Wh-Agreement and “Referentiality” in Chamorro

1 Background

One of the most compelling aspects of the claim that wh-movement is bounded is that it is supported by evidence from two quite different empirical domains: on the one hand, evidence from island effects (see Ross 1967, Chomsky 1973, and many others).

(1) What did Sally say that she noticed they had planted beside the hedge?
(2) *What did Max notice a place where we could plant it?

and, on the other, evidence from the morphology of extraction in various languages (including Chamorro (Chung 1982), Irish (McCloskey 1979, 1989), Kikuyu (Clements 1984), Moore (Haila 1990), and Palauan (Georgopoulos 1985)). The basic character of the second type of evidence can be seen from the Chamorro examples in (3)–(4).

(3) Hmällum  si Maria [na ha-pänak si Juan i pätgun].
AGR-assume Maria COMP AGN-spank Juan the child
‘Maria assumes that Juan spanked the child.’
(4) Hayi hinaloma si María [i pümänak i i pätgun]?
who wh-assume María wh-spank the child
‘Who does Maria assume spanked the child?’

In simple wh-constructions in these languages, the presence of a moved wh-phrase is signaled morphologically on some head in the extended projection of [+V]—namely, C°, I°, or [+V]° (see Grimshaw 1991). In long-distance wh-constructions, the special

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* Also relevant here is the subject-verb inversion discussed for French by Kayne and Pollock (1978) and for Spanish by Torrego (1984).
morphology shows up on every such head along the path of the moved wh-phrase, precisely as if extraction had occurred in a series of successive, bounded steps. Evidence of this kind appears to provide striking confirmation of the locality of wh-movement—

a locality that was initially established on the basis of island effects alone.

The early generative literature assumed that extraction out of islands was invariably ungrammatical (see, for instance, Chomsky 1977), an assumption consistent with the idea that wh-movement invariably applied in bounded fashion. However, it is now generally acknowledged that the real situation is more complicated. Since Huang 1982, it has been recognized that there are islands out of which extraction of arguments is far better than extraction of adjuncts (see also Lasnik and Saito 1984, Chomsky 1986, and others). This evidence from island effects led Rizzi (1990) to propose a theory of movement in which wh-traces of adjuncts must meet a locality requirement that wh-traces of arguments systemically evade (namely, they must be antecedent-governed). Rizzi’s theory was further refined by Cinque (1990) in a careful investigation of A-dependencies in Italian. Relying in part on contrasts like (5)–(6), Cinque argued that the only wh-traces that can escape the antecedent requirement are traces of “intrinsically referential” arguments—arguments that “refer to specific members of a set in the mind of the speaker or preestablished in discourse” (see Cinque 1990:16 and, for a related notion, Pesetsky 1987):

(5) QUESTA DICHIARAZIONE, mi chiedo perché abbia ritrattato ti.
   ‘This statement, I wonder why he has retracted.’

(6) OGGI DICHIARAZIONE, mi chiedo perché abbia ritrattato ti.
   (‘Every statement, I wonder why he has retracted.’) (Cinque 1990:10)

Table 1 gives an idea of what types of Italian DPs count as “referential” in Cinque’s classification. The rationale behind the classification, and the details of Rizzi’s theory, will be discussed further in section 7.

In effect, what emerges from this line of thinking is a relativized view of wh-movement and the locality it observes. Movement of adjuncts and “nonreferential” arguments is bounded (successive-cyclic), since the traces left by this movement must be antecedent-governed. On the other hand, movement of “referential” arguments may be unbounded (long), since for them the antecedent government requirement is not enforced.3

Significantly, the evidence cited by Rizzi and Cinque in support of their theory of movement comes exclusively from island effects. This immediately raises a question: Can evidence for a relativized view of locality also be found in the morphology of extraction?

Here I analyze some facts from Chamorro that reveal that the answer to this question

3 The relation between a moved element and its trace is also constrained by Subjacency (see Chomsky 1973, 1986). According to current thinking, this principle is responsible for the fact that many examples of long movement are less than fully grammatical.

<table>
<thead>
<tr>
<th>Cinque’s “nonreferential” DPs</th>
<th>Cinque’s “referential” DPs</th>
</tr>
</thead>
<tbody>
<tr>
<td>chi? ‘who?’</td>
<td>definite DP</td>
</tr>
<tr>
<td>ogni NP ‘every NP’</td>
<td>quale? ‘what?’</td>
</tr>
<tr>
<td>nessun NP ‘no NP’, niente ‘nothing’</td>
<td>tutti DP ‘all DP’</td>
</tr>
<tr>
<td>qualche ‘something’</td>
<td>molti NP ‘many NP’</td>
</tr>
<tr>
<td>qualcuno ‘someone’</td>
<td>qualche NP ‘some NP’</td>
</tr>
<tr>
<td>qualunque NP ‘whatever NP’</td>
<td>alcuni NP ‘some NP’</td>
</tr>
<tr>
<td>qualsiasi NP ‘whatever NP’</td>
<td>chiunque ‘whoever’</td>
</tr>
</tbody>
</table>

is yes. I will try to show that the Wh-Agreement that marks the path of extraction in this language is sensitive to the difference between long and successive-cyclic movement. Furthermore, it is also sensitive to the “referentiality” of the moved element in precisely the way that Cinque’s analysis predicts.

From the theoretical point of view, this is a remarkable result. It is also welcome from the standpoint of language-particular analysis. My initial work on extraction in Chamorro used the patterning of Wh-Agreement to argue that wh-movement in constituent questions was bounded (Chung 1982). However, the same logic that produced this result also forced me to conclude that relativization was unbounded, and left a troubling residue of data I could not easily explain. It turns out that Rizzi’s and Cinque’s views of locality provide a framework within which all these facts can be understood. At the same time, the Chamorro material may shed a bit more light on the question of why “referentiality” should be relevant to the theory of movement, as I will suggest, very tentatively, by way of conclusion.

Section 2 offers some background on Chamorro syntax, and section 3 motivates the basics of my analysis of Wh-Agreement. Readers with only a passing interest in Chamorro per se may want to skip ahead to the end of section 3, where I state the Wh-Agreement rule. Sections 4 through 6 describe the operation of Wh-Agreement in various types of extraction across a distance. It is here that the Chamorro evidence for relativized locality is presented. Finally, sections 7 and 8 draw some conclusions.

2 Basics

Chamorro is a Western Austronesian language spoken in the Mariana Islands. In general, the phrase structure of this language is strictly head-initial. The clausal head 1ª, for
instance, precedes its complement, the predicate XP, as well as its specifier, which I take to be the S-Structure subject (Chung 1990):³

(7a). Gini [VP māma ign'] hao?
IMP aag, AGR.sleep,PROG you
‘Were you sleeping?’

FUT three years she
‘She’s going to be three years old.’

c. Ti [AV wu-lu'la'gi sagu-na] i hāgan.
not AGR.aive LOC place-AGR the turtle
‘The turtle would not remain alive in his place.’ (Cooreman 1983:102)

d. Pues ti sifi [VP man-hatsa lānchu tu'lu'] esti i ta-tao
so not can AGR.AP-build ranch again this the man
‘So this man couldn’t build a ranch again.’ (Manibusson, n.d.:1)

e. Kulan [VP ha-ni hit sifi] esti i chi'lu-ta.
sort of AGR-give us sign this the sibling-AGR
‘It was as if our sister gave us a sign.’ (Cooreman 1983:187)

The nominal head D憔 precedes its NP complement as well as its specifier, the possessor (Chung 1991b):

(8a). kida sakkān
each year
‘each year’

b. i [NP tres na fumu'gu'un] tata-hu
the three l children father-AGR
‘the three children of my father’ (Cooreman 1982:8)

Two complications in this view of Chamorro phrase structure will be evident in what follows: one real, the other apparent. The real complication is supplied by C憔, which is not initial within all its projections but instead has its specifier, the moved wh-phrase, on the left:

(9a). Amarnu na mamokkat hao?
where? AGR AGR.walk you
‘Where did you walk (to) tapes?’

³IP is gini ‘imperfect’ in (7a), pāra ‘future’ in (7b), and sīnu ‘can’ in (7d); in the other examples it is phonetically null. I am assuming that the sentential negative it in (7c) is adjoined to IP, though it would also be possible to assume that it heads its own maximal projection i.e., NegP.

Chamorro is a null argument language: subjects, possessors, direct objects, and by-phrases of passive are routinely realized via null pronouns. Null pronouns are not represented at all in the examples cited in this article. (In contrast, null operators are represented as O, wh- traces as l, and null N as e.)

Relevant prefixes and suffixes in the Chamorro material are set off by hyphens; relevant infixes are italicized. l in the morpheme-by-morpheme glosses stands for linker, the Western Austronesian morpheme that links modifiers to heads.

b. Hafa na u-guāh lusung nai gi tānu’?
why? AGR.exist mortar DIMIN LOC land
‘Why would there be a mortar on the ground?’ (Cooreman 1983:8)

The apparent complication involves clausal word order, which allows some freedom when the predicate XP is [ + V]. In such cases several surface word orders are possible, but the unmarked order is VSO—more accurately, FIP [ + V]. Subject Complements Other:

(10a). Pāra u-hanoi i dos guītu gi kantu-n tasi.
FUT AGR-go the two there LOC side-l. ocean
‘The two would go to the edge of the sea.’ (Cooreman 1982:11)

b. Mafi-ānakki i dos pugua’.
AGR.AP-steal,PROG the two pugua’s.
‘The two were stealing pugua’s.

c. Ha-gaga esti i pāgu-po pambli i haga-n rai un aniyu pāra
AGR-beg this the child poor the daughter-l. king a ring for
prenda-nia.
token-AGR
‘The poor child asked the king’s daughter for a ring as his token.’ (Cooreman 1983:142)

One might be tempted to think that this VSO order is derived via head movement from an SVO structure in which V takes the subject, which occurs on the left, as its specifier (see Emonds 1980, 1985; Guilfoyle, Hung, and Travis 1992; Koopman and Sportiche 1991; Mcloosky 1991, and—for a different view—Woolford 1991). However, I have argued elsewhere (Chung 1990, forthcoming) that such a claim cannot be maintained for Chamorro. Instead, the VSO order of this language arises when the subject in the strictly head-initial structure (11a) undergoes right-adjunction to [ + V]. This adjunction leaves behind a null expletive in the specifier of IP, as shown in (11b).

