

# Linguistic Inquiry

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# Linguistic Inquiry

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

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 (Haik 1990), and Palauan (Georgopoulos 1985)).<sup>1</sup> The basic character of the second type of evidence can be seen from the Chamorro examples in (3)–(4).

- (3) *Humállum si Maria [na ha-pānak si Juan i pätgun].*  
 AGR-assume Maria COMP AGR-spank Juan the child  
 ‘Maria assumes that Juan spanked the child.’  
 (4) *Hayi hiralomña si Maria [t piamñak t i pätgun]?*  
 who? WH-assume Maria 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<sup>0</sup>, I<sup>0</sup>, or [+V]<sup>0</sup> (see Grimshaw 1991). In long-distance *wh*-constructions, the special

I am indebted to Bill Ladusaw, whose influence can be felt throughout this work. Thanks to him, to Ann Cooreman for generously sharing her Chamorro texts, and to Guglielmo Cinque, Ileana Comorovski, Manfred Krifka, Jim McCloskey, Paul Postal, and two *LJ* reviewers for comments. I am also indebted to the Chamorro speakers in California and Saipan who contributed to this work, especially: Maria T. Quinata, Priscilla Anderson, Ray P. Lujan, and Teresina Garrido (speakers of the Guam dialect); as well as Manuel F. Borja, Maria M. Rosario, Jose Bermudes, and Maria H. Borja (speakers of the Saipan dialect).

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<sup>1</sup> 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 systematically evade (namely, they must be antecedent-governed). Rizzi's theory was further refined by Cinque (1990) in a careful investigation of  $\bar{A}$ -dependencies in Italian. Relying in part on contrasts like (5)–(6), Cinque argued that the only *wh*-traces that can escape the antecedent government 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 *t*.

'This statement, I wonder why he has retracted.'

(6) \**OGNI DICHIARAZIONE*, mi chiedo perché abbia ritrattato *t*.

('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.<sup>2</sup>

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

<sup>2</sup> The relation between a moved element and its trace is also constrained by Subadjacency (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 1

Cinque's classification of DPs

<i>Cinque's "nonreferential" DPs</i>	<i>Cinque's "referential" DPs</i>
<i>chi?</i> 'who?'	definite DP
<i>ogni</i> NP 'every NP'	<i>quale?</i> 'what?'
<i>nessun</i> NP 'no NP', <i>niente</i> 'nothing'	<i>tutti</i> DP 'all DP'
<i>qualcosa</i> 'something'	<i>molti</i> NP 'many NP'
<i>qualcuno</i> 'someone'	<i>qualche</i> NP 'some NP'
<i>qualsunque</i> NP 'whatever NP'	<i>alcuni</i> NP 'some NP'
<i>qualsiasi</i> NP 'whatever NP'	
<i>chiunque</i> 'whoever'	

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  $I^0$ , for

instance, precedes its complement, the predicate XP, as well as its specifier, which I take to be the S-Structure subject (Chung 1990).<sup>3</sup>

- (7) a. *Ginin* [<sub>VP</sub> *māmaigu*] *hao*?  
IMPERF AGR.sleep.PROG you  
 'Were you sleeping?'
- b. *Pära* [<sub>DP</sub> *tres añas*] *gui*.  
FUT three years she  
 'She's going to be three years (old).'
- c. *Ti* [<sub>AP</sub> *u-la'*] *gi saga-ña*] *i hāggan*.  
not AGR-alive LOC place-AGR the turtle  
 'The turtle would not remain alive in his place.' (Cooreman 1983:102)
- d. *Pues ti* *sina* [<sub>VP</sub> *man-hatsa lānchu tã'lu*] *esti i taotao*.  
so not can AGR.AP-build ranch again this the man  
 'So this man couldn't build a ranch again.' (Mantibussan, n.d.:1)
- e. *Kulang* [<sub>VP</sub> *ha-na'*] *hit sinát*] *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<sup>0</sup> precedes its NP complement as well as its specifier, the possessor (Chung 1991b):

- (8) a. *kāda sakkan*  
 each year  
 'each year'
- b. *i* [<sub>NP</sub> *tres na fāmagu 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<sup>0</sup>, which is not initial within all its projections but instead has its specifier, the moved *wh*-phrase, on the left:

- (9) a. *Amanu na mamokkat hao*?  
where? COMP AGR.walk you  
 'Where did you walk (to)?'

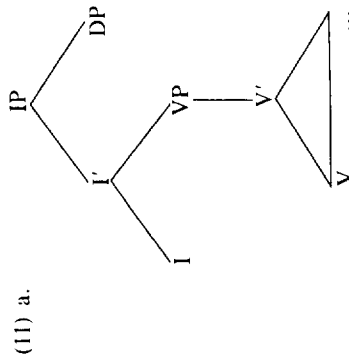
<sup>3</sup> I<sup>0</sup> is *ginin* 'imperfect' in (7a), *pära* 'future' in (7b), and *sina* 'can' in (7d); in the other examples it is phonetically null. I am assuming that the sentential negative *ti* in (7c) is adjoined to I<sup>0</sup>, though it would also be possible to assume that it heads its 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 *t*, and null N<sup>0</sup> 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.

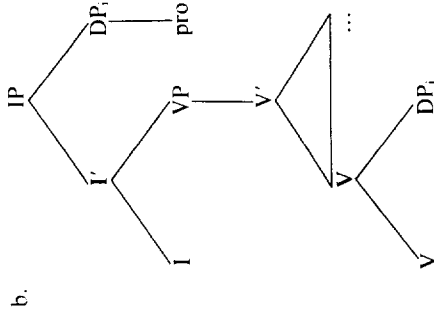
- b. *Hafa na u-guāha lusung nai gi tānu*?  
why? COMP AGR-exist mortar DIMIN LOC land  
 'Why would there be a mortar on the ground?' (Cooreman 1983:8)

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, I<sup>0</sup> [+V]<sup>0</sup> Subject Complements Other:

- (10) a. *Pära u-hanao i dos guātu 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. *Mañ-ñakki i dos pugua*.  
AGR.AP-steal.PROG the two betelnut  
 'The two were stealing betelnuts.'
- c. *Ha-gagao esti i pägun popbli i haga-n rai un aniyu pära*  
AGR-beg this the child poor the daughter-L king a ring for  
*prenda-nña*.  
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, McCloskey 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]<sup>0</sup>. This adjunction leaves behind a null expletive in the specifier of I<sup>0</sup>, as shown in (11b).





