual mechanisms that find antecedents (which we assume to be closely tied to the presence of ϕ -features on the pronoun), or whether it is identified by being associated with a predicate abstraction operator. In the former case, we will say that the *ID*-feature takes the value ϕ , and in the latter, that it takes the value *dep*, for *dependent*. These features and their interpretations are summarized as follows:

- A feature interpreted as predicate abstraction, [Λ]
- A feature interpreted as a variable, [*ID*]
 - [*ID*:*dep*]: identification of the pronoun takes place via the assignment function determined by a syntactic operator (such as that bearing a Λ -feature).
 - [*ID*: ϕ]: identification takes place directly by an assignment function determined by context (or binding theory) and consistent with the ϕ -features.

Given these features, there only needs to be a simple correspondence at the interface that allows a syntactic object of the following type to be interpreted as predicate abstraction:

$$(38) [\Lambda \dots ID] \rightarrow \lambda x \dots x$$

We make one further assumption about the nature of the interpretational interface. Just as the PF interface pronounces only one phonological ‘‘copy’’ of an item that undergoes Move, so the interpretational interface interprets only one occurrence of features that are identical, when they are connected by an Agree relation (see Brody 1997). For convenience, we name this principle *Interpret Once under Agree* (IOA).¹¹ Thus, we propose two general interface conditions between the syntax and the semantics.

¹¹ We recognize that IOA is a stipulation and that it does not currently follow from anything we have said so far. We speculate that this is the semantic correspondent of a PF interface principle that also has effects in the grammar: copies that are present in more than one syntacticosemantic point of the derivation are only pronounced once. IOA says that features in an Agree chain that are present at PF in more than one linear position in the derivation are only *interpreted* once. An obvious way to think about this, which would remove the need for stipulating IOA but would still be consistent with our claim that the head and the foot of the dependency are separately base-generated, is to say that the complementizer itself undergoes Rmerge successive-cyclically. Since Rmerge of an item involves the same item, the various features will only be interpreted once with no further stipulation. Moreover, this proposal would not involve head adjunction, so neither the Head Movement Constraint nor the violation of the Extension Condition that it requires is particularly relevant here, in our opinion. This kind of approach would fit well with our general assumption that Rmerge is diagnosed by identity effects. Although we believe this approach to be on the right track, we do not pursue the details of the analysis here, because a proper justification of the account would hinge on whether *vP* is a Rmerge site for *C*, and this interacts with current assumptions about the identity of phases (see, e.g., Legate 2003). Interestingly, there is morphological evidence that finite verbs have special ‘‘relative’’ forms in Scottish Gaelic and some northern dialects of Irish. However, making the argument that these forms derive from the featural content of *vP* will depend on the specific analysis of the base position of auxiliaries and modals, which we do not have space for here (but see Rouveret 2002 for related discussion on this issue). We hold the Rmerge option open as a possibility, but make the stipulation about IOA as a placeholder for further investigation.

(39) a. *Full Interpretation*

Every feature must be mappable to an interpretation at the interface.

b. *Interpret Once under Agree (IOA)*

Interpretable features in an Agree chain are interpreted only once.

The correspondence we invoked above matches the syntactic structure to elements of the semantic interpretation. This correspondence is more direct than positing a special rule that constructs the semantic representation. It allows us to maintain that there is an extremely tight relationship between the basic formatives of the syntax and those of the semantic representation, and hence that the interface itself is trivial for these elements: it essentially involves the substitution of semantic correspondents for syntactic ones.

4.2 *Analysis*

4.2.1 *The Basic Cases* The system just outlined posits a direct semantic correspondence that constructs interpretations based on a syntactic dependency involving the Agree operation. The Agree operation takes two independent syntactic formatives and establishes a connection between them based on their featural makeup. For Gaelic, we propose that, in addition to the usual pronouns, which are specified syntactically as $[D, Id:\phi]$ and which are identified via context, the language also has a pronominal with an unvalued Id -feature. The lexical specification of this pronominal is as follows:

(40) $[D, Id:]$

Since unvalued features must receive a value during the derivation, a syntactic connection must be established between a pronoun bearing $[Id:]$ and a separate syntactic formative bearing a matching valued Id -feature. Following the proposal we made above, that dep can be a value of the Id -feature, we can say that the relative complementizer a bears an interpretable Id -feature that has dep as its value. Since this complementizer is used to build relative clauses, it must also bear an interpretable Λ -feature, ensuring it is interpreted as a predicate abstractor. The $[Id:dep]$ feature ensures that the complementizer must be paired with a pronoun of matching type for grammaticality.