(11a).

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          IP

           ┌───┐
           │   │
           VP  DP

           ┌───┐   ┌───┐
           │   │   │   │
           V   l   O   e

```

V
3 Wh-Agreement and Wh-Traces

Chamorro has a variety of wh-constructions—constituent questions, relative clauses, clefts, and comparatives—all of which have the familiar properties identified by Chomsky (1977) as diagnostic of syntactic wh-movement. These constructions exhibit a gap; the gap can be related to its antecedent across an apparently unbounded distance; but the antecedent-gap relation must observe islands. Following Chomsky (1986), I assume that the antecedent-gap relation is created by movement of some element to the specifier of C. The extracted element (or operator) is overt in questions and clefts, but null in relative clauses and comparatives.

(12) a. Hafa, kinannō'nu-mu ti?  
what? wh-DET PROG-AGR  
‘What have you been eating?’

b. Lao [unu giya siha], muli ti.  
but one LOC them wh-see  
‘But one of them saw it.’

c. Guāha na [ha'ani siha [O, ni ti siha humanao ti]].  
AGR exist L day PLURAL COMP not can AGR go  
‘There were some days when he couldn’t go.’

In addition, these constructions exhibit the special morphology (glossed ‘wh’ above) that I call Wh-Agreement (see Chung 1982, Goldberg 1985, Chung and Georgopoulos 1988, and Dukes 1992). How is this Wh-Agreement to be analyzed?

Since Chomsky 1986, the prevailing Government-Binding (GB) Theory view of morphological agreement has been that it reflects the syntactic relation of spec-head agreement that links a functional head to its specifier. Work by Rizzi (1990, 1991) in particular suggests that syntactic agreement of C with its specifier plays a prominent role in the licensing of wh-constructions. Given this, one might hope to be able to analyze Wh-Agreement, and all other instances of the morphology of extraction, as language-specific manifestations of spec-head agreement with C.

Such an analysis turns out not to be possible for Chamorro. Though spec-head agreement is indirectly implicated in the phenomenon, as will be shown in section 4, in the simplest cases Wh-Agreement is not reducible to spec-head agreement in the C system. My reasons for making this claim will become massively clear by the end of this article. Meanwhile, we can find some initial support for it in the following; in Wh-Agreement the morphology varies not with the XP that occupies the specifier of C (e.g., interrogative phrase vs. relative O), but with the Case of the wh-trace.5

When the wh-trace is nominative, for instance, Wh-Agreement is realized by replacing any ergative agreement on [+V] with the infix -um:

(13) a. Todu i dos umaluk ti na bunitu esti na na'ani Juan.  
all the two wh[nom], say COMP AGR pretty this L name the Juan  
‘Both of them said that this name Juan was beautiful.’ (Cooreman 1983:78)

b. Matungu' ha'... [hayi chu'mgu i tesi na dāngku-l dañu  
AGR be known indeed who? wh[nom], do this L great L harm  
Guini gi santus na pali].  
here LOC saintly L priest  
‘They knew indeed who had done this great injury to the saintly priest.’ (Cooreman 1982:42)

When the wh-trace is objective or objective2 (the Case of oblique objects of verbs of transfer), Wh-Agreement may be realized by optionally nominalizing [+V], a process that inserts the infix -in if [+V] is transitive:

4 A literal translation of (12a) would be ‘The rice that Rita bought is more than (what) she sold’. Note the complex NP finahanu pugas ti Rita, which serves as the subject of megga'nu ‘be more’: the head of this complex NP (pugas) has been right-adjointed to the verb of the relative clause, as described in Chung 1991a.

5 More accurately, with the Case of the A-bound trace. See below.
wh[OBJ] eat, PROG-AGR
‘What’s the point of you worrying about what I’ve been eating?’
b. Pues todu adyu i [(O chime'na t] anuit] ha-goddi . . . so all that the wh[OBJ], take-AGR medicine wh[OBJ], AGR-tie
‘Then all the medicine that she had taken she tied together . . .’ (Cooreman 1983:17)

Finally, when the trace is oblique, Wh-Agreement must be realized by obligatorily nominalizing [+V]p, via a process slightly different from that shown in (14):
(15) a. Na'i yu'ni [hâbun [O ni pâra fa'gane-mmù ni karetu t]']. give me obl. soap COMP FUT wh[OBJ], wash-AGR OBL car
‘Give me the soap that you’re going to wash the car with.’
b. Na'tungu' yu' [hafa malago'mu t]. make, know me what? wh[OBJ], want-AGR
‘Let me know what you want.’ (Cooreman 1983:192)

The different overt realizations of Wh-Agreement are summarized in table 2. Observe that, throughout, the morphology surfaces on [+V]p, a fact that suggests that [+V]p of some head in its extended projection is the other category involved in the agreement.

Perhaps the most straightforward account of this pattern is to assume that the wh-trace shares its Case feature with this other category (whose identity will be revealed below). This, in outline, is the analysis of Wh-Agreement I will assume henceforth. In addition, following a long tradition in studies of agreement, I will assume that sharing of the Case feature occurs even when not overtly signaled by any special morphology (cf. English I agree, you agree, she agrees). On this view, Wh-Agreement has also occurred in the following examples:

(16) a. Ni hafa 'ha' matsu t ngap. not anything, EMP indeed wh[NOM], AGR-arrive yesterday
‘Nothing arrived yesterday.’
b. Hafa pâra u'fâ'inas si Juan t?
what? put wh[OBJ], AGR-make Juan
‘What is Juan going to make?’
c. Guâha adyu i [e [O man-ma'utut a'ga'a'-nhà t] . . . AGR-exist those the wh[GEN], AGR-be.cut neck-AGR
‘There were those whose heads were cut off . . .’ (Cooreman 1983:166)

Such an analysis immediately raises several questions (see Dukes 1992), of which the most compelling is this: Why should the agreement be sensitive to wh-traces? Although there is no non-speculative way to approach the question, I think one can begin to construct a plausible answer by observing a morphological generalization also noted by Dukes (1992): every overt realization of Wh-Agreement is homophonous with some independently occurring nonfinite form in the language. For instance, the overt form of nominative Wh-Agreement, which is found only on realis transitive verbs, is homophonous with the inflection of transitive infinitives:

(17) Ti hu-gågågågå lokkûi [lumû'gi'gui giv gi uriya-hu]. not AGR-beg, PROG also INFIN, see him LOC around-AGR
‘I’m not asking to see that person around me.’ (Cooreman 1983:76)

The overt forms of objective and oblique Wh-Agreement are homophonous with nominalizations. These deverbals forms have the external distribution and most of the internal syntax of DPs, as the following examples suggest:

(18) a. Man-attrasió hâm put [i sinigôn-mu ha']. AGR-leave we because the NMLZ.drive-AGR indeed
‘We’re late on account of your driving.’
b. Sa' hîmngnâng ni [ma'cû'jé-nà ni hânum] . . . because AGR-be.startled OBL NMLZ.be.spilled-AGR OBL water
‘Because he was startled by being spilled on with water . . .’ (Cooreman 1983:170)
c. Nahung esta pâra [lina'la-mâmi yan i asagasya-hu]. AGR-enough for NMLZ.alive-AGR and the wife-AGR
‘There is already enough for my and my wife’s sustenance (lit. being alive).’ (Cooreman 1983:73)

It seems clear that what is involved here is morphological homophony rather than any syntactic requirement that wh-movement occur only out of nonfinite clauses. For one thing, when Wh-Agreement is not realized overtly, wh-constructions display all the
morphosyntactic earmarks of finite clauses, including subject-verb agreement (19a), a finite 1\textsuperscript{st} (19a), and a predicate phrase that is not necessarily [+]V (19b).

(19) a. Hayi pārā u-aluk  r ādyu?
   who? fut wh[nom].agr say that
   'Who will say that?'
   b. Kao un-tungu' [hayi na paalo' an ti sisais
   comp agr-know who? l girl not wh[nom].six.prog
   ānus  r tānabai]
   years yet
   'Do you know which girl is not yet six years (old)'

For another thing, even when Wh-Agreement is realized via nominalization, finite 1\textsuperscript{st} routinely occurs, suggesting that the clause is syntactically finite:

(20) Hafa pārī fina'timas-iha si Juan r?
   what? fut wh[on].make-AGR Juan
   'What is Juan going to make?'

What, then, is the significance of this morphological homophony? Here I think it is useful to recall some of Barbara Partee's work on the parallels between nominal and temporal anaphora. Partee (1973) observed certain similarities between the ways that tense morphology is used to refer to times and pronouns are used to refer to their antecedents. In Partee 1984 she went on to account for these similarities using the analysis of tense developed by Erhard Hinrichs, an analysis that appeals to a discourse representation theory on the one hand and to Reichenbach's notion of 'reference time' on the other. Partee's discussion deals exclusively with tense, not with the related categories of mood or finiteness. Still, it would be within the overall spirit of her approach to try to characterize nonfinite morphology in terms of its temporal anchoring. When we do this, the following rough but intuitively plausible characterization emerges: nonfinite forms are not anchored to a reference time in and of themselves, but instead must look higher in the syntactic structure—typically, to the higher verb—to locate a temporal anchor.

What is striking is that much of the same characterization can be given of wh-traces and their referential anchoring. Namely, wh-traces are not anchored to a referent in and of themselves, but instead only acquire such a referent (or set of potential referents) by virtue of being bound by an A-antecedent located higher in the tree.

This parallel suggests a way of understanding Wh-Agreement and its sensitivity to wh-traces. Suppose we say that the function of Wh-Agreement is to indicate that there is a wh-trace that is unbound within some specified domain—a trace that has not yet located an anchor, in the sense that its A-antecedent lies outside the domain in question.

Then we will have provided a rationale for why the agreement should consist of the sharing of a Case feature; Case serves to narrow down the precise location of the trace within this domain. At the same time, we will have motivated the use of nonfinite morphology to realize the agreement, since this is the morphology that the language uses for another kind of anaphora that must search outside some specified domain to find its anchor.

This conception of Wh-Agreement makes clearer than I have managed to previously why the agreement should mention the trace at all. Accordingly, I will adopt it in what follows. On this view, Wh-Agreement is not just 'agreement with the trace,' but more particularly agreement with a trace that is unbound within some specified domain.

Having settled this, our next task is to determine what that domain might be. Here the two most plausible candidates appear to be the c-command domain of C\textsuperscript{0} and the m-command domain of 1\textsuperscript{st}, both of which contain the trace but not its A-antecedent, which is typically lodged in the specifier of C\textsuperscript{0}.