This is the analysis of VSO-hood that I will adopt below.

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<sup>0</sup>. The extracted element (or operator) is overt in questions and clefts, but null in relative clauses and comparatives.<sup>4</sup>

- (12) a. Hafa, kinannóno 'mu t<sub>i</sub>?  
 what? WH.EAT.PROG-AGR  
 'What have you been eating?'  
 b. Lao [unu giya siha]<sub>i</sub> mlii' t<sub>i</sub>.  
 but one LOC them WH.SEE  
 'But one of them saw it.'  
 c. Guáha na [ha'ami siha [O<sub>i</sub> ni ti siña humanao t<sub>i</sub>]].  
 AGR.EXIST L day PLURAL COMP not can AGR.GO  
 'There were some days when he couldn't go.'

<sup>4</sup> A literal translation of (12d) would be 'The rice that Rita bought is more than (what) she sold'. Note the complex NP *finala'na pugas si Rita*, which serves as the subject of *meggáina* '(be) more': the head of this complex NP (*pugas*) has been right-adjoined to the verb of the relative clause, as described in Chung 1991a.

- d. Meggai-na ha' finala'na pugas si Rita kini [O<sub>i</sub> biinde-nña t<sub>i</sub>].  
 many-COMPAR indeed WH.BUY-AGR rice Rita than WH.SELL-AGR  
 'Rita bought more rice than she sold.'

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<sup>0</sup> 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<sup>0</sup>.

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<sup>0</sup> (e.g., interrogative phrase vs. relative O), but with the Case of the *wh*-trace.<sup>5</sup>

When the *wh*-trace is nominative, for instance, *Wh-Agreement* is realized by replacing any ergative agreement on [+V]<sup>0</sup> with the infix *-um-*:

- (13) a. Todu i dos imaluk t na bunitu esti na na an i 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 chummo'gui t esti na dangkulu-n danu  
 AGR.be.known indeed who? WH[NOM].do this L great-L harm  
 guimi 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]<sup>0</sup>, a process that inserts the infix *-in-* if [+V]<sup>0</sup> is transitive:

<sup>5</sup> More accurately, with the Case of the Á-bound trace. See below.

occurred in the following examples:

- (16) a. Ni háfafa ha' maittu t nigap.  
not anything.EMP indeed WH[NOM].AGR.arrive yesterday  
'Nothing arrived yesterday.'
- b. Hafa pára u-fa 'tinas si Juan t?  
what? FUT WH[OBJ].AGR-make Juan  
'What is Juan going to make?'
- c. Guáha ádyu i [e [O man-ma 'utut aga'ga-'ñiha 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-gágagao lokku' [lrami'y' gui' 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 deverbal forms have the external distribution and most of the internal syntax of DPs, as the following examples suggest:

- (18) a. Man-atrasáo háam put [i sinigon-mu ha'].  
AGR-late we because the NML.Z.drive-AGR indeed  
'We're late on account of your driving.'
- b. Sa' hinenggang ni [maho'me-nña ni hánum] . . .  
because AGR.be.startled OBL NML.Z.be.spilled-AGR OBL water  
'Because he was startled by being spilled on with water . . .' (Cooreman 1983:170)
- c. Nahung esta pára [lina'la'-mami yan i asagua-hu].  
AGR.enough already for NML.Z.alive-AGR and the wife-AGR  
'There is already enough for my and my wife's sustenance (lit. being alive).'

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

- (14) a. Pára hafa di um-cháchathinassu put [hafa  
for what? COMP AGR-worry.PROG about what?  
kíannóno'-hu t]?  
WH[OBJ].eat.PROG-AGR  
'What's the point of you worrying about what I've been eating?'
- b. Pues todú ádyu i [[O chiniile'-ña t] amut] 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]<sup>0</sup>, via a process slightly different from that shown in (14):

- (15) a. Na' i yu' ni [hápbun [O ni pára fa'gase-nmu ni kareta 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]<sup>0</sup>, a fact that suggests that [+V]<sup>0</sup> or 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

**Table 2**  
Overt realizations of *Wh*-Agreement

<i>If the wh-trace is:</i>	<i>Then realize Wh-Agreement on [+V]<sup>0</sup> as follows:</i>
Nominative Obj or obj2	Replace any ergative agreement with <i>-um-</i> . Optionally nominalize. If the nominalized [+V] <sup>0</sup> is transitive, insert <i>-in-</i> .
Oblique	Nominalize. If the nominalized [+V] <sup>0</sup> is unaccusative, optionally insert <i>-in-</i> .

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.<sup>7</sup>

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  $C^0$  and the m-command domain of  $I^0$ , both of which contain the trace but not its  $\bar{A}$ -antecedent, which is typically lodged in the specifier of  $C^0$ .

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 1993 for general discussion bearing on this point.) However, if the domain of *Wh*-Agreement turned out to be  $C^0$ 's c-command domain, it would be natural to take  $C^0$  to be the other category involved in the agreement. Similarly, if the domain turned out to be  $I^0$ 's m-command domain, then we would want to identify  $I^0$  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 *w/h*-movement when the  $D^0$  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.<sup>8</sup> Consider the relative clause in (21), in which the possessor of the direct object has been relativized.

<sup>7</sup> Part of the appeal of this proposal is that it could be extended fairly directly to Kikuyu, Moore, and Palauan, since in all these languages the morphology of extraction is realized via some "irrealis" form (see the references cited in section 1).

<sup>8</sup> 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  $D^0$  for instance—then 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 nonovert *Wh*-Agreement are amenable to such an explanation. For instance, the *by*-phrase of passive can undergo *wh*-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.

morphosyntactic earmarks of finite clauses, including subject-verb agreement (19a), a finite  $I^0$  (19a), and a predicate phrase that is not necessarily [+V] (19b).

- (19) a. Hayi pära u-aiuk  
 who? FUT WH[NOM].AGR-SAY that  
 'Who will say that?'  
 b. Kao un-tungu [hayi na palao'an ti säsa:s  
 COMP AGR-know who? L girl not WH[NOM].SIX.PROG  
 añus t trabihal?]  
 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  $I^0$  routinely occurs, suggesting that the clause is syntactically finite:

- (20) Hafa pära fira' tinas-ña si Juan t?  
 what? FUT WH[OBJ].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 crucially to 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 the same characterization can be given of *w/h*-traces and their referential anchoring. Namely, *w/h*-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  $\bar{A}$ -antecedent located higher in the tree.