(41) $a[C, \Lambda, Id:dep]$

This Id -feature on C will undergo Agree with the unvalued Id -feature on the pronoun and value it as dep . Schematically, the following kind of derivation takes place:

(42) $a[C, \Lambda, Id:dep] \dots pro[D, Id:] \rightarrow$
 $a[C, \Lambda, Id:dep] \dots pro[D, Id:dep]$
 $\lambda x \dots x$

The pronoun is syntactically dependent on the complementizer for valuing within an Agree domain. The complementizer, on the other hand, is not strictly syntactically dependent in the same sense, since it possesses no unvalued features. If both interpretable features were interpreted

on the C, the conflicting requirements of operator and variable semantics would cause this item to be incoherent, and interpreting only one of the two features would lead to a violation of Full Interpretation. Thus, the interface conditions will force a derivation in which a dependent pronoun that has undergone Agree occurs in the c-command domain of the complementizer. This means in effect that the dependency will be mutual: the pronoun requires this particular complementizer for syntactic well-formedness, and this particular complementizer requires the pronoun because of the semantic interface conditions.¹²

We can now tie down the different morphological forms of the various complementizers to their featural specification. Recall that Gaelic morphologically distinguishes embedding and relativizing complementizers: the former bears simply a C-feature, while the latter bears the specification [Λ , ID:dep]. This correctly captures the following contrast:

- (43) an duine a bhuaileas e (Gaelic)
 the man C-REL strike-FUT he
 ‘the man that he will hit’
- (44) *an duine gum buail e (Gaelic)
 the man C strike-FUT he
 ‘the man that he will hit’

The example in (44) is ungrammatical because the ID-feature on *pro* remains unvalued.

Our analysis extends immediately to the same pattern in Modern Irish.

- (45) an scríbhneoir aL mholann na mic léinn (Irish)
 the writer C-REL praised the students
 ‘the writer that the students praised’
- (46) *an scríbhneoir go molann na mic léinn (Irish)
 the writer that praised the students
 ‘the writer that the students praised’

Our system also makes predictions for the successive-cyclic effects that have been observed ever since the earliest work on *wh*-movement (Chomsky 1977). For concreteness, we assume that the relevant aspects of cyclicity will ultimately derive from a proper understanding of phases and the Phase Impenetrability Condition (PIC) (Chomsky 2001b). The PIC prohibits syntactic operations crossing phase boundaries. The edges of phases, however, *are* accessible to those operations. In this case, the phase in question is CP.

¹² Andrew Barss and Heidi Harley point out to us that our system appears to allow a situation where a C[Λ] complementizer introducing an embedded clause undergoes Agree with a lower C[Λ] complementizer introducing a relative clause, a situation that does not occur (such sentences are ungrammatical). IOA would then ensure that the Λ -feature is interpreted low down. However, an adjunct relative clause is a locality domain for all syntactic dependencies, so something is independently needed to prevent even the edges of adjunct relatives from being accessible to Agree. This will also correctly rule out the situation described above.

has the meaning it does. The pro located at the bottom of the dependency is interpreted as a variable, the semantic value of which is constrained by the λ -operator, which itself is the interpretation of the Λ -feature. Recall our principle that interpretable features in an Agree relation can only be interpreted once (IOA). Thus, the Λ -feature is interpreted once, even though there are two syntactic instances. It cannot be interpreted in the intermediate position, since if it were, then the verb *thuir* ‘said’ would have to take a predicative rather than a propositional complement. However, it can be interpreted at the top of the dependency, since this produces a well-formed semantic output as a relative clause with a predicative interpretation. Similarly, [Id:dep] is only interpreted once, in this case in the lowest position, since interpreting that variable in the intermediate position will not be compatible with the interpretation of the category of C as a proposition. The Id-feature, then, needs to collocate with a D-feature for proper interpretation (this is presumably derivable from the different semantics of individuals and propositions).

This analysis captures the complementizer alternations that have previously been used to motivate successive-cyclic movement. Given that syntactic feature valuation is itself constrained by locality (in this case by phases), and given the lack of identity effects in these constructions, there is no need to posit a movement operation to derive them.

With this more specific implementation in hand, we now wish to address two further properties of \bar{A} -dependencies in Celtic that have received attention in the literature: the antiagreement effect and island sensitivity.

4.2.2 The Antiagreement Effect A well-known descriptive fact concerning \bar{A} -dependencies in the Celtic languages is that they correlate, at least partially, with what Ouhalla (1993) terms more generally the *antiagreement effect* (AAE) (McCloskey 1990). Ouhalla defines this effect as the appearance of an invariable default form of the verb, when the verb’s subject is extracted. Other languages displaying this effect include Palauan (Georgopoulos 1989), Kikuyu (Clements 1984), and Berber (Ouhalla 1993).

Subject agreement in Gaelic is too poor to clearly illustrate the AAE, but subject agreement morphology in Irish is rich enough (Hale and McCloskey 1984).

- (51) na daoine a chuirfeadh/*chuirfidis isteach ar an phost sin (Irish)
 the men C-REL put-COND-3SG/*put-COND-3PL in for the job that
 ‘the men that would apply for that job’

The AAE is a natural possibility under the approach we have defended for \bar{A} -dependencies in Celtic, since the bottom of the dependency is a pro bearing not ϕ as the value of its Id-feature, but dep. Since there are no ϕ -features on the pronoun, no morphosyntactic agreement is expected to be exhibited. The syntactic mechanism responsible for what is realized as morphosyntactic agreement accesses the Id-feature, but since the value of this feature is not ϕ , inflection is the default.

