Long-Distance Wh-Movement and Minimalism

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1 Introduction

Long wh-movement is a phenomenon by which an element appears to move directly from an A- or $\overline{\text{A}}$-position to a higher $\overline{\text{A}}$-destination, ignoring weak island constraints and bypassing the intermediate landing sites that are characteristic of successive-cyclic wh-movement. Cinque (1990) gives some examples of the contrast between long and successive-cyclic wh-movements, illustrating the long-distance variety's immunity to weak island effects (the (a) examples show successful long movement, and the (b) examples show failure of long movement because the moved element requires successive-cyclic movement):
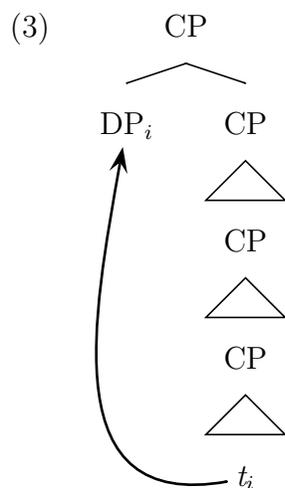
(1)   Extraposition Island (= Cinque (1990:2), ex. (7))

    a.   To whom is it time to speak t?

    b. *How is it time to behave t?

(2)   Factive Island (= Cinque (1990:2), ex. (6))

    a.   To whom do you regret that you could not speak t?

    b. *How do you regret that you behaved t?

These data indicate that some sort of island-defying movement is available in certain instances and/or to certain elements. This paper focuses on the properties of long-movement itself, leaving the issue of which elements may participate in this phenomenon for future research. For present purposes, it is sufficient to note that Cinque (1990) and Chung (1994, 1998) notice that only certain DPs are eligible to participate in a long-movement operation. Cinque argues that the moved element in a long-movement construction must be "referential." In Cinque's terminology, this is a DP "that refer[s] to specific members of a preestablished set" (Cinque 1990:8). It is D-linked (Pesetsky 1987), and, unlike non-referential DPs, it can enter into coreference relationships. Chung points out some deficiencies with this proposal, but it is a sufficient working analysis for now. I return to this issue in the conclusion.

Further, Cinque's formal notions of antecedent government and binding have quite different incarnations in the Minimalist Program (Chomksy 1999). For example, antecedent government, whose role is to enforce strict locality in successive-cyclic movement, is superseded by the Phase Impenetrability Condition. Antecedent government is consequently discarded in Minimalism. With the theoretical advances of Minimalist syntax, Cinque's ideas merit new scrutiny and revision. I discuss this topic in more detail in Section 7 and, with respect to Minimalism and long movement generally, immediately below.

As I show in Section 2, there is strong evidence that long wh-movement does indeed bypass the typical stopping-off points that characterize ordinary wh-movement. A DP that undergoes long wh-movement appears to move directly from its A-position to its final destination, potentially moving across several clauses (see (3)). An operation like this is incompatible with Minimalist assumptions. Since CPs, at the very least, are phases, a probe cannot locate a goal that is embedded multiple clauses below the probe's phase. This would violate the Phase Impenetrability Condition, as (3) makes clear. We seem to have a choice to make: either we deny the facts of long wh-movement, or we abandon the notion of phases that is central to the Minimalist Program. This paper essentially takes the former approach by developing an analysis of long wh-movement in Chamorro (Chung 1998) that does not involve movement across any long distance and is compatible with the Minimalist framework. The analysis involves base-generation of a DP in what appears to be the final destination of the movement operation, coupled with a short (i.e., non-long-distance) movement in the lower clause from which movement appears to have occurred.[1]

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[1]While the analysis below argues that there is in fact no unusually long movement involved in long-distance constructions, I continue to call the operations involved "long movement" or "long-distance movement" for terminological consistency.

(3)

```
            CP
          ╱  ⌒  ╲
      DP_i        CP
       ↑         △
       │          CP
       │         △
       │          CP
       │         △
       └──────── t_i
```

2   Wh-Movement in Chamorro

Chamorro is particularly interesting with respect to wh-movement because of its highly detailed morphology, which provides a visible record of the path of $\overline{\text{A}}$-movement.[2] This morphology is a clear diagnostic for long-distance constructions because each movement operation is signalled morphologically. Where this morphology is lacking, the moved element must have combined what would be a series of successive movements into a single operation. Before discussing this morphology, I outline the facts of wh-movement in Chamorro.

Wh-movement in Chamorro has all the properties of wh-movement in other languages.[3] Chung (1998) shows that wh-constructions in Chamorro "contain a syntactic dependency between a displaced constituent... and a gap" (p. 208), and that this dependency holds across an unbounded distance and exhibits island and crossover effects. Finally, the displaced constituent surfaces in an $\overline{\text{A}}$-position.

Consider first the constituent question in (4). Like all constituent questions in Chamorro, this one has an interrogative phrase (what I call below a "wh-phrase") at its left edge. Chung identifies this position as the specifier of C^0, a conclusion confirmed in part by the presence of

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[2] Other languages with similar record-keeping morphology include Irish (McCloskey 1990), Moore (Haïk 1990), and Palauan (Georgeopolous 1985, 1991a,b).

[3] Virtually all of the analysis in this section comes from Chung (1998) chapters 6–8.

an overt complementizer to the right of the wh-phrase in this example. t marks the position in which the wh-phrase is expected to appear in declarative constructions; it marks the gap.

(4) Ginin hayi na un-konni' i neni t ?
   from who? Comp agr-take the baby
   "From whom did you take away the baby?" (Chung 1998:209)

The wh-phrase and the gap form an $\overline{\text{A}}$-dependency. The position of the gap must be empty, as (5) shows. In (5b), the overt material in the position of the gap in (5a) causes ungrammaticality. The displaced element must also meet the semantic and syntactic selectional requirements imposed on the gap.

(5) a. Hayi ma'a'ñao-mu t ?
     who? WH[obl].afraid-agr
     "Who are you afraid of?" (Chung 1998:210)

  b. *Hayi ma'a'ñao hao nu guiya?
     who? agr.afraid you Obl him
     (Who are you afraid of him?) (Chung 1998:210)

This dependency may occur across an unbounded distance. For example, in (6) several clauses intervene between the initial displaced element and gap. This freedom is constrained by the normal array of island and strong crossover effects. (7) shows attempted extraction out of a relative clause (7a) and out of an embedded question (7b). (8) shows that a pronoun that c-commands the gap may not be coindexed with the gap.

(6) Manu na isla ni masangani hao man-ansias siha pära uma-muv
   which? L island Comp agr.Pass-say.to you agr-anxious they Fut agr-move
   siha   guätu t ?
   themselves over.there
   "Which island were you told that they are eager to move to?" (Chung 1998:211)

(7) a. *Hayi siha na famagu'un un-rispeta [ädyu i palao'an [ni fuma'na'gui
    who? Pl L children agr-respect that the woman Comp WH[nom].teach
    t]]?

   (Which children do you respect the woman who taught t ?) (Chung 1998:211–212)

b. *Taimänu in-tingu' [hayi siña chumo'gui   i   che'chu' t]?
   how?   agr-know who? can WH[nom].do the job
   (how do you (pl) know [who can do the job t]?) (Chung 1998:212)

(8)   Hayi$_i$ malago'-ña $pro_{j,*i}$ na   un-na'facho'chu' t_i ?
      who? WH[obl].want-agr   Comp WH[obj].agr-make.work
      "Who$_i$ does he$_{j,*i}$ want you to hire t_i ?" (Chung 1998:212)

Finally, wh-movement creates the full range of expected constructions in Chamorro. Constituent questions were illustrated in (4)–(6) above. (9) shows relative clauses, embedded questions, and clefts, each of which exhibit the same array of properties outlined above.

(9)   a.   Pära bai u-sugun guätu   [[änai pära u-gupu si Maria t] na lugát].
           Fut   agr-drive over.there Comp Fut   agr-fly   Maria   L place
           "I'm driving to the place that Maria is flying to." (Chung 1998:214)

      b.   Un-tungu' [taotao [O ni   ti   interesáo   yu' pära bai u-tungu'
           agr-know   person   Comp not agr.interested I   Fut   WH[obj].agr-know
           t]].

           "You know the people who I'm not interested in knowing." (Chung 1998:218)

      c.   Esta   alas otchu   na   man-maigu' i   famagu'un t.
           already eight.o'clock Comp agr-sleep   the children
           "It was eight o'clock when the children fell asleep." (Chung 1998:228)

Nothing discussed so far is unusual. These wh-constructions manifest the expected properties. In the next two sections I discuss the morphology that accompanies wh-movement in Chamorro. This morphology is a diagnostic for the presence of wh-movement, and therefore an indicator of successive-cyclic movement.

2.1   Operator-C Agreement

In Chamorro, unlike in English for example, there is direct morphological evidence of the path a moved item takes during its move. Two agreement relationships are associated with wh-movement. The first is what Chung (1998) calls Operator-C Agreement.

The normal complementizer morphology (that which appears when no wh-movement occurs) is illustrated in the following examples. Complementizers normally alternate according to various clausal properties: finite/nonfinite; interrogative/noninterrogative; root/embedded. In non-finite clauses (and finite non-interrogative root clauses), the complementizer is null:

(10) Mu-malägu' yu' lokkui' [[$_C$]   chumägi mama'].
      agr-want   I   also   *Comp* Infin.try chew.betelnut
      "I too came to want to try chewing the betelnut." (Chung 1998:223)

In finite non-interrogative non-root clauses, the complementizer is either *na* or null:

(11) [$_C$]   Ta-tungu' [<u>na</u>   guäha   man-mafañagu   ni   man-mo'na
      Comp agr-know *Comp* agr.exist WH[nom].agr-born Comp WH[nom].agr-front
      ki   hita].
      than us
      "We know that there were some born earlier than us." (Chung 1998:223)

In finite interrogative clauses, both root and non-root, the complementizer is *kao*. In the root variety, it may also be null (see the bracketed clause):

(12) Pära u-li'i' [<u>kao</u> magahit na   u-fan-osgi]
      Fut agr-see *Q*   agr.true Comp agr-AP-obey
      "(So) I could see whether it was true that he would obey" (Chung 1998:224)

Complementizer morphology in non-wh-movement constructions is summarized in (13).