This parallel suggests a way of understanding *Wh*-Agreement and its sensitivity to *w/h*-traces. Suppose we say that the function of *Wh*-Agreement is to indicate that there is a *w/h*-trace that is *unbound* within some specified domain—a trace that has not yet located an anchor, in the sense that its  $\bar{A}$ -antecedent lies outside the domain in question.<sup>6</sup>

<sup>6</sup> 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  $\bar{A}$ -binder is balanced on the cusp between the c-command domain of  $C^0$  and the m-command domain of  $I^0$ , 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  $C^0$ , 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  $I^0$ . According to the view of adjunction sketched by Chomsky (1986:7), elements adjoined to IP are not actually m-commanded by  $I^0$ , 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 [taotao [ $O_j$  ni [magagu-ña  
COMP AGR-see.PROG the person COMP clothes-AGR  
 $t_j$ ], nilakse-tta  
WH(OBJ).sew-AGR  
i]]?  
'Have you seen the person whose clothes we mended?'

- b. Adyu guihi guātu i [pätgun [ $O_j$  ni [nana-ña  
that there over.there the child COMP mother-AGR  
 $t_j$ ], achule'-mu  
WH(OBJ).resemble-AGR  
i]]?  
'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  $I^0$ . This conclusion makes it natural to infer that  $I^0$  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  $I^0$ 's domain. This leaves us with the rule of *Wh*-Agreement shown in (26).

(26) *Wh*-Agreement

An  $\bar{A}$ -bound trace that is free within the minimal m-command domain of  $I^0$  shares its Case feature with  $I^0$ .

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.

- (21) Kao un-lili'i i [taotao [ $O_j$  ni ta-lakxi  
COMP AGR-see.PROG the person COMP WH(GEN).AGR-sew  
[magagu-ña  $t_j$ ]]?  
clothes-AGR  
'Have you seen the person whose clothes we mended?'

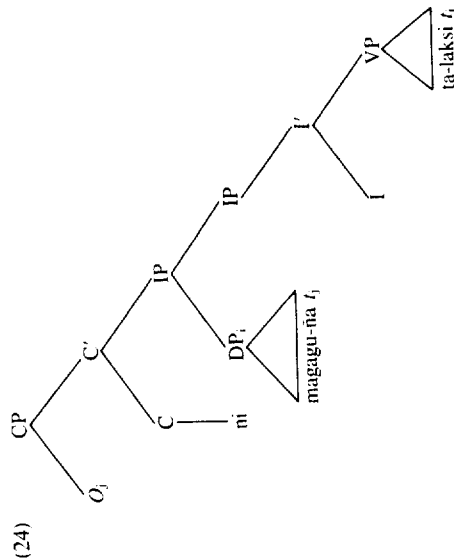
(22) shows that if objective (instead of genitive) *Wh*-Agreement were to surface on the verb of the relative clause, the result would be ungrammatical.

- (22) \*Kao un-lili'i i [taotao [ $O_j$  ni nilakse-tta  
COMP AGR-see.PROG the person COMP WH(OBJ).sew-AGR  
[magagu-ña  $t_j$ ]]?  
clothes-AGR  
'Have you seen the person whose clothes we mended?'

What we are interested in is that relative clauses like the one in (21) also allow the entire possessed DP to be moved to the left. The preposed DP lands in the classic position of elements that have been left-adjoined to IP, namely, between  $C^0$  and (the rest of) IP, as shown in (23).

- (23) Kao un-lili'i i [taotao [ $O_j$  ni [magagu-ña  $t_j$ ], ta-lakxi  
COMP AGR-see.PROG the person COMP clothes-AGR WH(?).AGR-sew  
i]]?  
'Have you seen the person whose clothes we mended?'

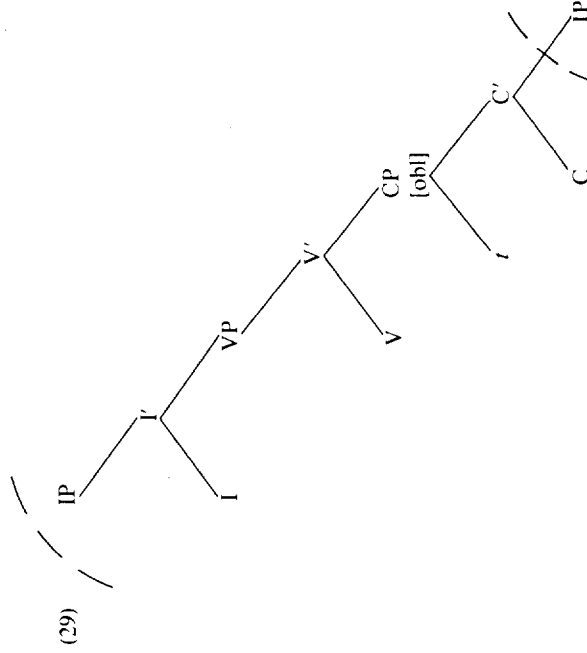
Relative clauses of this sort contain two  $\bar{A}$ -bound traces: the original *wh*-trace of the possessor, plus the trace left behind by adjunction of the possessed DP. In (23) the trace of adjunction ( $t_i$ ) occupies the position of the direct object, as shown in (24), and so presumably bears objective Case.





constructions such as (28a-d), movement has occurred successive-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.<sup>9</sup>

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)).



Here  $V^0$  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,  $C^0$ , and then between  $C^0$  and its specifier, so that oblique Case also shows up on the intermediate trace in the specifier of  $C'$ . Observe now that this trace satisfies all the conditions for *Wh*-Agreement with the higher  $I^0$ . An A-bound trace, it

<sup>9</sup> 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.