The choice between these domains is intertwined with the question of what we take to be the other category involved in Wh-Agreement. So far I have assumed merely that the other category is some head in the extended projection of [+]V, since the facts of morphological realization are consistent with that assumption but do not help narrow down the field any further. (See Grimshaw 1991 and Chomsky 1992 for general discussion bearing on this point.) However, if the domain of Wh-Agreement turned out to be C\textsuperscript{0}'s c-command domain, it would be natural to take C\textsuperscript{0} to be the other category involved in the agreement. Similarly, if the domain turned out to be 1\textsuperscript{st}'s m-command domain, then we would want to identify 1\textsuperscript{st} as the agreeing head.

Practically speaking, the difference between the two domains is slender enough that one might think the question could be settled only on theoretical grounds. It is gratifying, then, that Chamorro offers empirical evidence that bears directly on the resolution of this issue.

Certain possessors in Chamorro may undergo wh-movement when the D\textsuperscript{0} that heads the possessed DP is null (see Chung 1991b:125–128). Wh-movement of the possessor never results in any visible Wh-Agreement. I describe this fact by adding genitive to the list of Cases whose Wh-Agreement has no overt realization.\footnote{Consider the relative clause in (21). In the possession of the direct object has been relativized.}

\footnote{Part of the appeal of this proposal is that it could be extended fairly directly to Kikuyu, Moore, and Paman, since in all these languages the morphology of extraction is realized via some "irrealis" form (see the references cited in section 1).}

\footnote{A reviewer points out that government may ultimately be responsible for the fact that genitive Wh-Agreement is not overtly realized. In general, Wh-Agreement is triggered only by traces that are governed, and assigned Case by some head in the extended projection of [+]V. If one assumes that possessors are assigned Case within DP—by D\textsuperscript{0}, for instance—the absence of a genitive form of Wh-Agreement would follow automatically. This is an attractive idea. I should point out, though, that not all instances of non overt movement, but the movement never results in any visible Wh-Agreement. Nonetheless, it can be argued that the trace of this NP must trigger the Agreement rule; see Chung 1982.}

\textsuperscript{*} Thanks to Bill Ladusaw for suggesting this to me.
What is the status of the trace of adjunction with respect to Wh-Agreement? Since the trace's A-binder is balanced on the cusp between the c-command domain of C" and the m-command domain of P, the answer should help determine which of these domains is respected by Wh-Agreement in the first place. If the relevant domain were the c-command domain of C", then the trace of adjunction would be bound within that domain, so it should be impossible for it to license Wh-Agreement on the verb of the relative clause. Suppose, on the other hand, that the relevant domain is the m-command domain of P. According to the view of adjunction sketched by Chomsky (1986c), elements adjoined to IP are not actually m-commanded by P, so the trace of adjunction should count as unbound within this domain. We would therefore expect it to license Wh-Agreement in the usual way.

And in fact, the trace of adjunction does license Wh-Agreement. In (25), for instance, this trace is responsible for the Wh-Agreement that surfaces overtly on the verb of the relative clause.

(25) a. Kao un-lili'i i [taotoa [O_j ni [magagu-na t_j] ni [mikase-tta wh[GEN].AGR-SEW t_j]]? clothes-AGR 'Have you seen the person whose clothes we mended?'

b. Adyu guhi guatu i [patgunu [O_j ni [dana-na t_j] that there over.there the child COMP mother-AGR t_j] achatu-mu wh[OBJ].RESEMBLE-AGR 'Over there is the child whose mother you resemble.'

I conclude from this that the domain relevant for Wh-Agreement is the m-command domain of P. This conclusion makes it natural to infer that P is the other category involved in the agreement—the category with which the wh-trace shares its Case feature.

Finally, in anticipation of the analysis of long-distance wh-constructions below, I will make the (ultimately necessary) move of inserting a minimality requirement into the characterization of P's domain. This leaves us with the rule of Wh-Agreement shown in (26).

(26) Wh-Agreement

An A-bound trace that is free within the minimal m-command domain of P shares its Case feature with P'

where minimal m-command is defined as in (27).

(27) A head X minimally m-commands Y if and only if (a) X m-commands Y, and
(b) there is no head Z distinct from X, but of the same category type as X, such that Z m-commands Y and X m-commands Z.
Note that the minimal m-command domain of P0 carves out a territory roughly equivalent to the clause.

4 The Contribution of Spec-Head Agreement

Even though Wh-Agreement cannot be reduced to spec-head agreement in the C system (to which I return in footnote 19), there are situations in which spec-head agreement is indirectly relevant to the operation of the Wh-Agreement rule (26). These involve long-distance wh-constructions—constructions in which the operator has moved successively-cyclically across an apparently unbounded distance. Since I have presented my analysis of the facts in several other places (e.g., Chung 1982, 1990, 1991d), the discussion here will be brief.

Long-distance constituent questions provide classic examples of the agreement pattern of interest to us here. Consider the constituent questions in (28).

(28) a. Hafa ma’añao-na i palao’an [t pàra u-fa’nu’i what? wh[obl].afraid-AGR the girl FUT wh[obl2].AGR-show si nana-na i mother-AGR t]
   “What is the girl afraid to show her mother?”

b. Hayi wina’buah ha si Juan [t ni miniyalang i asangua-ta t]?
   who? wh[nom].disturb Juan COMP wh[obl],lonely the spouse-AGR
   “Who does it disturb Juan that his wife is lonely for?”
   (lit. ‘Who does that his wife is lonely for t disturb Juan?’)

c. Hayi miniyal’-úña ha [t pàra u-manag t gëspaing1]
   who? wh[obl].want-AGR FUT wh[nom].AGR-sleep late
   “Who do they want to sleep late?”

d. Hafa masangan-mmu ni policeman [t pàra un-cho’gu i what? wh[obl2].be,told-AGR obl policeman FUT wh[obl].AGR-do t]
   “What were you told by the policeman you should do?”

In these examples the P0 that has the original wh-trace in its minimal m-command domain shows the expected form of Wh-Agreement. Thus, the mostly deeply embedded P0 in (28b) is inflected for oblique Wh-Agreement; that in (28c) is inflected for nominative Wh-Agreement; and so on. What is unexpected is that higher P0’s along the path of extraction also show Wh-Agreement, but the form of agreement that they manifest is evidently not conditioned by the Case of the original wh-trace.

If one scrutinizes the data more closely, the descriptive generalization that emerges is this: in instances of “unexpected” Wh-Agreement, P0 seems to be agreeing with the CP in its domain whose specifier is occupied by an intermediate wh-trace. How is this generalization to be accounted for?

My analysis of this pattern relies on the following three assumptions. First, in wh-

constructions such as (28a-d), movement has occurred successively-cyclically. Second, Case in Chamorro is assigned to XPs in argument positions whether they are DPs or CPs (see Chung 1991d for discussion of this claim). Third, Case percolates beyond the syntactic position to which it has been assigned via the two types of (default) feature sharing recognized within GB: feature sharing between a maximal projection and its head, on the one hand, and feature sharing between a head and its specifier, on the other.” These assumptions combine with the basic Wh-Agreement rule to give an account of the full pattern of agreement shown in (28). To see how the system works, consider the schematic subtree (29), which represents a higher clause along the path of extraction in one of these wh-constructions (e.g., (28c)).

(29) / IP
   /  
   /   /  
   /     /   
   /       /     
   I      VP
   / 
   /   
   /     
   I

Here V0 assigns (inherent) oblique Case to its CP complement. Once that happens, the general mechanisms of feature percolation cause this Case to be shared first between CP and its head, C0, and then between C0 and its specifier, so that oblique Case also shows up on the intermediate trace in the specifier of C0. Observe now that this trace satisfies all the conditions for Wh-Agreement with the higher P0. An Â-bound trace, it

* Following Gazdar et al. (1985), I am assuming that this feature sharing is a default mechanism that cannot override feature values that have been explicitly stipulated.
is nonetheless free in its minimal m-command domain, whose boundaries are indicated by the broken lines in (29).

The result is that the higher *P comes to be inflected for oblique Wh-Agreement—precisely what we want to achieve (see (28c)). More generally, once these assumptions are made, the pattern of Wh-Agreement exhibited by higher *Ps along the path of extraction falls out in completely systematic fashion.

This final piece of the analysis of Wh-Agreement is noteworthy for two reasons. First, it relies on the assumption that Case percolates from C to its specifier via overall principles of feature sharing. It is in this sense that Wh-Agreement makes indirect use of spec-head agreement in the C system. 10 Second, and more important for our purposes, the analysis claims that every instance of Wh-Agreement on a higher *P is licensed by an intermediate trace in the specifier of C.

The sensitivity of Wh-Agreement to intermediate traces is crucial to the rest of this article. In effect, it leads us to probe from the morphology of extraction into the syntax of locality—into the question of whether wh-movement has been bounded or not in any particular instance of extraction across an apparent distance. If higher *Ps along the path of extraction exhibit Wh-Agreement, then movement must have been successive-cyclical (that being the only way to generate the intermediate traces that would license the agreement). On the other hand, if higher *Ps along the path of extraction do not exhibit Wh-Agreement, then it seems reasonable to conclude that long movement has occurred. 11

Armed with this probe, let us turn now to the question of central interest: just what sort of locality it is that wh-movement observes.

5 Evidence for a Relativized View of Locality

An investigation of Wh-Agreement in various types of extraction across a distance leads to what, in my opinion, is an astonishing result. The morphological evidence confirms Rizzi’s (1990) and, especially, Cinque’s (1990) views of relativized locality down to very tiny details. What we find in these wh-constructions is the following. The *P that has the