For Irish, these particular facts would also follow on a Move account, since full subject DPs never trigger ϕ -feature agreement in that language. Our point here is that the account that places a pronoun at the foot of the dependency does not force us into predicting agreement here either,

since the specialized pronoun for dependency formation is never [ID:ϕ]. This follows from the fact that ϕ and dep are two complementary ways of identifying a variable.

The AAE can in fact be seen in Gaelic, when the complement of a preposition is extracted.¹⁵

- (52) 'S e caileag bheag a bha thu a'bruidhinn (Gaelic)
 it's girl small-F C-REL be-PAST you at speaking
 *rithe/ris/*ri.
 with-3F.SG/with-3M.SG /*with
 'It was a small girl that you were talking to.'

The indefinite *caileag bheag* is semantically and grammatically feminine in Gaelic, as can be seen from the feminine agreement on the adjective, expressed as initial lenition. However, the preposition at the bottom of the dependency inflects for masculine singular agreement. Moreover, this preposition cannot occur in its plain uninflected form, *ri* (see (23)–(27) for the relevant paradigm). The default agreement on the preposition in Gaelic is unexpected on the movement analysis. If the bottom of the dependency is occupied by a trace (i.e., a copy), then we would expect that a bare (nonagreeing) form of the preposition should surface, rather than a default version. On our analysis, the two types of AAE are unified by the common specification for pro as [ID:dep].

4.2.3 Sensitivity to Islands Since [ID:] on pro receives its value via Agree, and Agree is sensitive to the PIC, no valuing can take place across a phase boundary, except into its edge.

On the assumption that strong islands are a subset of phases, it follows that pro's ID-feature can never be valued inside an island by a C that is outside that island. Although detailed explication will need to await a coherent minimalist theory of islandhood, this is the correct prediction: relative dependencies headed by *a* and its counterpart in Irish are ungrammatical ((53) and (55) are instances of a relative clause island, and (54) shows an adjunct island).

- (53) *am fear a phòg mi a'bhean a phòs (Gaelic)
 the man C-REL kissed I the woman C-REL married
 '*the man who I kissed the woman who married'
- (54) *Dè an t-òran nach eil duine sam bith ag èisdeachd ri Iain ged a
 which song C-REL, NEG is anyone listening to Iain although C-REL
 tha e a'seinn?
 is he singing
 'Which song isn't anyone listening to Iain even though he is singing?'
- (55) *an fear aL phóg mé an bhean aL phós (Irish)
 the man C-REL kissed I the woman C-REL married
 '*the man who I kissed the woman who married'

¹⁵ This is not strictly an anti-identity effect such as those discussed in section 3, since, for example, an overt feminine DP in situ in the object position of a preposition does not trigger feminine agreement on that preposition; rather, the preposition appears in a bare nonagreeing form (unlike the definiteness agreement discussed in section 3). Here, the issue is the featural composition that would have to be assumed for a null pronominal in that position.

5 Resumptive Pronouns

It will not have escaped the reader's notice that we have said nothing as yet about cases where the \bar{A} -dependency terminates in a full pronominal, bearing interpretable ϕ as a value of the Id -feature, rather than in a pronominal bearing unvalued Id -features. Such structures correspond to so-called resumptive pronouns, so the question can be phrased as follows: what does our theory predict about the distribution of resumptive pronouns?

The simplest theory of resumptive pronouns, as noted by McCloskey (2002), is that they are just like other pronouns. This captures the fact that resumptive pronouns do not carry any special morphology and that their syntax in any given language just is the syntax of pronouns in that language. Let us adopt this simplest theory and integrate it with our approach to the syntax/semantics of \bar{A} -constructions. If resumptive pronouns are just pronouns, then they have the specification [$Id:\phi$], and there is thus no requirement that they value an Id -feature.¹⁶

Recall that the semantic correspondences we proposed in section 4 made no reference to locality. Semantic rules seem to have this property in general, as Chomsky (1977:80) noticed in discussing the same question: "The movement rule observes the usual constraints; the interpretive rule violates them fairly freely."

Unlike Agree, the correspondence between the [$\Lambda \dots Id$] configuration and its semantic interpretation is blind to syntactic locality effects, and creates the semantic interpretation irrespective of the particular value of the Id -feature. It follows that, in the case where the Id -feature has ϕ as its value, we predict the possibility of establishing a semantic dependency, but with no syntactic locality effects. Resumptive pronouns are therefore predicted to be able to occur in embedded clauses with no special requirement that the embedded clause be introduced by a special complementizer whose purpose is to establish a syntactic connection.