Note that the minimal m-command domain of  $I^0$  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 (a point 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 successive-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. Hafá ma'a'nao-ña i palao'an [t pára u-fa'nu'i  
 what? wh[obl].afraid-AGR the girl FUT wh[obl2].AGR-show  
 si nana-ña t]?  
 mother-AGR  
 'What is the girl afraid to show her mother?'
- b. Hayi umistoba si Juan [t ni mihahalang i asagua-ña t]?  
 who? wh[nom].disturb Juan COMP wh[obl].lonely the spouse-AGR  
 'Who does it disturb Juan that his wife is lonely for?'
- c. Hayi minalagu'-ñiha [t pára u-maigu' t géspaing]?  
 who? wh[obl].want-AGR FUT wh[nom].AGR-sleep late  
 'Who do they want to sleep late?'
- d. Hafá masangane-mmu ni policeman [t pára un-cho'gui t]?  
 what? wh[obl2].be.told-AGR OBL policeman FUT wh[obl].AGR-do  
 'What were you told by the policeman you should do?'

In these examples the  $I^0$  that has the original *wh*-trace in its minimal m-command domain shows the expected form of *Wh*-Agreement. Thus, the mostly deeply embedded  $I^0$  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  $I^0$ '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,  $I^0$  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*-

is nonetheless free in I<sup>0</sup>'s minimal m-command domain, whose boundaries are indicated by the broken lines in (29).

The result is that the higher I<sup>0</sup> 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 I<sup>0</sup>s 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<sup>0</sup> 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.<sup>10</sup> Second, and more important for our purposes, the analysis claims that every instance of *Wh*-Agreement on a higher I<sup>0</sup> is licensed by an *intermediate trace in the specifier of C<sup>0</sup>*.

The sensitivity of *Wh*-Agreement to intermediate traces is crucial to the rest of this article. In effect, it hands us a 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 I<sup>0</sup>s along the path of extraction exhibit *Wh*-Agreement, then movement must have been successive-cyclic (that being the only way to generate the intermediate traces that would license the agreement). On the other hand, if higher I<sup>0</sup>s along the path of extraction do *not* exhibit *Wh*-Agreement, then it seems reasonable to conclude that long movement has occurred.<sup>11</sup>

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 I<sup>0</sup> that has the

<sup>10</sup> 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 (i).

(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 fumahan t adyu na guma?]  
who? Maria wh[OBL].want-AGR INFPR.buy that I. 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).

<sup>11</sup> Note that it cannot merely be concluded that *Wh*-Agreement is optional, given that the agreement is always obligatory for the I<sup>0</sup> that has the original *wh*-trace (the variable) in its minimal m-command domain.

original *wh*-trace (the variable) in its domain is obligatorily inflected for *Wh*-Agreement, just as predicted by rule (26). Whether or not higher I<sup>0</sup>s 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 I<sup>0</sup>s 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 I<sup>0</sup>s must show *Wh*-Agreement, a pattern that argues that, for these *wh*-phrases, successive-cyclic 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 section I discuss constituent questions, then clefts, and finally relative clauses.<sup>12</sup> 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 fifteen speakers. 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. Quinata, whom I wish to thank.) That 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 *haifa* 'what?' and *hayi* 'who?' count as 'nonreferential' in Cinque's system, so we would expect the  $\bar{A}$ -dependencies formed from them to require successive-cyclic movement. The morphological evidence bears this out, though more absolutely for *haifa* than for *hayi*. Constituent questions formed with *haifa* must show *Wh*-Agreement on all I<sup>0</sup>s 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-cyclic pattern of agreement, though I have found some speakers who occasionally allow this

<sup>12</sup> 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 I's along the path of extraction must show *Wh*-Agreement.

- (32) a. Hayi o'son-ña si Carmen [t pära u-kuentusi t]?  
 who? WH[OBL].bored-AGR Carmen FUT WH[OBL].AGR-speak.to  
 'Who is Carmen bored with talking to?'  
 b. Hayi muna'mänman si Juan [t na un-paniti t]?  
 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 [pära u-kuentusi t]?  
 who? AGR.bored Carmen FUT WH[OBL].AGR-speak.to  
 ('Who is Carmen bored with talking to?')  
 b. \*Hayi nina'mänman si Juan [na un-paniti t]?  
 who? AGR.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), *hayi na NP* (human), and *manu 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 I<sup>0</sup> with the original *wh*-trace in its domain must be inflected for *Wh*-Agreement, as was pointed out earlier. Higher I<sup>0</sup>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 malago'-mu [t  
 what? L part LOC car WH[OBL].want-AGR  
 u-mafa'maollik t]?  
 WH[NOM].AGR-be.fixed  
 'Which part in the car do you want to be fixed?'  
 b. Hayi na palao'an ma'a'nao-mu [t na pära u-kahat  
 who? L woman WH[OBL].afraid-AGR COMP FUT WH[NOM].AGR-lift  
 t esti na dangkulu-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 malägu' hao [u-mafa maollik t]?  
 what? L part LOC car AGR.want you WH[NOM].AGR-be.fixed  
 'Which part in the car do you want to be fixed?'

- b. Hayi na palao'an ma'a'nao hao [na pära u-kahat t esti na  
 who? L woman AGR.afraid you COMP FUT WH[NOM].AGR-lift this L  
 dangkulu-n kahun]?  
 big-L box  
 'Which woman are you afraid will pick up this big box?'

- c. Hafa na bistidu nina fanmäman hämyu [na ha-ehuli'  
 what? L clothes AGR.be-surprised you COMP WH[OBL].AGR-take  
 si Maria t]?  
 Maria  
 'Which dress did it surprise you that Maria took?'

### 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) Kareta malagu'-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, *kareta* 'car') has been moved to the specifier of C<sup>0</sup>:

- (37) [CP Kareta<sub>i</sub> [IP malagu'-mami t<sub>i</sub>]].  
 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) [DP Kareta]<sub>DP</sub> e [O<sub>i</sub> malagu'-mami t<sub>i</sub>].  
 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 C<sup>0</sup>—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:<sup>13</sup>

- (39) a. I chi'lu-hu lahi malägu' si Carmen [pära ali'e'ña t].  
 the sibling-AGR male AGR.want Carmen FUT WH[OBL].meet-AGR  
 'Carmen wants to meet my brother.'  
 (Also OK with the successive-cyclic pattern of *Wh*-Agreement)  
 b. I pänglao ma'ñaao yu [pumätächa t ni bäälis].  
 the crab AGR.afraid I WH[OBL].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 *toda* 'all', *käda* 'each', *meggai* 'many', *bula* 'much, plenty', or *pälu* '(contrastive) some'. These DPs are close analogues of Italian DPs that Cinque identifies as "referential." Perhaps with something like the following in mind: In most natural language uses, 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. Käda patgun man-malägu' häm [na bei in-na'chalik t].  
 each child AGR.want we COMP WH[OBL].AGR.make.laugh  
 'We want to make each child laugh.'  
 b. Meggai na biha malägu' si Antonio [pära u-bisita t].  
 many L old.women AGR.want Antonio FUT WH[OBL].AGR-visit  
 'Antonio wants to visit many old women.'  
 (Also OK with the successive-cyclic pattern of *Wh*-Agreement)  
 c. Bula na difirentis klasi-n taotao si Antonio interesáo [pära t].  
 plenty L different kind-L people Antonio AGR.interested FUT  
 asuddä' -ña  
 WH[OBL].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—*ni hajä* 'nothing', *ni hayi* 'no one', and *ni unu* 'not one'—are "nonreferential" according to Cinque. And, consistent with this,