original wh-trace (the variable) in its domain is obligatorily inflected for Wh-Agreement, just as predicted by rule (36). Whether or not higher *Ps along the path of extraction are also inflected for Wh-Agreement depends essentially on the character of the moved wh-phrase. If the moved element is a “referential” argument in Cinque’s classification, then higher *Ps may show Wh-Agreement, but need not, revealing that movement is allowed to occur in bounded or unbounded fashion. But if the moved element is “nonreferential,” then higher *Ps must show Wh-Agreement, a pattern that argues that, for these wh-phrases, successive-cyclical movement is forced. In short, the evidence strongly supports a theory of movement in which traces of “nonreferential” arguments must be antecedent-governed, but traces of “referential” arguments need not be.

In the rest of this article I discuss constituent questions, then clefts, and finally relative clauses. 12 First, however, a word on the data may be in order. The examples of long movement cited below are representative of data collected over fifteen years from some speaker. Many of these examples I initially filed away as unexplained exceptions, since they were inconsistent with the (oversimplified) conception of Wh-Agreement I held at the time (see Chung 1982, 1987). (All these example types have since been checked systematically with two speakers, Manuel F. Borja and Maria T. Quintana, whom I wish to thank.) The data collected in ignorance of the notion of “referentiality” should turn out to confirm its relevance for the theory of movement is, I think, a tribute to the correctness of Cinque’s approach.

5.1 Questions

The interrogative DPs hafa ‘what?’ and hayi ‘who?’ count as “nonreferential” in Cinque’s system, so we would expect the A-dependencies formed from them to require successive-cyclical movement. The morphological evidence bears this out, though more absolutely for hafa than for hayi. Constituent questions formed with hafa must show Wh-Agreement on all *Ps along the path of extraction. This generalization seems to be exceptionless:

(30) Hafa malago’-mu [t u-mafa’maolik t]?
what? wh[obl].want-AGR wh[NOM].AGR-be.fixed
‘What do you want to be fixed?’

Compare the ungrammatical (31), which illustrates the “long” pattern of Wh-Agreement.

(31) ‘Hafa malagu’ hao [u-mafa’maolik t]?
what? AGR.want you wh[NOM].AGR-be.fixed
(‘What do you want to be fixed?’)

Constituent questions formed with hayi must also, in general, show the successive-cyclical pattern of agreement, though I have found some speakers who occasionally allow this

10 Alternatively, one might be tempted to assume that in all these examples Case assignment has crossed CP and directly affected the phrase in the specifier of C. I am reluctant to take this route, which has previously been suggested by Kayne (1984:4) for English constructions of the type in (11).

(i) the only one who she didn’t claim had anything wrong with him
(cf. the only person who it’s not essential talk to her)
The reason for my reluctance is that Chamorro examples such as (ii) are completely ungrammatical.

(ii) ‘Hayi si Maria malago’-na [t filumihan r ady na gua]?’
who? Maria wish-loc want-MAJ think buy that 1. house
(‘Who does Maria want to buy that house?’)

Although it is not obvious how the analysis described in the text would predict the ungrammaticality of (ii), it seems clear that such a prediction could not be made at all if the same mechanism responsible for English (i) were invoked to account for the upstairs Wh-Agreement in (28).

11 Note that it cannot merely be concluded that Wh-Agreement is optional, given that the agreement is always obligatory for the *P that has the original wh-trace (the variable) in its minimal m-command domain.

12 Comparatives will not be discussed, since I have not investigated them in any detail.
generalization to be violated (see section 8 for more discussion). (32)-(33) illustrate the more usual situation, in which all P's along the path of extraction must show Wh-Agreement.

(32) a. Hayi o’son-ña si Carmen [t pāra u-kuentsusi who? wh[obl],bored-AGR Carmen fut wh[obl],AGR-speak.to] ‘Who is Carmen bored with talking to?’

b. Hayi mana’mānman si Juan [t na un-paniti who? wh[nom],surprise Juan comp wh[obl],AGR-punch ‘Who did it surprise Juan that you punched?’

Compare:

(33) a. *Hayi o’sun si Carmen [para u-kuentsusi who? AGN,bored Carmen fut wh[obl],AGR-speak.to] ‘Who is Carmen bored with talking to?’

b. *Hayi ana’mānman si Juan [na un-paniti who? AGN,be,surprised Juan comp wh[obl],AGR-punch ‘Who did it surprise Juan that you punched?’

On the other hand, the interrogative DPs corresponding to ‘which NP’—hafa na NP (nonhuman), hafi na NP (human), and mana na NP—are ‘referential,’ because they are D-linked in the sense of Pesetsky (1987); they ‘refer to members of a set that both speaker and hearer have in mind’ (Cinque 1990:16). Consequently, we expect A-dependencies formed from these DPs to allow long movement, and the morphological evidence argues that this is so. In the relevant constituent questions the P with the original wh-trace in its domain must be inferred for Wh-Agreement, as was pointed out earlier. Higher P's along the path of extraction preferably show Wh-Agreement, but need not do so, suggesting that long movement is possible. Compare the successive-cyclic examples in (34) with the examples of long movement in (35).

(34) a. Hafa na patti gi atumobit malagò'-mu what? l. part loc car wh[obl],want-AGR u-ma'ha' ma'olik who? wh[nom],AGR-be,bound ‘Which part in the car do you want to be fixed?’

b. Hayi na palao' an ma'a' hao-mu who? l. woman wh[obl],AFraid-AGR comp fut wh[nom],AGR-lift t esti na dāngkulu-n kahun? this l. big-l. box ‘Which woman are you afraid will pick up this big box?’

(35) a. Hafa na patti gi atumobit malagò’ hao what? l. part loc car AGN,want you wh[nom],AGR-be,bound ‘Which part in the car do you want to be fixed?’

5.2 Clefts

What I call the cleft construction in Chamorro is susceptible to the same multiple analysis documented for English clefts by Hankamer (1974) and Pinkham and Hankamer (1975). That is, a typical cleft sentence like (36) can be analyzed in two ways.

(36) Karetu malagò'-mami t. car wh[obl],want-AGR ‘We want a car.’

On one analysis, (36) consists of a simplex sentence in which the focused constituent (here, karetu ‘car’) has been moved to the specifier of C0:

(37) [CP Karetu, [IP malagò'-mami t]]. car wh[obl],want-AGR ‘A car we want.’

On the other, it consists of a complex sentence in which the focused constituent is a [-V] predicate and the rest of the sentence forms its subject, a null-headed relative clause (on which see section 5.3):

(38) [IP Karetu][IP e [O, malagò'-mami t]]. car wh[obl],want-AGR ‘The thing we want is a car.’

Since relative clauses also involve wh-movement—movement of the null operator O to the specifier of C0—it matters relatively little for our purposes whether any particular cleft is given one, the other, or both of these analyses (see Chung, forthcoming, for further details). For ease of exposition I will treat the examples below as if they had only the simplex analysis. The reader should be aware, however, that most clefts are compatible with the complex analysis as well.

Clefts offer further support for the claim that wh-movement is sensitive to the ‘referentiality’ of the moved element. Definite DPs, for instance, are clearly ‘referential’ in Cinque’s system, so they should be able to be clefted via long movement.
This seems to be so: when a definite DP serves as the focus of a cleft, the pattern of Wh-Agreement reveals that long movement and successive-cyclic movement are about equally favored. Long movement is explicitly illustrated here.\(^\text{13}\)

(39) a. I chi’atu-lu lahi malagu’si Carmen [pàra ali’e-’na \(\text{t}\)].
   the sibling-AGR male Carmen aGR.want Carmen put wh[OBJ]. meet-AGR
   ‘Carmen wants to meet my brother.’
   (Also OK with the successive-cyclic pattern of Wh-Agreement)

b. I pinglau ma’at’o’o yu’ [pumâtscha \(t\) ni baliks].
   the crab AGR.afraid I wh[OBJ].INFIN.touch OBL stick
   ‘I’m afraid to touch the crab with a stick.’

The same pattern is exhibited by DPs headed by nonnegative determiners such as todu ‘all’, kâda ‘each’, meggaí ‘many’, bula ‘much, plenty’, or pâla ‘(contrastive) some’.

These DPs are close analogues of Italian DPs that Cinque identifies as ‘referential.’ They perhaps with something like the following in mind: In most natural languages, universal quantifiers quantify over sets that are contextually determined—hence ‘referential.’ Weak determiners such as ‘many’ and ‘some’ have a reading in which the set they quantify over is presupposed to be nonempty (see Milsark 1977)—and so, conceivably, ‘referential.’ In any event, the ‘referentiality’ of these DPs leads to the prediction that they should be able to be clefted via long movement. This prediction is borne out by the Wh-Agreement facts, which argue that both long and successive-cyclic movement are allowed: Long movement is illustrated in the following examples:

(40) a. Kâda patgun man-malagu’ hâm [na bei in-na’chalik \(t\)].
   each child AGR.want we comp wh[OBJ]. make laugh
   ‘We want to make each child laugh.’

b. Meggaí na biha malagu’si Antonio [pàra u-bisita \(t\)].
   many 1 old women AGR.want Antonio aGR.visit
   ‘Antonio wants to visit many old women.’
   (Also OK with the successive-cyclic pattern of Wh-Agreement)

c. Bula na diferentis klas-n taato si Antonio interesào [pàra plenty 1 different kind-1 people Antonio AGR.interested put asuddá-’na \(t\)].
   wh[OBJ]. meet-AGR
   ‘Antonio is interested in meeting with many different kinds of people.’
   (Also OK with the successive-cyclic pattern of Wh-Agreement)

In contrast, the negative bare quantifiers—mi hafa ‘nothing’, ni huii ‘no one’, and ni unu ‘not(t) one’—are ‘nonreferential’ according to Cinque. And, consistent with this,

\(^\text{13}\) As a simplifying move, I will henceforth suppress examples of the successive-cyclic pattern of Wh-Agreement when the ‘long’ pattern is also possible. Instead, I will annotate particular examples of long movement (such as (39a)) when their successive-cyclic counterparts are also explicitly attested in my data.

the agreement evidence reveals that when these DPs are clefted, successive-cyclic movement is forced. (42) shows that when a negative bare quantifier serves as the focus of a cleft, the ‘long’ pattern of Wh-Agreement is ungrammatical (but see section 7 for some important qualifications).

(41) Ni unu ma’at’o’o hao [pàra un-kunuti t].
   not one wh[OBJ], AGR.afraid AGR.want wh[OBJ]. AGR.speak.to
   ‘You’re afraid to speak to no one.’

(42) *Ni unu ma’at’o’o hao [pàra un-kunuti \(t\)].
   not one AGR.afraid you put wh[OBJ]. AGR.speak.to
   (*You’re afraid to speak to no one.*)

5.3 Relative Clauses

