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VARIABLES IN PALAUAN SYNTAX*

1. INTRODUCTION

The analysis of unbounded dependencies in terms of Wh-movement lies at the heart of generative grammar. The components of this analysis are central concepts of the theory: the trace theory of movement rules, the Subjacency Condition, the ECP and recoverability, and the ordering of abstract levels of representation. One of the strengths of this analysis is that it has been found to apply consistently over a wide range of languages. However, it is this generality which poses a challenge to linguists analyzing unbounded dependencies in unfamiliar languages: one needs to maintain a characterization that appears to have universal validity, while giving the special properties of the language one is describing their due weight in the analysis.

In this paper I will describe the grammar of unbounded dependencies in an Austronesian language, Palauan, whose syntax at first appears to have quite unusual properties. First, although Palauan can be analyzed as having no syntactic Wh-movement, it has the full range of unbounded dependencies at S-structure. Second, though these dependencies involve the use both of gaps and resumptive pronouns, the distribution of gap and pronoun is unrelated either to island constraints or to the type of clause in which the binding takes place. Finally, though all the structures in question are base generated, they contain evidence that the variable, gap or pronoun, is bound to its antecedent at S-structure. This paper will attempt to show that most of these phenomena can be accommodated within Government-Binding Theory (GB), while still allowing the special nature of Palauan grammar to emerge. Those phenomena that remain unaccounted for will be seen to be suggestive of parametric variation, and I will propose a way in which the theory might be adjusted to account for the Palauan facts.

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In the section below, I discuss the evidence that Palauan is a pro-drop language. The connection of *pro* to the analysis of Palauan unbounded dependencies will later be seen to derive from the fact that the 'gap' in such structures is actually this null pronominal. The following sections are organized so as to present the various aspects of Palauan unbounded dependencies one by one. In section 3, I describe the occurrence of resumptive pronouns and show that they act like syntactic variables. Section 4 deals with the lack of island effects in Palauan. Sections 3 and 4 taken together demonstrate that base-generation is the best analysis of the data. In view of this analysis, the facts presented in section 5 – showing that Palauan unbounded dependencies contain S-structure variables – acquire considerable theoretical interest. This section therefore contains some discussion of the contrast between the current GB theory of $\bar{A}$ binding and the facts of Palauan grammar. In section 6 I discuss the locality condition on Palauan unbounded dependencies, a condition which does not arise from subjacency. The final section contains a more general discussion, and I suggest here a parametrized theory of variable binding.

2. PALAUAN AS A *PRO*-DROP LANGUAGE

Palauan[1] is a member of the Western Austronesian language family (Bender, 1971). There are about 17,000 speakers, about 80% of whom live in the islands of Palau in the Western Caroline Islands. Like many Austronesian languages, Palauan is verb-initial; basic word order is VOS.[2] It is also a pro-drop language, in the sense that it allows the subject position of tensed clauses (Chomsky, 1982) to be empty, and in the strong sense of McCloskey and Hale's (1984) suggested 'Null Argument Parameter': any position governed by person and number agreement must not contain an overt pronoun. This null argument, or empty pronoun, is hypothesized in GB to be *pro*, a base-generated pronominal. I will argue later that the gap in Palauan unbounded dependencies is *pro* rather than Wh-trace, so it is necessary first to establish the existence of *pro* and to describe its distribution.

In Palauan, not only subjects, but direct objects and possessors are null

[1] I have referred to the language as 'Belauan' in some earlier papers. I apologize for the confusion; 'Palauan' it shall be henceforth.

[2] Here I differ from Josephs (1975), who assumes that Palauan's basic order is SVO. Waters (1979) and Georgopoulos (1984c) address this question in detail.

when person and number inflection is present. The examples in (1a and b) show the incompatibility of person/number marking on the verb and overt expression of a subject pronoun:[3]

(1)a. **ng**-remurt (*ngii)
3s run he
He is running.

b. **ak**-umes er kau (*ngak)
1s IM-see P you I
I'm looking at you.

Perfective verbs in Palauan also register person and number agreement with their direct objects, disallowing an overt object pronoun as well:[4]

(1)c. ke-ʔillebed-**ii** (*ngii)
2s PF-hit 3s him
You hit him.

Other NP objects may be overt:

(1)d. ak-uldenges- **terir** a resensei er ngak
1s PF-honor 3p teachers P me
I respected my teachers.

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[3] I follow the standardized orthography developed by the Palau Orthography Committee and described in their final report (1972). The only exception is the glottal stop (ʔ), which is written **ch** in the standard orthography; **ng** represents the velar nasal in all cases; **e** may represent /e/, schwa, or a reduced vowel (see Josephs (1975) for more detail). It should be noted that this orthography is not in common use in Palau.

Palauan verb morphology is very complex (see Wilson, 1972; Flora, 1974); it is not possible to distinguish segmentally all the morphemes included in the glosses (see also notes 8 and 11). Where possible, paradigms of relevant forms are included in the text. The morpheme **a** is a constituent marker, and will not be glossed (its function remains to be described precisely; see DeWolf (1977) for one analysis). Tense is not glossed, as tense distinctions do not enter into the present analysis. Abbreviations are

CL	cleft	*OBL*	oblique	*PTC*	particle
DEM	demonstrative	*p(l)*	plural	*R*	realis
IM	imperfective	*P*	preposition	*s*	singular
IR	irrealis	*PF*	perfective		
L	linker				
N	negative				

[4] Perfective verb-objective agreement is zero when the object is nonhuman and lacks a certain semantic feature (defined by the language) that cross-cuts definiteness and specificity and depends on the presuppositions of the sentence. The object may be null in this case even when agreement is zero.