(13) *C Morphology in Non-wh-movement Clauses*

Type of Clause	C Morphology
[–finite]	—
[+finite,–q,+root]	—
[+finite,–q,–root]	na/—
[+finite,+q,+root]	kao/—
[+finite,+q,–root]	kao

When C's specifier position is filled, this morphology yields to a different system that reflects properties of C's specifier (DP vs. PP; locativity; null vs. non-null). With a null locative DP, the complementizer is realized as *änai* ("*O*" is the null relative operator):

(14) Pues dumimu [guihi [*O* <u>änai</u> gaigi si tata-ña   yan si nana-ña   *t*]].
　　so   agr.kneel there   *Comp* agr.be   father-agr and   mother-agr
　　"So they (du) knelt there where his father and mother were." (Chung 1998:226)

When this same DP is overt, the complementizer becomes *na* in the Guam dialect and

nai/ni in the Saipan dialect:

(15) Esta   alas otchu   <u>na</u>   man-maigu' i   famagu'un *t*.
　　already eight.o'clock *Comp* agr-sleep   the children
　　"It was eight o'clock when the children fell asleep." (Chung 1998:228)

With non-DP specifiers, C is again realized as *na* (Guam), or *nai/ni* (Saipan).

(16) Ginin hayi <u>na</u>   un-risibi   katta *t*?
　　from who? *Comp* agr-receive letter
　　"From whom did you receive a letter?" (Chung 1998:227)

The Operator-C Agreement morphology is summarized in (17).

(17)　*C Morphology in Wh-movement*

Type of Specifier	C Morphology
[+N,–locat]	—
[+N,+locat,+O]	änai
[+N,+locat,–O]	na (Guam), nai/ni (Saipan)
[–N]	na (Guam), nai/ni (Saipan)

In addition to the patterns summarized in (13) and (17), postnominal relative clauses have

their own Operator-C Agreement morphology. In such cases C reflects both the agreement

morphology and the morphology of the "linker" morpheme, which accompanies modifiers

in Western Austronesian languages (see Chung (1998) for details). Operator-C Agreement

surfaces according to (19) in these sentences. Some examples are given in (18).

(18)　a.　Adyik [un problema [*O* <u>ni</u>   impottanti   *t* pära hagu yan i
　　　　　choose a   problem   *Comp* WH[nom].agr.important   to   you   and the
　　　　　famagu'on-mu]].
　　　　　children-agr
　　　　　"Choose a problem that is important to you and your children." (Chung 1998:233)

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b. Adyugui' [i chinina [*O* <u>ni</u>   malago'-mu   *t*]].
   there.is   the shirt   *Comp* WH[obl].want-agr
   "There's the shirt that you wanted." (Chung 1998:233)

(19)   *Realizations of C in Postnominal Relative Clauses*

Type of Specifier	C Morphology
[+O,–locat]	ni
[+O,+locat]	änai (Guam), ni (Saipan)

Chung (1998) analyzes the morphological alternations in (14)–(16) as an instance of specifier-head agreement. As is apparent from the above examples, this kind of agreement is a feature of wh-movement. (14) shows the agreement in a relative clause, (15) shows it in a cleft sentence, and (16) shows it in a question. When wh-movement occurs across more than one clause, whether by successive-cyclic movement or long-distance movement, only the highest C—the one whose specifier is the final destination of movement—enters into this agreement relationship. The lower complementizers show their normal, non-movement morphology. An example is shown in (20), where complementizers are underlined. The highest C shows the morphology from (14), and its specifier is filled with the same null relative operator from (14). The lower complementizer, with a trace in its specifier, is realized as *na,* the form used for a finite non-interrogative non-root clause (see (11)). If it agreed with its specifier, we would expect to see the same morphology that appears on the higher C.

(20)   Taya'   kasamentu ma-susedi   [guihi na ha'ani [*O* <u>änai</u>
        agr.not.exist marriage   WH[nom].agr.Pass-experience there L   day   *Comp*
        hinasso-tta   [*t* <u>na</u>   um-äsagua i   dos *t*]]].
        WH[obj].think-agr   *Comp* agr-marry the two
        "No marriage sacrament occurred on the day when we thought they were married."

        (Chung 1998:229)

2.2   Wh-Agreement

Chung calls the second morphological phenomenon Wh-Agreement. Verbs along the path of wh-movement acquire special inflections, reflecting the grammatical function of the gap left

by movement.[4] When this inflection is overt, it replaces the normal subject-verb agreement morphology. In glosses below, WH[ ] (with case indicated in the square brackets) signals the presence of Wh-Agreement morphology in one form or another.

When the predicate is transitive and realis, *-um-* is the inflectional infix for a nominative gap:

(21) Hayi chu<u>um</u>ätgi-n   mämaisa gui' *t* ?
      who? WH[nom].laugh.at-L self.Prog him
      "Who was laughing at himself?" (Chung 1998:237)

With an objective gap,[5] the predicate is optionally nominalized.[6] If the predicate is transitive, then the infix *-in-* must accompany nominalization. (22) illustrates both the infix and nominalization associated with objective agreement. (23) contrasts two questions that are identical except that the first one realizes Wh-Agreement via nominalization (and infixation) while the second one does not. Notice the different morphology of the verbs glossed as "say" and the oblique marker in the first example.[7]

(22) Hafa ki<u>in</u>annóno'-mu   *t* ?
      what? WH[obj].eat.Prog-agr
      "What are you eating?" (Chung 1998:237)

(23) a. Hafa si Maria si<u>in</u>angane-nña   as Joaquin *t* ?
          what?   Maria WH[obj2].say.to-agr Obl Joaquin
          "What did Maria tell Joaquin?" (Chung 1998:242)

      b. Hafa si Maria ha-sangani si Joaquin *t* ?
          what?   Maria say.to-agr   Joaquin
          "What did Maria tell Joaquin?" (Chung 1998:242)

Finally, with an oblique gap, nominalization is required. The infix *-in-* optionally appears

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[4]More accurately, in clauses that are not the lowest CP along the path of movement, Wh-Agreement reflects the grammatical function of the CP out of which the moved item has moved.

[5]Chung (1998) identifies two objective cases, "object" (a direct object's case) and "object2" ("the [c]ase of the oblique object of a verb of transfer" (p. 237)). While the Wh-Agreement morphology is the same for both cases, I follow Chung in glossing the agreement as either [obj] or [obj2] as appropriate.

[6]A nominalized predicate exhibits possessor-noun agreement rather than the usual subject-verb agreement, "and its direct object occurs in the oblique morphological case, not the unmarked morphological case" (Chung 1998:242).

[7]Chung includes a Wh-Agreement gloss in (23b). I have removed this part of the gloss to emphasize that objective Wh-Agreement is optional, and this example fails to make use of that option.

when the predicate is unaccusative. For example, the predicate in (24) is nominalized:

(24)   Hayi mahalang-mu   *t* ?
        who? WH[obl].lonely-agr
        "Who are you lonely for?" (Chung 1998:238)

The agreement morphology is summarized in the table in (25).

(25)   *Wh-Agreement Morphology (from Chung 1994:8)*

Case of Gap	Agreement Realization
Nominative Obj, Obj2	Replace any ergative agreement with *-um-*. Optionally nominalize. If the nominalized $[+V]^0$ is transitive, insert *-in-*.
Oblique	Nominalize. If the nominalized $[+V]^0$ is unaccusative, optionally insert *-in-*.

Crucially, this agreement is required only on the lowest verb in a wh-construction. For higher verbs along the path of movement, agreement is optional when the moved element is a referential DP. In the basic case, this optionality is an all-or-nothing effect: either agreement appears on all of the non-lowest verbs, or it appears on none of them. (But see Section 6 for some apparent counterexamples to the all-or-nothing effect.) Agreement is required on all verbs along the path of movement for certain DPs, roughly corresponding to Cinque's (1990) "non-referential" DPs as noted at the outset of this paper.

(26) shows a wh-question in which the moved item is a referential DP. Agreement appears on the lowest verb, *u-ma-fa'maolik,* but not on the higher verb, *malägu'.*

(26)   Hafa na patti gi atumobit malägu' hao [u-ma-fa'maolik   *t*]?
        what? L part Loc car   agr.want you WH[nom].agr-Pass-fix
        "Which part of the car do you want to be fixed?" (Chung 1998:248)

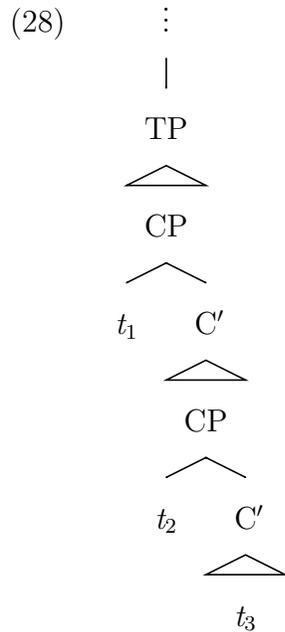In contrast, when a non-referential DP moves, agreement must appear on every verb:

(27)   Hafa malago'-ña   si Magdalena [*t* pära ta-chuli'   *t*]?
        what? WH[obl].want-agr   Magdalena   Fut WH[obj].agr-bring
        "What does Magdalena want us to bring?" (Chung 1998:249)

The two verbs in (27) show different agreement morphology. As a first approximation,

Wh-Agreement reflects the case of the closest lower gap. For the lowest verb in (27), the agreement morphology is dictated by the case of the moved item's A-position. Higher verbs show agreement based on the trace in the specifier of the immediately subjacent CP. The higher verb in (27) takes its cues from the trace in the specifier position of the embedded CP. Although I argue for a different conclusion in Section 4.2, moved items appear to acquire new case features with each movement operation, and Wh-Agreement reflects this new case.