The discussion of Chamorro relative clauses in this section presupposes a phrase structure in which relative clauses are adjoined to the NP complement of D\(^{\phi}\) (see Stockwell, Schachter, and Partee 1973, Abney 1987, and Chung 1991b). The two options for ad- junction are schematized in (43).

\[
\begin{array}{ll}
\text{D} & \text{NP} \\
\text{D'} & \text{CP}
\end{array}
\]

It further assumes that the wh-movement involved in relative clauses is movement of a null operator, \(O\), which is obligatorily contained with the head NP (see Safrir 1986). These assumptions are directly relevant to the word order variability of relative clauses, illustrated in (44), as well as for the absence of surface relative pronouns.

(44) a. I famalau’an yan i [famagu’un \(O\) ni onsi añas ya más \(t\)].
   the women and the children comp eleven years and more
   mana’an macho’chulu’ gi gualu’.
   AGR.be.made.work LOC field
   ‘The women and the children who were eleven years and older were put to work in the fields.’ (Cooreman 1982:14)

b. Ha-chul’i [\(O\) ni a’dyui i hagguan kahun].
   AGR.take the AGR.be.given out. that the turtle box
   ‘He took the box that the turtle had given him.’

See Chung, forthcoming, for further discussion.
A more complex and subtle picture is presented by head NPs that form part of an indefinite DP—head NPs selected by the Chamarro indefinite determiner, which happens to be phonetically null (see Chung 1991b). In Cinque’s treatment, the existential quantifiers that are the closest Italian analogues of this determiner are bifurcated into two groups: quantifiers that select overt NP complements, such as qualche ‘some’ and alcuni ‘some’, which are identified as “referential,” and so-called bare quantifiers, such as qualcosa ‘something’ and qualcuno ‘someone’, which have no overt complements and are identified as “nonreferential” (Cinque 1990:73–76). Although the semantic rationale behind this bifurcation is not made entirely clear, the classification has the desired outcome as far as the facts discussed by Cinque are concerned: qualche and alcuni allow long movement, whereas qualcosa and qualcuno do not (Cinque 1990:14–15).

Now if Cinque’s classification were to carry over to Chamarro in every detail, we might imagine that the head NPs selected by the indefinite determiner should likewise fall into two groups. Overt head NPs should combine with the indefinite determiner to form a DP analogous to qualche NP or alcuni NP, which should qualify as “referential.” On the other hand, null NPs should combine with the indefinite determiner to form the equivalent of a bare quantifier, which should count as “nonreferential.”

Very surprisingly, this is what we find. The pattern of Wh-Agreement inside indefinite NPs reveals that the relative operator is eligible for long movement when the head NP is overt. Consider the following examples, which once again show the “long” pattern of Wh-Agreement:

(47) a. Guáha [kari הו-כíc ú O ni malagú ‘si Juan [pára agr.exist nice COMP AGR.want] Juan fut asuddá-ta t]]].
wh[obl],meet-AGR
‘There’s somebody nice who Juan wants us to meet.’
(Also OK with the successive-cyclic pattern of Wh-Agreement)

b. Taya’ [abbuk taotao 10 ma’añao ‘si Carmen [pára agr.not.exist friendly person AGR.afraid Carmen fut u-kuentusi t]]].
wh[obl],AGR-speak.to
‘There isn’t any friendly person who Carmen is afraid to talk to.’
(Also OK with the successive-cyclic pattern of Wh-Agreement)

c. In-nisitula [lai O ni ti ma’añao ‘si Carmen [pára agr-need boy COMP not AGR.afraid Carmen fut u-kuentusi t]]].
wh[obl],AGR-speak.to
‘We need a boy who Carmen is not afraid to talk to.’

Long movement and successive-cyclic movement seem to be about equally favored in relative clauses of this type. Moreover, long movement seems to occur regardless of the larger syntactic context within which the indefinite DP is embedded—a point we

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14 The presence of a null relative operator in Chamarro casts doubt on Dobrovie-Sorin’s (1990) suggestion that there is a correlation between the relevance of “referentiality” to the syntax of a given language and its failure to exhibit null operator constructions. See section 7.1 for more discussion.
will have occasion to return to later. In (47a), for instance, the indefinite DP serves as the complement of the existential verb guāha ‘exist’; in (47b), as the complement of the negative existential verb taya ‘not exist’; and in (47c), as the object of nisisiha ‘need’. Despite the different syntactic and semantic properties associated with these constructions, in every case long movement of the relative operator is possible, because the head NP with which the operator is coindexed is overt and therefore counts as ‘referential.’

However, when the head NP is null, the pattern of Wh-Agreement shows that successive-cyclic movement of the relative operator is forced. The following examples make this point clearly:

(48) a. Guāha  [e [O malagō-’ña si Juan [t pāra asudda-‘ta t]].
   AGR.exist  wh[obl].want-AGR Juan  FUT  wh[obl].meet-AGR
   ‘There’s somebody Juan wants us to meet.’

b. Taya  [e [O ma’a’ñao-ña si Carmen [t
   AGR.not.exist  wh[obl].afraid-AGR Carmen
   pāra u-kuentusi  t]].
   FUT  wh[obl].AGR-speak.to
   ‘There isn’t anybody Carmen is afraid to talk to.’

c. Yanggin guāha  [e [O malagō-’ña [t pāra
   if  AGR.exist  wh[obl].want-AGR FUT
   u-faisin  yu’ t ē’alu]].  siña ha’.
   wh[obl2].AGR-ask me again can indeed
   ‘If there is anything else she wants to ask me, she can.’ (Cooreman 1983: 38)

The indefinite, null-headed relatives in (48) are complements of the existential verb guāha and the negative existential verb taya. Note the successive-cyclic morphology, in which each t’ along the path of extraction is inflected for Wh-Agreement. Any attempt to substitute the ‘long’ pattern of agreement in relative clauses of this type leads to ungrammaticality:

(49) a. ‘Guāha  [e [O malagō’ si Juan [pāra asudda-‘ta t]].
   AGR.exist  AGR.want  Juan  FUT  wh[obl].meet-AGR
   (‘There’s somebody Juan wants us to meet.’)

b. Taya  [e [O ma’añao-ña si Carmen [pāra
   AGR.not.exist  AGR.afraid Carmen  FUT
   u-kuentusi  t]].
   wh[obl].AGR-speak.to
   (‘There isn’t anybody Carmen is afraid to talk to.’)

The fact that Wh-Agreement in relative clauses distinguishes indefinite bare quantifiers from other indefinites constitutes extremely strong support for Cinque’s classification of DPs. At the same time, it raises the question of why this should be—why the classification should distinguish bare quantifiers from other quantified DPs in the first place. We will return to this rather difficult issue in section 7.

6 Further Predictions

Rizzi’s and Cinque’s theory of relativized locality makes some further predictions about Wh-Agreement that are harder to test within the confines of the field situation. I briefly describe three of these predictions below.

6.1 Extraction across a Longer Distance

First, it is predicted that the patterns of Wh-Agreement we have just seen should hold for even longer-distance wh-constructions—constructions that span three or more CPs. Specifically, ‘nonreferential’ arguments should require the successive-cyclic pattern of agreement, whereas ‘referential’ arguments should be able to license one or more instances of ‘long’ agreement. I cannot say with confidence whether or not this prediction is upheld, for the reason that it has proved difficult to elicit examples of wh-extraction across three or more CPs with any reliability. Nonetheless, the data I have are consistent with the results reported earlier, in the following sense: constituent questions formed with hafa ‘what?’ seem to require successive-cyclic Wh-Agreement even across three clauses, whereas the ‘long’ pattern of agreement seems more possible for questions formed with hayi ‘who?’ (see also section 8). Compare:

(50) a. Hafa sinangunin Juan as Dolores [t ni minalago-’ña [t
   pāra un-talai]] t].
   FUT  wh[obl].AGR-read
   ‘What did Juan tell Dolores that he wants you to read?’

b. Hayi ma’añao-mu [t malagō-’ña si Carmen [t
   who? wh[obl].afraid-AGR Carmen  wh[obl].want-AGR
   pāra ali’e-ña t]].
   FUT  wh[obl].meet-AGR
   ‘Who are you afraid that Carmen wants to meet?’

15 For reasons unclear to me, indefinite, null-headed relative clauses have a limited distribution in Chamorro, occurring only (a) as the complement of an existential verb, or (b) as the subject of a [i] Vi predicate in one analysis of clefts (see section 5.2). This is considerably narrower than the distribution of other indefinite DPs in the language (on which see Chung 1991b).
6.2 Extraction out of Islands

Second, since our diagnostic for long movement has been the absence of “upstairs” Wh-Agreement, the prediction is made that extraction out of a weak island—which necessarily involves long movement—should never result in Wh-Agreement on the next higher P. This prediction has also been difficult to test. In elicitation contexts, speakers tend to reject all extraction out of islands, even weak islands, quite apart from the pattern of Wh-Agreement that is exhibited. Still, it is worth noting that the predicted morphological pattern is consistent with the few grammatical examples I have come across of long movement out of islands, almost all of which are cited below. In (52) long movement of an interrogative phrase out of a complex NP might theoretically have led to objective Wh-Agreement on the higher P—an agreement that could have been spelled out overtly on the existential verb guíha ‘exist’. But it does not:

(52) Hafa na karetá, guíha [mayulang ramienta |O₁| in-isa what? L car agr.exist broken tools wil[obl].agr-use
   t₁ [para in-fa-maolik t₁]?
   fut wil[obl].agr-fix
   ‘Which car were there some broken tools that you used in order to fix?’

In (53), from a narrative text, across-the-board extraction of the relative operator out of two complex NPs could never have produced a visible effect on the higher P’s. This is because the Wh-Agreement triggered by the relevant traces (both of which are nominative subjects of intransitives) has no overt realization.

(53) Estí na istoria put i tuota mo’ na [O₁] ni guíha [O], this L story about the people first comp.agr.exist
   umá’aluk t₁ [man-dágí t₁]], guíha ha’ [O₂]
   wil[nom].say.prog wil[nom].agr.AP-loc comp.agr.exist indeed
   umá’aluk t₁ [maga-hit t₁]],
   wil[nom].say.prog wil[nom].agr.true
   ‘This story, which there are some who say is a lie (and) there are some who say is true, is about the ancient spirits.’ (Coeureman 1983:1)

At first glance, the prediction might appear to be counterexemplified by (54), in which an interrogative DP has been extracted out of an embedded cleft. Note that overt objective Wh-Agreement shows up on the higher verb sinangaménna ‘tell’.

(54) Hafa, sinangaménna si nana-mu nu hagu [na guíha what? wil[obl2].say-agr mother-agr obl. you comp she
   sumahan t₁ t₁]?
   wil[nom].buy
   ‘What did your mother tell you that she bought?’

