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**D-RAISING IN CHAMORRO RELATIVE CLAUSES AND OTHER
A′ CONSTRUCTIONS**

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Jake Wayne Vincent

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The thesis of Jake Wayne Vincent
is approved:

_____

Professor Sandra Chung, Chair

_____

Assoc Professor Maziar Toosarvandani

_____

Assoc Professor Matthew Wagers

_____

Tyrus Miller
Vice Provost and Dean of Graduate Studies

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Abstract

D-raising in Chamorro relative clauses and other A' constructions

Jake Wayne Vincent

The aim of this paper is to propose and motivate an analysis for internally headed relative clauses (IHRCs) in Chamorro, an Austronesian language spoken in the Mariana Islands. IHRCs are constructions in which a noun phrase interpreted as being modified by a relative clause (the head NP) surfaces as an argument inside that relative clause. Based on the grammaticality judgments of native speakers of Chamorro, we propose an analysis in which the head NP is merged as a determiner phrase (DP) argument inside the relative clause. The head of this DP is the null relative clause operator, which undergoes long head movement to the Specifier of CP, stranding the remainder of DP inside the relative clause. The movement component of the analysis is supported by island effects in IHRCs, and the claim that the null operator forms part of the head NP is supported by the inability for any (other) determiners to appear with the head NP. The long head movement component of the analysis is supported by patterns in other sentences with A' dependencies (constituent questions and focus sentences) in which an overt determiner is able to appear in the clause-initial position, while its nominal restrictor surfaces postverbally. The analysis, if correct, supports recent claims about the structural ambiguity of relative clauses, and enriches the typology of IHRCs in the world's languages.

Acknowledgements

1   Introduction

Chamorro (Austronesian; Mariana Islands) is home to a cross-linguistically rare construction known as an internally headed relative clause (IHRC), in which the noun phrase which introduces a domain of potential referents (head NP) surfaces inside of the relative clause (RC), which further restricts the domain introduced by the head NP. In (1), observe that the head NP (boxed) is flanked by constituents that are unequivocally part of the RC (bracketed).[1]

(1) K⟨um⟩åti   i   [ha   lalåtdi na ⟨påtgun⟩ si   Maria].
     ⟨SG.R.AGR⟩cry the 3SG.R.AGR scold   LK child   UNM Maria
     'The child that Maria scolded cried.'   (EDR: 62)

The internally headed pattern occurs alongside two more frequently used externally-headed RC types: head-initial (2a) and head-final (2b).

(2) a. K⟨um⟩åti   i   ⟨patgun⟩ [ni   ha   lalåtdi si   Maria].
         ⟨SG.R.AGR⟩cry the child   COMP 3SG.R.AGR scold   UNM Maria
         'The child that Maria scolded cried.'   (EDR: 60)

     b. K⟨um⟩åti   i   [ha   lalåtdi si   Maria] na ⟨påtgun⟩.
         ⟨SG.R.AGR⟩cry the 3SG.R.AGR scold   UNM Maria LK child
         'The child that Maria scolded cried.'   (EDR: 61)

The main purpose of this paper is to propose and justify an analysis of Chamorro IHRCs that involves head-raising and stranding. As in head-raising analyses of externally-headed RCs (Vergnaud 1974; Kayne 1994; Bianchi 1999), the head NP is base-generated within the RC as a DP; but instead of this entire DP raising,

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1. **Abbreviations:** ABIL=abilitative, AGR=agreement, AP=antipassive, APPL=applicative, CAUS=causative, COMP=complementizer, DIR=directional, DU=dual, EMP=emphatic, ERG=ergative, EXCL=exclusive, FUT=future, GEN=genitive, INC=inclusive, INF=infinitive, IRR=irrealis mood, LOC=locative, LK=linker, NEG=negative/negation, NOM=nominative, OBJ=objective, OBL=oblique, PASS=passive, POSS=possessor agreement, PFV=perfective, PL=plural, PROG=progressive, Q=question, R=realis mood, RECP=reciprocal, SG=singular, UNM=unmarked case

D^0 (in IHRCs, the null RC operator) raises on its own, stranding the remaining lexical material of DP inside the RC (most often just a noun). The stranded material always includes the prenominal form of the linker, *na*,[2] whose presence I argue is conditioned by the null operator.

The proposed analysis enriches the typology of IHRCs and of RCs generally. Although IHRCs are cross-linguistically rare, the evidence brought to bear on the proposal shows that even in apparently head-internal RCs, long-distance movement to Spec, CP is still a crucial component of the derivation, showing us that Chamorro's IHRCs, from one perspective, are consistent with general findings on RCs and A′-constructions. The novel component of the proposal, from the perspective of IHRC typology, is that the null RC operator (which is a D^0) can raise on its own. However, this is shown to follow from parameters that also allow a range of overt determiner-like elements in Chamorro to strand their nominal restrictors, both in constituent questions and in focus sentences. In this way, surface word order in Chamorro is shown to belie a cross-linguistically common property of RCs and other A′-constructions—that they are derived by A′-movement.

The proposal supports recent conclusions that some RCs are structurally ambiguous between a head-raising structure (in which the head NP raises from an argument position in the RC) and a head-external structure (in which CP adjoins to the head NP) (Sauerland 1998, 2003; Bhatt 2002; Sichel 2014). The stranding pattern enabled by the possibility for certain determiners to be extracted in Chamorro sheds light on and supports the view that there is a RC-internal position in which semantically contentful head NPs can be base-generated.

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2. In very rare circumstances, it may be acceptable to omit the linker (see e.g. (65a)). I do not understand why this would be, and in the vast majority of cases, the linker is mandatory on head NPs of IHRCs.

The paper is organized as follows. §2 provides relevant background information on Chamorro grammar. §3 presents and argues against extending three previous approaches to IHRCs in Chamorro; discussion of each of these approaches is used as a springboard to highlight the various properties of Chamorro IHRCs—and the ways in which they differ from IHRCs previously described in other languages. Once it is apparent that none of the previous approaches will generalize to Chamorro, we turn in §4 to two other A'-constructions in Chamorro—constituent questions and focus sentences—which lend insight into the problem posed by Chamorro IHRCs. §5 proposes a formal analysis for Chamorro IHRCs, reviews the evidence in favor of the approach, and discusses important questions related to the proposal. §6 discusses the impact of the proposal on RC typology and briefly ties in new data relevant to RC typology. §7 concludes the paper and discusses implications and future work.

2   Background: Chamorro

Chamorro, spoken in the Mariana Islands (Micronesia), is an Austronesian language of the Western Malayo-Polynesian (WMP) subfamily, along with Tagalog and other Philippine languages (Blust 2000:104). Within the WMP subfamily, though, it is an isolate (having no closely related sisters).

Over centuries of colonial domination of the Northern Mariana Islands—first by Spain and later by Germany, Japan, and the United States—the Chamorro lexicon incorporated a substantial number of loanwords, mostly from Spanish. But its grammar is indigenous, as evidenced by the fact that most of its functional morphemes (agreement, pronouns, case-markers, etc.) are not borrowed, and that it retains many grammatical properties characteristic of related WMP

languages, including a predicate-initial clause structure. The remainder of this section provides a descriptive overview of the relevant aspects of Chamorro grammar.

2.1 Phrase and clause structure

Chamorro phrases are head-initial: the head X^0 of a phrase is linearized before its complements. This can be seen at every level of phrase structure; the annotated example in (3), or any other example in this paper, should serve to illustrate.[3]

(3) [$_{DP}$ i   [$_{NP}$ istoria [$_{PP}$ put   [$_{DP}$ i   [$_{NP}$ chetnut   kansit]]]]]
        the   story   about   the   disease.LK cancer
      'her story about her cancer'   (CD: *dinagi*)

Pragmatically neutral clauses place the main predicate in the initial position. Predicates can be of any lexical category: verbs (1-2), adjectives (4), nouns (5), or prepositions.

(4) **Asut**   i   sabanas gi   kattri.
      SG.R.AGR.blue the blanket LOC bed
      'The blanket on the bed is blue.'   (EDR: 473)

(5) **Lanchera**   i   g⟨um⟩aluti   yu' na palåo'an nigap.
      AGR.farmer the ⟨SG.R.AGR⟩hit me LK woman   yesterday
      'The woman who hit me yesterday is a farmer.'   (BPS: 471)

Several different inflectional elements occur in the preverbal field. The foremost of these is sentential negation *ti*, which may be followed by modal/aspectual words such as *para* (future orientation) and *siña* 'can' (6).

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3. In comparison to complements, the position of specifiers is somewhat more complex: specifiers of CP occur to the left of C^0, but specifiers of TP and DP most often occur to the right of T^0 and D^0 (and their complements) respectively. Even so, specifiers of DP (possessors) occasionally surface to the left of D^0. See Chung 1998.

(6) **Ti** **siña** ma-kumprendi t⟨in⟩ige'-hu
NEG can SG.R.AGR.PASS-understand ⟨WH[OBJ]AGR⟩write-1SG.POSS

sa' [...].
because

'No one can understand my writing because [...].' (CD: *burón*)

Next, preverbal agreement (sometimes written as a separate word) occurs immediately to the left of predicates that are verbs or adjectives. Predicates of other categories do not exhibit overt subject-predicate agreement, and in examples with nonverbal predicates, agreement is simply glossed AGR. The agreement cross-references three different types of information: person and number of the subject, the mood of the clause (realis–irrealis), and the surface-transitivity of the verb (transitive–intransitive). The agreement only occurs with verbal and adjectival predicates. See the example in (7), in which agreement is in bold.

(7) Ti **hu** tungu' håfa esti na klåsi-n alitus ababbang.
NEG 1SG.R.AGR know what this LK type-LK cocoon.LK butterfly
'I am not familiar with this kind of butterfly cocoon.' (CD: *alitus*)

2.2 Constituent order

The default word order for arguments following the verb is Subject–Object–Other,[4] resulting in a default word order of VSOX. (8) illustrates this default word order.

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4. Ordinary active, transitive clauses in Chamorro obey a restriction on what kinds of arguments are allowed to co-occur. These restrictions are based on the animacy and the grammatical roles of the co-occurring arguments: an overt object cannot outrank the subject of the same transitive clause on the person-animacy hierarchy.

(i) 2nd person < 3rd person animate pronoun < animate non-pronoun < inanimate

Violation of this constraint is avoided in various ways, including by using passive and antipassive clauses that have the same truth conditions as their active, transitive counterparts would. See Clothier-Goldschmidt 2015.

(8) a. Ha   po'lu [$_S$ si   Juan] [$_O$ i   masi'] [$_X$ gi   kahun
         3SG.R.AGR   put   UNM Juan   the penny   LOC box.LK

         salappe'-ña].
         money-3SG.POSS

         'Juan is putting the penny in his piggy bank.'   (CD: *masi'*)

     b. Ha   chochopchup [$_S$ i   abeha] [$_O$ i   mamis] [$_X$ gi
         3SG.R.AGR   suck.PROG   the bee   the sweet   LOC

         halum   flores].
         inside.LK flowers

         'The honeybee sucks out the sweet from flowers.'   (CD: *abeha*)

Though this is the default word order, the relative ordering of the subcon-
stituents is flexible, especially for the subject, which may surface after the object
or other constituents in the clause. I assume that flexible subject word order is
the result of the option for subjects to lower from Spec, TP (a rightward speci-
fier in Chamorro) and adjoin to any part of the verbal projection (Chung 1998).

2.3 WH-agreement

Chamorro has a specialized inflectional paradigm for verbs in clauses that par-
ticipate[5] in WH-movement. This agreement supersedes the usual subject-verb
agreement and instead registers the case of the extracted constituent. Nomina-
tive WH-agreement is realized as the infix *-um-* in transitive, realis clauses (9a).
Objective WH-agreement (the case of direct objects and second objects of verbs
of transfer) is optionally realized in transitive clauses as *-in-* with possessor
inflection, either via possessor agreement (registering the person and number
of the subject) or the post-head form of the linker (9b). Lastly, oblique WH-
agreement is realized (for clauses with unaccusative predicates) as possessor
inflection and (optionally) the infix *-in-* (9c).

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5. Clauses "participate" in WH-movement if the WH-moved constituent originates in that
clause or if the WH-moved constituent passes through that clause from an embedded clause.

(9) a. **NOMINATIVE WH-AGREEMENT**
Håfa k⟨**um**⟩å'lik   si   Juan?
what ⟨WH[NOM]AGR⟩burn UNM Juan
'What burned Juan's mouth?'   (CD: *kina'lik*)

b. **OBJECTIVE WH-AGREEMENT**
Mahettuk   mampus i   f⟨**in**⟩a'tinås-ña   si
SG.R.AGR.hard   very   the ⟨WH[OBJ]AGR⟩make-3SG.POSS UNM
  Alice na guyuriha.
  Alice LK sugar.coated.biscuit
'The sugar-coated bicuit that Alice made is very hard.'
                                               (CD: *guyuriha*)

c. **OBLIQUE WH-AGREEMENT**
Håfa para fa'gasem-**mu**   ni   kareta?
what FUT   WH[OBL]AGR.wash-2SG.POSS OBL car
'What are you going to wash the car with?'   (Chung 1998:236)

In this paper, WH-agreement is only glossed if it has a morphological exponent. While I assume that this agreement occurs in all clauses with A'-dependencies, for my convenience I avoid glossing it if it is not overtly realized.

2.4 Nominal structure

2.4.1 Determiners and quantifiers

Chamorro arguably has three ordinary determiners: the definite article *i* (see preceding examples), the specific indefinite article *un* (13, p. 9), and the non-specific indefinite article, which is null (10).

(10) Kumu gof mang-guaiya   i   taotao **palåo'an**, ...
      if   very SG.R.AGR.AP-love the man   woman
      'If a guy really loves a woman, ...'   (CD: *poktu*)

Chamorro has quantifiers which can be classified as strong or weak. The strong quantifiers include *kada* 'each' and *todu* 'all'. Weak quantifiers include numerals; *bula* and *meggai* (11), both of which mean roughly 'many'; *dídidi'* 'few'; and

palu 'some'.

(11) Guaha   ga'-ña   si   Jesus **meggai** na obehas gi
     SG.R.AGR.exist animal-3SG.POSS UNM Jesus many   LK sheep LOC

     lanchon-ña.
     farm-3SG.POSS

     'Jesus has a lot of sheep at his farm.'   (CD: *obehas*)

2.4.2   Modification

Nouns can be modified by a range of different categories, including adjectives,
other nouns, and relative clauses. Modifiers of nouns that are either adjectives
or nouns can surface on either side of the head NP.[6] When the modifier pre-
cedes the noun, it is almost invariably separated from the noun by the linker,
na, as exemplified by (12).

(12) Esta   i   mongha siha ti ma-u'usa   i   **anåkku'**
     already the nun   PL NEG SG.R.AGR.PASS-wear.PROG the long

     na magågu.
     LK clothes

     'The nuns are no longer wearing the long outfit'   (CD: *mongha*)

As shown in §1, there are several RC structures in Chamorro, classified by the
position of the head NP with respect to the RC. As is characteristic of RCs, they
have a "gap" where some argument (or adjunct) from the clause appears to be
missing; this gap corresponds to the head NP. In Chamorro, this gap must cor-

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6. When these same modifiers follow the noun, they are separated from the noun by the post-
nominal form of the linker, which surfaces as *-n* when the noun ends in a vowel, and is other-
wise null:

(i) a. I   man-kakahat guma' d⟨um⟩istrosa   i   gima' **bihu**....
       the PL-builder.LK house ⟨WH[NOM]AGR⟩destroy the house.LK old

       'The builders demolished the old house....'   (CD: *distrosa*)

   b. Ha   rimpuha i   maseta-n **floris** i   katu gi hilu' lamasa.
      3SG.R.AGR overturn the vase-LK flower the cat LOC top.LK table

      'The cat overturned the flower vase on the table.'   (CD: *rimpuha*)

respond to a nominal position (Chung 1998:219), but not all nominal positions can host a gap (a fact which will become important in §3).