To be more precise, the morphology of the higher verb reflects the case assigned to the immediately lower CP in whose specifier the trace sits. Chung (1998) argues that the C^0 head of this CP inherits the case assigned to the CP, and it passes this feature to its specifier. Thus while the intermediate trace in (27) may be a trace of something that was originally assigned objective case, the moved item acquires oblique case when it moves to the specifier of the lower CP. This is because the lower CP is itself oblique, and it assigns this oblique case to its specifier. The Wh-Agreement on the higher clause is oblique, reflecting the case assigned to the intermediate trace by the embedded C. This line of reasoning is discarded below, but it is useful to think in these terms for the time being.

In Chung's (1998) analysis, Wh-Agreement is agreement between T (In Chung's terms I) and a lower trace, and this agreement is manifested on the VP complement of T. For a trace to trigger agreement, it must be free within this T's maximal projection. This means that only the highest trace within TP can trigger agreement because all lower traces are bound by higher traces in TP. For example, in (28), t_1 binds t_2, so t_2 may not trigger Wh-Agreement on the highest TP. Likewise, t_2 binds t_3, so t_3 cannot trigger agreement either. However, t_1 is free within the highest TP, so it triggers agreement.

(28)

$$
\begin{array}{c}
\vdots \\
\mid \\
\text{TP} \\
\triangle \\
\text{CP} \\
\wedge \\
t_1 \quad \text{C}' \\
\triangle \\
\text{CP} \\
\wedge \\
t_2 \quad \text{C}' \\
\triangle \\
t_3
\end{array}
$$

Wh-Agreement provides a morphological indication that (at least some) wh-movement in Chamorro is successive-cyclic. Wh-Agreement appears on a verb precisely because some wh-moved item stops, at least temporarily, in the immediately lower clause. When wh-movement does not bring any moved wh-phrase into a clause, no agreement appears on the immediately higher verb. If all wh-movement in Chamorro were successive-cyclic, sentences like those in (26) would be ungrammatical. A clause that appears to be along the path of wh-movement fails to trigger the requisite agreement morphology on the higher verb.

Constructions like those in (26) are the focus of this paper. The data and the theoretical assumptions of Minimalism appear to be incompatible. The DP *Hafa na patti gi atumobit* "which part of the car" in (26) cannot move from the right edge of the sentence (where its trace is the object of the embedded verb) to the left edge of the sentence (i.e., the specifier of the higher CP) via successive-cyclic movement because such movement would trigger Wh-Agreement on the highest verb: The wh-phrase would have to stop in the specifier of the lower CP, triggering agreement on the higher verb. On the other hand, since the highest C is separated from its goal's trace by at least one phase boundary (the CP that heads the embedded clause), the movement operation that creates the question cannot occur in a single

step: the probe cannot locate the goal's A-position.

In the following sections I resolve these contradictions. These are the central facts that motivate my analysis: In (26), the lowest clause—the one containing the A-position trace— shows signs of wh-movement. There is a gap, and Wh-Agreement appears. And in the higher clause, a wh-phrase appears in C's specifier, triggering Operator-C Agreement.
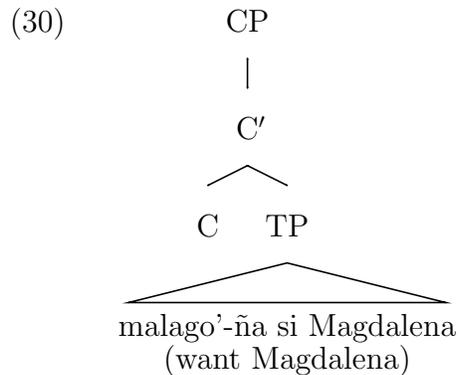
As outlined in the introduction, I propose that the wh-phrase is base-generated in the specifier of the highest C. In the lower clause, an operator (whose identity is explored below) moves from the position of the trace to the specifier position of the embedded CP, triggering Wh-Agreement in this clause. Before developing this analysis in greater detail, I discuss successive-cyclic movement, from which the necessary theoretical constructs are drawn.
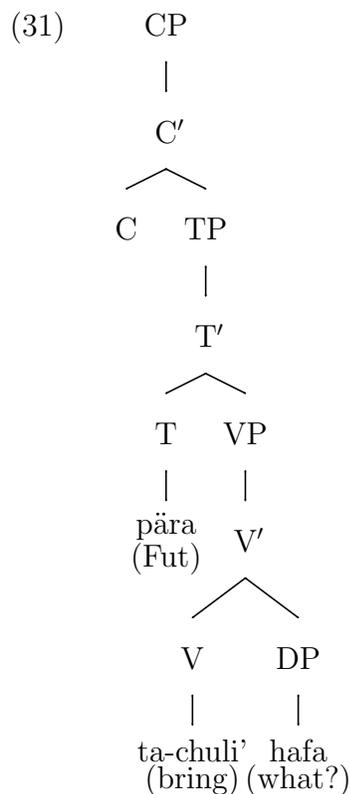
2.3 Successive-Cyclic Movement

Consider again the example in (27), repeated here:

(29) Hafa   malago'-ña   si Magdalena [t pära ta-chuli' t]?
      what? WH[obl].want-agr   Magdalena   Fut WH[obj].agr-bring
      "What does Magdalena want us to bring?" (Chung 1998:249)

The Wh-Agreement pattern, in the form of nominalization of both verbs, indicates that successive-cyclic movement occurs here. The moved item passes through the lower CP's specifier. How is this construction produced in the Minimalist Program? Notice first the two CPs, which must be phases. There are other phases in this construction (notably the vPs), but they are not crucial to the current discussion (v's import as a phase boundary is addressed in Section 4). I therefore make the simplifying assumption that only two phases are involved in this construction. The phase that becomes the higher clause has the structure in (30) (abstracting away from the nominalization of both verbs in (29): Chung does not give the pre-nominalization forms of these verbs, so I show nominalization here even though it hasn't yet been triggered). This phase is incomplete: A verbal complement is missing, and this argument will be supplied by the phase constituting the lower clause.
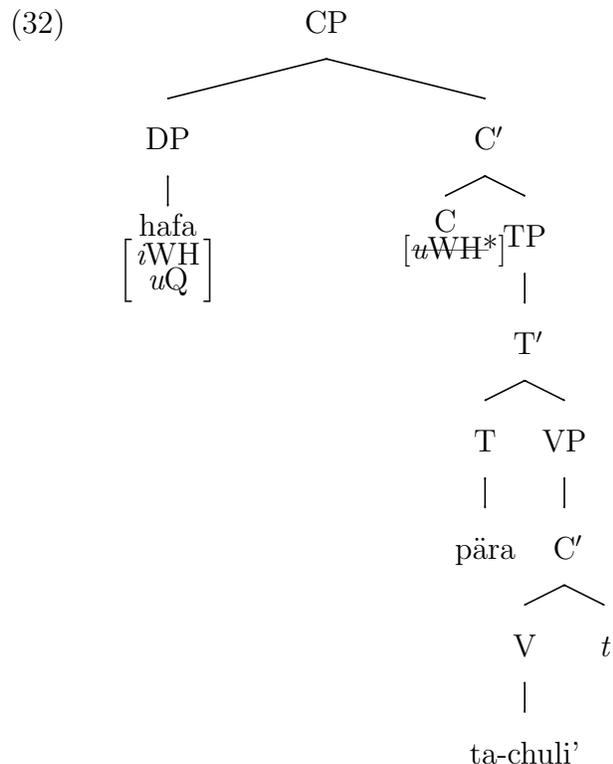
(30)

```
            CP
            |
            C'
          /   \
         C     TP
      /‾‾‾‾‾‾‾‾‾‾‾\
  malago'-ña si Magdalena
     (want Magdalena)
```

Likewise, the phase that constitutes the lower clause has this structure before wh-movement (again showing premature nominalization):

(31)

```
        CP
        |
        C'
      /   \
     C     TP
           |
           T'
         /   \
        T     VP
        |     |
      pära   V'
      (Fut) /   \
           V     DP
           |     |
      ta-chuli' hafa
       (bring) (what?)
```

The DP *hafa* must move to the specifier of the CP in (31). In the Minimalist Program, this means that this DP must be an available goal for some probe. To be an active goal, it must have an uninterpretable $[u\text{Q}]$ feature.[8] Similarly, the probe has uninterpretable features

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[8] The [Q] feature indicates that its host heads a constituent question, or, in semantic terms, that its host is an interrogative operator (see Section 5.1). Such a semantic property is interpretable on C (because C can be an interrogative operator) but not on DP (because DP cannot be an interrogative operator).

that must be checked, and the DP checks these features. At least one of these features must be strong so that *in situ* feature checking is not an option. Since *hafa* moves to C's specifier, C must be the probe. The relevant feature to be checked is the $[u\text{WH*}]$ feature on C.[9] *Hafa* carries a $[i\text{WH}]$ feature that checks C's feature, and the strength of $[u\text{WH*}]$ compels movement.[10] So far, we have the structure in (32):

(32)

CP
- DP
  - | hafa $\begin{bmatrix} i\text{WH} \\ u\text{Q} \end{bmatrix}$
- C'
  - C $[u\text{WH*}]$
  - TP
    - | T'
      - T
        - | pära
      - VP
        - | C'
          - V
            - | ta-chuli'
          - t

At this point, Wh-Agreement between T in this clause and the newly created trace can occur. (Since *hafa* is in C's specifier, the trace is free within TP.) This results in nominalization on the verb. See Section 4.2 for a discussion of the formal properties of this agreement relation in Minimalist terms.

As the derivation continues, the CP-phase in (32) is in turn merged as an argument of the higher verb. *Hafa* moves from its position in (32) to the specifier position of the higher

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[9]Asterisks indicate strong features.

[10]The [WH] feature is interpretable on DP and uninterpretable on C because this feature signals semantic properties that are appropriate for a DP but not for C. It distinguishes wh-phrases from ordinary DPs in that a wh-phrase is a semantically appropriate restrictive clause for a constituent question (see section 5.1), for example. Since C's do not participate in wh-constructions in the same way as DPs, the [WH] feature is uninterpretable on C; That its presence signals the semantic viability of its host's participation in wh-movement is meaningless on C.