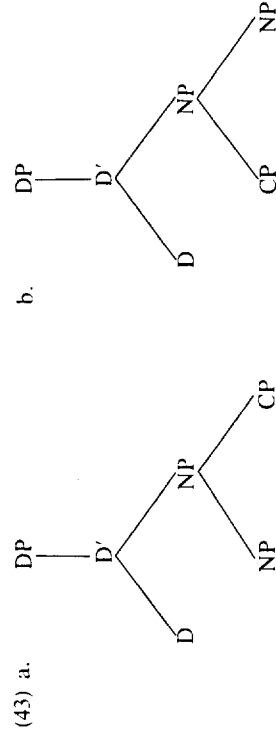
<sup>13</sup> As a simplifying move, I will henceforth suppress examples of the successive-cyclic pattern of *Wh*-Agreement when the "long" pattern is also possible. Instead, I will annotate particular examples of long movement (such as (39a)) when their successive-cyclic counterparts are also explicitly 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'ñaao-mu [t pära un-kuintusi t].  
 not one WH[OBL].afraid-AGR FUT WH[OBL].AGR-speak.to  
 'You're afraid to speak to no one.'  
 (42) \*Ni unu ma'ñaao hao [pära un-kuintusi t].  
 not one AGR.afraid you FUT WH[OBL].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<sup>0</sup> (see Stockwell, Schachter, and Partee 1973, Abney 1987, and Chung 1991b). The two options for adjunction are schematized in (43).



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

- (44) a. I famalao'an yan i [famagu'un [O ni onsi años ya más t]]  
 the women and the children COMP eleven years and more  
 mana 'famacho' chu' 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-chuli' i [[O minä'i t ni ädyu i häggan] kahun].  
 AGR-take the AGR.be.given OBL that the turtle box  
 'He took the box that the turtle had given him.'

See Chung, forthcoming, for further discussion.

The pattern of *Wh*-Agreement in relative clauses confirms the correlation we have been attempting to establish between "referentiality" and long movement, but with this difference: since relativization involves movement of the null operator *O*, which is invariant, what matters is not *O* itself, but rather the "referentiality" of the head NP with which it is coindexed.<sup>14</sup>

Head NPs that form part of a definite DP, for instance, are presumably "referential." In line with the expectations we have built up so far, the pattern of *Wh*-Agreement reveals that the relative operator is eligible for long movement (see Chung 1982). Long movement is, in fact, somewhat more usual than the successive-cyclic option in relative clauses of this type:

- (45) a. Hu-taitai i [katta [O ni ma'a'ñaio i palao'an [na  
AGR-read the letter COMP AGR.afraid the girl COMP  
u-fa'nu'i si nana-ña t]].  
WH[OBL2].AGR-show mother-AGR  
'I read the letter that the girl is afraid to show her mother.'  
(Also OK with the successive-cyclic pattern of *Wh*-Agreement)
- b. Hu-sodda' i [palao'an [O ni inistótoba si Juan [ni  
AGR-find the woman COMP AGR.be.disturbed.PROG Juan COMP  
mirahalang i che'lu-ña lahi t]].  
WH[OBL].lonely the sibling-AGR male  
'I found the woman who it disturbs Juan that his brother is lonely for.'  
(Also OK with the successive-cyclic pattern of *Wh*-Agreement)

Head NPs that form part of a definite DP are "referential" even when *N*<sup>0</sup> is phonetically null (in which case it translates as 'one' or 'thing'; see Chung 1987). To judge from the agreement evidence, long movement of the relative operator is preferred even in these constructions, an observation that will become significant in a moment. Consider:

- (46) a. Mäma'atungu' si Rosa ni [e [O malägu' gui' [pära  
AGR.be.friendly Rosa OBL AGR.want she FUT  
atungo'-ña t]].  
WH[OBL].be.acquainted-AGR  
'Rosa is friendly with the one(s) she wants to be friends with.'  
(Also OK with the successive-cyclic pattern of *Wh*-Agreement)
- b. Aduy i [e [O ma'a'ñaio yu' [na u-bäba  
that the AGR.afraid I COMP WH[OBL].AGR-open  
gófdangkulu.  
AGR.very.big  
'The (thing) that I was afraid to open, it was very big.'

<sup>14</sup> The presence of a null relative operator in Chamorro 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.

A more complex and subtle picture is presented by head NPs that form part of an indefinite DP—head NPs selected by the Chamorro 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 Chamorro 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 DPs 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. Guäha [kariñosu [O ni malägu' si Juan [pära  
AGR.exist nice COMP AGR.want Juan FUT  
asuddä'-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' [äbbuk taotao [O ma'a'ñaio si Carmen [pära  
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-nisita [lahi [O ni ti ma'a'ñaio si Carmen [pära  
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

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*-movement 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:<sup>16</sup>

- (50) a. Hafa *sirangani*-n Juan as Dolores [*t* ni *mimalago*'-ña [*t*  
 what? WH[OBL2].tell-L. Juan OBL. Dolores COMP WH[OBL].want-AGR  
 pära un-taitai *t*] ]?  
 FUT WH[OBL].AGR-read  
 'What did Juan tell Dolores that he wants you to read?'  
 b. Hayi ma 'a ñao-mu [*t* malago'-ña si Carmen [*t*  
 who? WH[OBL].afraid-AGR WH[OBL].want-AGR Carmen  
 pära ali'e'-ña *t*] ]?  
 FUT WH[OBL].meet-AGR  
 'Who are you afraid that Carmen wants to meet?'