Head-initial RCs whose head NP is non-locational are introduced by the complementizer *ni* (13).[7] Note that head-initial (postnominal) RCs differ from postnominal adjectives in the following way: while postnominal adjectives are separated from the head NP by the postnominal form of the linker (*-n*/∅; see fn. 6), head-initial RCs are separated from the head NP by the complementizer *ni*, and not by the linker.

(13) **HEAD-INITIAL RCs**

    a. Hu   li'i' un tåotao [**ni**   gof-bulenchut
       1SG.R.AGR see a   man   COMP SG.R.AGR.very-long.nosed
       gui'eng-ña].
       nose-3SG.POSS
       'I saw a man who has a very long nose.'   (CD: *bulenchut*)

    b. Chaddek-ña   i boti-n måkina kinu atyu i   boti
       SG.R.AGR.fast-COMPAR the boat-LK engine than that the boat
       [**ni**   ma-tuleleti].
       COMP SG.R.AGR.PASS-row.PROG
       'A speed boat is faster than a boat that needs to be rowed.'
                                   (CD: *tuleti*)

In the other RC types (head-final and internally headed RCs), the head NP is preceded by the prenominal form of the linker (*na*), and the RC is introduced by the null complementizer (unless the head NP is locational). The effect of this is that the first category to follow the determiner is most often the main

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7. Another RC subtype in Chamorro might also be classified as head-initial, though it doesn't follow the patterns described in this paragraph. These usually have a demonstrative followed by the linker, a head NP, and a relative clause introduced by *i*, rather than *ni*, as below. This subtype is ignored here.

(i) Gof-getmun   esti na kåtni i [ha   na'lågu si   nåna].
    SG.R.AGR.very-gristly this LK meat   3SG.R.AGR cook   UNM mother
    'The meat that mother cooked has a lot of gristle.'   (CD: *gekmun*)

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predicate of the RC. Head-final RCs (14) precede the head NP completely, and internally headed RCs (15) have at least one RC subconstituent on either side of the head NP, as shown in the introduction.

(14) **HEAD-FINAL RCs**

  a. I   [ha   na'lågu si   Maria] na [nengkannu'], hu
      the 3SG.R.AGR cook   UNM Maria LK food   1SG.R.AGR
      kånnu'.
      eat
      'The food that Maria cooked, I ate.'   (BNS&LBC: 54)

  b. Bunitu   i   [h⟨in⟩ingok-ña   si   Juan] na
      SG.R.AGR.nice the ⟨WH[OBJ]AGR⟩hear-3SG.POSS UNM Juan LK
      [istoria] put   antigu.
      story   about ancient
      'The story about the ancient times that Juan heard at school is good.'
                                                                  (EDR: 763)

(15) **HEAD-INTERNAL RCs**

  a. I   [mam-fresku   na [biskuit Maria] nigap]   esta   på'gu
      the PL.R.AGR-fresh   LK cookie.LK Maria yesterday already   now
      inapulaihan.
      PL.R.AGR.moldy
      'Maria's cookies that were fresh yesterday are now moldy.'
                                                                  (BPS: 765)

  b. Ha   tungu' si   Juan i   [um-ásodda'   na [tåotao] yan
      3SG.R.AGR know   UNM Juan the DU.R.AGR-meet   LK man   with
      i   patgun].
      the child
      'Juan knows the man who met the boy.'   (EDR: 207)

For internally headed RCs, the position of the head NP is rather flexible. This is perhaps not surprising, considering that constituent order (especially for subjects) is flexible in Chamorro in general, as mentioned in §2.2.

So-called headless RCs are also possible in Chamorro; these have no overt constituent corresponding to a head NP, but are often translated into English

as free relatives or RCs with the head NP 'one'. Headless RCs have no overt complementizer (like head-final and head-internal RCs) as long as the implicit noun is non-locational.

(16) **HEADLESS RCs**
Fa'na'an hågu yuhi i [hu li'i' gi paingi].
maybe you that the 1SG.R.AGR see LOC last.night
'Maybe you were the one that I saw last night.' (CD: *fa'na'an*)

2.4.3 Linkers

As mentioned above, Chamorro has two linkers that play a role in nominal structures. Generally stated, the presence of a linker entails that a noun is accompanied by certain other types of word or phrase in the nominal domain. The particular realization of the linker depends on whether the accompanying constituent precedes or follows the noun. If it precedes the noun, the linker is realized prenominally as *na* (X(P) *na* NP); if it follows, the linker is realized postnominally as *-n* (NP-*n* X(P)), or as ∅ if NP ends in a consonant. Linkers are common in languages of the WMP subfamily, though there is variation in which classes of elements the linker occurs with. Chamorro never uses the linker between nouns and articles, but requires the linker for prenominal demonstratives (unless the definite article is present; see footnote 9), interrogative determiners, weak quantifiers, adjectives, participles, and RCs.[8,9]

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8. The distribution of the postnominal form of the linker is more restricted. Since the linker tracks which side of the noun the accompanying word or phrase is on, the postnominal form of the linker should only occur with elements that are capable of following the noun. Even though this class includes adjectives, relative clauses, and participles, as mentioned in §2.4.2 the postnominal form of the linker only occurs between nouns and postnominal adjectives (or postnominal nouns acting as modifiers) and participles. RCs that follow nouns are usually separated from the noun by the complementizer *ni*, rather than the linker.
9. On Foley's (1976) implicational "bondedness" hierarchy for linkers in Austronesian languages,

I assume that the linker forms a constituent with NP, though beyond this I do not assume any particular analysis for it (but see Chung 1998:233-4 for ideas on Chamorro's linker, as well as Scontras and Nicolae 2014 and Aldridge 2017 for analyses of linkers in related languages).

3 Previous approaches to IHRCs

3.1 Binding of an in-situ head NP

Recent work by Grosu (2012) on IHRCs (mostly those of indigenous American languages and Japanese; building on a large body of work including Basilico 1996; Williamson 1987; Munro 1976; Gorbet 1976) has motivated several different analyses for IHRCs cross-linguistically. Grosu describes a finer-grained typology for IHRCs than has been outlined before, so it is worth considering whether Chamorro's IHRCs fit into this typology. The typology is organized by the syntax-semantics mapping for each type, as indicated by several diagnostics. Two of the subtypes are restrictive, one of which has a transparent syntax-semantics mapping (which I will refer to as Plain-Restrictive to avoid confusion), the other of which has a mapping mismatch (Mismatch-Restrictive). The third type is argued to be a different type of (IH)RC altogether—Maximalizing (Grosu and Landman 1998)—because the contribution of the head NP is made in a different way and is subject to more stringent pragmatic requirements.

(i) Articles + Noun > Deictics + Noun > Interrogatives + Noun > Quantifiers/Indefinites + Noun > Adjectives + Noun > Participles + Noun > Relative Clauses + Noun

Chamorro requires the linker for every category below Deictics, with few exceptions. Demonstratives may be followed by the definite determiner (*i*) or the linker. Predictably, no linker will be present when a demonstrative is followed by the definite determiner. Similarly, not all quantifiers will be followed by *na*. The strong quantifiers cannot, and will be followed either by *i* or by NP. As for the weak quantifiers, the linker is present mandatorily for *bula* 'many', *meggai* 'many', and *dídidi'* 'few', and optionally for *palu* 'some'.

The Plain-Restrictive subtype is exemplified by languages including Lakhota (Williamson 1987) and Mojave (Munro 1976). This subtype permits a range of different determiners outside of the IHRC construction. Inside the IHRC, the internal head NP (IH) must be indefinite. Here, the definiteness restriction on the IH is the same as the one identified for existentials in English (Milsark 1974). The Plain-Restrictive subtype is also shown to be island-insensitive, meaning the RC containing the IH can acceptably have an embedded island inside which the IH is generated. Finally, this subtype can be stacked, resulting in a configuration like the schematic in (17), in which a single IH is shared by two IHRCs.

(17) $[_{CP} \dots [_{DP_1} [_{IHRC_1} \dots [_{DP_2} [_{IHRC_2} \dots [_{IH_{1,2}}] \dots]] \dots]]]$

The semantic analysis Grosu advances for this subtype involves long-distance binding of the IH by a lambda-operator.[10] The definiteness constraint of the IH is captured ultimately by a ban on vacuous quantification; indefinites are analyzed as restricted free variables (Heim 1982), in contrast to other quantificational types, all of which are assumed not to leave a free variable for the lambda-operator to bind.

The Mismatch-Restrictive type, while having a similar semantics to Plain-Restrictive IHRCs at the top node, has a different mapping between its syntax and semantics. Determiners are banned outside the IHRC. The full range of determiners is allowed local to the IH, but these mandatorily scope outside the RC. Like the Plain-Restrictive subtype, Mismatch-Restrictives allow intersective stacking, but in contrast, are island-sensitive. Grosu analyzes them as

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10. While Grosu says nothing about what sort of syntax leads to lambda abstraction in the semantics, I assume that this could be captured by merging a null operator directly into Spec, CP (external merge), which triggers a compositional rule Predicate Abstraction (Heim and Kratzer 1998:114), forcing the lambda operator to bind a variable that bears the same syntactic index as the operator. This syntactic analysis would be essentially the same as that proposed for Irish RCs with resumptive pronouns by McCloskey (2002).

involving mandatory A'-movement of the IH with spell-out of the head NP in its internal (base-generated) position, forming an IHRC; or in its external (derived) position, forming a head-external RC.

The Maximalizing subtype is found in Japanese, Imbabura, and Cuzco Quechua, among others. It exhibits a ban on determiners outside the RC, and allows even strong determiners with the IH. Stacking is banned, and the subtype is island-sensitive. In addition, Maximalizing RCs exhibit what Kuroda (1992) calls "The Relevancy Condition".[11] The analysis Grosu proposes to explain all of these properties has the IH base-generated as an ordinary argument in the RC. The IH is not technically the RC's "pivot" (the constituent over which the clause is abstracted). A functional head merged above VP takes a null operator in its specifier and, in the semantics, equates the variable introduced by the operator with a contextually salient role (the role of the IH, due to the Relevancy Condition) in the eventuality associated with the matrix clause. In the syntax, the null operator raises to Spec, CP, deriving island-sensitivity; in the semantics, this operator provides the necessary lambda-abstraction.

The properties of the three IHRC subtypes are summarized in the table in (18).

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11. The Relevancy Condition is a pragmatic requirement that the IH and the role it plays in the RC be immediately relevant to the content of the matrix clause.

(18)   TYPOLOGY OF IHRCS (GROSU 2012)

IHRC type	Properties	Analysis
Plain-Restrictive • Lakhota • Mojave	• Range of Ds outside IHRC • Indefinite IH • Intersective stacking • Island-insensitive	• IH denotes restricted free variable • No A'-movement • IH is abstracted over semantically, bound by lambda operator
Maximalizing • Japanese • Imbabura • Cuzco Quechua	• No Ds outside IHRC • Strong Ds allowed w/ IH • No stacking • Island-sensitive	• Functional head "ChR" merged above VP • Op merged into Spec, ChRP • Op raises to Spec, CP, leaving variable • ChR equates Op-variable to an individual with a contextually salient role in matrix clause
Mismatch-Restrictive • Navajo	• No Ds outside IHRC • Strong Ds allowed w/ IH, but have external scope • Intersective stacking • Island-sensitive	• IH always moves to Spec, CP • IH interpreted CP-externally • Spell-out of the IH in its external (derived) or internal (initial) position

3.1.1   Chamorro IHRCs

The following discussion shows that the properties of Chamorro IHRCs don't align neatly with any category described and analyzed by Grosu. I will conclude that Chamorro IHRCs represent a distinct subtype of restrictive IHRC in the typology.

3.1.1.1   A range of determiners are allowed outside the IHRC   The Chamorro IHRCs shown above have all had the definite determiner i immediately pre-

ceding the RC, but other determiners and quantifiers are allowed, including at least the indefinite specific determiner *un* 'a' (19a), the strong quantifier *todu* 'all' (19b), and weak quantifier numerals like *tres* 'three', in bold below.

(19) a. Ha   tungu' si   Juan **un** [måmamfuk   na
          3SG.R.AGR know   UNM Juan a   SG.R.AGR.AP.weave.PROG LK

          biha   kanåstra   siha gi   tiempon-ña].
          old.lady OBL.basket PL   LOC time-3SG.POSS
          'Juan knows an old lady who weaves baskets in her (free) time.'
                                                                    (BPS: 376)

      b. I   lancheru ha   sodda' på'gu **todu** [man-malågu na
          the farmer   3SG.R.AGR find   today all   PL.R.AGR-run LK

          gå'ga' siha] gi   Sabalu].
          animal PL   LOC Saturday
          'The farmer found all the animals today that ran away on Saturday.'
                                                                    (EDR: 203)

The range of determiners possible outside the IHRC rules out both the Maximalizing and Mismatch-Restrictive RC types as a possibility for Chamorro, but is compatible with Grosu's Restrictive type.

3.1.1.2 Local determiners are banned   No overt determiners are allowed on the IH. The definite article (20a) and indefinite specific article (20b) are both banned, whether or not a determiner is present outside of the IHRC.

(20) a. * Malagu'   yu' (i) [ha   fa'gåsi-n måolik i̲   mansåna
            SG.R.AGR.want I   the 3SG.R.AGR wash-LK well   the apple

            si   Juan].
            UNM Juan
            ('I want the apple that Juan washed well.')   (EDR: 227,228)

      b. * Malagu'   yu' (un) [ha   fa'gåsi-n måolik u̲n mansåna
            SG.R.AGR.want I   a   3SG.R.AGR wash-LK well   a   apple

            si   Juan].
            UNM Juan
            ('I want an apple that Juan washed well.')   (EDR: 225,226)

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The sentence improves, as expected, if the only category accompanying the IH is the linker.

(21) Malagu'   yu' un [ha   fa'gåsi-n måolik na [mansåna]
     SG.R.AGR.want I   a 3SG.R.AGR wash-LK well   LK apple
     si   Juan].
     UNM Juan
     'I want an apple that Juan washed well.'   (EDR: 224)

Quantifiers cannot co-occur with the IH either, as demonstrated by the ungram-maticality of the weak quantifier *dos* 'two' in (22). Note that the presence of the linker on either side of the quantifier does not increase acceptability.

(22) * Ch⟨um⟩ålik   i   [k⟨um⟩uekuentus   (na) <u>dos</u> (na) [påtgun] gi
     ⟨SG.R.AGR⟩laugh the ⟨SG.R.AGR⟩talk.PROG LK two LK child LOC
     egga'an].
     morning
     ('The two children who were talking in the morning laughed.')
                                                        (EDR: 100,746,752)

This restriction indicates a departure from the three subtypes described by Grosu. Even in the Plain-Restrictive subtype, which exhibits a definiteness restriction, local determiners are possible as long as the resulting DP is indefinite. We might consider the possibility that Chamorro has a stricter indefiniteness requirement than the languages for which Grosu's analysis is intended (discussed in §3.1.1.3), but this is unlikely to be the case.

3.1.1.3 The IH does not behave like an indefinite in Chamorro The IH in Chamorro IHRCs does not have the surface profile of an indefinite in Chamorro. Existential constructions provide a window into what counts as indefinite. In existentials, we see a definiteness restriction familiar from Milsark (1974). The pivot of the existential can be headed by the null nonspecific indefinite (23a),

the specific indefinite *un* 'a/an' (23b), or the range of weak quantifiers, including *palu* 'some' (23c), numerals (23d), and others.