CP. Once again, this movement is triggered by a strong feature on the matrix C that is checked by *hafa.* As in the lower clause, the appropriate feature is [uWH*] on C. Further, since this is *hafa*'s surface position, its [uQ] feature must be checked here. For this reason, the matrix C must possess a [iQ] feature. This feature marks the clause as interrogative and is interpretable (see fn. 8). (33) shows the surface structure of (29).

(33)

malago'-ña si Magdalena *t* pära ta-chuilil' *t*

I adopt this system, which is consistent with standard Minimalist analyses of wh-movement, in the analysis of long movement below. While there are important differences between successive-cyclic and long-distance derivations, I assume that the same feature system is at work. Wh-phrases possess the [iWH] and [uQ] features. Complementizers that attract wh-phrases to their specifiers have a [uWH*] feature, and the C that heads a question has an additional [iQ] feature. I now turn to the analysis of long-distance Wh-movement, starting with the lowest clause of these constructions.
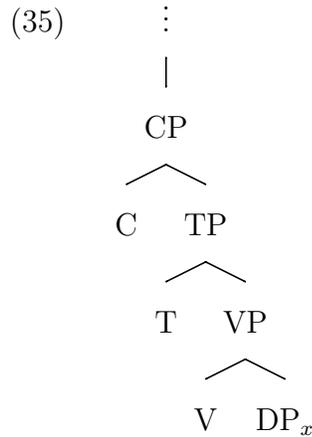
3   The Syntax of Long Movement
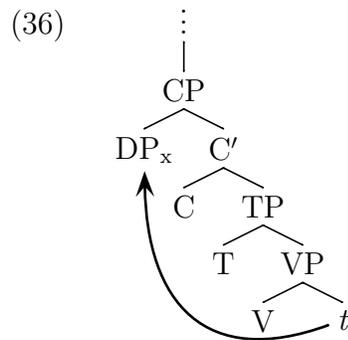
3.1   The Lower Clause

Two facts suggest that movement occurs in the lower clause in (26), repeated below as (34). First, there is a gap in this clause. Second, Wh-Agreement morphology appears in this

clause.[11] Apparently, then, this clause has the pre-movement structure in (35).

(34) Hafa   na patti gi   atumobit malägu' hao [ṳ-ma-fa'maolik   t]?
      what? L part Loc car   agr.want you WH[nom].agr-Pass-fix
      "Which part of the car do you want to be fixed?" (Chung 1998:248)

(35)   ⋮
            |
          CP
         ╱ ╲
        C   TP
            ╱ ╲
           T   VP
               ╱ ╲
              V   DP$_x$

(35) abstracts away from certain details of the construction, such as the presence of vP. DP$_x$ is the verbal complement, and it occupies the position of trace in (34). This DP then moves to the specifier of the lower C, creating this structure:

(36)   ⋮
            |
          CP
         ╱ ╲
      DP$_x$ C′
           ╱ ╲
          C   TP
              ╱ ╲
             T   VP
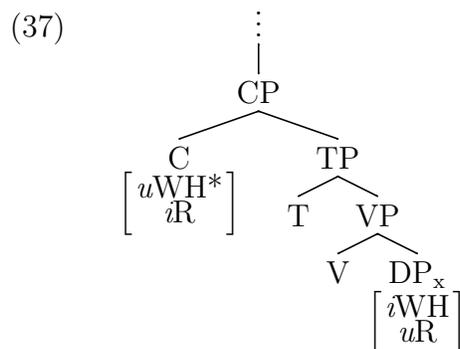   ╱ ╲
                V   t

With this movement, Wh-Agreement on the verb is triggered. I suggest that this movement is identical to the successive-cyclic movement described above. DP$_x$ possesses a [iWH] feature that checks C's [uWH*] feature.

DP$_x$ needs an uninterpretable feature to be an active goal. It is not clear what this feature is. [Q] is not an option because it is reserved for the head of a question. If [Q] were assigned to

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[11]Chung (1998) does not tie the appearance of Wh-Agreement morphology to movement directly. Rather, it is triggered by variables that are A̅-bound. Nonetheless, since the most obvious way to produce an A̅-bound variable is through movement, it is reasonable to take Wh-Agreement as a symptom of movement until evidence to the contrary appears.

the resumptive pronoun, this feature would have to appear on intermediate C's, too, because the resumptive pronoun doesn't move to the CP that heads the wh-construction. Second, it will become clear in Section 4.1 that positing [Q] on intermediate C's causes problems for an analysis of Operator-C agreement which ties this morphology to [Q].

Another feature, perhaps [Op] or [resumptive], could be adopted. Alternatively, we could give up on the idea that goals need uninterpretable features to be active. This is compatible with what I have said so far in that the [Q] feature could be removed from the overt wh-phrases with [WH] remaining to motivate movement.[12] I will not resolve this issue here, but for concreteness I assume a feature [uR(esumptive)] (perhaps a placeholder for a better feature) that makes the resumptive pronoun active. An interpretable version of this feature appears on C to check the resumptive pronoun's feature, just like [Q] in successive-cyclic movement. In (37), the [WH] and [R] features are added to the structure in (35).

(37)

$$
\begin{array}{c}
\vdots \\
| \\
\text{CP} \\
\diagdown \\
\text{C} \qquad \text{TP} \\
\left[\begin{array}{c} u\text{WH*} \\ i\text{R} \end{array}\right] \quad \text{T} \quad \text{VP} \\
\text{V} \quad \text{DP}_\text{x} \\
\left[\begin{array}{c} i\text{WH} \\ u\text{R} \end{array}\right]
\end{array}
$$

What exactly is the moved element? Given that it lacks phonological content, there seem to be two plausible choices: It is either a trace or a null pronominal. I assume (partly for reasons to be discussed below) that it is a (resumptive) pronoun. The resumptive nature of this element is clear from the semantics: The overt wh-phrase in the matrix C's specifier position is interpreted as if it were assigned the θ-role of the null element in the lower clause. In other words, the overt phrase binds the null resumptive pronoun.[13] In the context of the

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[12]Or we could leave the analysis as it is with the understanding that the [uQ] feature is not responsible for wh-phrases being active goals.

[13]Although I will not discuss the point in any detail, it should be noted that the properties of the null DP generally match the typical characteristics of resumptive pronouns as described by McCloskey (2005).

rest of the language, this is a reasonable conclusion. Null pronouns that are $\overline{\text{A}}$-bar-bound are well attested in Chamorro (in topicalization, for example; see Chung (1998)).

Returning to (37), when the probe C searches for some goal to satisfy its [uWH*] feature, it finds the resumptive pronoun, and the strength of C's [uWH*] feature causes movement of the DP. This is identical to the first step in the successive-cyclic wh-movement in (32) on p. 15 above. If the next higher C lacks a [uWH*] feature, the resumptive pronoun will not move any farther. If the next higher C possesses this feature, it can attract the resumptive pronoun to its specifier, just as in normal successive-cyclic wh-movement. This happens in some of the variations on the long-movement pattern described in Section 6. This is how the surface appearance of the lower clause in (34) is derived. The resumptive pronoun's movement triggers Wh-Agreement on the embedded verb.
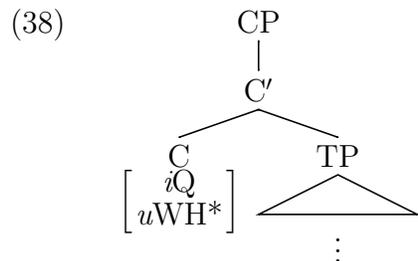
If the resumptive pronoun engages in successive-cyclic movement, it can, in principle, end up in the specifier of the matrix CP, just as if it were a full DP undergoing wh-movement. However, this configuration would be semantically unviable. The resumptive pronoun must acquire its semantics from some other element in the construction. I argue in Section 5.1 that this is accomplished via binding by an overt wh-phrase higher in the structure. If the resumptive pronoun moves all the way to the specifier of the matrix CP, it cannot be bound by a higher wh-phrase. (Nor would there be an acceptable place in which to merge this overt wh-phrase: There would be no element to check its [uQ] feature.) Such a configuration is therefore semantically ill-formed, and the resumptive pronoun must stop in a position lower than the specifier of the matrix CP. In other words, the only semantically acceptable structure is one in which a non-matrix C possesses a [iR] feature that can halt the resumptive pronoun's movement. For the duration of this paper, until Section 6, I ignore the possibility that the resumptive pronoun can move successive-cyclically. The rest of the analysis focusses on constructions in which the resumptive pronoun stops after the first movement.

3.2 The Higher Clause

The wh-phrase *Hafa na patti gi atumobit* "which part of the car" from (34) is base-generated in the specifier of the highest CP. This means that this DP satisfies (some of) the selectional criteria of the root C and is therefore merged in C's specifier to fulfill these criteria. The first thing to consider, then, is the nature of C's selectional criteria.

Since (34) is a question, the root C has the [iQ] feature. Further, since this a constituent question, C should have the familiar [uWH*] feature. Something must be merged into C's specifier position to check this feature. In successive-cyclic movement, this is achieved through movement of a wh-phrase from the existing structure. This is not possible in long-movement constructions. The only wh-phrase is the null pronoun from the previous section. The pronoun's [uR] feature has been checked, so it is inactive (keeping in mind the above caveat concerning active goals). The root C has no choice but to accept a base-generated wh-phrase in its specifier.

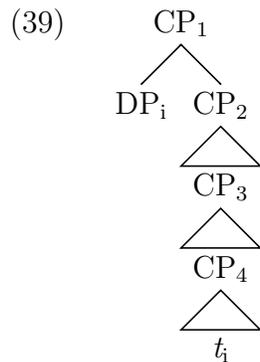Before the wh-phrase is merged, the higher clause has this structure:

(38)

The DP *Hafa na patti gi atumobit* "which part of the car" is merged into C's specifier. C's [uWH*] feature is checked, and the DP's [uQ] feature is checked. Descriptively speaking, no Wh-Agreement is triggered because no trace is produced.[14] Operator-C agreement proceeds as normal, though, and the appropriate agreement morphology appears in the construction. That the wh-phrase was not moved is irrelevant to Operator-C agreement.