<sup>16</sup> The idiolect of a third Chamorro speaker with whom I systematically checked the sentence types of sections 5.1–5.3 provides some confirmation of the well-behaved character of extractions across a longer distance. This speaker allows long movement for clefts of type (40) and for relative clauses of type (45), but not for any of the other *wh*-constructions described above. (See footnote 27 for further discussion.) Consistent with this, she systematically requires the successive-cyclic pattern of *Wh*-Agreement whenever an interrogative word is extracted across a distance, even when that distance spans three or more CPs.

will have occasion to return to later. In (47a), for instance, the indefinite DP serves as the complement of the existential verb *guäha* 'exist'; in (47b), as the complement of the negative existential verb *taya* 'not exist'; and in (47c), as the object of *nisisita* '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. Guäha [*e* [*O* malago'-ña si Juan [*t* pära asuddä'-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  
 pära u-kuentusi *t*] ]].  
 FUT WH[OBL].AGR-speak.to  
 'There isn't anybody who Carmen is afraid to talk to.'  
 c. Yänggin guäha [*e* [*O* malago'-ña [*t* pära  
 if AGR.exist WH[OBL].want-AGR FUT  
 u-faisin *yu*' *t* ä'lu] ]], 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 *guäha* and the negative existential verb *taya*.<sup>15</sup> Note the successive-cyclic morphology, in which each I<sup>0</sup> 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. \*Guäha [*e* [*O* malägu' si Juan [pära asuddä'-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 'a ñao si Carmen [pära  
 AGR.not.exist AGR.afraid Carmen FUT  
 u-kuentusi *t*] ]].  
 WH[OBL].AGR-speak.to  
 ('There isn't anybody who Carmen is afraid to talk to.')

<sup>15</sup> 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 [–V] 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).

- (53) Esti na istoria put i taotao mo'na [ $O_i$  ni guäha [ $O_j$   
 this L. story about the people first COMP AGR.exist  
 umá'aluk  $t_j$ ] [man-dägi  $t_i$ ], guäha ha' [ $O_k$   
 WH[NOM].say.PROG WH[NOM].AGR.AP-lie AGR.exist indeed  
 umá'aluk  $t_k$ ] [magahit  $t_i$ ]].  
 WH[NOM].say.PROG WH[NOM].AGR.itruc

'This story, which there are some who say is a lie (and) there are some who say is true, is about the ancient spirits.' (Cooreman 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 *sinanganenña* 'tell'.

- (54) Hafa, sinanganenña si nana-mu nu hagu [na guiya,  
 what? WH[OBJ2].say-AGR mother-AGR OBL.you COMP she  
 fumahan  $t_i$   $t_i$ ]?  
 WH[NOM].buy

'What did your mother tell you that she bought?'

But closer scrutiny reveals that the clefted constituent *guiya* 'she' does not, in fact, occupy the specifier of the bracketed CP, since it does not occur to the left of  $C^0$ , 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  $I^0$  to be inflected for *Wh*-Agreement. Consider the subtree in (55) (p. 28), in which  $t_i$  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 successive-cyclic 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,

- (51) a. ?\*Hafa sinanganen-n Juan as Dolores [ $t$  ni malägu' gui'  
 what? WH[OBJ2].tell-1. Juan OBL Dolores COMP AGR.want he  
 [pära un-taitai  $t$ ]?  
 FUT WH[OBJ].AGR-read  
 ('What did Juan tell Dolores that he wants you to read?')
- b. (?)Hayi ma'a'nao-mu [ $t$  malägu' si Carmen [pära  
 who? WH[OBJ].afraid-AGR AGR.want Carmen FUT  
 ali'e'ña  $t$ ]?  
 WH[OBJ].meet-AGR  
 'Who are you afraid that Carmen wants to meet?'

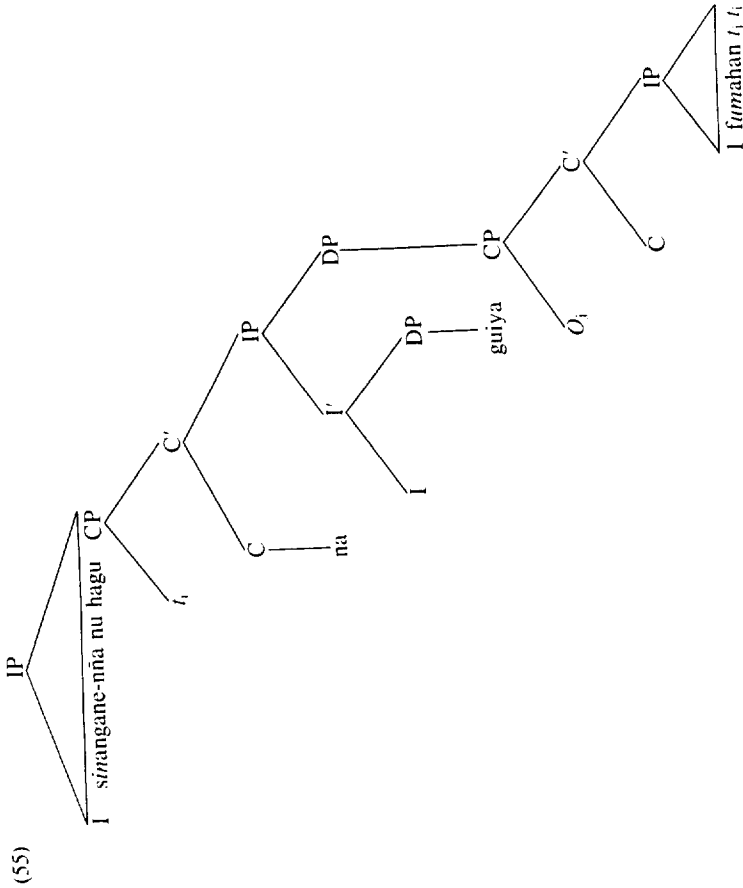
### 6.2 Extraction out of Islands

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  $I^0$ .<sup>17</sup> 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  $I^0$ —an agreement that could have been spelled out overtly on the existential verb *guäha* 'exist'. But it does not:

- (52) Hafa na kareta, guäha [mayulang ramienta [ $O$ ] in-isa  
 what? L. car AGR.exist broken tools WH[OBJ].AGR-use  
 $t_i$  [pära in-fa'maolik  $t_i$ ]?  
 FUT WH[OBJ].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  $I^0$ 's. This is because the *Wh*-Agreement triggered by the relevant traces (both of which are nominative subjects of intransitives) has no overt realization.