(23) a. Guaha   **buteya** gi   halum kahun ais.
          SG.R.AGR.exist bottle   LOC inside box.LK ice
          'There's a bottle in the icebox.'   (Chung 1987:194)

      b. Guaha   **un paharita** in-akka'   ni   cha'ka gi
          SG.R.AGR.exist a small.bird SG.R.AGR.PASS-bite OBL rat   LOC
              paingi.
              last.night
          'There was one small bird that was bitten by the rat last night.'
                                                              (CD: *påharita*)

      c. Guaha   **palu famalåo'an** man-malångu.
          SG.R.AGR.exist some women   PL.R.AGR-sick
          'There were some women sick.'   (Chung 1987:199)

      d. Guaha   **tres na kareta** man-a-totpi   giya Garapan.
          SG.R.AGR.exist three LK car   PL.R.AGR-RECP-collide in   Garapan
          'There were three vehicles that collided in Garapan.'   (CD: *totpi*)

IHs formed with determiners like those in (23) are rejected by speakers, so it is clear that a plain indefiniteness restriction like that required for Lakhota IHRCs will not be sufficient for Chamorro IHRCs.

While it is possible that there is some component of indefiniteness to the IH in Chamorro, it is not just an indefinite DP, as evidenced by the following.[12] Recall from §2.4.1 that nonspecific indefinites in Chamorro have the appearance of bare NPs. The nonspecific indefinite determiner is null, and as long as the

12. If Chamorro existentials can tell us whether what counts as indefinite in the language, it would be logical to ask whether the pivot of an existential can have the surface appearance of an IH (i.e. *na*+NP). If it can, we might suppose that there is an indefiniteness restriction in Chamorro IHRCs, but that this restriction recognizes finer grains of indefiniteness and is more strict than that of Lakhota, for example. It is indeed possible for a *na*+NP string to follow the existential predicate, which suggests that this constituent satisfies the indefiniteness restriction on the pivot of an existential sentence. But *na*+NP can never be an argument in an ordinary (non-existential, simplex) clause, suggesting that there is something common to both existential sentences and IHRCs that conditions the presence of the linker. Discussion of this is postponed until §5.

indefinite is simplex (i.e. the noun has no modifiers or possessors), the only other component in addition to the null determiner will be the noun.

The IH in Chamorro IHRCs is not quite so minimal: even when there is just a single noun, it must be preceded by the prenominal form of the linker *na*. This is an odd state of affairs, considering the distribution of the linker discussed in §2.4.3. Like other articles, the nonspecific indefinite determiner never conditions the presence of the linker, so even if the IH contains the nonspecific indefinite article, the linker indicates that there is something additional going on.

Recall that the linker's presence is conditioned by certain elements preceding the noun, namely determiner-like elements (demonstratives not followed by *i* 'the', and weak quantifiers), adjectives, and nouns acting as modifiers. In IHRCs, the presence of the linker should indicate that one of these elements is present, but none are present in the string. Instead, what linearly precedes the linker is always something outside the nominal domain of the IH: the RC's predicate or some other constituent of the clause, none of which will have a modificational relationship to the IH if the IH is merged into the clause as an argument.

Because the IH of Chamorro's IHRCs can't have local definite or indefinite determiners, it doesn't seem to be captured by any of the IHRC subtypes proposed in Grosu's typology.

3.1.1.4 Intersective stacking A first glance suggests that intersective stacking is impossible in Chamorro's IHRCs. While it is possible for head-initial RCs (24), attempts to create IHRCs with intersective meaning are rejected (25).

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(24) Éstagui'   i   ⟨magågu⟩ [ni   man-ápplacha'] [ni
     SG.R.AGR.here.is the clothing COMP PL.R.AGR-dirty COMP

     malagu'   yu' na   uma   chuli' para i   gima'].
     SG.R.AGR.want   I   COMP 3PL.IRR.AGR bring to the house
     'These are the shirts that are dirty that I want them to take home.'
                                                              (EDR: 187)

(25) * Éstagui'   i   [man-applacha' i   [malagu'   yu' na
       SG.R.AGR.here.is the PL.R.AGR-dirty the SG.R.AGR.want   I   COMP

       uma   chuli' na ⟨magågu⟩ para i   gima']].
       3PL.IRR.AGR bring LK clothing to the house
       ('These are the shirts that are dirty that I want them to take home.')
                                                              (EDR: 209)

However, the unacceptability of (25) is quite possibly the result of an island vi-
olation: under the analysis advanced in §5, the derivation of (25) would require
extraction out of a definite DP, which is known to result in unacceptability in
possessor extraction (Chung 1994:11-12). This potential confound forces us to
mark this answer as inconclusive, pending further investigation.[13]

3.1.1.5 Chamorro IHRCs are island-sensitive   Each of the subtypes of Grosu's
typology is predicted to be either island-sensitive (Maximalizing, Mismatch-
Restrictive) or insensitive (Plain-Restrictive). Chamorro has many of the famil-
iar islands, including the complex NP island and embedded question island
(Chung 1998:211-12;351-56). Extraction out of both relative clauses (26) and
embedded questions (27) is known to result in ill-formedness. (26a) involves
extraction for question formation; (26b), for focus; (27a), for RC formation; and
(27b), for question formation. The islands below are enclosed in square brack-
ets.

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13. Another island one might suspect is present in (25) is the subject island, but Chamorro
doesn't obey the SSC (Chung 1998:297-298).

(26) a. * Håfa₁ un   tungu' atyu i   boi [ni   para u
         what 2SG.R.AGR know   that the boy COMP FUT 3SG.IRR.AGR
           t⟨in⟩aitai   t₁]?
           ⟨PASS⟩read
           ('What₁ do you know the boy who is going to read t₁?')
                                                                  (Chung 1998:351,(39a))

     b. * [I   kahita-n dångkulu]₁ na   tåya'   [in
        the box-LK   big   COMP SG.R.AGR.NEG.exist 1EXCL.PL.R.AGR
           pe'lu t₁].
           put
           ('It was in [the big box]₁ that there was nothing we put t₁.')
                                                                 (Chung 1998:351,(39d))

(27) a. * Kao esta   un   taitai i lepblu₁ ni   ti   hu
         Q   already 2SG.R.AGR read the book   COMP NEG 1SG.R.AGR
           tungu' [håyi para u   t⟨in⟩aitai   t₁]?
           know   who FUT 3SG.IRR.AGR ⟨PASS⟩read
           ('Have you read the book₁ that I don't know who is going to read t₁?)
                                                        (Chung 1998:352)

     b. * Månu₁ na   para un   in-istotba   [håfa un
        where COMP FUT 2SG.IRR.AGR PASS-disturb   what 2SG.R.AGR
           po'lu t₁]?
           put
           ('Where₁ would it bother you what you put t₁?')   (Chung 1998:352)

These examples show us that both embedded questions and relative clauses are islands in Chamorro. They also show us that the derivations for forming constituent questions (26a, 27b), focus constructions (26b), and relative clauses (27a) involve movement, as opposed to long-distance binding. To determine whether Chamorro IHRCs are island-sensitive, a known island needs to be embedded within the IHRC, and the IH needs to be placed inside the known island.

The following examples have islands—a (head-initial) RC (in 28) and an embedded question (EQ) (in 29)—inside of an IHRC. These examples are re-

jected by my consultants, which leads to the conclusion that IHRCs are derived

by successive cyclic movement, despite the fact that the IH surfaces *within* the

known island.

(28) * Hu　　　　ayuyuda　i　[RC bunitu　　　　　　i　doktu [RC
　　　1SG.R.AGR help.PROG the　　SG.R.AGR.handsome (is) the doctor

　　　ni　　ha　　　tungu' na　　ma-na'-malångu
　　　COMP 3SG.R.AGR know　COMP SG.R.AGR.PASS-CAUS-SG.R.AGR.be.ill

　　　na　malångu　gias Juan]].
　　　LK patient　OBL Juan

　　　('I helped the patient who the doctor is handsome who knows that the
　　　patient was made sick by Juan.')[14]　　　　　　　　　　(EDR: 504)

(29) * Hu　　　　li'i'　i　[RC ha　　　　tungu' si　Juan [EQ håyi
　　　1SG.R.AGR see　the　　3SG.R.AGR know　UNM Juan　　who

　　　mu-na'-malångu　　　na　tåotao]].
　　　WH[NOM]AGR-CAUS-be.ill LK person

　　　('I saw the man who Juan knows who made that man sick.')[15,16]

　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(EDR: 218)

Their island-sensitivity means that Chamorro IHRCs cannot be derived by bind-

ing, as proposed by Grosu for the Plain-Restrictive subtype; instead, they will

require a derivation involving movement, something closer to Grosu's analysis

for Maximalizing or Mismatch-Restrictive IHRC types.

　　(30) summarizes the properties of Chamorro IHRCs relevant to Grosu's ty-

pology.

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14. [I helped the patient [RC who1 [Subj. the doctor [RC who2 t2 knows that t1 was made sick by Juan] is handsome.]

15. [I saw the man [RC who1 Juan knows [EQ who2 t2 made t1 sick.]]]

16. A potential confound is present in (29): the relative clause is not unambiguously head-internal, since the head NP is the last constituent after the RC verb. The RC could be head-final, which, if these involve a different sort of derivation that would result in island violation effects, could be the result of the ungrammaticality in (29). However, assuming that a head-internal parse of (29) is available and would be non-island-violating, that is the parse that I would expect to be chosen by the listener. Since the result is still unacceptability, (29)'s badness is plausibly the result of an island violation.

(30) **PROPERTIES OF CHAMORRO IHRCS**

    a. **External determiners**: A range is allowed (at least the definite article *i*, the indefinite specific article *un*, the universal quantifier *todu*).

    b. **Internal determiners**: None are allowed, not even indefinite determiners.

    c. **Stacking**: ???

    d. **Island-sensitivity**: Sensitive (at least) to RC and embedded question islands.

The collection of properties shown in (30) reflects none of the IHRC types in (18). The possibility of determiners outside the IHRC and impossibility of determiners local to the IH rules out both the Maximalizing and the Mismatch-Restrictive analyses. But the island-sensitivity rules out the analysis proposed for Plain-Restrictive IHRCs. Since the collection of properties exhibited by Chamorro's IHRCs matches none of the subtypes of Grosu's typology, I conclude that they represent an additional subtype of restrictive IHRC. Before advancing an analysis, though, it must first be considered whether analyses of IHRCs proposed for more closely related languages can be ported, either in whole or in part, to Chamorro.

3.2   Approaches for other Austronesian languages

It has recently been recognized in the literature that some Austronesian languages have internally headed RCs. Aldridge (2004) reports that IHRCs exist in Tagalog (Philippine), and also notes that they have been identified in Seediq (Atayalic), Puyuma (Puyuma), and Riau Indonesian (Nuclear Malayo-Polynesian) (citing, respectively, Chang 2000; Huang 2000; Gil 2000). Jed Pizarro-Guevara (p.c.) has also reported to me that they exist in Cebuano (Philippine). Aldridge (2004) proposes an analysis for IHRCs in Tagalog and Seediq which

involves multiple mechanisms. It is worth considering whether her analysis can be extended to Chamorro. The following subsections first consider the analysis from Aldridge (2004), and then an update from Aldridge (2017). The conclusion will be that neither analysis can be generalized to Chamorro.

3.2.1 Aldridge 2004

Tagalog, like Chamorro, has three different RC surface patterns (head-initial, head-final, and internally headed (31a-c, respectively), for which Aldridge (2004) proposes a common initial structure in which the head NP is base-generated as an argument in the RC. Head-initial RCs are derived via head-NP raising to Spec, CP (as in Kayne 1994; Bianchi 1999), internally headed RCs via short movement of the head NP plus the merging of a null operator in Spec, CP (as in the Grosu analysis considered in §3.1), and head-final RCs via full raising (to Spec, CP) followed by fronting of the remnant TP.
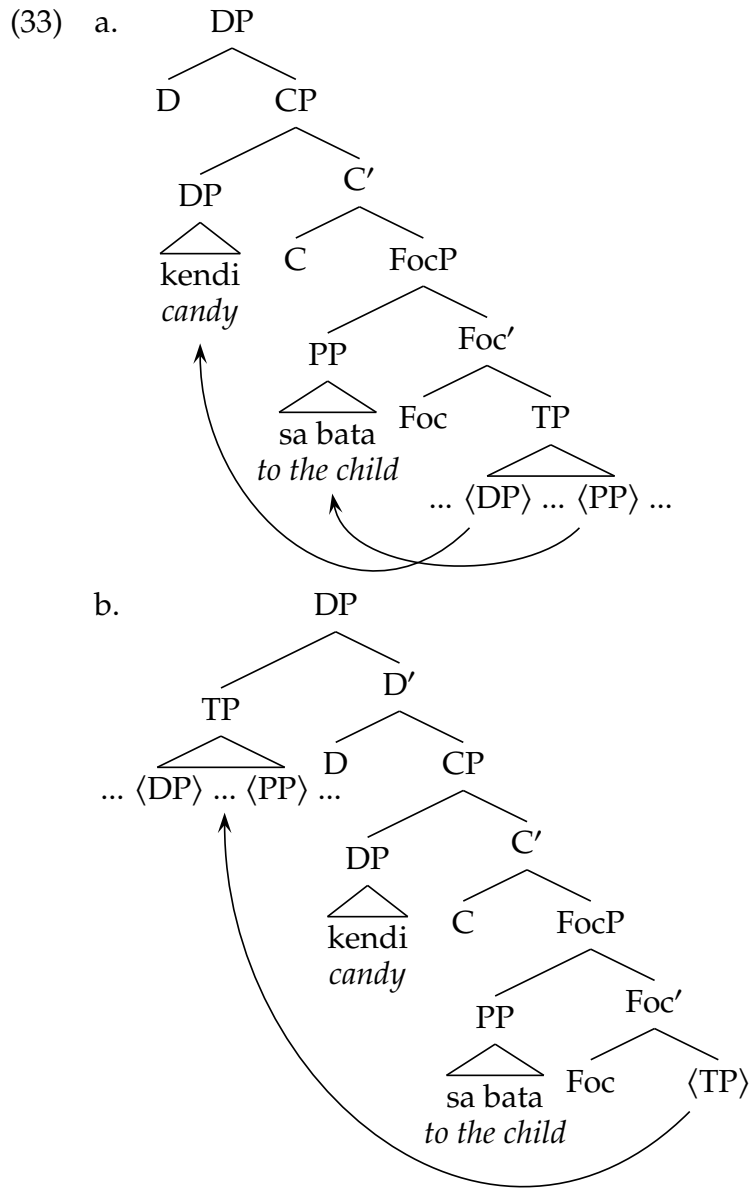
(31) a. $\boxed{\text{libro}}$-ng b⟨in⟩ili   ni   Maria
     book-LK ⟨PFV⟩buy ERG Maria

    b. b⟨in⟩ili   ni   Maria-ng $\boxed{\text{libro}}$
       ⟨PFV⟩buy ERG Maria-LK book

    c. b⟨in⟩ili-ng $\boxed{\text{libro}}$ ni   Maria
       ⟨PFV⟩buy-LK book ERG Maria
       All: 'the book that Maria bought'   (Aldridge 2004:100)

Aldridge's analysis for IHRCs is not fundamentally different from the one considered in §3.1, and will not work for additional reasons,[17] so it is not discussed

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17. The short movement account Aldridge (2004) proposes for Tagalog IHRCs relies on the fact that Tagalog has V to T movement. Aldridge proposes a functional projection immediately below T which attracts the IH to its specifier. Since Tagalog has V to T movement, this will result in the IH always being immediately postverbal in the string. If this account were adopted, it would have to be modified to exclude movement of the IH to Spec, FP. This is because Chamorro does not have V to T movement (as evidenced by certain adverbs that occur preverbally, even when T is empty, in which case they would be expected to occur postverbally

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further. The analysis to be evaluated here is her analysis for what she considers to be a subtype of head-final relative clause (32) in which the IH is not immediately postverbal (and so does not count as an IHRC under her analysis). A subconstituent of the RC surfaces between the verb and the IH, and some other constituent from the RC follows the IH, resulting in what might be called an IHRC pretheoretically (since the head NP is flanked by constituents of the RC).