That there is no other candidate to satisfy the root C's requirements is seen most clearly when other clauses intervene between the lowest clause from Section 3.1 and the root clause.

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[14]It is useful to think in these terms for the time being, but the idea that traces trigger Wh-Agreement is rejected below.

Consider the schematic structure from (3), repeated and modified here as (39):

(39)

```
        CP₁
       /  \
     DPᵢ   CP₂
          /\
         /  \
        CP₃
        /\
       /  \
      CP₄
      /\
     /  \
    tᵢ
```

CP$_1$ is the root CP discussed in this section. CP$_4$ is the clause containing the resumptive pronoun. The intermediate CPs play no role in this analysis. If CP$_4$'s head checks the resumptive pronoun's [uR] feature, these clauses do not participate in the long-movement derivation. The root C is separated from resumptive pronoun in the lowest clause by at least two phase boundaries. With this DP well out of reach, the highest C has no choice but to accept a first-merged wh-phrase. In addition to the fact that the resumptive pronoun is unavailable because its [uR] feature has been checked, examples like these show that the resumptive pronoun can be buried too deep for the matrix C to access it.

Still ignoring the possibility of successive-cyclic movement of the resumptive pronoun, CP$_2$ and CP$_3$ are normal non-interrogative CPs. Lacking the relevant features, the complementizers in these clauses do not attract anything to their specifiers. These clauses behave just like non-interrogative embedded clauses, even though they are in the middle of a question construction. The crucial operations occur in the highest and lowest clauses.

Finally, DPs in the specifier of CP characteristically take the default morphological case (S. Chung, p.c.), so there is no need to pass the case of the gap (the case assigned to the null resumptive pronoun) up to this DP. The morphology of a DP in a specifier of CP is not dependent on the case of its A-position, even in instances of successive-cyclic movement. Since the default morphology appears, no mechanism is needed to connect the overt DP in long movement with the case assigned to the resumptive pronoun. And as it is not formally

associated with a θ-role, the overt DP does not need to acquire abstract case.

In canonical long movement, Wh-Agreement appears only in the lowest clause because wh-movement only occurs only here (via mechanisms to be developed below). Operator-C agreement appears on the highest C because the wh-phrase appears in this C's specifier position. The agreement facts are accounted for.

Non-question instances of wh-constructions require further comment because they lack a [Q] feature. Consider the sentence in (40), which contains a relative clause.

(40)   [Adyu i   [*O* ma'a'ñao yu' [na   u-bäba   *t*]]], gófdangkulu.
        that   the   agr.afraid I   Comp *WH*[obj].agr-open   agr.very.big
        "That thing which I was afraid to open, it was very big." (Chung 1998:248)

Of interest here are the bracketed constructions. The relative clause *O ma'a'ñao yu' [na u-bäba t]* "which I was afraid to open" is an adjunct to the DP *Adyu i* "that thing." This relative clause contains an embedded clause, indicated by the innermost square brackets. As the gloss shows, Wh-Agreement is present on this clause, but it is absent from the higher clause in the relative clause. This is evidence that (40) is a case of long movement.

The lowest clause in the relative clause—the one with Wh-Agreement—behaves exactly as described in Section 3.1. A null resumptive pronoun originates in the position of the trace, and it moves to the specifier position of the complementizer *na* to satisfy featural criteria.

Following Chung (1998), I assume a null relative operator in the specifier position of the relative clause's matrix CP. This operator is marked as *O* in (40). As in English relative clauses, this operator forms a dependency with the gap and acquires its semantic content from the phrase to which the relative clause is adjoined (the DP *adyu i* "the thing").

Since this is a long-movement construction, the operator *O* must be merged directly into *na*'s specifier position with no movement (because the overt DP is not the moved element in long-movement operations). As a complementizer in a relative clause, *na* cannot possess a [Q] feature, but does possess the same [uWH*] feature that was employed above. The operator *O* is merged to check this feature. It must therefore have its own [WH] feature, but

I remain agnostic about whether or not this feature is interpretable. If it is uninterpretable, we can account for why the operator does not participate in further movement, but since it is buried within a DP, it is unclear whether such an explanation is necessary. If DPs are phases, the operator is unavoidably inaccessible to further probes.

Despite the absence of a [Q] feature on the higher C, relative clauses behave exactly like constituent questions with respect to long-distance movement. One further point is worth noting. The null operator O checks a complementizer's [uWH*] feature and receives its semantic content from another DP. In this respect it is just like the resumptive pronoun postulated above. It is conceivable that these two entities are actually the same, but at the very least we have an interesting pattern. In three constructions (long-distance movement, relative clauses, and topicalization), we have a null element that forms a dependency with another DP. One might formulate a generalization concerning the (absence of) phonological content of anaphoric elements in Chamorro. However, reflexive pronouns are not null:

(41) Ha-bira gui'$_i$ si Santa Maria$_i$ ya   ha-fana' i   liga.
      agr-turn herself   Santa Maria and.then agr-face the wall
      "The Virgin Mary would turn and face the wall." (Chung 1998:36)

4   The Agreement Relations in Minimalist Terms

In this section I develop Minimalist analyses of the two agreement relations, Operator-C Agreement and Wh-Agreement.

4.1   Operator-C Agreement

Chung's rule for Operator-C agreement is (from Chung (1998:230)):

(42) *Operator-C Agreement Rule (holds at s-structure)*
      C^0 and an Associate that is both its specifier and an operator must have compatible values for [N], [O], and [locat].

The details of this rule need not concern us here. Crucially, Operator-C agreement is a relation between C and the element in its specifier. This element must not be a variable: Operator-C Agreement holds between C and the highest item in an $\overline{\text{A}}$-chain (i.e. a full DP).

Clearly [N], [O], and [locat] are the relevant features in this relation. These correspond to the features of C's specifier that determine C's shape, as described in (17). [+N] indicates a DP, [+O] indicates a phonetically null operator, and [+locat] indicates a locative operator. If the highest C along the path of $\overline{\text{A}}$-movement contains uninterpretable versions of these features, we can explain their influence on C's morphology by assuming that the wh-phrase moved into its specifier checks these features. C is realized accordingly.

But we must be careful to ensure that only the highest CP possesses these features. The easiest solution is to bundle these features with the feature that renders the wh-phrase inactive when it reaches this CP. Consequently, [iQ] must be linked to the [N], [O], and [locat] features. In constituent questions, when a wh-phrase reaches the specifier of a CP whose head has the [iQ] feature, the wh-phrase's [uQ] feature is checked, and the phrase is rendered inactive. In addition to checking C's [WH] feature, this phrase also checks C's [N], [O], and [locat] features. Since [Q] cannot appear on C without [N], [O], and [locat], and *vice versa,* the Operator-C agreement features will only appear on the C in whose specifier the wh-phrase appears at s-structure.[15]

Operator-C Agreement is easily modeled in Minimalist terms. Because a unique local agreement relations already exists between a wh-phrase and a C with a [Q] feature, additional agreement relations can be posited in a way that capitalizes on this special association. Wh-Agreement is much harder to accommodate.

4.2 Wh-Agreement

If we take the description of Wh-Agreement assumed above at face value, we must devise a system in which C can acquire case and transfer this case to its specifier. DPs must be

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[15]As mentioned above, the fact that Operator-C agreement only appears on the highest clause in a long-movement construction is one motivation for not using [Q] on the resumptive pronoun.

able to discard one case feature and acquire a new one. In addition to checking a subject's [NOM] feature, T must have its own additional case features that can be checked only by a wh-element. Some unappealing aspects of this approach may already be apparent to the reader; I will argue that this is in fact the wrong way to proceed, and the way in which Wh-Agreement was characterized above is mistaken.

Within the Minimalist Program, Wh-Agreement is best understood as a morphological phenomenon rather than a purely syntactic one. That is, Wh-Agreement does not motivate the postulation of more features that trigger the morphology described in Section 2.2. Instead, independently necessary featural requirements conspire to produce unique arrangements among the participants in A-system case-checking and $\overline{\text{A}}$-system wh-movement. These unique configurations are signaled by Wh-Agreement. Such an approach has been proposed by Watanabe (1996), although I depart from that analysis in important places.

The morphology itself is syntactically insignificant (as suggested by Chung (1998)) in that it drafts existing morphology in the manifestation of the special featural configurations. For example, verbal nominalization is simply a way to signal oblique Wh-Agreement. It does not reflect any syntactically or semantically meaningful metamorphosis of the verb.

I first discuss approaches that attempt to derive Wh-Agreement directly from a feature-checking operation. These efforts are unappealing on both conceptual and empirical grounds. I then turn to a more indirect method in the vein of Watanabe (1996) that frames Wh-Agreement as a by-product of other syntactic processes.

4.2.1 Wh-Agreement as Feature Checking

The most obvious way to implement Wh-Agreement in a Minimalist framework is by postulating a case-checking relationship that accompanies wh-movement. In this section I sketch an attempt along these lines, but it proves conceptually unappealing.

Chung's (1998) agreement rule is a reasonable starting point. Using T here instead of I, Chung's rule is formalized as in (43) (from Chung (1998:257)):

(43)   *Wh-Agreement (holds at s-structure)*
       T^0 and an $\overline{A}$-bound trace that is free within T^0's minimal m-command domain must have compatible values for [Case].
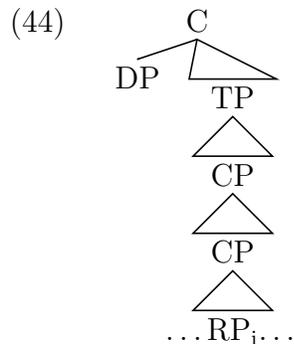
Chung (1998) provides careful argumentation to the effect that T is the element that participates in the agreement relation with the trace. I adopt this conclusion for the purposes of the current discussion. The following arrangement correctly predicts the occurrence or non-occurrence of Wh-Agreement in all clauses:

Following Chung (1998), the case assigned to CP is inherited by its head, C^0. When a wh-element moves to C's specifier, it acquires C's case. T in the immediately higher clause has a weak uninterpretable case feature bundled with a weak [WH] feature. Consequently only a wh-element can check the case feature. To this end, T locates the wh-element in C's specifier. The wh-phrase may then continue its successive-cyclic movement.