<sup>17</sup> Thanks to Lee Baker and Akira Watanabe for pointing this out.



trigger *Wh*-Agreement. This can be seen from the following constituent questions, all of which involve short extraction of some putative adjunct:

- (56) a. Sa' hafa na ma-dingu Sa'ipan *t*?  
 because what? COMP AGR-leave Saipan  
 'Why did they leave Saipan?'  
 b. Disdi ngai'an hao *sumaga* Merizo *t*?  
 since when? you AGR.live Merizo  
 'Since when have you lived in Merizo?'  
 c. Pāra hafa di un-chāchathinassu *t* . . . ?  
 for what? COMP AGR-worry.PROG  
 'For what purpose are you worrying . . . ?'  
 d. Ki ora ni pāra ufan-mattu i bisita *t*?  
 what? time COMP FUT AGR-arrive the visitors  
 'What time are the guests going to arrive?'

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-nña ni  
 AGR-ask the old.lady the woman how? WH[OBL].do-AGR OBL  
 alaguan-nña kalamasa *t*].  
 pudding-AGR pumpkin  
 'The old lady asked the woman how she had made her pumpkin pud-  
 ding.' (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-mmū ni kanta *t*]], bunitu.  
 how WH[OBL].sing-AGR OBL song AGR.beautiful  
 'The way you sang that song, (it) was beautiful.'  
 b. Guāha [*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-cyclic pattern of *Wh*-Agreement is allowed:

- (59) a. Taimānu malago'-nu [*t* pāra arekla-nña si Pedro ni  
 how? WH[OBL].want-AGR FUT WH[OBL].fix-AGR Pedro OBL  
 kareta *t*]?  
 car  
 'How do you want Pedro to fix the car?'  
 b. [*e* [Taimānu malago'-nña 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?')



Table 3

## Wh-movement of Chamorro DPs

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

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.<sup>20</sup>

## 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

<sup>20</sup> 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.

- b. \* $[e$  [Taimānu malāgu' si Juan [pāra kanta-kku ni kanta t]],  
how AGR-want Juan FUT WH[OBL].sing-AGR OBL song  
ti maolik.  
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-cyclic, 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.<sup>18</sup> 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.<sup>19</sup>

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

<sup>18</sup> 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., *nessuna 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., *káda NP*). I suspect that this difference may ultimately be traced to differences in the semantics of *ogni* and *káda*, but am not now prepared to defend this intuition.

<sup>19</sup> 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.

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).<sup>21</sup> 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  $\bar{A}$ -position. Second, whether or not a given NP counts as a quantifier is determined by the inherent features of its constituents. 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  $\bar{A}$ -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

<sup>21</sup> Dobrovie-Sorin does not herself use the term *referential* to characterize the class of clitic licensors.

direct impact on the possibility of long movement, given Rizzi's claim that  $\bar{A}$ -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  $\bar{A}$ -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 coindexed 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 [O ma'a'nao si Miguel]pāra  
AGR-not.exist American AGR.afraid Miguel FUT  
mumu-ña  
wh[OBL].fight-AGR  
t]].  
'There isn't any American who Miguel is afraid to fight with.'
- b. \*Si Miguel, *taya* [e [O ma'a'nao [pāra mumu-ña  
AGR-not.exist AGR.afraid FUT wh[OBL].fight-AGR  
t]].  
'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 Enç (1991)): both 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 on 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.<sup>22</sup>

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.

<sup>22</sup> Evidently, the sortal 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.

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.<sup>23</sup> 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.<sup>24</sup>

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 *hafu* 'what?', anything', *hayi* 'who?', anyone', and *unu* 'one', to produce the negative bare quantifiers *ni hafu* 'nothing', *ni hayi* 'no one', and *ni unu* 'no(t) one'.<sup>25</sup> *Ni* can also adjoin to the

<sup>23</sup> 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 that is a cook* versus *someone that is a linguist and a cook*.

<sup>24</sup> Chamorro evidently differs from Italian here: according to Cinque's classification, all negatively quantified DPs, whether bare quantifiers or not, count as "nonreferential."

<sup>25</sup> This use of *hayi* and *hafu* (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 Tootzli.

determiner *un* 'one, a', in which case the result is a negatively quantified DP (e.g., *ni un patgun* '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 successive-cyclically:

- (62) a. Ni unu malago'-hu [t u-fañ-uli' t  
not one WH[OBL].want-AGR WH[NOM].AGR-AP-take  
katta ginin as Jose].  
letter from OBL Jose  
'I want *no one* to get a letter from Jose.'
- b. Ni háfafa ha' interesao-ña si Juan [t pára  
not anything.EMP indeed WH[OBL].interested-AGR Juan FUT  
u-fahan t].  
WH[OBJ].AGR-buy  
'Juan is interested in buying *nothing*.'
- (63) a. \*Ni unu malägu' yu' [u-fañ-uli' t katta ginin  
not one AGR.want I WH[NOM].AGR-AP-take letter from  
as Jose].  
OBL Jose  
'(I want *no one* to get a letter from Jose.)'
- b. \*Ni háfafa ha' interesáo si Juan [pára  
not anything.EMP indeed AGR.interested Juan FUT  
u-fahan t].  
WH[OBJ].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:<sup>26</sup>

- (64) a. Taya' ni háyiyi ha' [O malago'-hu  
AGR.not.exist not anyone.EMP indeed WH[OBL].want-AGR  
[t pára bai u-li'i' t pá'gu na ha'ani]].  
FUT WH[OBJ].AGR-see now L day  
'There isn't anyone I want to see today.'
- b. Sën-taya' ha' ni háfa [O malago'-hu  
extremely-AGR.not.exist indeed not anything WH[OBL].want-AGR  
[t pára bai u-taitai t]].  
FUT WH[OBJ].AGR-read  
'There isn't anything I want to read.'

<sup>26</sup> 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.

- (65) a. \*Taya' ni háyiyi ha' [O malägu' yu' [pára bai  
AGR.not.exist not anyone.EMP indeed AGR.want I FUT  
u-li'i' t pá'gu na ha'ani]].  
WH[OBJ].AGR-see now L day  
'(There isn't anyone I want to see today.)'
- b. \*Sën-taya' ha' ni háfa [O malägu' yu' [pára bai  
extremely-AGR.not.exist indeed not anything AGR.want I FUT  
u-taitai t]].  
WH[OBJ].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' häm [pára 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.)  
'?We want *no one* (of you) to fall off the cliff.'