In our analysis of Gaelic, successive cyclicity is dependent on one factor: an unvalued Id -feature on a pronoun needs a value, and it can acquire one only via Agree, which is constrained to operate within the phase. The Gaelic relativizing C is specified as [$C, \Lambda, Id:dep$]; this entails that, if this particular C locally c -commands a pronoun specified as [$Id:\phi$], the features do not match, and therefore [$Id:dep$] on the complementizer does not end up in an Agree relation with anything. At the interface, this will either produce incoherence on the interpretation of C or violate Full Interpretation since [$Id:dep$] will not be mapped to an interpretation. This correctly predicts the absence of resumptive pronouns in Gaelic, which possesses only the a complementizer.¹⁷

- (56) *an duine a chunnaic mi e (Gaelic)
 the man C-REL see-PAST I him
 'the man that I saw him'

¹⁶ Richard Kayne has pointed out to us that some kinds of resumptives in some languages appear to give rise to Condition C reconstruction effects. It may be that these examples do involve a movement strategy, with the apparent resumptive spelling out a trace or perhaps being inserted by the processor for memory reasons. We concentrate here on those resumptives that appear not to allow such effects.

¹⁷ Resumptive pronouns do appear in certain cases as last resort devices to facilitate processing an utterance of an ungrammatical sentence. However, these are quite distinct from the true resumptives discussed in this section, in that they cannot appear except in islands.

However, if a language were to have a C just like the C we find in Gaelic, but lacking [ID:dep] (i.e., it would just be C[A]), then such a C would be predicted to occur with a pronoun, which the semantic correspondence relation would interpret as the variable bound by the predicate abstraction operator. This is exactly what we find in Modern Irish (McCloskey 1990).

Irish has two Cs (*aL* and *aN*)¹⁸ used to head relative dependencies. This is exemplified by the following contrast:

(57) an scríbhneoir aL mholann na mic léinn (Irish)
 the writer C-REL praised the students
 ‘the writer that the students praised’

(58) an scríbhneoir aN molann na mic léinn é
 the writer C-REL praised the students him
 ‘the writer that the students praised’

Example (58) has this basic structure:

(59) C[A] . . . pro[ID:φ]
 λx . . . x

The first line of (59) gives the syntactic specification of the complementizer and the pronoun. The second line shows how the interpretation is derived via the same semantic correspondence that is used to derive the interpretations of the relatives discussed earlier. The syntactic A-feature is interpreted as a semantic λ -operator, and the syntactic ID-feature as the semantic variable. This means that the clause introduced by *aN* is interpreted (correctly) as a predicate. Since the semantic rule is blind to syntactic locality effects, we expect to see resumptive pronouns in embedded clauses, with the intermediate clause being introduced by a simple (semantically inert) complementizer. As (60) shows, this is the right result.

(60) fir ar shíl Aturnae an Stáit go raibh siad díleas (Irish)
 men aN thought attorney the state that were they loyal
 ‘men that the attorney general thought were loyal’

As expected, resumptive pronouns in Irish can be found even in islands, since the semantic rule ignores not only simple embedding, but all kinds of locality.

(61) Sin teanga aN mbeadh meas agam ar duine ar bith aL tá ábalta (Irish)
 that language aN would-be respect at-me on person at all aL is able
 í a labhairt.
 it-F to speak
 ‘??That’s a language that I would respect anyone who could speak it.’

¹⁸ The capital letters in these representations do not signify phonological segments; rather, they are abbreviations for the morphophonological effects that each of the complementizers has on the immediately following verb. See Duffield 1995 and McCloskey 2000 for detailed discussion.

In this example, we see the resumptive inside a relative clause, being interpreted as the variable bound by the λ -operator introduced by the complementizer *aN*.

The system developed here also correctly predicts that *aN* cannot occur with a ‘‘gap.’’¹⁹ This is because an [ID:] pronoun cannot be valued by a C[Λ] with no [ID:dep].

(62) *C[Λ] ... pro[ID:]

(63) *an scr bhneoir aN molann na mic l inn
 the writer C-REL praised the students
 ‘the writer that the students praised’

The table in (64) summarizes the discussion so far.

(64) Feature(s)	Language	Phonological form	Effect
—	Irish/Gaelic	go/gun	pure complementation C
[Λ]	Irish	aN	pure semantic binding C
[Λ , ID:dep]	Irish/Gaelic	aL/a	syntactic dependency C
[ID:]	Irish/Gaelic	default pro	foot of syntactic dependency
[ID: ϕ]	Irish/Gaelic	ϕ -featured pro(noun)	pronoun

6 Against Null Operator Movement

In the previous sections, we proposed an analysis of \bar{A} -dependencies in Gaelic and Irish that does not make use of Move, but relies on base generation plus Agree. Our motivation for the analysis came first from empirical data on the lack of identity effects found in Gaelic \bar{A} -dependency constructions. The analysis claims these structures have the following schematic form syntactically and semantically:

(65) *wh*-word/DP ... C[F] ... pro[F]
 (which) thing ... λx ... x

The lack of identity effects militates against an analysis of the following form where the three copies are in place by the end of the derivation and are then differentiated by an explicit interpretation rule (as in Fox 2002):

(66) *wh*-word/DP ... $\langle wh$ -word/DP \rangle ... $\langle wh$ -word/DP \rangle
 (which) thing ... λx ... x

However, given that all *wh*-questions seem to be formed on the relative clause model in Gaelic, the lack of identity effects might merely be taken as evidence that the head noun of a

¹⁹ Since Irish pronouns can be null, a literal ‘‘gap’’ is, in fact, possible. However, such a null pronoun will always cooccur with morphosyntactic agreement on a head, marking the ϕ -features of the pronoun and thereby indicating its presence. See Hale and McCloskey 1984 for extended discussion.

relative structure has not been copied from the base of the dependency. It still leaves open the possibility that the head noun/*wh*-word is base-generated, but that a null *pro* moves from the base of the dependency into the specifier of CP (see, e.g., Browning 1987). The copied instances of *pro* would then have to be interpreted differentially as in Fox's approach.