(32) i-b⟨in⟩igay   ng babae-ng   [kendi] sa bata
      APPL-⟨PFV⟩give ERG woman-LK candy P child
      'the candy the woman gave to the child'   (Aldridge 2004:103)

The analysis Aldridge gives to RCs of this pattern involves a RC subconstituent scrambling to Spec, FocP (which sits between C and T in the extended verbal projection), movement of the head NP to Spec, CP (as in her analysis for head-initial and head-final RCs), and fronting of the remnant TP to Spec, DP (as in her analysis for head-final RCs). The scrambled phrase, in this way, becomes stranded, being the only thing left behind from the moved TP. These steps are illustrated in (33) for (32).

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if Chamorro had V to T—see Chung 1998:130-131). In absence of V to T movement, the IH would be expected to occur between T and V in IHRCs, which is never the case. Removing the movement to Spec, FP would result in an analysis that is identical to that discussed in §3.1, so the same arguments against Aldridge's modified analysis for IHRCs apply.

(33) a.

```
              DP
          ┌────┴────┐
          D         CP
               ┌────┴────┐
              DP         C'
              △      ┌────┴────┐
            kendi    C        FocP
            candy         ┌────┴────┐
                         PP        Foc'
                         △    ┌─────┴─────┐
                       sa bata Foc        TP
                     to the child       △
                                  ... ⟨DP⟩ ... ⟨PP⟩ ...
```

b.

```
                   DP
             ┌──────┴──────┐
            TP             D'
            △         ┌────┴────┐
   ... ⟨DP⟩ ... ⟨PP⟩ ...  D      CP
                          ┌──────┴──────┐
                         DP             C'
                         △         ┌────┴────┐
                       kendi       C        FocP
                       candy            ┌────┴────┐
                                       PP        Foc'
                                       △     ┌────┴────┐
                                     sa bata  Foc     ⟨TP⟩
                                   to the child
```

The evidence for this account is that whenever the head NP is not immediately postverbal, the only constituents that can follow it are those that can be scrambled (undergo A′-movement) in Tagalog. This limits the class of possible stranded elements to absolutives and PPs (Aldridge 2004:107).[18]

In order for this analysis to be ported to Chamorro IHRCs, it would have to

18. While PPs are not absolutives and generally do not undergo A′-movement in Tagalog, they can be scrambled according to Aldridge. This is apparently the only exception to the generalization that only absolutive constituents can undergo A′-movement.

be expanded to allow for multiple instances of scrambling. This would allow us to account for sentences in which multiple constituents follow the IH, as in (19a). Let us proceed with the assumption that Chamorro allows multiple specifiers.

Apart from this, a more serious modification is needed to make correct predictions about word order. Observe the structure in (33b). While D and C are covert in Tagalog, D can be overt in Chamorro, and we should be able to tell straightforwardly whether TP fronting to Spec, DP has occurred by whether the determiner occurs after the contents of a fronted TP. As all of the previous Chamorro IHRC examples have illustrated, the determiner must occur before **any** RC material. (15a) is repeated here for convenience; note the position of *i* 'the'.

(15a) I   [mam-fresku   na ⟦biskuit Maria⟧   nigap]   esta   på'gu
       the PL.R.AGR-fresh LK cookie.LK Maria yesterday already now
       inapulaihan.
       PL.R.AGR.moldy
       'Maria's cookies that were fresh yesterday are now moldy.'   (BPS: 765)

A workaround could obviously be fashioned in which D undergoes head movement to a higher location in the nominal extended projection, but I do not know of any independent evidence for such an operation.

A final complication with porting this analysis to Chamorro arises from its predictions about the kinds of constituents that can follow the IH in IHRCs. Though Chamorro has fewer restrictions on A' movement than Tagalog, there are two constituent types that systematically cannot be A'-moved. These are the oblique agents of passive, realis clauses and oblique objects of antipassive clauses. These descriptive generalizations are illustrated by the following ex-

amples, which attempt to form questions out of a passive agent (34) and an antipassive object (35), resulting in ungrammaticality.

(34) * Håfa   na   råmas   trongku d⟨in⟩anchi   i   primu-mu
      what LK branch.LK tree   SG.R.AGR⟨PASS⟩hit the cousin-2SG.POSS
      nigap?
      yesterday
      ('Which tree branch was your cousin hit by yesterday?')   (EDR: 688)

(35) * Håfa   na   kanåstra mam-bendi   i   biha   gi   metkåo?
      what LK basket   SG.R.AGR.AP-sell the old.lady LOC market
      ('What (kind of) basket did the old lady do some selling of at the market?')   (EDR: 690)

If, under this analysis, the IH really were located in Spec, CP and the remnant TP had fronted, then everything following the IH should have gotten there via scrambling, a type of A′-movement. It should be impossible for a constituent that could not undergo A′-movement to occur after the IH (in particular, those discussed above). This prediction is not borne out. Both passive agents and antipassive objects can occur after the IH, as illustrated respectively by (36) and (37). The relevant constituents following the head NP below are in bold.

(36) a. Matomba   påpa′ i   [d⟨in⟩idilalak   na påtgun
        SG.R.AGR.fall down the SG.R.AGR⟨PASS⟩chase.PROG LK child
        ni   che′lu-ña   palåo′an].
        OBL sibling-3SG.POSS woman
        'The child who was being chased by his sister fell down.'
                                                                    (EDR: 301)

     b. Ha   tungu′ si   Juan i   [t⟨in⟩etpi   na lancheru
        3SG.R.AGR know   UNM Juan the SG.R.AGR⟨PASS⟩hit LK farmer
        ni   kareta nigap].
        OBL car   yesterday
        'Juan knows a farmer who was hit by a car yesterday.'   (BPS: 303)

(37) a. Guaha   f⟨in⟩ahån-ña   si   Maria gi
          SG.R.AGR.exist ⟨WH[OBJ]AGR⟩buy-3SG.POSS UNM   Maria LOC

          [mam-bebendi   na   palåo'an **kanåstra**   **siha** gi
          SG.R.AGR.AP-sell.PROG   LK   woman   OBL.basket   PL   LOC

          metkåo]
          market

          'Maria bought something from the woman who sells baskets at the
          market.'   (BPS: 373)

      b. Ha   li'i' si   Maria i   [måmanggi'   na
          3SG.R.AGR see   UNM Maria the   SG.R.AGR.AP.write.PROG   LK

          bihu   **kåtta**   para i   senadot siha].
          old.man OBL.letter   to   the senator PL

          'Maria saw the old man who was writing letters to senators.'
                                                                              (BPS: 388)

Because this account makes several incorrect predictions for Chamorro, I abandon it here and move on to briefly consider an alternative analysis provided by Aldridge (2017).

3.2.2   Aldridge 2017

Reacting to objections raised in Law (2016), Aldridge abandons the 2004 analysis in favor of a different one. As in her 2004 analysis, all RC types have the same initial structure, and non-head-initial RCs receive a split analysis depending on whether the head NP is immediately postverbal or has constituents between it and the verb. Postverbal head NPs are analyzed as having undergone incorporation with V (as in Baker 1988), while head NPs in any other (non-initial) location are analyzed as being in-situ. For both analyses, the head NP makes its contribution to the RC semantics via what Aldridge calls "complex predicate formation." While the specifics of this process are left out, she argues that it is enabled by the head NP being merged as a bare N or NP, rather than a

DP,[19] which prevents Function Application from applying. I assume complex predicate formation could be captured, for example, by the compositional rule Restrict from Chung and Ladusaw (2004).

Incorporation is argued to result when the IH is merged as a bare (non-phrasal) N^0, and pronunciation in-situ results when the IH is merged as a phrasal NP. These claims are supported by the ability of non-postverbal head NPs to host possessors or PP modifiers (38a), and the contrasting *in*ability of postverbal head NPs to host possessors or PP modifiers (38b).

(38) a. a-ng   b⟨in⟩ili   ni   Maria na [bahay sa Maynila].
        NOM-LK ⟨PFV⟩buy GEN Maria LK   house in Manila
        'the house in Manila that Maria bought'   ((45b), 2017:20)

     b. * a-ng   b⟨in⟩ili-ng   [bahay sa Maynila] ni   Maria.
          NOM-LK ⟨PFV⟩buy-LK   house in Manila   GEN Maria
          ('the house in Manila that Maria bought')   ((45c), 2017:20)

There are several reasons why this analysis will not work for Chamorro. First of all, Chamorro has productive incorporation of objects into V for two verbal predicates, as shown in Chung and Ladusaw (2004), from which the following description is drawn. If Chamorro IHs underwent incorporation, it would be reasonable to expect head NP incorporation to mirror Chamorro's object incorporation pattern. But the surface profile of incorporated objects is quite different from that of head NPs in IHRCs. Object nouns can incorporate into two verbs of possession: *gai* 'have' (39a) and *tai* 'not have' (39b). The incorporated object is not inflected with the linker, and forms a phonological word with the verb.

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19. This is argued to be supported by the presence of Tagalog's linker, which, just as in Chamorro, occurs directly before the head NP of non-head-initial RCs. Inspired by Scontras and Nicolae (2014), Aldridge claims that the linker signals non-saturating composition.

(39) a. Gai-**famagu'un** atyu na palåo'an.
SG.R.AGR.have-children that LK woman
'That woman has children.' ((12a), 2004:82)

b. Tai-**prublema** i próhimu.
SG.R.AGR.not.have-problem the fellow
'The guy had no problem [spelling *Saipan*].' ((12c), 2004:82)

Evidence of incorporation is provided by the fact that the verbs above are morphologically intransitive: though the incorporated noun is semantically an object, the verb is inflected via the intransitive agreement paradigm, as (40) illustrates (intransitive agreement in bold; refer to Chung (1998; in prep.)).

(40) Lameggai para **u** **fan**-tai-che'chu' dispues.
a.little.more FUT 3.IRR.AGR PL.AGR-not.have-work later
'Even more people will have no work later.' ((15b), 2004:84)

It is already apparent that the profile of IHRCs in Chamorro is substantially different from the profile of object incorporation. As we have seen, an IH must be inflected with the linker, in contrast to the incorporated objects in (39). Nor does the presence of an object IH result in a verb that is surface-intransitive. Instead of receiving the inflection of an intransitive verb, as do verbs with incorporated objects, verbs in object–IHRCs receive transitive inflection (when WH-agreement is not overt), as illustrated in (41) and numerous other examples in this paper (e.g. (21)). Transitive agreement is in bold below.

(41) a. Éstagui' i [**hu** na'lågu na [aga'] gi
SG.R.AGR.here.is the 1SG.R.AGR cook LK ripe.banana LOC
paingi].
last.night
'Here is the banana that I cooked last night.' (BPS: 835)

b. Båbaba ha' i [**in** bisita na iskuela siha
SG.R.AGR.bad.PROG EMP the 1EXCL.PL.AGR visit LK school PL

giya Amerika gi ma'pus na såkkan].
in America LOC last LK year

'The schools that we visited last year in America are still not good.'
(EDR: 749)

Incorporated objects in Chamorro allow modifiers, which Chung and Ladusaw argue indicates that they must be phrasal. Despite this, they cannot host possessors, whether that possessor is overt, or is covert but indicated by possessor agreement (42). This is another contrast between object incorporation and IHRCs, since IHs allow possessors of either kind, as shown in (43).

(42) a. *Si Antonio gai-kareta-n Dolores.
UNM Antonio SG.R.AGR.have-car-LK Dolores
('Antonio has Dolores's car.') (28a, 2004:88)

b. *Gai-lepblom-mu yu'.
SG.R.AGR.have-book-2SG.POSS me
('I have your book.') (28b, 2004:88)

(43) a. Sen-malångu på'gu i [k⟨um⟩ekeha na
SG.R.AGR.very-ill today the ⟨SG.R.AGR⟩complain.PROG LK

haga-**n Dora** nigap].
daughter-LK Dora yesterday

'Dora's child who was complaining yesterday is now very sick.'
(BPS: 798)

b. Hu taitai i [ha nå'i na lepblon-**ña** si
1SG.R.AGR read the 3SG.R.AGR give LK book-3SG.POSS UNM

Juan si Maria.]
Juan UNM Maria

'I read the book of his that Juan gave to Maria.' (EDR: 547)

In short, the IH of an IHRC does not fit the pattern of incorporated objects in Chamorro. This does not mean that Aldridge's complex predicate formation rule should not be considered, though, since it is possible in principle for it

to apply without incorporation (as she argues for RCs in which one or more constituent separates the IH from the verb).

I assume that Aldridge's process of complex predicate formation is something like Chung and Ladusaw's (2004) Restrict, a compositional rule whereby a property-denoting NP merged in an argument position is composed with a function (e.g. a verb which has not yet been composed with its argument(s)) without semantically saturating the function's argument. Instead, it simply restricts that argument by adding a conjunction to the meaning of the function. Since this procedure would ultimately result in semantic incompleteness, existential closure must apply to saturate the unsaturated argument (Chung and Ladusaw 2004:4-12). This is illustrated for the object incorporation example (44a) in (44b), corresponding to Chung and Ladusaw's (65) and (66)[20] (2004:105-106).

(44) a. Gai-kareta   si   Antonio.
        SG.R.AGR.have-car UNM   Antonio
        'Antonio has a car.'

   b. $[\lambda y \lambda x[\text{have}'(y)(x)](\text{car}')](a)$ = (via Restrict)
      $[\lambda x \lambda y[\text{have}'(y)(x) \wedge \text{car}'(y)]](a)$ = (via Function Application)
      $\lambda y[\text{have}'(y)(a) \wedge \text{car}'(y)]$ = (via Existential Closure)
      $\exists y[\text{have}'(y)(a) \wedge \text{car}'(y)] \rightsquigarrow$ *there is a y such that Antonio has y, and y is a car*

For Restrict to apply to the IH of an IHRC, something must ensure that the RC is interpreted as a property (and not a proposition), which is problematic if existential closure applies automatically to saturate unsaturated arguments. An obvious way to deal with this is to merge an operator in Spec, CP, which would trigger Predicate Abstraction over the IH. Such an analysis would make

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20. For brevity, event arguments have been removed from (44b), and additional steps have been added to show saturation of the external argument by the subject.

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predictions similar to Grosu's analysis for Plain-Restrictive IHRCs (§3.1): no island effects would be predicted because there is no movement.[21]

In summary, neither of Aldridge's analyses for Tagalog can be generalized to Chamorro. The head-raising with scrambling and TP fronting analysis (2004) makes incorrect predictions about the kinds of constituents that can follow the IH of an IHRC. The complex predicate formation analysis (2017) doesn't generate the correct predictions either: it predicts a different surface profile for immediately postverbal IHs, and it doesn't predict the observed island effects.

4   A related phenomenon

In §3.1.1.3, attention was called to the fact that the linker adjacent to the IH falls outside of the distribution of the linker, outlined in §2.4.3. The linker (specifically, its *na* form) typically separates a noun from a modifier, demonstrative, or weak quantifier that surfaces to its left. Its appearance with the IH, which func-

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21.   Alternatively, a version of Restrict might be employed in which Existential Closure does not apply (or can at least be held off in some cases), and in which there is no need to merge an RC operator anywhere. Instead, the unsaturated argument that has been targeted by Restrict gets carried all the way up through each compositional step, such that the interpretation of the RC CP has a single lambda-abstract left at the top, at which point the CP can be taken as an argument of the determiner (assuming that RC CPs can be complements to D).