(66) was rejected in the reading where *ni unu* means 'no one (in general)', but judged far better if uttered in a situation in which the speaker is admonishing several children playing at the edge of a cliff (cf. Cinque 1990:75). This difference is expected on the view of long movement sketched in section 7.2, given that in the second reading *ni unu* is quantifying over a set that is familiar.

More significant for our purposes is that other negatively quantified DPs do permit long movement, and do so even in the absence of the special discourse circumstances required to set up a covert partitive reading. Consider the cleft in (67) and the relative clauses in (68), all of which exhibit the 'long' pattern of *Wh*-Agreement.

- (67) Hagu, ni hayi ha' na médiku ma'a'nao hao [kumuentusi t].  
you not one indeed L doctor AGR.afraid you WH[OBJ].INFIN.talk.to  
'As for you, you're afraid to talk to *no doctors*.'
- (68) a. Taya' ni un [patgun [O malägu' yu' [na u-li'i'  
AGR.not.exist not one child AGR.want I COMP WH[OBJ].AGR-see  
t pa gu]].  
now  
'There isn't any child I want to see today.'
- b. Taya' ni háfafa ha' na [lepblu [O malägu' yu' [pára bai  
AGR.not.exist not anything indeed L book AGR.want I FUT  
u-taitai t]].  
WH[OBJ].AGR-read  
'There aren't any books I want to read.'

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 fall 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 unni*, on the one hand, and *ni un patguni*, 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.<sup>27</sup>

## 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  $\bar{A}$ -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 nonpronominal 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

<sup>27</sup> Within this approach, the idiolect 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.)

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 initiated by Aoun (1986) and continued in work by Frampton (1991, 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."<sup>28</sup> 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 *t*?

- (73) ??How much money is it unclear whether she will have to pay *t*?

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.<sup>29</sup> 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-

<sup>28</sup> 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. 2.1 for relevant discussion). Given that pronouns are often taken to be classic instances of bound variables (see, 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.

<sup>29</sup> 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.

ginally) kinds. If (69) were recast in terms of the notion "individual variable," the long movement possibilities of these DPs in Chamorro would fall out directly from Heim's view of their interpretation.<sup>30</sup>

These considerations make clear, I think, the initial attractiveness of attempting to bring the Chamorro evidence under the wing of a semantically based approach to long movement, and a Frampton-style appeal to individual variables in particular. Were one to pursue this line of thought, one might try to reduce the role of descriptive content in the licensing of long movement to an independent condition—for instance, some sort of ban on unrestricted *wh*-quantification (on which, see Cresti 1992:17–20). I will not continue to explore this avenue here, however, because—attractive though it may seem—I cannot yet see how it can successfully account for all the Chamorro facts. Two difficulties in particular arise.

First, there appear to be examples of extraction across a distance in which the *wh*-trace cannot be interpreted as an individual variable (in the sense of Heim (1987)), but in which the "long" pattern of *Wh*-Agreement is nonetheless allowed. Consider:

- (74) a. Kuantu na kantida-n néngkanu ma 'a ñao hao [pära  
 how.much? L quantity-L food AGR.afraid you FUT  
 uma-kannu t gi una ora]?  
 wh[OBJ].AGR-eat LOC one hour  
 'How much food are you afraid they might eat in an hour?'  
 (Also OK with the successive-cyclic pattern of *Wh*-Agreement)
- b. Kuantu na mineggai guñhan malägu hao [pära u-guäha  
 how.much? L muchness fish AGR.want you FUT wh[NOM].AGR-exist  
 t guñhi gi sädduk]?  
 there LOC lake  
 'How many fish do you want there to be in the lake?'  
 (Also OK with the successive-cyclic pattern of *Wh*-Agreement)

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 *guñha* '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

<sup>30</sup> Thanks to a reviewer for pointing this out.

construction of this type. As shown earlier (see section 5.3), these require successive-cyclic *Wh*-Agreement:

- (75) a. Guäha [e [O malägo'-ña si Juan [t na ta-li'i t]].  
 AGR.exist wh[OBJ].want-AGR Juan COMP wh[OBJ].AGR-see  
 'There's someone who Juan wants us to see.'  
 b. \*Guäha [e [O malägu' si Juan [na ta-li'i t]].  
 AGR.EXIST AGR.want Juan COMP wh[OBJ].AGR-see  
 ('There's someone who Juan wants us to see.')

It seems unlikely that the most deeply embedded trace in these examples could be interpreted as anything but an individual variable (see Heim 1987:36–39 for discussion). The possibility of construing the trace as 'x-many ones' seems dubious, given that the relative clause in question is not an amount relative—and could not be, if we accept Carlson's (1977:525) observation that amount relatives are never headed by the indefinite determiner or by cardinality quantifiers. Nonetheless, to judge from the *Wh*-Agreement evidence, long movement is impossible in (75).

Note further that one could not easily attribute the ungrammaticality of (75b) to any ban against unrestricted *wh*-quantification. This is because, from the standpoint of descriptive content, the quantification in (75b) is just as unrestricted as the quantification involved in the null-headed relative clause in (76). But since the null head of the relative clause in (76) is definite, long movement is allowed (see section 5.3).

- (76) Esti na lahi [ädyu [O ti siguru hao [na un-li'i t]].  
 this L boy that not AGR.certain you COMP wh[OBJ].AGR-see  
 'This boy is that (one) who you're not sure that you saw.'

Where does this leave us? As far as Chamorro is concerned, I think the empirical evidence is strong that long movement is constrained by (69)—a condition that relies on two notions, familiarity and descriptive content, whose relation to locality (and to each other) is less than completely obvious. One might hope that a condition like (69) could ultimately be resolved into one or more principles whose theoretical motivation is better understood. I have just argued that resolution cannot be straightforwardly achieved by appealing to the notion "individual variable"—a notion that may give an attractive account of extraction out of islands in languages such as English and Italian. If that is so, then the question of how and why long movement is licensed still remains essentially a mystery. The further exploration of this mystery I must leave for another time.

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# Economy of Derivation and the Generalized Proper Binding Condition

### 1 Introduction: Economy of Derivation

Chomsky (1991, 1993) 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):<sup>1</sup>

##### (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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<sup>1</sup>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.