Only C with a [WH] feature may select this Wh-Agreement T with an additional case feature. Further, only the Wh-Agreement T may (and in fact must) select v with a [WH] feature. (vP is a phase boundary, so a [WH] feature on v is necessary independently. An $\overline{A}$-moved DP stops in each specifier of vP in addition to each specifier of CP.)
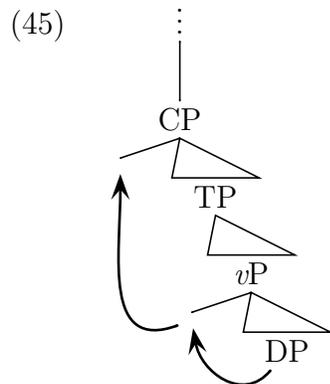
These selectional requirements are essential. If any C can select the Wh-Agreement T, then Wh-Agreement should be possible on any clause that contains a CP whose specifier is filled by a wh-element. For example, in (the Chamorro equivalent of) *I don't know who the police arrested,* the matrix verb *know* should have the option of showing Wh-Agreement. This does not happen, so the Wh-Agreement T must not be available in non-wh-CPs.

Also, we cannot require C with a [WH] feature to select the Wh-Agreement T. The long-movement construction in (44) shows this most clearly. The matrix C has a [WH] feature, but the T that it selects must not need Wh-Agreement case-checking. The only elements that could check T's case are the resumptive pronoun, which may be embedded many clauses lower, and the overt DP, which in inaccessible to T because it is in C's specifier position. If T required Wh-Agreement, certain long-movement constructions would be impossible.

(44)

```
              C
         DP  ╱‾‾‾‾‾‾╲
             ‾‾‾‾
                 TP
                ╱‾╲
               ‾‾‾
                CP
               ╱‾╲
              ‾‾‾
               CP
              ╱‾╲
             ‾‾‾
          …RPᵢ…
```

How, then, do we ensure that the special T appears in every clause along the path of wh-movement? If T without a Wh-Agreement case feature appears in a clause headed by a C that drives wh-movement, no Wh-Agreement will appear. Wh-Agreement would incorrectly be predicted to be optional in all cases. We might expect to find an alternating pattern of agreement where one clause shows agreement, the next does not, and the next does, etc.

Consider the diagram in (45). We've already concluded that this C, which has a [WH] feature, can optionally select the Wh-Agreement T. The goal now is to force C's hand in this case by ensuring that only the Wh-Agreement T will yield a well-formed structure. In order for the movement shown to be successful, v must have a [WH] feature. If only the Wh-Agreement T may select a v with a [WH] feature, then only the Wh-Agreement T may appear in (45). Without a Wh-Agreement case feature, T cannot select a v with a [WH] feature, and the derivation will crash. The result is that while C is not required to select the special T, only through the selection of this T will the derivation succeed. This is why it is necessary to restrict T's selectional criteria.

(45)

```
             ⋮
             │
            CP
           ╱‾╲
          ‾‾‾ TP
             ╱‾╲
            ‾‾‾ vP
               ╱‾╲
              ‾‾‾ DP
```

The stipulative nature of the selectional requirements is unappealing. It would be preferable if the distribution of Wh-Agreement could be accounted for with the free distribution of case and [WH] feature on the relevant heads. Ideally, the derivation would succeed in only and all the cases in which the resulting morphological pattern is attested.

By themselves, the selectional stipulations do not condemn the analysis. But there is another drawback. If Wh-Agreement reflects C's case, C must be able to change its specifier's case feature. How such an arrangement can be produced in Minimalist terms is difficult to imagine. Simple feature-checking isn't enough: The case feature on C's specifier has already been checked in the A-system and has no influence on Wh-Agreement.[16]

This is a more serious problem than the selectional requirements because it challenges the nature of feature checking in Minimalism. We might gloss over this difficulty and assume that a solution is possible, but with the compounding issue of the selectional stipulations, the wiser move is to question the whole approach.

There are a couple additional drawbacks to the feature-checking analysis. First, C must have case features that it can transfer to DP. It is not clear what it means for C to have case, nor is it clear why it might need case. Also, T must have more than one case feature. It must participate in the nominative case-checking of a subject as well as case-checking for Wh-Agreement. Such duplication is to be avoided: There are no other instances of a head participating in two completely unrelated case-checking operations likes this.

One might attempt an analysis that takes DP out of the Wh-Agreement process, establishing a feature-checking relationship between C and T. v would need to serve as an intermediary so the checking process could cross the vP and CP phase boundaries. C would check v's case, and v would check T's case. No feature-changing power is needed. However, the other drawbacks are amplified here. v now needs case, just like C and T, making

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[16] Alternatively, we might give the DP a second case feature that matches C's case and triggers Wh-Agreement. Aside from the conceptual awkwardness of claiming a DP has more than one case feature, it would be necessary, in principle, to assign DP a different case feature for each $\overline{A}$-movement operation it undergoes. Wh-Agreement may vary from clause to clause within the same construction, so we cannot be sure the same "extra" case feature will work for each instance of Wh-Agreement in an $\overline{A}$-construction. Clearly such an analysis is to be avoided on conceptual grounds.

three non-nominal heads that require case. The case-checking duplication problem is compounded, too. To see this, consider two scenarios. In the first, C is not a verbal complement. C must receive case from some head and then, for Wh-Agreement, check case on v. (v checks accusative case on another element.) Case checking for Wh-Agreement must therefore be independent of normal case checking because in this instance v does not check accusative case on C. In the second scenario, where C is a verbal complement, C has two case-checking relationships with v, both of which we know are necessary from the first scenario but which are undeniably redundant here.
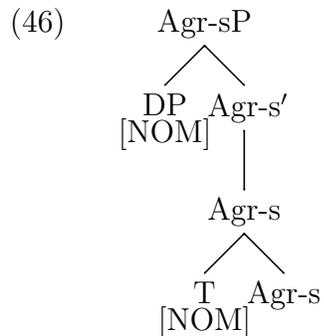
Many aspects of the feature-checking analysis are unappealing. This is not an analysis that is generally sound except for some residual issues. Instead, the core aspects of the analysis present the greatest problems. I conclude that an approach along these lines is technically feasible, but conceptually inadequate. Another analysis that does not have these conceptual problems is available, rendering the analysis sketched here inadequate. At least as far as Minimalism is concerned,[17] Wh-Agreement is best analyzed in other terms.
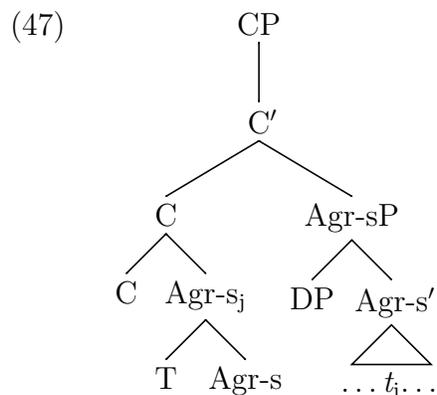
4.2.2 Wh-Agreement as Morphology

Watanabe (1996) argues that Wh-Agreement is simply a morphological side-effect of other feature-checking relations. As such, it serves as a signal for certain featural configurations but is not itself triggered by any particular featural requirement. This is the system I adopt here with some modification.

Watanabe develops a system in which case absorption—the elimination of uninterpretable case features before spell-out—is mediated through the Agr-s and Agr-o heads. In the subject-verb agreement system, T adjoins to Agr-s, and the subject moves to the specifier of Agr-sP. We thus have the configuration in (46).
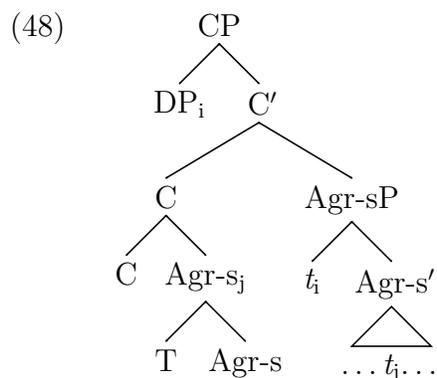
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[17]An analysis in the spirit of GPSG or HPSG may have more success. For example, in GPSG terms, an XP/DP may signal that the displaced DP is missing by reflecting the case of the gap or the case of the clause containing the gap.

(46)

```
              Agr-sP
              /    \
          DP      Agr-s′
        [NOM]       |
                  Agr-s
                  /    \
                 T     Agr-s
               [NOM]
```

Provided the case features on T and DP match, Agr-s may absorb one of these case features so that it is invisible at LF. The other case feature must be dispensed with some other way. Normally, Agr-s incorporates DP's [NOM] feature, and the [NOM] feature on T is dealt with by movement of the T/Agr-s complex to C. This movement eliminates T's case feature, yielding (47).

(47)

```
                   CP
                   |
                   C′
                 /    \
               C        Agr-sP
             /   \      /     \
           C    Agr-sⱼ  DP   Agr-s′
                /  \          /\
               T  Agr-s    ... tⱼ ...
```

In subject extraction, DP then moves to C's specifier:

(48)

```
                CP
              /    \
           DPᵢ     C′
                 /    \
               C        Agr-sP
             /   \      /     \
           C    Agr-sⱼ  tᵢ    Agr-s′
                /  \          /\
               T  Agr-s    ... tⱼ ...
```
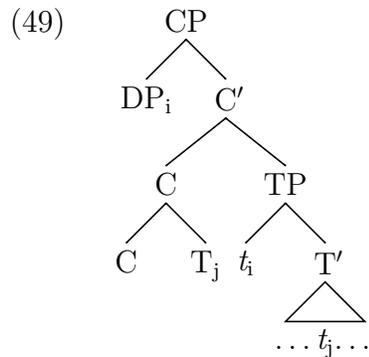
This creates a circle of feature-checking relationships with DP, C, and T/Agr-s. DP and

T/Agr-s are involved in a case-checking relationship, T/Agr-s and C have their own case-checking relationship, and DP and C are the central players in wh-movement. Alternatively, we might think of this in terms of a "double relationship" between DP and T/Agr-s. Within the Agr-s projection, these elements are involved in A-system feature-checking, and within the CP projection, when T/Agr-s occupy C, they are involved in $\overline{\text{A}}$-feature-checking.