Under this view, an IH that is embedded e.g. within a CP complement to V will be composed via Restrict in situ, and its lambda abstract would be carried through the embedded clause, finally stopping at the top node of the RC CP. Since an extra lambda abstract would be present at each compositional stage, I assume that there would either have to be massive type-shifting or many applications of Restrict-like operations (which apply to higher types than $\langle e \rangle$) which modify functions without Function Application.

If all this is possible, it is not clear to me that this alternative version of Restrict would predict island violations in Chamorro's IHRCs, which is one of our desiderata. If, for example, an RC embedded within an RC is generated with two head NPs in the most embedded RC, the only place I suspect that something might go wrong (compositionally) is at the highest node of the most embedded RC. At that point, there would be two lambda abstracts instead of one, meaning that node is of type $\langle e, \langle e, t \rangle \rangle$—the wrong type for a determiner to take as an argument. But since massive type-shifting (or some other non-Function Application rule) would be needed anyway, I see no reason for this issue not to be resolved in the same manner as any other compositional issues stemming from this account.

tions as an argument within the RC and has no modifier to its left, is therefore unusual.

In fact, two other constructions in Chamorro exhibit a similar pattern. Strikingly, these are also A′ constructions: Focus and WH-questions. When the constituent that undergoes A′-movement (which I will refer to as the pivot) in one of these clause types consists of either a weak quantifier (in Focus clauses) or a WH-word (in questions) and an NP restrictor, most often this whole constituent raises in one piece. This is illustrated for focus sentences in (45), and for a root WH-question and an embedded WH-question in (46).

(45) **Focus**

    a. [**Bula na tåotao**]$_1$ g⟨um⟩uaiya t_1 esti i buñuelus
         many LK people ⟨WH[NOM]AGR⟩love   this the doughnut
         machaflilik.
         twisted
        'Plenty of people like twisted doughnuts.'

                                           (CD: *buñuelus machaflilik*)

    b. [**Meggai na attikulu**]$_1$ f⟨in⟩ahån-ña   si Josephine
         many LK item ⟨WH[OBJ]AGR⟩buy-3SG.POSS UNM Josephine
         t_1 gi Town House.
           LOC Town House
        'Josephine bought a lot of items at Town House.'   (CD: *attíkulu*)

(46) **WH-questions**

    a. [**Håyi na måolik mediku**]$_1$ um-ayuda   hao t_1 gi
         who LK nice.LK doctor   WH[NOM]AGR-help you   LOC
         espitåt?
         hospital
        'Which nice doctor helped you at the hospital?'   (BPS: 723)

b. Hekkua' [**håyi na påtgun**]₁ g⟨um⟩omgum   *t₁* esti i
   not.know who LK child   ⟨WH[NOM]AGR⟩pry.loose   this the

   petta-n san-me'na.
   door-LK DIR-front

   'I don't know who (lit. which child) pried loose my front door.'

                                                    (CD: *gomgum*)

Although the examples above represent the most frequent option, it is also pos-
sible for just the weak quantifier or WH-word to be fronted, and for the nom-
inal restrictor (*na*+NP) to be stranded postverbally, a pattern reminiscent of
what has been called "split topicalization" in the literature (den Besten 1985,
among others). This results in exactly the pattern observed in IHRCs, except
that there is an apparent dependency between the *na*+NP string and a fronted
determiner-like (D-like) element. The phenomenon is illustrated in (47) for sen-
tences with focus and in (48) for WH-questions; fronted determiners are shown
in bold, and the clause containing the stranded restrictor is bracketed.

I will refer to focus sentences with weak quantifiers dislocated from their
nominal restrictors as *split focus sentences*, WH-questions with WH-phrases dis-
located from their nominal restrictors as *split* WH-*questions*, and to both of these
collectively as *split A'-constructions*.

(47) **SPLIT FOCUS**

a. **Dididi' ha'** [k⟨in⟩annu'-måmi   na
   few   EMP   ⟨WH[OBJ]AGR⟩eat-1PL.EXCL.POSS   LK

   potu-n Carmen]].
   rice.cake-LK Carmen

   'We ate [just] a few of Carmen's rice cakes.'   (Chung, p.c.)[22]

b. **Ni håyiyi ha'** [h⟨um⟩ugågandu   gi   kantu-n tasi na
   NEG any.EMP EMP   ⟨SG.R.AGR⟩play.PROG LOC edge-LK water LK

   påtgun]].
   child

   'No children were playing at the beach.'   (Chung, p.c.)

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c. **Bula** [man-oggan   na [tåotao] gi   tasi].
   many PL.R.AGR-be.stranded LK people LOC sea
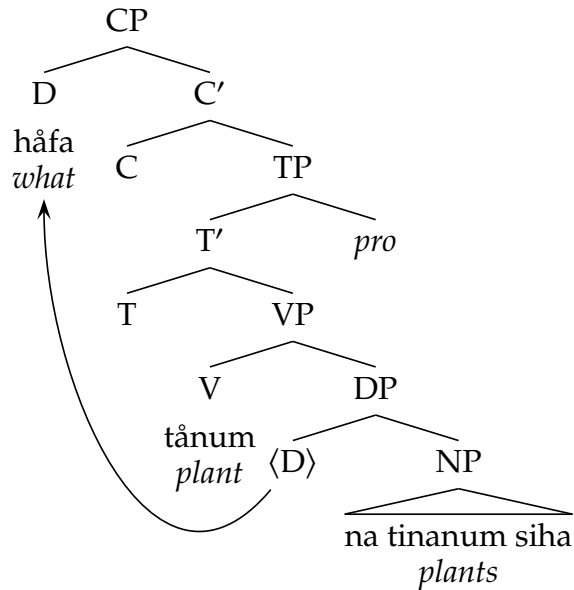   'There were a lot of people stranded at sea.'   (CD: *oggan*)

(48) **SPLIT WH-QUESTIONS**

a. **Håfa** [un   tånum na [tinanum siha] gi   gualu' gi
   what 2SG.R.AGR plant LK plant PL   LOC garden LOC
   ma'pus na simåna]?
   last   LK week
   'What plants did you plant in the garden last week?'   (EDR: 681)

b. **Månu** [s⟨um⟩usugun   atyu na kareta na [tåotao]]?
   which ⟨WH[NOM]AGR⟩drive that LK car   LK person
   'Which person drives that car?'   (BPS: 696)

c. **Håyi** [b⟨um⟩isita   hao na [mañe'lu-mu]   gi   ma'pus
   who   ⟨WH[NOM]AGR⟩visit you LK siblings-2SG.POSS LOC last
   na simåna]?
   LK week
   'Who among your siblings visited you last week?'   (EDR: 685)
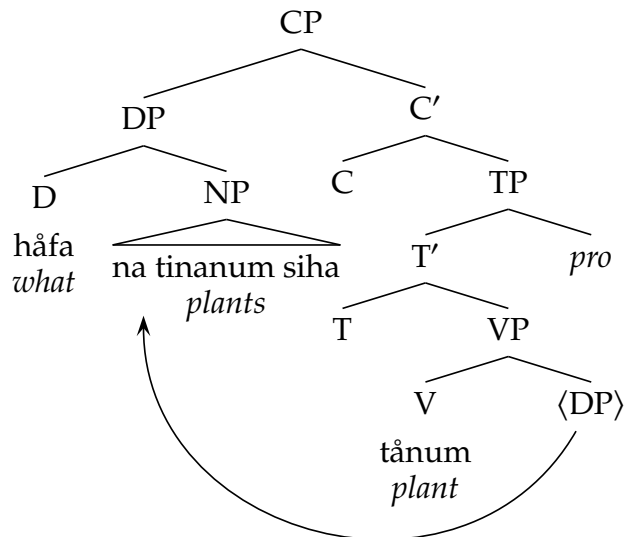
The fact that pied-piping of the *na*+NP string with the determiner is also an
option indicates that these items form a constituent when they are first merged
into the clause. If this is correct, then the appearance in (47-48) of those same
types of determiners at the beginning of the clause, while their restrictors re-
main within the clause, suggests a derivation in which the determiner itself
can be the target of movement, and its *na*+NP restrictor can be stranded in the
clause below. This sort of derivation is illustrated in (49), which is based on
(48a). (50) would be the non-split version of the same sentence.

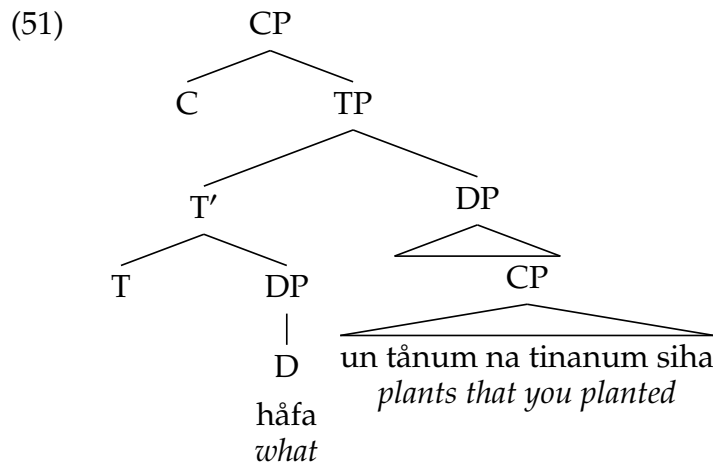22. Many thanks to Sandy Chung for providing these examples.

(49) **RAISING W/ STRANDING**

```
                    CP
            ┌────────┴────────┐
            D                 C′
          håfa        ┌───────┴───────┐
          what        C              TP
                            ┌─────────┴─────────┐
                           T′                  pro
                    ┌───────┴───────┐
                    T              VP
                            ┌───────┴───────┐
                            V              DP
                         tånum      ┌───────┴───────┐
                         plant    ⟨D⟩             NP
                                            na tinanum siha
                                                 plants
```

(50) **RAISING W/ PIED-PIPING**

```
                         CP
             ┌───────────┴───────────┐
            DP                       C′
      ┌──────┴──────┐         ┌───────┴───────┐
      D            NP         C              TP
    håfa    na tinanum siha        ┌─────────┴─────────┐
    what        plants            T′                  pro
                            ┌───────┴───────┐
                            T              VP
                                    ┌───────┴───────┐
                                    V            ⟨DP⟩
                                  tånum
                                  plant
```

Although a D-raising analysis like the one just illustrated might be the most appealing, there is an alternative derivation available in Chamorro that would also result in the string shown in (48a) and parallel sentences with split focus. Chung (1998:295-6) shows that the language makes available two different ways to form WH-questions. The first involves long-distance raising of the WH-constituent to Spec, CP, as in (50). The second way involves merg-

ing a WH-constituent as the predicate of the clause, rather than as an argument. This option is made possible by the ability for predicates to be of any category in Chamorro, as discussed in §2. The distinction between these two available derivations is hidden by the lack of an overt copula for non-verbal predicates, the predicate-initiality of the language, and the ability for the D-like elements under discussion here (WH-words and weak quantifiers) to have an NP complement only optionally. In this second derivation, the interrogative non-verbal predicate would be merged as the complement of T (following Chung 1998:55-56), and the remaining overt clausal material would form part of a relative clause within the DP subject of the nonverbal predicate. This alternative derivation for (48a) is illustrated in (51).

(51)

```
                    CP
                  /    \
                 C      TP
                      /    \
                   T'        DP
                  /  \      /  \
                 T    DP   /    CP
                      |   /   /    \
                      D  un tånum na tinanum siha
                     håfa   plants that you planted
                     what
```

The kind of structure in (51) has been referred to as a headless relative cleft (HRC) in the literature, and certain Austronesian languages have been argued to use *only* this route to form questions (Paul and Potsdam 2012; Potsdam 2009; and see Chung 2009 for discussion of the availability of HRCs and WH-movement in Chamorro).

Although (51) and (49) have different structures, I assume that they have

similar enough truth conditions that telling the two structures apart couldn't be based on interpretation alone.[23] Since both derivations are available in the language, the D-raising analysis might be available in principle, but it would be far better to provide an evidence-based verification that it is available in split questions and split focus sentences. Without verification, we must sit with the uncomfortable possibility that for independent, unknown reasons, the only derivation available in split questions and split focus sentences is the non-verbal predicate derivation. It is difficult to provide evidence for the proposed D-raising analysis in questions, but there *is* evidence that this derivation is available in split focus sentences. This evidence comes from the licensing of negative concord items in sentences with focus, the topic of the following subsection.

4.1 Negative concord in sentences with focus

Chamorro is a language with negative concord. The phrases which bear negative concord—negative concord items (NCI)—are indefinite phrases which display negative morphology but are only licensed in the scope of clausal negation. For Chamorro, this condition is met as long as clausal negation c-commands the NCI (Chung 1998:92-99). The NCI's negative morphology is semantically inert, such that the whole sentence only has one semantic negation, supplied by the clausal negator. (52) illustrates negative concord occurring in the c-command domain of the sentential negator *ti* 'not'. Both the licensor and the NCI are in bold.

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23. English analogues of the interpretations based on these two different structures might be *What plants did you plant?* for (49) and *What are the plants that you planted?* for (51).

(52) a. **Ti** ma påtti si Kiko' **ni un grånu na guihan**.
NEG 3PL.R.AGR share UNM Kiko' NEG a piece LK fish
'They didn't give Kiko' even one part of the fish.' (CD: *ni un grånu*)

b. **Ti** siña ma-sangåni si Jerome **ni håfa** sa'
NEG can SG.R.AGR.PASS-tell UNM Jerome NEG anything because
gof-utguyosu.
SG.R.AGR.very-self.opinionated
'Jerome can't be told anything because he's very self-opinionated.'
(CD: *utguyosu*)

The sentential negator *ti* is not the only NCI licensor. Focused negative phrases can also supply negation for the clause, in which case NCIs can occur anywhere in the c-command domain of the focused phrase, and the sentential negator *ti* is absent, as shown in (53).

(53) a. **Ni unu** [mu-li'i' si Dolores **ni mánunu ha'**].
NEG one WH[NOM]AGR-see UNM Dolores NEG anywhere EMP
'No one saw Dolores anywhere.' (Chung 1998:273)

b. **Ni hafafa ha'** [ma-tataitai **ni unu giya**
NEG anything EMP SG.R.AGR.PASS-read.PROG NEG one LOC
hami].
us
'Nothing had been read by any one of us.' (Chung 2009:104)

Consider now that if the focused negative phrases in (53) were the main predicate of the clause, as illustrated schematically in (54), the NCIs would be unlicensed, since they wouldn't be c-commanded by negation, and the examples above would be predicted to be ungrammatical. The dashed arrow in (54) refers to a c-command relation between the arrow's source and target.

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(54)
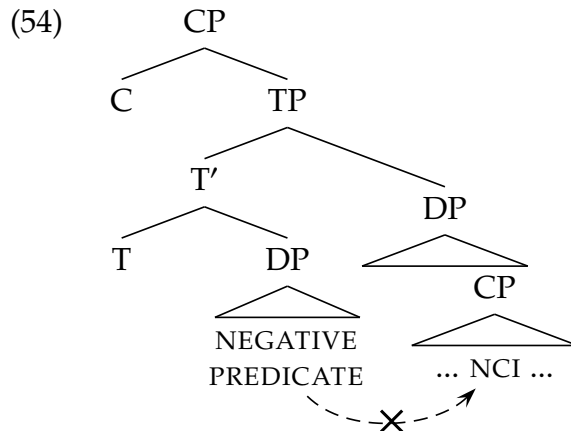
One might suspect that a nonverbal predicate analysis might still be available for the focus sentences in (53) if the sentential negator *ti* were present but covert (and supplied negation for the clause), but this alternate hypothesis is shown to be inadequate by the fact that even subjects are outside of the c-command domain of the sentential negator *ti*, as shown by the ill-formedness of (55). If subjects are not c-commanded by *ti*, then even if the sentences in (53) had covert sentential negation under a nonverbal predicate analysis, the NCI should not be licensed, since it would be embedded in a subject in Spec, TP (under the HRC analysis).