But closer scrutiny reveals that the clefted constituent guíha ‘she’ does not, in fact, occupy the specifier of the bracketed CP, since it does not occur to the left of C’, but rather to its right (see section 2). In other words, this cleft is one of those that allow only the complex analysis—the analysis in which the focus of the cleft is a [-V] predicate, and the remainder is a null-headed relative clause (see section 5.2). On this analysis there is no reason why the interrogative phrase could not undergo long movement to the specifier of the bracketed CP and then continue on, leaving behind a trace that would cause the higher P to be inflected for Wh-Agreement. Consider the subtree in (55) (p. 28), in which t₁ is the trace of hafa ‘what’. One would not want to draw firm conclusions from data as tenuous as (52)–(54). Still, it is reassuring that what data there are on extraction out of islands appear to pose no problems for the analysis developed above.

6.3 Adjunct Extraction

A third prediction made by the theory of relativized locality concerns adjunct extraction: movement of adjuncts across an apparent distance should always force the successivically pattern of Wh-Agreement. This is an important prediction. Though my understanding of adjunct extraction in Chamorro is limited, the small amount of data I have managed to collect suggests that this prediction, too, may turn out to be correct.

To see this, one must first clear away a certain amount of language-particular complexity. The vast majority of adjunct traces in Chamorro do not, in and of themselves,
The only adjunct trace known to me that does activate the Agreement rule is the trace of the ways-and-means phrase, which triggers oblique Wh-Agreement. The interrogative form of this phrase is (hafa) taimānu ‘in what way?, by what means?’:

(57) a. Taimānu arekla-nña si Pedro ni kareta t?
   how? wh[obl].fix-AGR Pedro obl. car
   ‘How did Pedro fix the car?’

b. Ha-faisin i biha i palao’an [hafa taimānu bida-fa ni
   AGR-ask the old.lady the woman how? wh[obl].do-AGR obl
   alaguan-fa kalamasa t],
   pudding-AGR pumpkin
   ‘The old lady asked the woman how she had made her pumpkin pudding.’ (Marciano, n.d.:8)

For at least some speakers, the phrase also has a relative form, taimānu, which serves as the operator of null-headed relatives that translate as ‘the way in which . . .’:

(58) a. [e [Taimānu kanta-mm u ni kanta t]], bunitu,
   how wh[obl].sing-AGR obl. song AGR.beautiful
   ‘The way you sang that song, (it) was beautiful.’

b. Ġuāha [e [taimānu macho’gue-nña esti t]],
   AGR.exist how wh[obl].be.done-AGR this
   ‘There’s a way to do this (lit. there’s a way this is done).’

What happens when the ways-and-means phrase is extracted across a distance? The answer is clouded by the fact that speakers do not like to produce the relevant constructions to begin with. Still, the few examples of this type in my data reveal that only the successive-cyclical pattern of Wh-Agreement is allowed:

(59) a. Taimānu malago’-mu [t pāra arekla-nña si Pedro ni
   kareta t]?
   car
   ‘How do you want Pedro to fix the car?’

b. [e [Taimānu malago’-fa si Juan [t pāra kanta-kku ni
   how wh[obl].want-AGR Juan fut wh[obl].sing-AGR obl
   kanta t]], ti maolik.
   song not AGR.good
   ‘The way Juan wanted me to sing the song, (it) wasn’t good.’

The ‘long’ pattern of agreement is systematically rejected:

(60) a. *Taimānu malāgu’ hao [pāra arekla-nña si Pedro ni kareta t]?
   how? AGR.want you fut wh[obl].fix-AGR Pedro obl. car
   (‘How do you want Pedro to fix the car?’)
b. *[e [Taimiñu malai] ni kanta-kku juan [para kanta-kku ti kanta]]
   how AGR.WANT Juan FUT wh[obl].sing-AGR OBL song
   not AGR.good
   ('The way Juan wanted me to sing the song, (it) wasn’t good.‘)

These facts hold out the promise that adjunct extraction may systematically require successive-cyclic Wh-Agreement, just as the theory of relativized locality predicts. For the point to be demonstrated conclusively, I would need to show that the extraction of other adjuncts across a distance is similarly well behaved. It remains to be seen whether this can be done.

With that said, let us now step back and assess the overall results.

7 “Referentiality” and Long Movement

Table 3 summarizes the conclusions of this investigation of extraction across a distance. Taking Wh-Agreement as our diagnostic for whether movement has been long or successive-cyclical, we found the split shown in the table between the Chamorro DPs that are eligible for long movement and those that are not. These results from the morphology of extraction correlate almost perfectly with Cinque’s (1990) findings regarding the possibility of long movement in Italian. With few exceptions, every Chamorro DP that allows the “long” pattern of Wh-Agreement has an Italian analogue that can be extracted out of a weak island; and every Chamorro DP for which the “long” pattern of Wh-Agreement is prohibited has an Italian analogue that cannot be extracted out of a weak island.18

The completeness with which the morphological evidence confirms the evidence from island effects offers a powerful argument for Rizzi’s (1990) and Cinque’s (1990) overall approach, according to which the traces of “referential” arguments evade a requirement that all other traces must satisfy.19

At the same time, the Chamorro facts have something to contribute to an understanding of why this should be so—why “referentiality” should influence the possibility of long movement in the first place. It seems fair to say this is the central mystery to emerge from the research that has been done on relativized locality, beginning with

18 One exception to this is supplied by negative DPs—DPs headed by negative determiners whose NP complements are nonnull. The Italian versions of these DPs (e.g., nessun NP) are “nonreferential” (Cinque 1990:10), whereas the Chamorro versions are “referential.” I discuss the Chamorro facts below. Another exception is supplied by DPs headed by ‘each’, which are “nonreferential” in Italian (e.g., ogni NP) but “referential” in Chamorro (e.g., kada NP). I suspect that this difference may ultimately be traced to differences in the semantics of ogni and kada, but am not now prepared to defend this intuition.

19 In addition, the very existence of the “long” pattern of Wh-Agreement offers an argument against analyzing Wh-Agreement as spec-head agreement in the C system. In order to generate the “long” pattern in such an analysis, one would have to force agreement to be triggered by the specifier of the C closest to the variable, but allow it not to be triggered by higher specifiers of C (including the specifier of C occupied by the operator). Such a state of affairs would, to say the least, be difficult to arrange. In contrast, the “long” pattern falls out straightforwardly from the analysis of Wh-Agreement adopted in the text.

Table 3

<table>
<thead>
<tr>
<th>Long movement prohibited</th>
<th>Long movement possible</th>
</tr>
</thead>
<tbody>
<tr>
<td>who?, what?</td>
<td>Definite DP</td>
</tr>
<tr>
<td></td>
<td>which NP?</td>
</tr>
<tr>
<td>no one</td>
<td>all DP, each NP</td>
</tr>
<tr>
<td>Relative O coindexed with the null heads</td>
<td>many NP, much NP, some NP</td>
</tr>
<tr>
<td>someone or something</td>
<td>Relative O coindexed with any other head NP</td>
</tr>
</tbody>
</table>

Huang’s initial investigation of adjunct extraction and extending through much current work. The linguists who have addressed the issue directly have done so by attempting to give the rather cloudy notion of “referentiality” some more precise formal status. If we limit ourselves to work done within the generative tradition, broadly speaking, there are at least three approaches to be considered.20

7.1 Previous Approaches

An essentially pragmatic approach to the restrictions on long movement has been pursued by Comorovski (1989) and Kroch (1989). Observing that many languages permit the Wh-Island Constraint to be violated by a relative operator or a D-linked interrogative phrase, but not by a non-D-linked interrogative phrase, Comorovski offers an account of this pattern that appeals to the existential presupposition of constituent questions. Her claim is that long movement of an interrogative phrase is not allowed if the resulting question would have presuppositions whose truth is impossible for the speaker to check. A similar proposal is made by Kroch (1989) to account for the inability of amount wh-phrases to violate the Wh-Island Constraint in English. As he says, “the problem with long-movement in ‘non-referential’ amount questions is that a general requirement on wh-questions is usually not met; namely, that their existential presupposition introduce an entity uniquely identifiable in the discourse context” (1989:9).

These proposals are attractive in that they explain the failure of (some) “nonreferential” elements to undergo long movement in terms of the pragmatic properties of the wh-constructions in which they occur. However, the evidence of Wh-Agreement argues

20 A fourth, semantically based approach to long movement has been developed within the categorial framework by Szabolcsi and Zwarts (1990) and pursued by Kas (1992). I cannot do justice to this work here. A related proposal by Szabolcsi (1992) that relies on the notion of “individual” will be discussed briefly in section 8.
that this cannot be the whole story. What the agreement facts reveal is that long movement is disallowed in a broader range of contexts than one might have imagined, given the island evidence alone. Long movement is prohibited in some wh-constructions that involve no islands (see (33) and (42)). Long movement is even prohibited in certain relative clauses (see (49)), despite the fact that relative clauses—unlike clefts and questions—have no existential presupposition associated with them. If we are to account for these restrictions on long movement in the same way as the restrictions revealed by the island facts—and the circumstantial evidence strongly suggests we should—then an appeal to pragmatic presupposition will not suffice. Evidently, some other explanation must be sought for the link between “referentiality” and long movement.

Quite a different approach to “referentiality” is taken by Dobrovie-Sorin (1990), who is concerned not with movement per se but rather with the distribution of clitic doubling in Romanian. In Romanian, it appears that doubled accusative clitics are licensed by precisely the DPs that Cinque identifies as “referential” (see Cinque’s (1990) discussion of clitic left dislocation in Italian). Dobrovie-Sorin’s analysis of the facts relies on the following assumptions. First, for Case reasons, no clitic can be the “double” of a variable—a Case-marked trace bound by a quantifier in an A-position. Second, whether or not a given NP counts as a quantifier is determined by the inherent features of its subconstituents. NPs that exhaustively dominate a [+qu] word necessarily count as quantifiers; NPs whose specifier is [+qu] count as quantifiers only if the specifier is lexically marked to allow this (Dobrovie-Sorin 1990:361). The upshot of this is that all and only the arguments we have been calling “nonreferential” are identified as quantifiers in Logical Form.