Subject Wh-Agreement is simply a reflection of this double feature-checking relationship between DP and T/Agr-s. In the case of non-subject extraction, this peculiar relationship does not exist (because the extracted DP's case is not checked by T/Agr-s), and Wh-Agreement reflects this in the form of different morphology. We thus have a two-way contrast between constructions with the double-agreement arrangement between DP and T/Agr-s and constructions without this special configuration. The morphophonological realization of this dichotomy is arbitrary: the language simply coopts existing verbal morphology.

This analysis is sufficient for languages like Palauan (Georgeopolous 1985, 1991a,b) which have a two-way Wh-Agreement system, separating subject from non-subject extraction. But Chamorro has a three-way contrast among subject extraction, object extraction, and oblique extraction. Before developing an account of the object/oblique distinction, it is worth bringing Watanabe's system in line with current syntactic theory.

In particular, Agr-s and Agr-o are unnecessary. Nominative case-checking occurs within TP. The subject DP and T check each other's cases directly, and the [NOM] features disappear with no further operations. T-to-C movement is motivated on other grounds. The basic premise behind Watanabe's argument remains intact though. DP and T are still in the double feature-checking relationship: case-checking within TP, wh-movement within CP. Wh-Agreement reflects the presence or absence of this configuration. (49) replaces (48).

(49)

```
              CP
            /    \
         DPᵢ     C′
                /  \
              C      TP
            /  \    /  \
          C   Tⱼ  tᵢ   T′
                        /\
                      …tⱼ…
```

The contrast between object and oblique extraction is not yet motivated. Perhaps this distinction is of the same type as the subject/non-subject dichotomy. That is, perhaps object or oblique extraction creates a feature-checking configuration that the other does not. What might this configuration be?

In the previous section v was given a more prominent role because of its projection's status as a phase boundary. Rather than moving from CP to CP, a wh-moved item must move from CP to vP to CP, etc. Verbal objects have their accusative case features checked within vP. They therefore have a relationship with v that is the exact analogue of the relationship between T and DP in subject extraction. In object extraction, v checks a DP's [ACC] feature, and then this DP moves to v's specifier and checks v's [uWH] feature. I suggest that Chamorro's objective Wh-Agreement morphology is just a reflection of this. Such a conclusion is almost required by the analysis of subject extraction: If "double feature-checking" triggers special agreement in one instance, it would be odd if other similar configurations were barred from triggering their own special agreement morphologies. Oblique extraction is the result of no such special feature-checking configuration. In this light, Chamorro simply opts to signal more unique configurations than Palauan. Both languages are sensitive to the featural relationship between T and extracted subjects, and Chamorro is also sensitive to the featural relationship between v and extracted objects.

Oblique Wh-Agreement morphology is just the elsewhere condition, arising when neither of the special featural configurations holds. This means that all DPs that trigger oblique Wh-Agreement (i.e. any DP that is not a subject, direct object, or oblique object of a verb

of transfer) must not have their case features checked by either T or v. Pylkkänen (1997) provides a way of ensuring this. In her system, only "core" arguments (generally, direct objects) originate within VP. External arguments (one type of non-core argument) originate in vP (VoiceP for her). This is exactly what I assumed above, so nothing new must be said for these arguments. Other non-core arguments are introduced by one of six functional heads: high applicative, low recipient applicative, low source applicative, root-selecting CAUSE, verb-selecting CAUSE, and phase-selecting CAUSE (Pylkkänen 1997:15). The details of these heads need not concern us here. What is important is that Pylkkänen provides a way to introduce certain arguments independently of VP and vP. If an argument is licensed by one of these six, it will trigger oblique Wh-Agreement under extraction because it will not enter into one of the special featural relationships described above.

For an analysis like this to hold, it must be shown that arguments that trigger objective morphology are Pylkkänen's core arguments, and those that trigger oblique morphology are Pylkkänen's non-core (but also non-external) arguments. Objective Wh-Agreement is triggered by direct objects and "the oblique object of a verb of transfer" (Chung 1998:237). Clearly, direct objects fall within Pylkkänen's conception of core arguments; they're prototypical examples of such arguments. If we take Chung's description seriously, we can conclude that oblique objects of verbs of transfer are also core arguments. While oblique DPs are in general non-core, it is reasonable to assume that the oblique object of a verb of transfer is a core argument: The verb itself requires this DP to fill the θ-role of recipient or source. DPs in this case are distinct from recipients and sources that are introduced by Pylkkänen's applicative heads in that oblique objects of verbs of transfer are directly licensed by the verb of transfer because of this verb's semantic properties. Verbs of transfer require recipients and/or sources independently of other functional heads, so the DPs that fill these θ-roles for verbs of transfer are distinct from DPs that fill these θ-roles for other verbs.

DPs that trigger oblique Wh-Agreement are "oblique complements of intransitive predicates, instruments, and subcategorized comitatives" (Chung 1998:238). None of these

categories overlaps, in whole or in part, with Pylkkänen's core arguments. Consequently, Pylkkänen's system would introduce these arguments through nonverbal functional heads. Further, these DPs are non-subjects, so their case is not checked by T. We thus have precisely the situation we want: These DPs will not enter into the special featural configurations that trigger subject and object Wh-Agreement. They therefore trigger oblique Wh-Agreement, which is the morphology that appears when no special featural configuration holds.

Watanabe does not elaborate on the mechanisms that translate the double-feature-checking relationships into morphology, and this is a recalcitrant problem for both his analysis and the current proposal. The intuition behind Watanabe's proposal is clear, but its formal implementation is less than straightforward. The syntax seems to require memory: For subjective Wh-Agreement, the syntax must know that the DP that checked T's [NOM] feature is the same DP that checked C's [WH] feature. Simply examining the features on T and C won't help: It will always be the case that these two features are checked. The important point for Watanabe is that the same DP checked both features.

One solution reassigns the duty of checking [NOM] to finite C.[18] With this change, the features that trigger Wh-Agreement are consolidated onto two heads: [NOM] and [WH] on C, [ACC] and [WH] on v. Now, case-checking coupled with [WH] has a morphological exponent that varies with the case assigned, either nominative or accusative. Checking of [WH], when not "linked" with any case-checking operation, has its own morphological exponent, oblique Wh-Agreement. This solution is speculative at best, but it at least provides a means to formally understand Watanabe's ideas. Notice that it also allows us to dispense with some assumptions from the above analysis, notably that T moves to C.

Under this approach, Wh-Agreement is not a reflection of case in any way. Subject agreement doesn't appear because the moved item is nominative. It appears because the moved item has a unique relationship with T. Wh-Agreement is sensitive to which head checks the moved item's case but not to the specific case feature involved. Agreement

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[18]Thanks to J. McCloskey (p.c.) for suggesting this approach.

morphology varies with case but is not triggered by case.

5 Semantic Interpretation and Its Consequences

5.1 Semantic Interpretation

How does the current analysis square the requirements of the semantic component of the grammar? The syntax must supply the semantics with an interpretable structure. While I do not present a full-fledged semantic analysis here, I suggest that the long-movement structures proposed above are compatible with existing semantic ideas.

Heim & Kratzer (1998) develop a system for assigning a denotation to relative clauses. The crucial part of their system is Predicate Abstraction, which is responsible for turning the otherwise (semantically) ordinary relative clause into something that can be integrated with the NP to which it is attached. This system can be straightforwardly applied to relative clauses in Chamorro as long as the resumptive pronoun is accommodated.

Perhaps the most straightforward remedy is to assign the resumptive pronoun an empty semantic value. This is not an unusual move in the Heim and Kratzer system. For example, the complementizer *that* does not affect the denotation of the construction it is a member of. To extend this property to the resumptive pronoun, we simply need to adopt the rule in (50). (For typographical reasons, "CP_{RP}" is used to stand in for the structure in (51).)

(50) $[\![CP_{RP}]\!] = [\![C']\!]$

(51) $CP_{RP} =$

$$
\begin{array}{c}
\text{CP} \\
\diagup\ \diagdown \\
\text{RP} \quad \text{C}'
\end{array}
$$

This rule ensures that the resumptive pronoun will not affect the semantic interpretation of the construction. The binding relation between the null operator O and the resumptive pronoun ensures that O and the pronoun's trace will be coindexed, mimicking the situation in standard relative clauses. The computation of the denotation proceeds exactly as described

by Heim and Kratzer, and Predicate Abstraction will ensure that the appropriate value is assigned to the trace. The relative clause can then be integrated with the larger sentence.

The system in Heim & Kratzer (1998) is not well suited for questions on conceptual grounds. It is unclear exactly what the denotation of a question should be, and Heim and Kratzer offer no speculation. Consequently, I adopt the analysis used in Chung, Ladusaw, & McCloskey (1995; henceforth CLM).

CLM, making use of Berman (1991), argue that three syntactic elements are required for a well-formed constituent question: an interrogative operator, a restrictive clause, and a nuclear scope. These elements must meet certain syntactic and semantic requirements. The restrictive clause is the displaced constituent in C's specifier position. It "must syntactically bind a position within the TP complement of C^0" (CLM:244). The restrictive clause must contain or be a wh-phrase, and it "must contribute to semantic interpretation just as if it were sitting in the syntactically bound position" (CLM:244).

The role of the interrogative operator, which is associated with the [Q] feature, is filled by C. It semantically binds the wh-phrase in the restrictive clause.

The nuclear scope is the TP complement of C. It supplies a propositional function whose domain is defined by the restrictive clause. The interrogative operator forces an interpretation in terms of a set of propositions.