(55) a. *__Ti__   ha   åkka′ yu′ __ni__   __håfafa__   __ha′__.
          NEG 3SG.R.AGR bite   me   NEG anything EMP
          ('Nothing bit me.')   (Chung 1998:97)

      b. *__Ti__   ha   chatli′i′ maisa gui′ kana ha′ __ni__   __håyiyi__   __ha′__.
          NEG 3SG.R.AGR hate   self   him almost EMP NEG anyone EMP
          ('Almost no one hates himself.')   (Chung 1998:97)

      c. *__Ti__   ma-såkki   gi   paingi   __ni__   __unu__ __na__ __bisikleta__.
          NEG SG.R.AGR.PASS-steal LOC last.night NEG one   LK bicycle
          ('Not one bicycle was stolen last night.')   (Chung 1998:98)

In contrast to the pattern illustrated in (55), the subject *can* be an NCI when it is c-commanded by sentential negation, such as when the negator is in a higher

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clause (56).

(56) a. **Ti**   ma'å'ñao   hao [k⟨um⟩uentus-i **ni** **håyiyi**   **ha'**].
         NEG SG.R.AGR.afraid you ⟨INF⟩speak-APPL NEG anyone.EMP EMP
         'You're not afraid to speak to anyone.'   (Chung in prep.:ch. 17)

      b. **Ti**   ya-ña   [na   u   ma-li'i' **ni**
         NEG 3SG.R.AGR.like-3SG.POSS COMP 3SG.IRR.AGR PASS-see NEG
         håyi].
         anyone
         'He didn't want that she be seen by anyone.'   (Cooreman 1983:139)

We have just seen that NCIs in Chamorro are licensed by c-commanding sen-
tential negation, and that this sentential negation can be supplied by a focused
negative phrase. When NCIs are licensed by a focused negative phrase, the
HRC derivation (in which the focused negative phrase is a nonverbal predi-
cate) is not available, since the negative predicate would not c-command an
NCI embedded in a headless relative.

4.1.1 NCIs in split focus sentences

Given that NCIs can be licensed by focused negative phrases that have been
raised to Spec, CP, we can now ask an empirical question whose answer will
tell us whether the D-raising derivation is available in split focus sentences:

(57)   Are NCIs licensed in clauses that contain a *na*+NP restrictor stranded by
        a focused negative determiner?

If focused negative constituents can license NCIs, they cannot be analyzed as
the nonverbal predicate of a HRC (for the reasons shown above). Since the
focused negative can't be a predicate, the material following it cannot be a rela-
tive clause (as in the HRC analysis), and must instead be contents of the clause
out of which the focused constituent moved. If the focused negative has moved

out of that clause, and a stranded *na*+NP in that clause is interpreted as the restrictor of the focused negative, it must be the case that the focused negative and the *na*+NP restrictor initially occupied the same argument position in the clause.

Investigation reveals that the answer to (57) is *yes*. While pied-piping of the restrictor is unsurprisingly possible (58), the restrictor can also be stranded in the same clause as an NCI licensed by the focused negative associated with that restrictor (59). As above, the relevant negative constituents are shown in bold, and stranded nominal restrictors are boxed.

(58) **Ni** **unu** **na** **påtgun** [hu nåʼi **ni** **håfafa** **haʼ** gi
     NEG one LK child 1SG.R.AGR give NEG anything.EMP EMP LOC
     kumpliaños-ña].
     birthday-3SG.POSS
     'I gave none of the children anything on their birthday.'   (BPS: 898)

(59) a. **Ni** **unu** [n⟨in⟩aʼi-hu na 〔påtgun〕 **ni**
     NEG one ⟨WH[OBJ]AGR⟩give-1SG.POSS LK child NEG
     håfafa **haʼ** gi kumpliaños-ña].
     anything.EMP EMP LOC birthday-3SG.POSS
     'I gave none of the children anything on their birthday.'   (BPS: 896)

    b. **Ni** **håyi** [f⟨in⟩aʼnaʼguen-ña i maʼestru na
     NEG anyone ⟨WH[OBJ]AGR⟩teach-3SG.POSS the teacher LK
     〔istudiånti〕 **ni** **håfa** **na** **leksion**].
     student NEG any LK lesson
     'No student was taught a single lesson by the teacher.'   (BPS: 892)

    c. **Ni** **håyi** [f⟨um⟩aʼnåʼgui na 〔maʼestra siha〕 i
     NEG anyone ⟨WH[NOM]AGR⟩teach LK teacher PL the
     man-istudiånti **ni** **håfa** **na** **leksion**].
     PL-student NEG any LK lesson
     'None of the teachers taught the students a single lesson.'
                            (BPS: 890)

If the focused negative determiners in (59) can only have gotten there by move-

ment, and the stranded *na*+NP string is acting as a restrictor on the negative determiner, these two pieces must have been initially been part of the same constituent occupying the same argument position in the clause.

I propose that at initial merge, these pieces formed a DP headed by the determiner that gets fronted. The morphological negation of negative concord is head-adjoined to D. I suggest that the feature-set of the complementizer in focus sentences includes EPP, an uninterpretable WH feature, and an interpretable focus feature. The focus-marked constituent that undergoes raising has both an interpretable WH feature and an uninterpretable focus feature. The complementizer and the focus-marked constituent Agree, and the focus-marked constituent raises to Spec, CP to satisfy C's EPP feature. In the process, C's uninterpretable WH feature and D's uninterpretable focus feature get checked. This is illustrated in (60), using the lexical items from (59c). I assume that the extended projection for the verb *fa'nå'gui* 'teach' includes a covert Appl(icative) head that introduces a goal argument, and that the placement of the subject in (59c) is achieved as discussed in §2.

(60)

```
                              CP
                 ┌─────────────┴─────────────┐
                 D                            C′
           [iWH, u̶F̶]              ┌───────────┴───────────┐
           ┌─────┴─────┐          C                        TP
         Neg           D   [E̶P̶P̶, u̶W̶H̶, iF]       ┌───────────┴──────────┐
          ni         håyi                       T′                       DP
         not        anybody              ┌──────┴──────┐          ┌──────┴──────┐
                                         T            vP  ⟨D⟩      NP
                                                          [iWH, uF]
                                                                    na ma'estra siha
                                                                       teachers
                                              v
                                        ┌─────┴─────┐
                                      Appl   v           ApplP
                                    ┌──┴──┐       ┌───────┴───────┐
                                    V  Appl       DP              Appl′
                                   fa'nå'gui   ┌───┴───┐      ┌─────┴─────┐
                                    teach    i man-istudiånti ⟨Appl⟩     VP
                                              the students          ┌────┴────┐
                                                                   ⟨V⟩       DP
                                                                         ni håfa na leksion
                                                                            any lesson
```
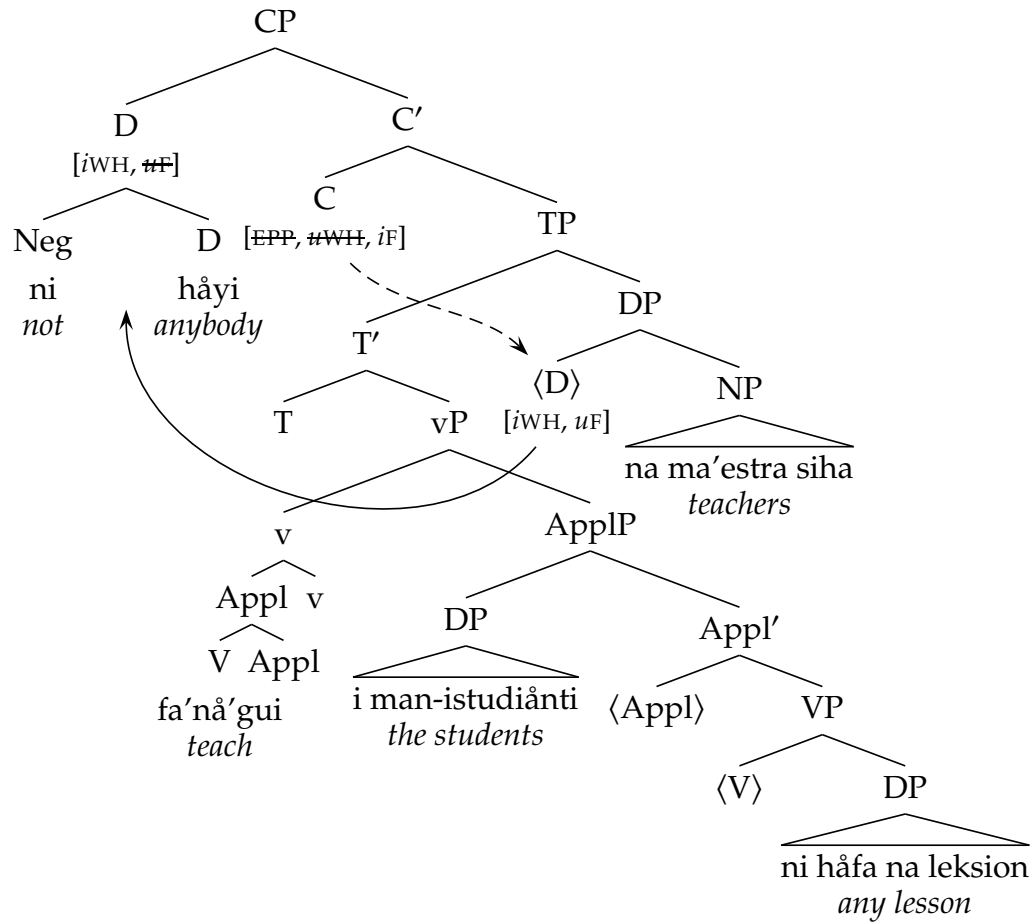
5   D-raising in Chamorro IHRCs

In the previous section, it was argued that in split focus sentences and split WH-questions, the appearance of *na*+NP inside of the clause is due to the D-like element that conditions the linker's presence evacuating DP, stranding *na*+NP. The presence of the linker without any apparent trigger is explained by this analysis. Although the linker initially appears to be occurring outside its usual distribution in these kinds of sentences, its presence follows the same principles described in §2.4.3, but the element which conditions the linker has simply moved (a case of apparent counter-bleeding).

The analysis proposed for split focus sentences and split WH-questions has a natural extension to Chamorro IHRCs. Although IHRCs differ from the split A′-constructions in that there is no element in the string that can be pinpointed as a determiner that has evacuated DP, recall from §3.1.1.5 the finding that IHRCs must be derived by A′-movement. Since the IH is in situ (as evidenced by its appearance between RC subconstituents), the IH cannot be what has moved.[24] I argue that what moves in IHRCs is the null relative clause operator, Op_{RC}, which is syntactically a determiner. Like weak quantifiers and WH-phrases in the other split A′-constructions, Op_{RC} is one of the determiners that conditions the presence of the linker, and is capable of moving on its own, leaving behind its nominal restrictor.

This proposal has two main advantages: it explains the presence of the linker without an apparent trigger, and it explains why we observe island effects in Chamorro IHRCs. The syntactic analysis of Op_{RC} as a determiner that can take NP complements is not unfamiliar, either; this same structure has recently been proposed in matching analyses of head-initial RCs in English and other languages (Sauerland 2003, 2004; Hulsey and Sauerland 2006).

5.1 Analysis

The analysis I propose for IHRCs is based directly on the analysis of split focus given in §4. The IH in a Chamorro IHRC is a DP, the head of which is the null operator, Op_{RC}. The feature make-up of Op_{RC} includes an interpretable WH feature, iWH. This DP is merged into the relevant argument position in the clause, just like any other DP. The RC complementizer C_{RC} has an uninterpretable WH

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24. Barring a variable spell-out explanation, which will be discussed later in this section.

feature uWH and an EPP feature. After C_{RC} has been merged, it enters into an Agree relationship with Op_{RC} and raises it to its specifier. Agree allows the uWH to be checked, and movement of Op_{RC} satisfies the EPP feature. The analysis is illustrated in (62) for the bracketed RC in the subject DP in (61).

(61) | Sen-malångu | på'gu | i | [k⟨um⟩ekeha | | na |
| SG.R.AGR.very-ill | now | the | ⟨SG.R.AGR⟩complain.PROG | | LK |

[haga-n Dora] nigap].
daughter-LK Dora yesterday

'The daughter of Dora's who was complaining yesterday is now very sick.' (BPS: 798)

(62)
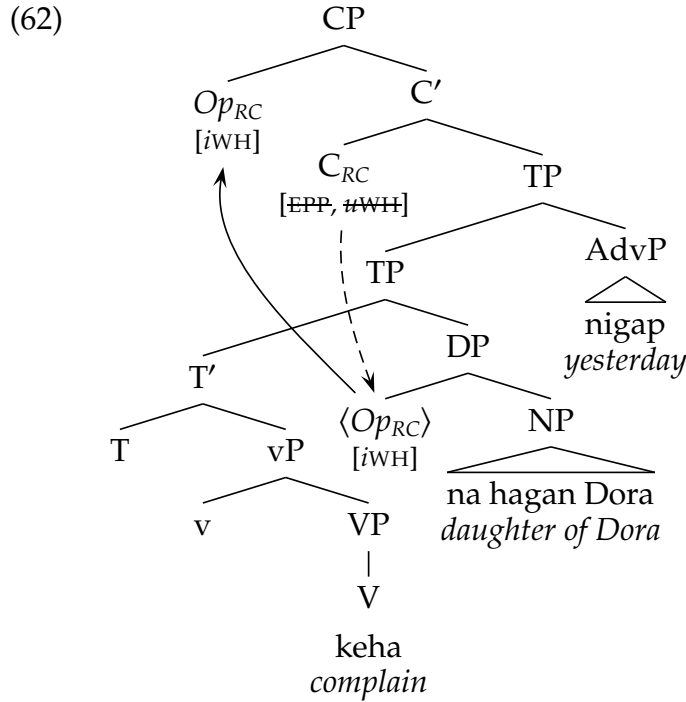
5.1.1 Op_{RC} as D and impossible determiner patterns

The status of null RC operators as determiners (therefore the head of DP) is uncontroversial, but it is somewhat unusual to see a proposal in which a null operator has an overt NP complement. Both null RC operators and relative pro-

nouns (plausibly the overt counterpart to null RC operators[25]) have the basic distribution of DPs, but in many languages, including English, these elements never have overt NP complements, and it is not immediately obvious what the internal make-up of null operator or relative pronoun DPs is. It is worth drawing comparisons between null operators/relative pronouns and ordinary pronouns, which also have the distribution of DPs, but usually do not have overt NP complements except in limited contexts (e.g. English DPs like *we linguists*, *you people*, etc.). Head-raising analyses of RCs in languages with overt relative pronouns analyze relative pronouns as determiners that select the head NP, which later vacates the DP headed by the relative pronoun (Kayne 1994; Bianchi 1999, 2000).

Though the proposal for Chamorro IHRCs that Op_{RC} has an overt NP complement is perhaps uncommon, it is supported by the ban on determiners local to the IH. As discussed in §3.1.1.2, IHs are incompatible with determiners of any sort, including the overt definite and indefinite specific determiners *i* and *un*, and weak quantificational determiners like numerals. This is in contrast to the IHs of the languages whose IHRCs fall into any of the three categories in Grosu's typology, all of which allow overt local determiners of some type. The complete ban on local determiners in Chamorro IHRCs is plausibly a case of complementary distribution: no determiners are allowed because there is already a determiner present, Op_{RC}.