Whatever the merits of such an analysis, it is not entirely clear that it addresses the question we are interested in, namely, why it should be that only “referential” arguments are eligible for long movement. Note that, as far as Chamorro is concerned, there is nothing to be gained by denying that traces of “referential” arguments are variables, given that these traces—like all other A-bound traces—activate the Wh-Agreement rule (26). Nor is it obvious what could be gained by trying to restrict the antecedent government requirement to variables (especially given that this requirement is generally believed to affect NP-traces as well). I will, therefore, not consider this possibility further.

Finally, we can turn to the theory of “referentiality” and long movement proposed by Rizzi (1990) and adopted by Cinque (1990)—a theory whose central idea is that “referentiality” reduces to the ability to bear a referential index. On this view, referential indices are assigned at D-Structure to all and only the arguments characterized above as “referential.” A “referential” element “if moved, can carry its index along,” but “no other position can carry a referential index” and “the binding relation is defined in terms of the notion of referential index” (Rizzi 1990:86). These assumptions have a direct impact on the possibility of long movement, given Rizzi’s claim that A-dependencies must be “connected,” meaning that the operator must either bind its variable or else be linked to it via a chain of antecedent government relations (Rizzi 1990:92). Since “referential” elements bear and can propagate an index, they can always be connected to their variable via binding; so long movement is possible. But since “nonreferential” elements lack an index, they can be connected to their variable only via a chain of antecedent government relations; so successive-cyclic movement is forced.

This is a very appealing theory of movement, one that captures precisely and successfully the restrictions on long movement we are interested in. What is less clear is whether its consequences outside the domain of movement can be lived with. The way in which referential indices are assigned in Rizzi’s system introduces a nonuniformity into the treatment of DPs that has no obvious correlate in the theory of anaphora. In so doing, it creates an uncomfortable distance between the notion “referential index” and the semantic (or Logical Form) uses to which indices are standardly put. Such a system could not, for instance, use the indexing mechanism to represent bound variable anaphora (see Reinhart 1983a, b, 1986, and much other work), given that bound variable pronouns can be anteceded by “nonreferential” DPs as well as “referential” ones (compare Who divorced his wife? and Each girl loves her mother). Nor could such a system set up a one-to-one correspondence between referential indices and discourse referents (see Heim 1982), given that it is possible for a discourse referent to be introduced via a “nonreferential” DP and then referred to subsequently via a “referential” DP (Who left that door open? He should be spoken to).

These observations reveal that Rizzi’s referential indices cannot be identified with the indexing mechanism that is a mainstay of current approaches to anaphora (see Frampton 1991:39–42 for similar conclusions). But if that is so, then we are left wondering whether the use of indices in this theory amounts to more than a diacritic to distinguish the DPs that allow long movement from those that do not.

7.2 A Suggestion

I will therefore retreat from the specific details of Rizzi’s theory of “referentiality” and long movement. Nonetheless, it is clear that the theory incorporates some important insights: notably, the idea that long movement sets up a binding relation between an A-antecedent and its trace, and the perception that the trace’s ability to enter into this relation is ultimately determined by intrinsic properties of the antecedent (its “referentiality”). How should these insights be captured by the theory of movement?

Though I have no good answer to offer, I would like to begin to contemplate the question by returning to the relative clauses described in section 5.3, particularly those that are modifiers of indefinite DPs. These are the Chamorro constructions that provide the most interesting support for Cinque’s claim that quantifiers with overt NP complements are “referential,” whereas bare quantifiers are “nonreferential”—a claim that
merits closer examination. Consider, for instance, the relative clauses in (61), which are close analogues of the examples in (47)–(49). These relative clauses modify a (necessarily) indefinite DP that serves as complement to the negative existential verb *taya’* ‘not exist’. In (61a) the head NP with which the relative operator is conjoined is phonetically realized (hence ‘referential’), and long movement is allowed. In (61b) the head NP is the null complement of an indefinite bare quantifier (hence ‘nonreferential’), and long movement is prohibited.

(61) a. *Taya’ [Amerikanu | Of ma’a’nao si Miguel [para agr. dat. exist American agr. afraid Miguel put munu-na \{\}]\].
   *wir[iβ], fight-agr*
   ‘There isn’t any American who Miguel is afraid to fight with.’

   b. *Si Miguel, taya’ [e | Of ma’a’nao [para munu-na \{\}]].
   *Miguel agr. dat. exist agr. afraid put wir[iβ], fight-agr*
   ‘(As for Miguel, there isn’t anybody he is afraid to fight with.’)

   (But OK with the successive-cyclic pattern of Wh-Agreement)

Notice that the heads themselves do not differ in reference, familiarity (in the sense of Heim (1982), or specificity (in the sense of Enc (1991)) are nonreferring, novel, and nonspecific. That being so, the contrast in grammaticality between (61a) and (61b) reveals that ‘referentiality’ cannot be made to follow exclusively from any of these notions.

What seems to license the possibility of long movement is, instead, whether or not the head NP serves to explicitly narrow down the set from which the value of the relative operator is chosen. Looking beyond the examples in (61) to the full range of relative clauses in section 5.3, we can conjecture that this narrowing may be accomplished in two ways. The set of potential referents may be restricted by virtue of the descriptive content of the head NP, as seems to be the case in (61a). Or it may be restricted by virtue of the definiteness of the head (see (45)–(46))—a feature that ensures that the value of the relative operator will be familiar. Under either scenario, any restriction of the values of the relative operator automatically imposes a comparable restriction on the values of its trace, given that the two form an A-chain. It is only when the head does not restrict the value of the relative operator at all—either via familiarity or via descriptive content—that the operator is ineligible for long movement, and the successive-cyclic option must be taken. 32

More generally, I am suggesting that the theory of movement includes the following condition: Long movement is prohibited except when it is possible to calculate ‘narrowly enough’ the set from which the value of the operator (and hence its trace) is chosen.

When the operator is nonnull, either its familiarity or its descriptive content can provide the basis for a “narrow enough” calculation. When the operator is null (as is the case in Chamorro relative clauses), such a basis can be supplied by the familiarity or the descriptive content of its controller. In either case, the result of the calculation is that the possible values of the operator are restricted enough that long movement is permitted. But when the calculation cannot be made, along any of the dimensions just described, then successive-cyclic movement is forced.

This suggestion bears some resemblance to Comorovski’s and Kroch’s approach to long movement, in that it focuses on locating a set of potential referents over which the operator can range. The difference is that it does not rely entirely on the pragmatics to accomplish this, but makes appeal to the syntax of Logical Form as well. This is the import of the appeal to descriptive content, which ultimately takes into account the internal structure and lexical meaning of the operator or its controller. 23 Descriptive content is, of course, a vague concept—perhaps as cloudy as the original notion of “referentiality” we have been trying to elucidate. Still, the suggestion I have just put forth makes the point that discourse structure is only one of the contributors to the classification of DPs we are interested in. In this sense, it may represent a small advance.

7.3 Negative Quantifiers

Where might we find evidence to support this view of long movement over the other approaches to “referentiality” discussed earlier? One place to look is in the behavior of negative quantifiers. Since negatively quantified DPs have a minimal impact on the larger discourse structure, any difference in long movement between, say, a negative bare quantifier and other negatively quantified DPs would be less plausibly traced to familiarity or specificity than would some of the other contrasts seen above. Such a difference would, however, follow from the view of long movement I have just articulated, according to which the crucial question is whether the operator—regardless of its quantificational force—imposes a narrow enough restriction on the domain being quantified over.

In fact, Chamorro turns out to provide evidence of precisely this sort. 24

Negative quantifiers in Chamorro are formed with the negative *ni*, which I will treat as left-adjoined to D. *Ni* can adjoin to the indefinite bare quantifiers *hafa* ‘what?, anything’, *haya* ‘who?, anyone’, and *unu* ‘one’, to produce the negative bare quantifiers *ni hafa* ‘nothing’, *ni haya* ‘no one’, and *ni unu* ‘not(1) one’. 25 *Ni* can also adjoin to the

22 Evidently, the spatio-temporal restrictions imposed by *who* and *what* do not restrict the set of potential referents “enough” to allow long movement. I have no explanation for this.

23 Note that, on this view (as well as in Cinque’s original classification), there is predicted to be a difference in “referentiality” between the heads of semantically equivalent complex NPs such as a *linguist who is a linguist and acook* versus *someone who is a linguist and a cook*.

24 Chamorro evidently differs from Italian here; according to Cinque’s classification, all negatively quantified DPs, whether bare quantifiers or not, count as “nonreferential.”

25 This use of *haya* and *hafa* (which I have treated up to now as interrogative words) reveals that these items deserve an analysis along the lines developed by Aissen (1992) for *Tzotzil.*
determiner an 'one, a', in which case the result is a negatively quantified DP (e.g., ni un patgu 'no child').