(67) *wh*-word/DP ... *pro* ... ⟨*pro*⟩
 (which) thing ... λ*x* ... *x*

The lack of a simple movement-based *wh*-question of the type in (68) in Gaelic and Irish follows on our base-generation account if *wh*-words in Gaelic do not bear the relevant features that would require/allow movement. Thus, an independent base-generation strategy using *pro* at the base and a complementizer at the top must be adopted instead.

(68) *wh*-word ... ⟨*wh*-word⟩
wh:*x* ... *x*

However, the facts can be made to follow on a movement account as well, if it is assumed that *pro* in these languages possesses *wh*-features in addition to its referential features and that the referential features are sometimes default (for Gaelic) and sometimes nondefault (English). In such an approach, what would then move to the specifier of CP would be a null default *pro* bearing [+*wh*]—essentially a null operator. An analysis with essentially these properties has been defended for relatives in Irish by McCloskey (1990, 2002).

Given the framework of assumptions we adopt, constructing the relative dependency as a base-generation structure is unavoidable. This same framework, as we have said, also leaves open the possibility that the pronominal at the foot of the dependency might move, giving something akin to a null operator account.²⁰ It follows that whether a particular language has one or the other will depend on the setting of some parameter, on the basis of the primary linguistic data. In the present case, this parameter could be rather abstract: for example, it could be related to the explanation of the basic VSO and noun-possessor orders as deriving from absence of specifiers in both the higher clausal and nominal domains. If the specifier of C is generally absent, then no null operator analysis will be available to the learner. Alternatively, the parameter might be rather more concrete, perhaps related to something as simple as the absence of overt relative pronouns in Gaelic, noted in section 2, coupled with the presence of specially marked complementizers. Our intuition (albeit in the absence of a full understanding of learnability issues) is that the core data and surface syntactic and morphological facts about Gaelic make it difficult to see how the null operator option would actually be learnable for speakers of this language, given the other option made available by UG.

²⁰ It is certainly possible that a more restrictive set of assumptions might remove this latter option, so that no null operator strategy is available as part of UG. This step would require rethinking a number of traditional approaches to relativization, and we will not undertake this here, adopting rather the weaker position that both options are available to the learner.

More convincingly, there are two empirical arguments from Gaelic that favor a nonmovement analysis of these constructions, even one in which the movement just involves *pro*. The first argument relates to the absence of multiple *wh*-constructions in Gaelic (and also in Irish—see McCloskey 1979:sec. 3.5).

In English, multiple *wh*-questions like (69) formed on the basis of clefts allow pair-list readings.

(69) Who was it that kissed who?

Under standard assumptions, the two *wh*-expressions are able to undergo an absorption operation at LF (Higginbotham and May 1981), presumably because the object *wh*-expression has raised into the specifier of the CP headed by *that* and this is close enough to allow absorption to take place (perhaps because the *wh*-element then moves to the higher specifier of CP).

If our analysis of Gaelic *wh*-questions as *wh*-clefts is correct, and if there is an operation moving operators to the specifier of CP in relatives, then one would expect Gaelic to also allow multiple *wh*-questions. This expectation is, however, not met.

(70) *Cò a bha a' pògadh cò? (Gaelic)
 who C-REL be-PAST kissing who
 'Who kissed who?'

McCloskey (1979) gives parallel examples from Irish.

(71) *Cé a rinne caidé? (Irish)
 who C-REL do-PAST what
 'Who did what?'

However, if there is no movement to the specifier of CP, but rather a base-generated dependency, these data follow with no further stipulation, since the object *wh*-expression will be in situ and hence too far from the higher *wh*-expression for absorption to take place. A null operator analysis, however, would have to stipulate something extra to disallow absorption in these contexts in this language.

A second argument indicating that Gaelic relativization and question formation involve no movement comes from the nonexistence of parasitic gap constructions in the language. Chomsky (1982) points out that resumptive pronouns, which are marginally available in islands in English, do not license parasitic gaps.

(72) *a man whom everyone who meets him knows someone who likes pg

(73) *a man whom everyone who meets pg knows someone who likes him

Engdahl (1985) argues that certain resumptive pronouns in Swedish are overt spell-outs of traces left by movement operations, whereas others are true pronouns at the foot of a base-generation dependency. Interestingly, the former license parasitic gaps, while the latter do not. Similarly, Shlonsky (1986) points out that resumptive pronouns in Hebrew cannot license a parasitic gap in a clausal adjunct.