If Op_{RC} is itself a determiner, the question arises why it couldn't be replaced with another determiner, or why it couldn't be the second determiner in a DP with stacked determiners. I claim that Op_{RC} is the only determiner that can

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25. What many now view as null operators were originally proposed to be derived via deletion of relative pronouns that had undergone WH-movement (Chomsky 1973, as cited in Browning 1991).

head an IH because it is the only one that bears the features that allow the derivation of the RC to converge. The relevant feature here is the [iWH] feature, which is targeted by C_{RC} to check its own [uWH] feature and satisfy its EPP property.[26] Presumably, strong determiners merged either above or below Op_{RC} will cause the derivation to crash by preventing Op_{RC} from being bound in the way required for an RC, or by preventing Op_{RC} from being extracted at all. As for why weak determiners like numerals cannot be merged with the IH, one possibility is that these compete for the same position in the extended projection of N as Op_{RC}, and so only one or the other can be merged as part of the IH.

The analysis of the internal make-up of the IH in Chamorro IHRCs is identical to the analysis of (silent) internal head NPs in so-called matching RCs, and the current analysis gains plausibility from that analysis. Sauerland (2003, 2004) supports the view that head-initial RCs in some languages are structurally ambiguous between a raising RC (in which the head NP is base-generated as an argument in the clause and raises to Spec, CP) and an RC right-adjoined to the head NP. RCs right-adjoined to NP are argued to be derived by "matching": an NP identical to the external head noun is generated within the RC. Sauerland's proposal is that the matching NP is merged inside the RC as part of a DP headed by the null operator, but that the internal head NP is mandatorily elided, as illustrated for English in (63).

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26. One will recall that in the analysis of focus sentences proposed in §4.1.1, the focus-marked constituent was assumed to bear a WH feature. Though I will not give a full explanation of this here, I suggest that this WH feature must co-occur with the uninterpretable focus feature uF for the determiners that can participate in split focus. If these determiners are merged as part of the IH in an IHRC, the derivation will not converge because there will be uninterpretable features at the interface with LF. C_{RC} does not bear an interpretable focus feature and the determiner's uF feature will remain unchecked.

(63) a. the story that the teacher told

   b. [$_{DP}$ the [$_{NP}$ [$_{NP}$ story] [$_{CP}$ [$_{DP}$ *Op* ~~story~~] [$_{C'}$ that the teacher told ⟨DP⟩]]]]

5.1.2 Island effects

As shown in §3.1.1.5, Chamorro IHRCs are island-sensitive. Their island-sensitivity supports the claim advanced here that Chamorro IHRCs are derived by A′-movement. In a monoclausal IHRC, this movement is possible because nothing interferes with it; in an IHRC whose IH is generated in an embedded island (e.g. a head-initial RC (28) or embedded question (29)), this movement is impossible because of the intervening island boundary. In minimalist syntax, this is handled with the Phase Impenetrability Condition (Chomsky 2008). These embedded clauses (islands) are phases, which must be shipped to spell-out upon completion, after which only an element at the phase edge can be extracted. The embedded island would only have one constituent in Spec, CP—the null operator for the head-initial RC island, and the WH-phrase *håyi* for the embedded question island—which means that the IH embedded in the island would not be at the phase edge after spell-out, and would therefore be ineligible for extraction. Since it can't be accessed by the IHRC probe C$_{RC}$, C$_{RC}$'s *u*WH feature will be unchecked, and the derivation will not converge.

5.1.3 WH-agreement

Evidence for the D-raising analysis is also provided by WH-agreement. As mentioned in §2.3, Chamorro has a specialized type of agreement that cross-references the grammatical role (structural case) of an A′-moved phrase. This agreement is possible in all RC types; relevantly, this includes IHRCs. Though

optional in RCs generally,[27] I assume that the same agreement processes take place whether or not that agreement is realized overtly. For WH-phrases with structural nominative case in realis, transitive clauses, WH-agreement is realized as the infix *-um-*. The example in (64) shows that this inflection is possible in an IHRC.

(64) **NOMINATIVE WH-AGREEMENT**
Lanchera i [g⟨**um**⟩aluti yu' na ⌈palåo'an⌉ nigap].
AGR.farmer the ⟨WH[NOM]AGR⟩club me LK woman yesterday
'The woman who clubbed me yesterday is a farmer.' (BPS: 471)

Objective WH-agreement is shown in bold in (65), which shows object IHRCs.

(65) **OBJECTIVE WH-AGREEMENT**

   a.   i   [k⟨**in**⟩enne'-**ña**   ⌈guihan⌉ i   rai]
       the   ⟨WH[OBJ]AGR⟩catch-3SG.POSS fish   the king
       'the fish that the king had caught'   (Cooreman 1983:118)

   b.   i   [k⟨**in**⟩enni'   Manuel na ⌈palåo'an⌉ para i   giput]
       the   ⟨WH[OBJ]AGR⟩take.LK Manuel LK woman   to   the party
       'the woman who Manuel took to the party'   (Chung 1991:229)

Lastly, (66) shows that oblique WH-agreement is also possible in IHRCs.

(66) **OBLIQUE WH-AGREEMENT**
I [a-sudda'-**ña**   si   Juan na ⌈amigu-ña⌉
the WH[OBL]AGR.RECP-meet-3SG.POSS UNM Juan LK friend-3SG.R.AGR
  gi   unibetsidåt], måolik.
  LOC university   good
'The friend of his that Juan met at the university is nice.'   (BPS: 531)

Along with Reintges et al. (2006), I assert that there is an implicational relationship between WH-agreement and WH-movement, such that if WH-agreement is present, WH-movement must have occurred, and WH-agreement can therefore be used as a diagnostic for WH-movement. All constructions in Chamorro

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27. Except, possibly, for RCs formed on an oblique pivot (Chung, p.c.).

which exhibit WH-agreement are those which have been identified cross-linguistically as involving A'-movement: root and embedded constituent questions, relative clauses, and focus constructions.

Chung (1994, 1998) identifies the functional head that participates in WH-agreement as residing no higher than T. For the current purposes, I will assume that T is the head implicated in WH-agreement. Any traces of WH-movement in the domain of T will share their case feature with T, and this case feature is realized as the special inflection illustrated in (64-66). Here, I attempt to put this into more specific terms in order to show that whenever there is WH-agreement, there will be WH-movement.

In addition to its usual function as a nominative case-assigner, I argue that in WH-constructions, T has an uninterpretable [WH] feature, like C. T's [uWH] feature isn't just checked, but receives a value according to the case of the WH-bearing DP that T interacts with. In order to check this feature, T must probe in its domain for a DP bearing a [WH] feature. When it finds a WH-DP whose case has been valued, the case of the WH-DP will be shared with T, and T's [uWH] feature will be valued accordingly. If [uWH] interacts with a WH-DP bearing objective case, for instance, it will be valued as [WH:OBJ].

T is also the nominative case assigner and triggers raising to Spec, TP (see Chung 1998), so I assume it must also have nominative case to discharge and an EPP feature that needs to be satisfied. If T performs its usual functions in WH-constructions in addition to those involving WH-agreement, these various functions must interact with each other. Since raising to Spec, TP occurs even in object-extracted WH-constructions,[28] nominative case-assignment and satisfac-

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28. This is not a claim I have tested, but I assume that Chung's (1998) specific findings about the configurationality of clauses in Chamorro hold in WH-constructions, too.

tion of the EPP property must occur first, followed by additional probing that values T's [uWH] feature with the case of the WH-DP. Assuming that the external arguments of transitive verbs are base-generated below T, it is possible that all of this feature checking and exchanging will occur in one fell swoop if the WH-DP is also the DP to which T assigns nominative case. If the external argument is not the WH-DP, then the external argument will be assigned nominative case and be raised to Spec, TP, but T will continue probing (omnivorously, in the sense discussed by Deal (2015) and others), since not all of its features have been satisfied. Once it finds this WH-DP—say, the object of a transitive verb—its [uWH] feature is valued. Since T's EPP feature was already satisfied by raising the DP to which T assigned nominative case, the object WH-phrase will remain in situ (for the time being).

If T interacts with a WH-phrase in its domain, resulting in WH-agreement after spell-out,[29] it is guaranteed that by the end of the derivation of that clause, WH-*movement* will have occurred. WH-phrases in Chamorro are only licensed by particular complementizers, of which there is a somewhat detailed array that take a different form depending on the properties of the phrase they attract to their specifier (see Chung 1998:221-34). When a complementizer is present that licenses a WH-phrase, that complementizer always triggers raising of the WH-phrase. In terms of lexical items and features, what this means is that Chamorro has no complementizers that license WH-phrases that do not have an EPP feature to attract those WH-phrases (for some discussion along these lines, also see Chung 1998:185).

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29. Presumably, these features get spelled out in the phonological word that includes the verb via whatever mechanism results in subject-verb agreement being spelled out on the verb. V does not raise to T in Chamorro (Chung 1998:130-131), so this is barred as a potential explanation, but one might consider appealing e.g. to morphological lowering (Embick and Noyer 2001).

5.1.4 Why is D-raising possible in Chamorro?

The previous sections provide evidence for the movement component of the analysis, but the second component—that the moved element is just the head of DP—is more challenging to justify. I have no fully satisfactory explanation, but the remainder of this section makes some suggestions. The analysis for split A′-constructions shows various kinds of D^0 being targeted by a probe independently of their maximal projection DP, and being raised without the remainder of their phrase. The proposal might be considered suspect for the following reasons. First, the proposed movement appears to be a case of long-distance head movement. As such, this movement would disobey the Head Movement Constraint (HMC) (deMena Travis 1984), which states that when any X^0 undergoes head movement, it does not skip any intervening heads. While there are clear cases of the HMC being obeyed, its validity has been called into question, and more general locality principles have been proposed as the source of HMC effects and its counterexamples (see Roberts 2010 and citations therein).[30]

If there is no concern raised by the HMC, we are still lacking an explanation as to why D^0 can raise without DP, the constituent that gets its name from D^0. Under the bare phrase structure theory of syntax (Chomsky 1995), the proposed analysis is available in principle, since phrases (maximal projections) are rendered indistinguishable from heads (terminal elements). But even if we adopt bare phrase structure, part of the problem is still present. If the IH of an IHRC has the assumed geometry (i.e. $[_{DP} [_D][_{NP}]]$), and DP is indistinguishable

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30. It is plausible, as discussed in Harizanov and Gribanova (2017), that what we have been calling head movement is actually two different species of phenomena: on the one hand, genuine syntactic movement (which does not obey the HMC), and post-syntactic word formation (which does obey the HMC). If these ideas are correct, then HMC-insensitive cases of head movement are not necessarily problematic, and most likely show us that the movement involved is genuinely syntactic.
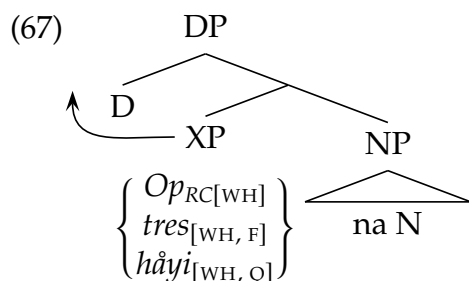
from D^0, DP would be expected to carry all the same features as D. Since DP dominates D^0, DP will always be closer to the probe C_{RC}, and locality principles should dictate that DP will always be encountered first, and therefore will always be the constituent targeted for raising.

5.1.4.1 Not all features of D are present on DP A possible explanation for the puzzle just mentioned is that DP does not actually acquire all the features of D^0; in particular, D^0 bears the [WH] feature that makes it the goal of C_{RC}, but DP doesn't bear the [WH] feature. I am unaware of why certain features wouldn't make their way up to DP, but further research might address questions along the line of how the syntactic labeling mechanism works and whether all features of the terminal node are acquired by the dominating node that receives the label of that terminal node.

5.1.4.2 What moves is not the head of DP An alternative solution is that what moves is not actually a head but a phrase (maximal projection). Insight into the geometry of the phrase out of which the various determiner-like elements move might be given here by split focus sentences, since they show the largest variety of movable elements. In sentences with split focus, almost all of the determiners that can be split from their restrictor are weak quantifiers. In Chamorro, most of the quantifiers are able to act both as determiners and as adjectives.[31] What this means for us is that it is possible that the moved elements are not actually the head of DP, but modifiers of NP. In this way, what moves would be both a maximal projection, and would conceivably be able to bear features that do not extend to the highest projection of the argument. Such

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31. For brevity, I will not discuss the dual category status of weak quantifiers here, but see Chung 1998:47-48 as well as Chung in prep., ch. 6.

an account is illustrated in (67).

(67)

$$
\begin{array}{c}
\text{DP} \\
\text{D} \qquad \text{XP} \qquad \text{NP} \\
\left\{ \begin{array}{l} Op_{RC[\text{WH}]} \\ tres_{[\text{WH, F}]} \\ h\mathring{a}yi_{[\text{WH, Q}]} \end{array} \right\} \quad \text{na N}
\end{array}
$$

This account faces additional complications, though. The one I will mention has to do with WH-agreement, which, recall, registers the case of the moved constituent on the verb. Under this account, it would be unclear why the case of the DP out of which XP moves is registered via WH-agreement when it is a sub-constituent of DP that is supposed to bear all the relevant features that trigger movement. If DPs are what receive case, then XP should not bear case, and WH-agreement should not register the case of the DP out of which XP moves. This is especially problematic since known cases of extraction out of DP (namely, possessor extraction) cannot trigger WH-agreement that corresponds to the DP out of which the possessor moved (Chung 1994).

5.1.4.3 DP moves, but NP is spelled out in the low position The final possibility I suggest might utilize variable spell-out of moved constituents (as in Bobaljik 2002), along with a version of the copy theory of movement. On this view, the IH DP is the only possible goal for C_{RC}, and what raises is actually the full DP. The surface pattern arises because D is spelled out in the higher copy of DP (null in IHRCs, but overt in the other split A′-constructions), and the nominal restrictor is spelled out in the lower copy of DP. This view eliminates the question of why D appears to raise on its own (it doesn't, technically), but other questions are introduced. In particular, what is the source of variable spell-out?

A suggestion is found in research on certain reconstruction phenomena, briefly mentioned earlier.

Various sorts of evidence suggest that the nominal restrictors of quantified DPs are interpreted in their base position, while the quantifier is interpreted in the derived position (see Fox and Nissenbaum 1999; Fox 2002, among others, and Johnson 2011 for a review of the evidence). In a language such as English, this results in a misalignment between PF and LF when the quantified DP is raised overtly. In the constituent question *[Which color]₁ does she like t₁ best?*, the nominal restrictor *color* is pronounced in the derived position with *which*, but (so the claim goes) is interpreted in the initial position of the WH-DP: *which x does she like x, a color, best?* If nominal restrictors are indeed interpreted in the initial position, a variable spell-out analysis of Chamorro IHRCs might be justified by appealing to universal constraints (or parameters) which optimize the interface between PF and LF by keeping them as transparently related as possible.

5.2 A note on the compositional semantics

In order for the RC to denote a property instead of a proposition, there needs to be a lambda abstract at the top of the logical form of the clause that binds a variable associated with the IH. The mechanisms available to generate the lambda-abstract are straightforward and well-known. We might consider employing the mechanism presented in Heim and Kratzer (1998:114), which uses a special compositional rule (Predicate Abstraction/PA) to generate a lambda operator at the forefront of the logical form of the RC CP. As formulated in their textbook, PA would look at the syntactic index of Op_{RC}, assign a variable

to that index to accompany the lambda operator, and force anything else in Op_{RC}'s c-command domain bearing the same index as Op_{RC} to be assigned the same variable.

How the stranded nominal restrictor (the IH) is composed with the contents of the RC once Op_{RC} has left the DP is an interesting and more complicated question. What does it mean that Op_{RC} has left the IH? Is it interpreted both in situ and at the clause edge, or is the trace of Op_{RC} uninterpretable, forcing the IH to be interpreted as a bare NP? If it *is* interpreted as a bare NP, how is there not a derivation-crashing type mismatch when this NP is composed as an argument of the function?