How do negative quantifiers respond to extraction across a distance? When a negative bare quantifier is clefted, the usual answer is that long movement is prohibited. Consider (41)-(42) and the following, which reveal that movement must occur successively-cyclically:

katta ginin as Jose.
'I want no one to get a letter from Jose.'

b. Ni [ha'] interesa- [t pära not anything.EMP indeed wh[obl].interested-AGR Juan FUT u-fahan t]. wh[obl].AGR-buy
'Juan is interested in buying nothing.'

(63) a. Ni [t katta ginin not one AGR.want I wh[nom].AGR-AP-take letter from as Jose].
ori. Jose
'(I want no one to get a letter from Jose.)'

b. Ni [ha'] interesa- [t pära not anything.EMP indeed AGR.interested Juan FUT u-fahan t]. wh[obl].AGR-buy
'Juan is interested in buying nothing.'

The same holds true when a negative bare quantifier serves as the head of a relative clause:

(64) a. Taya' ni háyi [O malago'-hu AGR.not.exist not anyone.EMP indeed wh[obl].want-AGR [t pära bai u-li'i t p'ai gu na ha'am]].
FUT wh[obl].AGR-see now 1. day
'There isn't anyone I want to see today.'

b. Sën-taya' ha' ni hafa [O malago'-hu extremely-AGR.not.exist indeed not anything wh[obl].want-AGR [t pära bai u-tai'ai t]].
FUT wh[obl].AGR-read
'There isn't anything I want to read.'

Interestingly, the prohibition against long movement can sometimes be relaxed if the discourse context clearly restricts the set being quantified over. (This is the 'covert partitive' reading of the negatively quantified DP; see Enç 1991.) Consider (66), for instance, in which the agreement pattern reveals that ni unu 'no one' has been clefted via long movement.

(66) Ni unu man-malägu' hüm [pära u-poddung t gi kantit].
not one AGR.want we FUT wh[nom].AGR-fall LOC cliff
'(We want no one (in general) to fall off the cliff.)'

(67) Hagü, ni hay [u médiku ma'a'nao hao [kumunusti t]].
you not one indeed L doctor AGR.fear you wh[obl].INFIN.talk to
'As for you, you're afraid to talk to no doctors.'

(68) a. Taya' ni un [patgu [O malago'-yu' na u-li'i AGR.not.exist not one child AGR.want I comp wh[obl].AGR-see t p'ai gu]].
now
'There isn't any child I want to see today.'

b. Taya' ni hafa ha' na [lepblu [O malago'-yu' pära bai AGR.not.exist not anything indeed L book AGR.want I FUT u-tai'ai t]].
wh[obl].AGR-read
'There aren't any books I want to read.'

Chamorro is a negative concord language. Thus, strictly speaking, the relative clauses in (64)-(65) are headed not by a negative bare quantifier but by the negative concord version of a bare quantifier that is a polarity item (see Ladusaw 1992). I will ignore this, since it has few if any semantic or discourse implications for the examples at hand.
Though there seems to be a preference for successive-cyclic movement in extraction of this sort, long movement is perfectly grammatical as well.

Why should negative bare quantifiers resist long movement, but other negatively quantified DPs allow it? It seems unlikely that such a contrast could fail out from any theory that links the possibility of long movement to discourse considerations alone. Though negatively quantified DPs do serve to introduce new discourse referents, the life span of these discourse referents is extremely short (see Karttunen 1976 and Heim 1982). From the standpoint of the larger discourse structure, this leaves us with no hook on which to hang a difference in “referentiality” between ni ina, on the one hand, and ni an patguan, on the other.

If, however, we are willing to believe that the descriptive content of an operator can narrow down the domain of quantification enough to make the operator eligible for long movement, then there is nothing surprising in the contrast between (64)–(65) and (67)–(68). In this sense, the facts of negative quantifiers offer some support for the approach to long movement I have just outlined.27

8 Conclusion

I state in (69) the licensing condition on long movement that I have been defending.

(69) The trace of long movement must range over a sufficiently restricted set, where ranges over a sufficiently restricted set is defined as follows:

(70) A trace X that is \( \hat{A} \)-bound by \( Y \) ranges over a sufficiently restricted set if and only if \( Y \) or \( Y \)'s controller either (a) is familiar, or else (b) has descriptive content.

Following much previous research within GB Theory, it seems reasonable to try to integrate (69) with the other general conditions on movement—for instance, by incorporating it into the antecedent government requirement that forms one-half of the conjunctive ECP (on which, see Rizzi 1990 and the references cited there):

(71) The Empty Category Principle

A nonpronounal empty category X must (a) be properly head-governed (in the sense of Rizzi 1990); and (b) either be antecedent-governed, or else range over a sufficiently restricted set.

Though I have chosen to state the licensing condition as an alternative to antecedent government, other formulations are conceivable. What interests me more is the following. Though I have managed to rephrase the question of why “referentiality” should affect the possibility of long movement, the question itself remains unanswered. Why should long movement be legitimized in just those cases where the trace ranges over a sufficiently restricted set? To put the question differently, what is it about the ability to narrow down the domain of wh-quantification “enough” that makes it possible for strict locality to be violated?

Contemplating these questions might lead one to wonder whether there could be a connection between (69) and a semantically based view of long movement inspired by Aoun (1986) and continued in work by Frampton (to appear) and Szabolcsi (1992), among others. In this strand of research, extraction out of weak islands is linked to the possibility of interpreting the trace as ranging over a set of individuals. For Frampton (to appear:10), the trace of long movement “must be interpreted as an individual variable” (for Szabolcsi 1992:4–6), an operator that has undergone long movement must range over a domain that is individuated, in the sense that its members “can naturally be collected into unordered sets.”28 Both proposals build on the observation (familiar from the literature cited in section 7) that long movement is more acceptable for interrogative phrases that range over individuals (e.g., (72)) than for those that range over amounts (e.g., (73)).

(72) Who is it unclear whether she will have to pay it?
(73) "How much money is it unclear whether she will have to pay it?"

In Frampton’s system, the observation is accounted for by assuming that the trace of who is interpreted as an individual variable. The trace of how much money is not so interpreted, being construed instead as if ‘x-much money’ had been reconstructed back to this position (as discussed by Heim 1987).

Could (69) be recast in terms of the notion “individual variable”? Such a reconceptualization might conceivably handle the Chamorro evidence that argues that long movement is licensed when the moved XP or its controller is familiar. This is because the traces left by definite DPs and universally quantified DPs are interpreted as (individual) variables.29 Moreover, such a revision would deal nicely with a point of detail observed in sections 5.1 and 6.1: according to the evidence of Wh-Agreement, long movement is far better for ‘which NP?’ than for ‘what?’, with ‘who’ being intermediate between the two. The three-way contrast is reminiscent of Heim’s (1987:27–32) claim that ‘which NP?’ ranges over individuals whereas ‘what?’ ranges over kinds, and her further suggestion that ‘who?’ can be interpreted as ranging over individuals or (mar-

27 Within this approach, the idiom mentioned in footnote 16 can now be analyzed as follows: long movement is prohibited unless the operator both is familiar and has descriptive content. In the majority dialect, in contrast, long movement is prohibited unless the operator is familiar or else has descriptive content.

28 Paul Postal (personal communication) has proposed that the gaps left by long movement deserve to be analyzed as null resumptive pronouns (see Postal 1994 sec. 2.1b for relevant discussion). Given that pronouns are often taken to be classic instances of bound variables (e.g., Heim 1987), it may not be inaccurate to see a connection between this explicitly syntactic proposal and the semantic proposals described in the text.

29 As observed by Heim (1987: n. 4), steps must be taken to reconcile the claim that all variables are “strong” with a system like that proposed by Heim (1982), in which indefinite DPs are interpreted as (free) variables.
The examples in (74) involve extraction of an amount phrase. In (74b) the amount phrase has been extracted from a position that exhibits a classic definiteness restriction, namely, the position of complement to the existential verb guåha ‘exist’. The hypothesis that the definiteness restriction entails a ban on individual variables is defended in great detail by Heim (1987). Accepting the correctness of her conclusions, the trace in (74b) cannot be interpreted as an individual variable, but is interpreted instead as ‘x-many fish’. Even so, the Wh-Agreement pattern in both examples argues that long movement has occurred.

Second, there are examples of extraction across a distance in which the wh-trace probably is interpreted as an individual variable, but in which the “long” pattern of Wh-Agreement is prohibited. Relative clauses formed on indefinite null heads offer one

References

Economy of Derivation and the Generalized Proper Binding Condition

1 Introduction: Economy of Derivation

Chomsky (1991, 1993) and Chomsky and Lasnik (1992) have proposed that syntactic derivations are constrained by the principle of Economy of Derivation. In this article I will show that two direct consequences follow from this proposal. First, it eliminates a class of derivations involving "chain interleaving" (section 2). Second, it prohibits certain cases of downward and sideways movement (section 3). To the extent that these consequences are easily verifiable, they provide strong support for such a principle.

Since chain interleaving and downward movement can also be blocked with the Generalized Proper Binding Condition (GPBC) (see Lasnik and Saito 1992), it will be concluded that in all known cases the GPBC is redundant.

1.1 Economy of Derivation

I will assume the following framework (modified from Chomsky 1991, 1993, and Chomsky and Lasnik 1992):

1. Convergence

A derivation converges if its structural description (a pair of representations at LF and PF) contains only legitimate objects.

2. Legitimacy

An object is legitimate if all its morphological features have been satisfied (e.g., Case, [+wh]).

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The background theory that I adopt is that of Chomsky 1986 and Lasnik and Saito 1992. Any relevant differences between these works and any assumptions that differ from those made in these works will be pointed out in the text.