- (74) *Ze ha-baxur še-nišakti oto mibli lehakir. (Hebrew)
 this the-guy that-kissed-1M.SG him without to-know
 ‘This is the guy that I kissed without knowing.’
- (75) Ze ha-baxur še-nišakti mibli lehakir.
 this the-guy that-kissed-1M.SG without to-know
 ‘This is the guy that I kissed without knowing.’

Although the data are undoubtedly more complex than we can do justice to here, the generalization that emerges is that parasitic gaps are not licensed by base-generated dependencies. The following data show that parasitic gaps are disallowed in Gaelic relatives (and the questions formed from them):

- (76) *Cò a’ chaileag a phòg thu gun a bhith air bruidhinn (Gaelic)
 who the girl C-REL kissed you without to be after talking
 ris?
 to-3M.SG
 ‘Which girl did you kiss without talking to?’
- (77) *Seo a’ chaileag a phòg thu gun a bhith air bruidhinn ris.²¹
 this the girl C-REL kissed you without to be after talking to-3M.SG
 ‘This is the girl that you kissed without talking to.’

This is unexpected if there is null operator movement in the relative clause, since it should then be possible to license a parasitic gap in the adjunct. If there is no movement in the relative clause, then the relative is a base-generated dependency that is not expected to license the parasitic gap. Of course, one could maintain the null operator approach and rule out the parasitic gap constructions by some other stipulation, but the point we emphasize here is that no extra stipulation is required under our approach.

For all these reasons, we believe that the most successful and compelling analysis of relative and question formation in these languages is a base-generation account such as the one we have proposed. In the next section, we will present examples from São Tomense creole where an overt version of *pro*[*D:dep*] appears spelled out at the foot of the dependency triggering default agreement, showing that the nonmovement strategy is available in other languages as well and revealing, as expected under our account, that the nonovertness of the default *pro* in Gaelic is an accidental property of the base-generation dependency, not an inherent one.

It is important to emphasize again that we are not ruling out Move as a syntactic operation, or even as a property of *wh*-questions in certain languages. We are claiming simply that the Move strategy exists side by side in the world’s languages with the Merge strategy, with different empirical consequences.

²¹ The examples are well formed if the preposition in the adjunct clause is fully specified for agreement. But this is simply the case of a nonresumptive fully ϕ -featured pronoun that is interpreted as coreferential via the usual mechanisms for creating bound pronoun readings.

In the next section, therefore, we examine some other languages and make explicit where we consider the locus of parametric variation to be. We will show that the particular strategy a language adopts is a direct consequence of the lexical/featural inventory at its disposal and that the pairing between lexical items and features is at the heart of the displacement property of human language.

7 Crosslinguistic Variation

7.1 Merge Languages

We have been at pains to argue that the ‘‘gap’’ at the foot of the \bar{A} -dependency in Scottish Gaelic is a result not of movement but of base generation of a pronoun with a very particular featural composition. One charge that might be leveled against such an account is that it makes no sense of the fact that the pronoun in question is actually nonovert. The only thing that follows from the base-generation account of a syntactic \bar{A} -dependency is the antiagreement or reduced ϕ -featural content of the pronoun, not its nonovertness per se. Fortunately, when other languages are taken into account, this seems to be precisely what the generalization is. In So Tomense creole (Hagemeyer 2000), we find a pronoun equivalent to the Gaelic *pro*[Id:] in that it appears at the foot of \bar{A} -dependencies but is not found in islands.²² This pronoun is, however, overt (a possibility predicted by our account), but it shows no agreement (again predicted on the view that identification via ϕ -features is in complementary distribution with dependence on an abstraction operator).

The sentence in (78) shows that the nonagreeing version of the pronoun is required at the foot of an \bar{A} -dependency. The sentence in (79) shows that inside an island, the nonagreeing pronoun is ungrammatical and the only possibility is a true resumptive pronoun with full ϕ -features.

(78) *inen faka se ku n va mpon ku-e/*ku-inen* (So Tomense creole)
 3PL knife DEM REL 1SG cut bread with-3SG/with-3PL
 ‘these knives that I cut the bread with’

(79) *Inen migu se ku bo che di fesa se fla ku-inen/*ku-e sa n’ai.*
 3PL friends DEM REL 2SG leave of party without talk with-3PL/with-3SG are in-here
 ‘*The friends that you left the party without talking to are here.’

In fact, So Tomense shows precisely the same pattern as Gaelic, in that it too has a lexically specific complementizer that appears at the edge of each CP when an \bar{A} -dependency reaches into the CP, giving the complementizer alternation *kumalku*.

(80) *Bo ka kunda kuma Zon konta soya se ku gosto?*
 2SG ASP think that Zon tell story DEM with joy
 ‘Do you think Zon told the story with joy?’

²² Many thanks to Tonjes Veenstra for bringing this fact to our attention.

- (81) Ke nge ku bo ka kunda ku konta soya se ku gosto?
 which person C-REL 2SG ASP think C-REL tell story DEM with joy
 ‘Who do you think told the story with joy?’