There are certain solutions that could be borrowed from research on reconstruction of nominal restrictors: in particular, Fox's (2002:67) Trace Conversion, which was developed initially to explain reconstruction effects and to subsume the interpretation of traces under the copy theory of movement. The trace conversion mechanism has two components: variable insertion (which presents a variable for the lambda operator to bind) and determiner replacement (which renders the trace into a definite description). The end result of applying Trace Conversion to the logical form of an IHRC in Chamorro would look like (68b).

(68) a. i   [Op_{RC} ha   lalåtdi ⟨Op_{RC}⟩ na [påtgun] si   Maria]
          the   3SG.R.AGR scold   LK child   UNM Maria
          'the child that Maria scolded'
     b. the λx[Maria scolded the child equal to x]

Although Trace Conversion surely has relevant uses, a simpler solution for the current purpose is to take inspiration from Op_{RC}'s being a silent relative pronoun, and from relative pronouns' parallel to ordinary pronouns, which are often viewed as representing variables semantically. I suggest that Op_{RC} is a

WH-pronoun interpreted as a simple variable. After Op_{RC} is targeted for movement, two copies of an identical variable are present in the RC: one in Spec, CP, and the other in the original position inside the RC. The stranded restrictor (the head NP) places a semantic restriction on the copy in DP (as in the restricted free variable theory of indefinites due to Heim (1982)). The high copy of the variable in Spec, CP triggers the Predicate Abstraction rule in the semantics, and the chain that exists between the two copies of Op_{RC} ensure that the low copy will be bound by the lambda operator applied to the high copy. This is illustrated in (69) for the same IHRC example as above.

(69) a. i [Op_{RC} ha   lalåtdi ⟨Op_{RC}⟩ na [påtgun] si   Maria]
          the   3SG.R.AGR scold   LK child UNM Maria
          'the child that Maria scolded'
      b. the λx[Maria scolded x:child]

6 Extensions and implications for RC typology

Chamorro's D-raising pattern gives insight into what might be called the RC-internal position for head NPs. Recent work supporting the structural ambiguity of RCs (Sauerland 2003; Hulsey and Sauerland 2006; Bhatt 2002; Sichel 2014) maintains that there are two positions in which the head NP of a relative clause can be generated: the position corresponding to the gap (the internal position), or the position in which NPs in DPs are normally generated: as the complement of D (the external position). These two initial structures can result in identical strings in languages in which head NPs initially merged in the internal position raise to Spec, CP. In determining whether a language allows head NPs to be merged in the internal position, researchers have been unable to rely on

word order, and have had to probe the matter in other ways, in particular by examining binding patterns. But because Chamorro allows Op_{RC} to raise on its own, stranding the remainder of the phrase it projects, we can observe that the internal position for head NPs can indeed host contentful material (more than just an empty category), providing support for the general possibility of head NPs being base-generated in the internal position.

If the long-distance dependency of a RC[32] can be formed either by binding or by movement (or, in some languages, both: McCloskey 2002), then languages which allow the internal position to host more than an empty category can derive an array of (surface) RC types. For languages which derive RCs by binding, the entire DP corresponding to the IH is internal, and the long-distance dependency between the IH and the Operator in Spec, CP is formed by long-distance binding. This results in a fully internally headed RC, as exemplified by Lakhota and Mojave in Grosu's typology. The movement derivation for RCs results in a more diverse array of surface patterns for RCs, all of which have a long-distance dependency formed by movement. If the entire DP corresponding to the head NP undergoes raising, the result is an apparently head-external RC, which have been argued to exist in a number of languages (see e.g. Kayne 1994; Bianchi 1999). If the language utilizes the movement derivation but allows spell-out (S-O) of lower copies, the result is a fully internally headed RC with movement, as exemplified by Navajo in Grosu's typology. If the language allows the dependency to be established via raising of a part of the head NP (as exemplified by Chamorro; also referred to as partial raising), the result is what might be called a split internally headed RC.

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32. Which seems to be a required ingredient in RC derivation—plausibly to allow abstraction over the pivot position.

(70) **TYPOLOGY OF RCS THAT USE THE INTERNAL POSITION**

Derivation by binding	Derivation by movement		
	Full raising		Partial raising
	High S-O	Low S-O	
Fully internally headed RC with binding (Lakhota, Mojave)	Apparently head-external RC with movement (English, French, ...)	Fully internally headed RC with movement (Navajo)	Split internally headed RC (Chamorro)

If numerous languages make available a fully articulated internal position for head NPs, we must wonder why some languages have RCs that do not seem to make full use of this internal position and, instead, base-generate head NPs in the external position. Is it possible that we have been misguided in our analyses and that, cross-linguistically, all RCs begin life internally headed? I have no deeply satisfying answer as to why both options might be available,[33] but it seems relatively certain that both options *are* available. This is supported by various sorts of evidence, including evidence from idioms, evidence from antecedent-contained deletion, and elsewhere (for articulation, see Sauerland 2004:14; Sichel 2014).

Chamorro provides evidence of a different sort that both the external and the internal position are available. Remarkably, both positions can host overt material simultaneously, resulting in a double-headed relative clause (DHRC). Below the TP level, these are schematically identical to an IHRC: the clause has

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33. And perhaps there is no satisfying answer, except that both structures can be generated according to the principles of universal grammar, and both structures produce logical forms that are useful formats for externalizing of mental states.

a predicate and argument(s), and the IH is preceded by *na*. DHRCs differ from IHRCs in that they deploy the same complementizer found in head-initial RCs: *ni*, shown in bold in (71). Both head NP positions are boxed.

(71) Asta på'gu ti   hu   fa'nana'an i   ⌐ga'-hu⌐   [**ni**
      up.to now NEG 1SG.R.AGR name.PROG the animal-1SG.POSS COMP

      hu   adopta na ⌐katu⌐ gi ma'pus na simåna].
      1SG.R.AGR adopt LK cat   LOC last   LK week

      'I still haven't named my pet cat that I adopted last week.'   (BPS: 623)

The pattern in (71) is also judged grammatical by another speaker:

(72) Trabiha ti   hu   nåna'i   na'ån-ña   i   ⌐ga'-hu⌐
      still   NEG 1SG.R.AGR give.PROG name-3SG.POSS the animal-1SG.POSS

      [**ni** hu   adopta na ⌐katu⌐ gi ma'pus na simåna].
      COMP 1SG.R.AGR adopt LK cat   LOC last   LK week

      'I still haven't given a name to my pet cat that I adopted last week.'
                                               (EDR: 653)

The word *ga'* 'animal' in (71) and (72) is one of Chamorro's dependent nouns,[34] which have a very generic meaning. The possibility for DHRCs seems to be highly restricted in Chamorro. Judgments become much more negative when the initial head NP picks out an insufficiently general set[35] (73), when the two head NPs match (74), or when the two head NPs need to be locally composed (as in a N-N compound) to arrive at the intended meaning (75). The (a) examples in (73-75) illustrate illicit attempts to form DHRCs, and the (b) and (c)

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34. Dependent nouns in Chamorro are nouns which cannot occur as their own phonological word and must form a word with some other morpheme or phrase: either a possessor agreement morpheme, the postnominal linker and a possessor, or the noun-incorporating possessive verbs mentioned in §3.2.2. Although these dependent nouns were previously analyzed as possessive classifiers by Topping and Dungca (1973:164), Chung in prep. analyzes them as nouns, since only nouns can be incorporated into possessive verbs in Chamorro (see ch. 7 of Chung in prep.). I assume this analysis of Chamorro's dependent nouns.

35. The set denoted by the initial head NP must be sufficiently general. It is not clear to me how exactly this line is drawn, but judgments of DHRCs are only positive when the initial head NP constitutes a large set, such as those denoted by *ga'* 'animal', and possibly Chamorro's other dependent nouns *iyu* '(a) possession' and *na'* 'food.'

examples assure that the more standard formulations are possible.

(73) a. *i [pilotu-n eruplånu] [ni k⟨um⟩onni' ham na
        the pilot-LK airplane COMP ⟨WH[NOM]AGR⟩take us LK

        [palåo'an] para san-lagu]
        woman to DIR-west

    ('the woman airplane pilot who took us to the mainland')

    (EDR: 648)

   b. i [palåo'an na pilotu-n eruplånu] [ni k⟨um⟩onni'
        the woman LK pilot-LK airplane COMP ⟨WH[NOM]AGR⟩take

        ham para san-lagu]
        us to DIR-west

    'the woman airplane pilot who took us to the mainland'

    (EDR: 597)

(74) a. *i [monggus] [ni hu na'lågu na [monggus] gi
        the mung.bean COMP 1SG.R.AGR cook LK mung.bean LOC

        paingi]
        last.night

    ('the mung beans that I cooked last night')   (BPS: 873)

   b. i [monggus] [ni hu na'lågu gi paingi]
        the mung.bean COMP 1SG.R.AGR cook LOC last.night

    'the mung beans that I cooked last night'   (BPS: 841)

   c. i [hu na'lågu na [monggus] gi paingi]
        the 1SG.R.AGR cook LK mung.bean LOC last.night

    'the mung beans that I cooked last night'   (BPS: 872)

(75) a. *i [katsunis] [ni malagu' yu' um-usa na [jeans] para
        the pants COMP want I SG.R.AGR-wear LK jeans to

        i iskuela på'gu]
        the school tomorrow

    ('the jeans that I want to wear to school tomorrow')   (BPS: 858)

   b. i [katsunis jeans] [ni malagu' yu' um-usa para i
        the pants.LK jeans COMP want I SG.R.AGR-wear to the

        iskuela på'gu]
        school tomorrow

    'the jeans that I want to wear to school tomorrow'   (BPS: 833)

c. i [malagu' yu' um-usa na [katsunis jeans] para i
   the want I SG.R.AGR-wear LK pants.LK jeans to the
   iskuela på'gu]
   school tomorrow
   'the jeans that I want to wear to school tomorrow' (BPS: 852)

Assuming that the word *ga'* 'animal' in (71) and (72) is indeed a noun, the most plausible analysis of the two head NPs in these examples is that one is base-generated externally, and the other internally. The IH is stranded by movement of Op_{RC} to Spec, CP. As argued in this paper, this is a necessary step in the derivation of a RC with a stranded internal head NP. The CP which hosts the IH is adjoined to the external head NP. A sketch of the derivation is shown in (76).

What results in the presence of the complementizer seems to be the presence of an external head NP. It is plausible, and I suggest, that all head-initial RCs in Chamorro with the complementizer *ni* are derived by base-generating the head NP externally, rather than by raising a head NP base-generated inside the RC. This idea is supported by Chung's (1987) analysis of Chamorro existential sentences as being derived by head raising; though these kinds of sentences appear to have a head-initial RC, they lack the *ni* complementizer. If *ni* only surfaces when a RC is adjoined to NP as a modifier, it is possible that *ni* is a coalescence of both the linker (which is normally present for postnominal modifiers, but is absent in postnominal RCs) and C^0 (as suggested in Chung 1998:233-234).

(76)
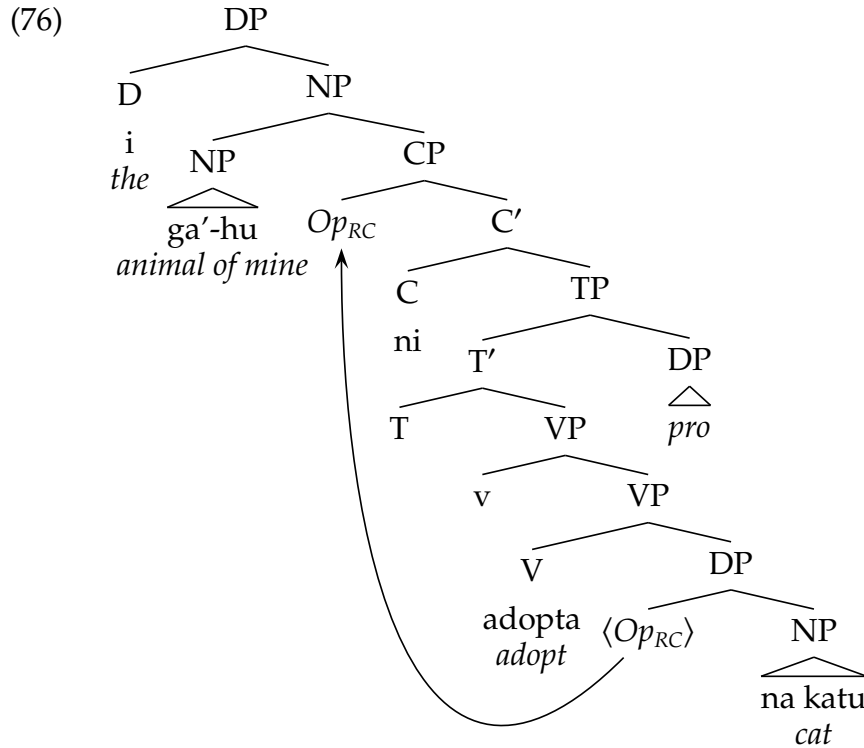
Taken together, the evidence presented in this paper strongly favors the idea behind the structural ambiguity of relative clauses: that UG makes available two positions for head NPs, both of which are capable of hosting semantically contentful material.

7 Conclusion

This paper has motivated an analysis of Chamorro IHRCs that involves base-generating the head NP inside the RC as a DP headed by Op_{RC}, similar to proposals for both raising and matching RCs. In the derivation of a Chamorro IHRC, Op_{RC} is raised independently, stranding the nominal restrictor in situ and giving the RC internally headed word order. The movement component of the analysis is required in order to generate the lambda abstract at LF, allowing

the CP to be interpreted as a predicate formed over the head NP. The analysis explains multiple properties of Chamorro IHRCs, including their island-sensitivity, determiner patterns outside the RC and local to the IH, and more.

The analysis has implications both for the typology of IHRCs and for RC typology generally. On the one hand, Chamorro requires us to add new pieces to the typology of IHRCs. On the other hand, the evidence brought to bear on the analysis supports the recent claim that RCs are sometimes structurally ambiguous between a true head-external derivation and a head-internal derivation with raising of the head NP. The idea behind that claim is that there are two distinct syntactic positions (used to greater or lesser extent depending on the language) associated with what have been called head NPs. The proposed analysis shows us that Chamorro grammar can make full use of the RC-internal position, and the data presented in §6 shows that the external position can be used simultaneously as long as certain conditions are met. Since Chamorro allows both positions to be occupied by overt material simultaneously, it verifies the claim that these two syntactic positions exist.

Why there should be two distinct positions associated with head NPs cross-linguistically is not immediately obvious, but we should consider that RCs present a creative puzzle for UG: the functional problem of nominal constituents containing RCs is to get a single nominal argument to play roles in two different clauses (the main clause and the RC). Accomplishing this is not straightforward, since UG appears to have pressures against this precisely (consider e.g. the Theta Criterion (Chomsky 1993)). The key to solving the creative puzzle, it seems, is to employ two distinct syntactic positions to generate structures with the intended meaning. Overt material normally surfaces in just one of these positions, but both positions are available, and both are crucial to the deriva-

tion.

The current proposal will be improved by future research in a number of areas. First of all, it remains unclear why Chamorro allows determiners to be raised independently of the phrase they project. I have no theory that explains this phenomenon, and future research in this area is required. Second, the implications of the DHRC patterns presented in §6 will benefit from additional systematic research on acceptable patterns of head NP pairs, and researching the constraints on dual head NPs has the potential to shed light on why most languages only allow overt material in one head NP position at a time, even though both positions are available and syntactically active.

Finally, it is worth noting that the current paper presents research on a construction (IHRCs) that was only recognized as being present in Austronesian relatively recently (as discussed in §3). It remains to be seen which languages and subfamilies this construction is limited to, and how closely related the proper analyses are for IHRCs in each of these languages. Further research into IHRCs in Austronesian has potential to shed light on Chamorro's IHRCs, as well as on RC and IHRC typology.

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