What are the parts of this system in the analysis developed here? Clearly, the interrogative operator must be the higher C because only this C has a [Q] feature. This means that the restrictive clause must be the wh-phrase in this C's specifier, and the nuclear scope is the matrix TP. All of the requirements mentioned above are met in this configuration. The wh-phrase syntactically binds the trace through the resumptive pronoun, just as if it headed a conventional $\overline{\text{A}}$-chain formed by successive-cyclic movement. The wh-phrase also behaves "just as if it were sitting in the syntactically bound position." Because of (50), the resumptive pronoun does not affect the derivation except to connect the overt DP to the trace.

The analysis of long-movement proposed here is compatible with the semantic require-

ments of wh-constructions. Long-movement constructions are interpreted exactly like their successive-cyclic counterparts. The only addition to the semantic component of the grammar is the rule in (50), which is essentially an instruction to ignore the resumptive pronoun.

5.2 Codependencies Between the Higher and Lower Clauses

The analysis of long-distance constructions developed here involves syntactically distinct and independent operations. In the higher clause, a wh-phrase is merged into the specifier of the matrix CP. In the lower clause, a resumptive pronoun is merged into an argument position and undergoes $\overline{\text{A}}$-movement. Since there is no syntactic requirement that one half of this analysis be present for the other half to appear,[19] we might expect to find constructions that contain just a resumptive pronoun with no binder or a binder with no resumptive pronoun. This would be an incorrect prediction, and I suggest that this is a semantic fact.

In order for Predicate Abstraction to apply successfully, the syntactic unit from which the predicate is to be constructed must contain some syntactic object that can be construed as a variable. "Traces" and resumptive pronouns serve this function prototypically. If there is no such element, the assignment function introduced by Predicate Abstraction will not have the necessary effect. A useless denotation will result, one which includes lambda abstraction of a variable that is not present. We can therefore conclude that the operator O in relative clauses requires the resumptive pronoun in the lower clause when O is first-merged into its surface position. Without the resumptive pronoun, Predicate Abstraction will fail.

Likewise, in questions, the restrictive clause and interrogative operator cannot be interpreted without an appropriate nuclear scope. Without an TP that contains an unbound variable, no semantic computation can be performed.

Perhaps a similar argument can be made for why the resumptive pronoun requires the presence of a wh-phrase elsewhere in the construction. The resumptive pronoun seems to

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[19]To be more specific, there is no syntactic requirement that merger of the wh-phrase is permitted only if there is a resumptive pronoun elsewhere in the construction. Likewise, no syntactic restriction permits the merger of a resumptive pronoun only where a wh-phrase can bind it.

require a wh-binder, and this may be attributable to semantic or syntactic attributes of the resumptive pronoun. Alternatively, when no suitable binder is present, the anaphor may simply be a (non-resumptive) pronoun.

6   Variations on the Long-Movement Pattern

Much of the discussion so far has assumed that in long-distance movement, the resumptive pronoun moves to the first specifier of CP and stops, and the wh-phrase merges directly into its surface position. But the analysis in fact predicts other options.

The current analysis does not prevent the wh-phrase from merging in a non-matrix specifier of CP and moving successive-cyclically to its surface position until it is deactivated by a [ɨQ] feature, triggering Wh-Agreement along the way. We would predict that such a configuration would involve, from the top of the structure down, one or more clauses with Wh-Agreement (triggered by the wh-phrase), followed by one or more clauses with no agreement, followed by one or more clauses with agreement (triggered by the resumptive pronoun). In other words, we predict what appears to be long-movement followed by successive-cyclic movement. This is exactly what we find:

(52)   Hayi malago'-mu   [t pära u-ma'a'ñao si Carmen [pära ali'e'-ña   t]]?
        who? WH[obl].want-agr   Fut agr-agraid   Carmen Fut WH[obl].meet-agr
        "Who do you want Carmen to be afraid to meet?" (Chung 1998:365)

This construction must be of the long-distance variety. With no Wh-Agreement in the middle clause, it appears that the moved item has skipped over a clause. Since this is not possible, a resumptive pronoun must be in the lower clause, triggering agreement there, followed by base-generation of the over wh-phrase in a higher position. In this respect, (52) is just like a long-movement sentence. But the Wh-Agreement on the highest clause signals the presence of a trace in the specifier of the next lowest CP. The analysis developed here permits *Hayi* to merge into this position, presumably to satisfy this intermediate C's [uWH*]

feature, and then move into the matrix CP to check the same feature on the higher C.

Similarly, suppose the C that immediately dominates the resumptive pronoun's A-position has a [uWH*] feature but not a [iR] feature. Upon moving to this C's specifier, the resumptive pronoun remains an active goal because its [uR] feature has not been checked. If the next higher C has a [uWH*] feature, the resumptive pronoun may move again. In fact, it may move successive-cyclically, triggering Wh-Agreement with each move, until it encounters a [iR] feature. We therefore predict an analog of (52) where the higher clauses have no Wh-Agreement but two or more lower clauses do. That is, we should find what appears to be successive-cyclic movement followed by long-movement. This prediction is correct:

(53)   Esti na pitsonas ni   ma'a'ñao yu' [man-malagu'-ñiha   [t pära
        this L person   comp agr.afraid I   WH[obl].agr-want-agr   Fut
        uma-kuentusi t]].
        WH[obj].agr-speak.to
        "It's this person who I'm afraid they want to speak to." (Chung 1998:365–366)

Again, this sort of structure is expected in the context of the current analysis. All that is required is that the C into whose specifier the resumptive pronoun first moves not possess a [iR] feature. In other words, the kind of C that appears in the middle of normal successive-cyclic constructions is necessary.

Finally, the current analysis predicts that both the resumptive pronoun and the overt wh-phrase can move successive-cyclically in the same construction. There are no such examples in Chung (1994) or Chung (1998), but this may be an artifact of complexity. Such a construction would require at least four clauses. Two lower clauses with Wh-Agreement would show successive-cyclic movement of the resumptive pronoun, and Wh-Agreement in the highest clause would reflect the movement of the wh-phrase. A fourth clause with no agreement is needed between these two sets of clauses to show conclusively that the construction is not a normal successive-cyclic wh-construction. It may be difficult to elicit reliable judgments on constructions with this kind of embedding, so their absence is not surprising.

7   Conclusion

The analysis of long-distance wh-movement presented here reconciles the empirical facts of Chamorro and the theoretical assumptions of Minimalism. Because no Wh-Agreement appears on intermediate verbs in long movement constructions, it seems as though a wh-phrase moves directly from its original clause to its final surface position without stopping in any intermediate positions. An operation like this would ignore the Phase Impenetrability Condition. Minimalism therefore predicts that long-distance movement should not be possible. By separating what appears to be a long movement operation into two parts, the conflict is resolved. In fact, "long-distance movement" is no longer an accurate description of these constructions. They involve normal successive-cyclic movement and the base-generation of a wh-phrase in a higher position. No movement across long distances is required.

In addition, this analysis accounts for the fact that apparent long-distance movement is exempt from island violations. Since little movement is involved, movement out of an island is not an issue except where it concerns the null pronoun's short movement. Any number of islands may occur between the wh-phrase and the null pronoun, but no ungrammaticality will result. This is because the wh-phrase is base-generated in its surface position and thus cannot incur any island violations.

Two issues have yet to be settled. The most important remaining issue is that of the distinction between DPs that can participate in the long-movement construction and those that can't. Recall that Cinque (1990) identifies the set of DPs that may undergo long-movement as "referential." In his system, referential DPs may bind, rather than antecedent govern, pronouns and traces. Non-referential DPs, such as quantified DPs, must antecedent govern traces and pronouns. Either binding or government is sufficient to license a trace or an anaphoric pronoun. Because government is an inherently local relationship, it is unavailable in long-movement constructions. Binding is required in these cases. Since only referential DPs may be binders, only they may participate in long wh-movement.

Chung (1994) discusses some shortcomings of Cinque's analysis. The notion of referentiality is unsatisfyingly vague, and the data concerning which DPs may participate in long-distance movement lead Cinque's system to draw some puzzling conclusions about what is a referential DP and what is not. For example, certain pairs of DPs in Chamorro that contrast in their ability to participate in long movement do not differ along the lines of reference, familiarity, or specificity, all semantic factors that might be imagined to contribute to referentiality. Rather, familiarity seems to be the critical factor in these cases.

Whatever the right factor is, I assume that it is tangential to the present investigation. Syntactic resources make long movement available, but other factors can influence the well-formedness of the resulting structures. Kluender (1998) provides evidence that cognitive processing is (one of) these additional factors. The parsability of a wh-construction improves as the extracted DP increases in "identifiability" (roughly, specificity or richness of descriptive content). Perhaps long movement is parsable only if the overt wh-phrase meets some level of specificity. (See also the references in Kluender (1998), as well as Gordon et al. (2001a,b), for discussion of the kinds of DPs that can affect processing in wh-constructions.)

Also, the mechanism that makes the resumptive pronoun an active goal has not been identified. A [uResumptive] feature was used here, but we have seen no evidence that this is indeed the correct feature. Perhaps, as already suggested, long-movement provides evidence that goals do no need uninterpretable features to be active.

The analysis developed above makes long-movement constructions look strikingly similar to phenomena like partial wh-movement in German, for example. In partial movement, an $\overline{\text{A}}$-chain is produced through two distinct but connected operations. An element moves from an A-position into the $\overline{\text{A}}$-system, moving successive-cyclically from one specifier of CP to the next. At some point, this element stops moving and another item is merged into the next higher specifier of CP. This second item continues moving and completes the $\overline{\text{A}}$-chain. The two halves of the partial movement operation are comparable to the two halves of the long-movement construction: Some element moves from the A-system into the $\overline{\text{A}}$-system,

but its movement is insufficient to "complete" the derivation of a wh-construction. Another element is merged in a higher position to complete the $\overline{\text{A}}$-chain, binding the first element.

In sum, the analysis of long-distance movement presented here removes much of the oddness of these constructions. While it appears at first that certain DPs can defy the standard locality conditions of wh-movement, the phenomenon of long-distance movement is in fact compatible with these restrictions.

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