The cooccurrence of the invariable default pronoun with the lexically specific relativizing complementizer is exactly what is expected on our account. This correlation is unexplained on an obligatory movement account without further stipulation.

Another interesting possibility is instantiated by Welsh, which shares with its Celtic cousins Irish and Gaelic the lexical resource of specialized complementizers and the appearance of overt pronominals at the base of \bar{A} -dependencies. However, there are differences here that might initially seem problematic for our view, since the base-generated pronoun at the foot of an \bar{A} -dependency has two properties that should not cooccur: syntactic locality effects and overt marking of agreement.

The following examples show ϕ -featured pronominals. In (82), the pronominal is null but triggers agreement on the preposition. In (83), it is overt and occurs in an embedded clause.

- (82) yr ysgol yr ai Deian a Loli iddi (Welsh)
 the school REL went-IMPF Deian and Loli to-3F.SG
 ‘the school that Deian and Loli went to’
- (83) y llyfr y dywedodd John y gwerthodd Mary ef
 the book C said John C read-3SG Mary it
 ‘the book that John said that Mary read’

That the null pronoun triggering agreement isn’t an Irish-style resumptive is shown by the fact that it cannot appear inside islands (see Tallerman 1983; see also Willis 2000 for discussion of the range of possibilities in colloquial Welsh).

- (84) ??Dyma’r dyn y cusanaiet ti ’r ddynes a siaradodd amdano.
 here the man C kissed you the woman C-REL talked about-3M.SG
 ‘Here’s the man that you kissed the woman that talked about him.’

This pattern is a challenge for our approach, since the locality effect (the fact that islandhood matters) suggests that we are dealing with an [ID:] pronoun that can be overt (as in São Tomense). However, in Welsh the pronoun is apparently triggering morphological agreement with V and P just like a ϕ -featured pronoun. If things are as they seem on the surface, this goes against our generalization about the ϕ -feature impoverishment of these special pronouns.

However, a closer look at the pronominal system of Welsh turns out to support the morphological correlation after all. Welsh is different from the other two Celtic languages in having two versions of its pronouns both of which mark ϕ -features: there are the “weak” ones, which mark agreement but which cooccur with verbal inflection; and the “strong” ones, which look as if the agreement features have been doubled and which do not cooccur with verbal inflection. Weak pronouns are optional.

- (85) Gwelais (i)/*fi ef.
 saw-1SG I him
 'I saw him.'
- (86) Gwelodd ef *i/fi.
 saw he I
 'He saw me.'

The fact that the weak pronouns in Welsh cooccur with verbal inflection suggests that the morphological agreement that they manifest is not syntactically active in some sense. This is because of the general complementarity between agreement features on an argument and agreement features on a verb in Welsh (and in Celtic more generally). This can be seen in the following paradigm:

- (87) Darllenodd y dyn y llyfr.
 read-3SG the man the book
 'The man read the book.'
- (88) Darllenodd y dynion y llyfr.
 read-3SG the men the book
 'The men read the book.'
- (89) *Darllenasant y dynion y llyfr.
 read-3PL the men the book

Full DPs and strong pronouns pattern together in not cooccurring with full agreement on the verb or preposition (with strong pronouns being ungrammatical and full DPs triggering default agreement). We hypothesize therefore that these forms have full syntactic specification as ϕ , while the weak pronouns actually do not, surface morphology notwithstanding. Thus, our claim regarding this pattern is that the weak pronouns in Welsh function as [ID:], while the strong ones bear [ID: ϕ] (and therefore should act as resumptives in islands). The weak pronouns simply 'echo' the agreement expressed in verbal inflection (see Rouveret 1991 for the idea that Welsh pronouns are bipartite).

The sentence in (90) confirms this hypothesis and shows a case where an \bar{A} -dependency reaches inside an island. The weak form of the pronoun is ungrammatical, as illustrated above; only the strong version is possible, showing that it is only the strong pronoun in the language that really bears [ID: ϕ].²³

- (90) Dyma'r dyn y cusanaist ti 'r ddynes a siaradodd amdano ef.
 here the man C kissed you the woman C-REL talked about-3M.SG he-3M.SG
 'Here's the man that you kissed the woman that talked about him.'

The base-generation account we have developed predicts languages where both the comple-

²³ Again, the facts here are more complex. See Rouveret 2002 for detailed analysis from a perspective close to ours.

mentizer and the foot of the dependency are overt, and this is what we found to be the case in both São Tomense and Welsh. We can tell we are dealing with a true syntactic dependency here because of its sensitivity to islands. These cases are crucial, because correlating locality effects with Move would predict that the foot of a syntactic dependency is always a gap (unless we complicate our spell-out mechanisms for copies). These overt syntactically dependent pronouns contrast with the true independent resumptives (which can participate in a purely semantic dependency) in that they consistently show impoverishment with respect to ϕ -features. We have speculated that this inverse correlation is found because ϕ -features and Λ -features are two choices for fulfilling the syntactic identification requirements for pronouns.

7.2 *Move Languages*

Having established a case for the existence of languages that construct \bar{A} -dependencies using a base-generation (Merge) strategy, we turn now to the case of English, which seems to use the Move strategy. We have argued that there are empirical differences between the two strategies, and that the syntactic and lexical mechanisms are different despite similar semantic effects.

English shows “identity” effects in the construction of its questions—namely, the existence of reconstruction for binding theory (91), and idiom chunks (92) (see Bianchi 1995 among many others for arguments for the presence of identity effects in English).

(91) Which picture of himself_i does John_i like best?

(92) How much advantage was taken of John?

English also has no distinct complementizer that shows up in relative constructions.

(93) a. I said (that) I saw him.

b. the man (that) I saw

This indicates that English lexical C is a true subordinator and that there is no lexical C that has an interpretable Λ -feature. Thus, we also predict that resumptive pronouns are not strictly grammatical, but have the flavor of a last resort processing strategy.

(94) ??Here’s the man that you kissed the woman that talked about him.

If the complementizer in English does not bear the Λ -feature, the element responsible for the introduction of the feature into the derivation must be the *wh*-element itself. Another striking difference between English and Celtic is the fact that *wh*-expressions in English actually show up overtly at the edge of relative clauses in what we might plausibly interpret as the abstraction operator position (95). The corresponding types of examples in Celtic are completely ungrammatical (96).

(95) the man who I saw

(96) *am fear cò a chunnaic mi (Gaelic)
 the man who C-REL saw I
 ‘the man who I saw’

This view of things gives a new perspective on the displacement property of human language (Chomsky 2001a). Given the principle of Full Interpretation, and given the constraints on how different interpretable features are treated by the mechanisms that compose the semantic interpretation, any lexical item with more than one incompatible interpretable feature on it will be forced to move. Movement may appear to be a departure from perfection from certain perspectives, but given that languages create lexical items by bundling features together, it is not surprising that such a strategy exists, combining featurally complex lexical items with Move to satisfy the interface constraints. This is especially so if Move is just Rmerge and hence is a simple rather than compound operation. The choice between Merge and Move in a language depends on the way the interpretable features are configured within the lexical inventory of that language in interaction with the universal requirements of the interface constraints.

8 Conclusion

We have examined the phenomenon of question formation and relativization in Scottish Gaelic (and Irish) to argue that Celtic, far from being a language family that gives overt evidence for successive-cyclic *movement*, is one where the morphological complementizer alternations arise instead from a base-generation strategy. The point is that under current conceptions of the architecture of grammar, long-distance dependencies that show locality effects could in principle be instances of either Move (Rmerge) or Merge (cf. Chomsky 1977). A Merge strategy is possible if the language has the lexical items with the appropriate syntactic features to set up a dependency; features are then checked/valued via Agree, which is subject to locality. In the case of Move, copies are available in each position and identity effects emerge. In both cases, the same semantic correspondence between syntactic features and interpretations is invoked.

In constructing our analysis, we have assumed that a certain ‘‘minimal kit’’ of interpretable features is necessary at the interface to feed the meaning representation of a semantic dependency, and this is the same for all languages. In particular, we have argued for the feature Λ that is interpreted as predicate abstraction, and we have argued for a syntactic feature on pronouns, ID, that marks a pronoun as requiring a semantic interpretation (via an assignment of values to variables). Two distinct possible syntactic values for the ID-feature were proposed: ϕ , which marks the pronoun as potentially independent of any abstraction operator and therefore able to access an antecedent via an assignment function (appropriately constrained by binding theory and/or the current discourse);²⁵ and *dep*, which marks it as being dependent on an abstraction operator. This proposal captures the nonidentity effects that we observed for languages of this type.

One important ramification of our analysis is that the details of the syntactic structure of a representation at LF (i.e., the final structure in a derivation), corresponding to a particular interpretation, may vary across languages; so English relative clauses have a different syntax from Gaelic

²⁵ Nothing however prevents the semantic rules from interpreting any such pronoun as the base of the dependency, if the configurational circumstances are right.

relative clauses, as we showed above. However, the interface rules that map from LF structures to interpretations are universal, as are the mechanisms available to the syntactic computation. For the case in hand, we have argued that, in principle, all languages have the potential to use both Merge and Move to establish relative dependencies: languages may, however, differ in where they deploy each strategy. In fact, given the properties of the framework we have adopted, it is difficult to see how a derivation of an \bar{A} -dependency via base generation could be prevented, without stipulating that certain syntactic features cannot be lexicalized separately (a move that seems ad hoc and empirically false).

What speakers know, therefore, when they know their specific language is the inventory of lexical items at their disposal: the pairings between phonological form and bundles of syntactic features. If a language has a lexical item that bundles together more than one interpretable feature that the interface rules require to be interpreted separately, this forces a Move strategy to create an interpretable structure. If distinct lexical items are to be interpreted as dependent on each other, an Agree relation set up in the syntax will allow this. Our system offers a new perspective on the displacement property of human language: it results from the interaction between universal syntax-semantics correspondences and the different ways that languages can bundle interpretable features within a single lexical item.

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