Throughout the rest of the paper it will be useful to refer to the paradigms in (2), which display the subject agreement prefixes and direct object agreement suffixes (see also note 6).

(2)a. *Subject Agreement*

	Singular	Plural	
		Excl	Incl
1	ak-	aki-	kede-
2	ke-	kom-	
3	ng-	te-	

b. *Direct Object Agreement*

	Singular	Plural	
		Excl	Incl
1	-ak	-emam	-id
2	-au	-emiu	
3	-ii	-terir	

Palauan also allows 'possessor agreement' (see Chung, 1982b), and the presence of such inflection within NP excludes the overt expression of pronominal possessors. Other possessors cooccur with the agreement form. As we can see in the examples in (3), the head is initial, and carries person and number features matching those of the possessor; a pronominal possessor is null:

(3)a. [a ngok-**el** (*er ngii)] a ʔelam
flute 3*s* *of him* *broken*
His flute is broken in two.

b. [a ʔerm-**ek** (*er ngak)] a soal melim
pet 1*s* *of me* *want drink*
My dog wants to drink.

c. ng-meringel [a ʔim **-al** a Droteo]
3*s* *hurt* *hand* 3*s*
Droteo's hand hurts.

Example (4) illustrates 'long movement' of the subject, i.e., a Wh-question formed on the subject of an embedded clause headed by a complementizer. In the discussion in Chomsky (1981) and Pesetsky

(1982), for example, such examples are taken to be one of the diagnostic properties of pro-drop languages.[5]

(4) ng- te?a$_i$ [le- dilu a sensei [el kmo ng- milsa
CL who IR-3 PF-say teacher COMP R-3s PF-see
[el mesk -ak a buk ——$_i$]]]
COMP R-PF-give 1s book

Who did the teacher say that he saw give me the book?

The null argument in the examples in (1), (3), and (4) has the distribution of *pro*, the empty pronoun that occurs in governed positions. The 'pro-drop parameter' is accounted for in GB in terms of the theory of government, of which the Empty Category Principle (ECP) is a part. The ECP constrains the distribution of phonologically empty arguments; *pro* is one of the empty categories to which the ECP applies. The relevant concepts are defined as follows (from Chomsky, 1981, 1982).

Government: A category *X* governs a category *Y* if

a. *X* c-commands *Y*
b. no maximal projection intervenes between *X* and *Y*
c. *X* is lexical (= X^0).

The ECP: [$_{NP}$ e] must be properly governed.

Proper Government: *X* properly governs *Y* if

a. *X* c-commands *Y*
b. no maximal projection intervenes between *X* and *Y*
c. *X* is lexical or *X* is coindexed with *Y*.

In a pro-drop language, an INFLection node that contains the AGReement element qualifies as a lexical proper governor, allowing subject position to be empty (see Chomsky, 1981). Although most of the current literature on pro-drop focusses on empty subjects, the criteria for distinguishing pro-drop languages do not exclude the possibility of empty categories in other positions.

In Palauan, as we have seen, *pro* appears in any position that is governed by some lexical category inflected for person and number features matching those of the null pronoun. These positions, as shown above, are subject, direct object of a perfective verb, and possessor. Without entering into a discussion of theories of inflection, I will assume

[5] If the *COMP-*t* effect depends on string adjacency and not on hierarchical structure, of course, this diagnostic would not be relevant in a VOS language.

that the INFL node that is daughter of S contains AGR features that make INFL capable of properly governing both subject and direct object position, and that the AGR feature in NP properly governs possessor position. I will continue to refer informally, however, to 'agreement' in the surface morphology of N or V.[6]

Not all NP positions in Palauan are properly governed by agreement, however. Where agreement is not present, pronominal arguments are overt.[7] One position where agreement is absent is that of object of an imperfective verb. Imperfective verbs, in contrast to the perfective verbs described above,[8] agree (in person and number) with their subjects only, and their objects are marked with Palauan's only preposition, **er**:

(5)a. ng-ulemeng? **er** a ?o?-il a bilis
3*s IM-bite P foot* 3*s dog*
The dog was biting its own foot.

b. ak-uleldanges **er** a resensei er ngak
1*s IM-honor P teachers P me*
I respected my teachers.

Note that (5b) and (1d) constitute a minimal pair, differing only in the aspect of the verb. In the perfective (1d), the verb carries the third plural object morpheme **-terir**, while in the imperfective (5b), the object is marked with **er** and the verb carries no object agreement.[9]

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[6] It is clear that this morphology is due to inflection and not to cliticization of syntactically independent pronouns. The paradigms of surface verb forms and of possessed nouns have the morphophonological irregularities and gaps one would expect of inflectional systems. Agreement affixes, further, are very selective of their hosts (object affixes, for example, select only the subclass of 'regular' perfective transitive verbs). The Palauan agreement forms are judged inflectional by the tests proposed by Zwicky and Pullum (1983) for distinguishing affixes from clitics (but see Clark, 1983).

[7] Exceptions are rare. One is the case of nonhuman, indefinite/nonspecific pronoun objects of imperfective verbs, discussed below. These are null, and do not appear to be governed by agreement. Another is the case of the exceptional verb **omsa** 'give', whose perfective forms agree with the *goal* argument rather than the *theme*. The theme can, however, be 'extracted'.

[8] In addition to the morphological differences described in the text, the imperfective verb is distinguished from the perfective in containing the imperfective morpheme (**-l-**, **-m-**, or **-ng-**) infixed between the "verb marker" (see note 11) and the root. The initial consonant of the root assimilates completely to the imperfective morpheme and does not appear on the surface.

[9] Imperfective objects fail to be marked with **er** under the same conditions that induce zero agreement in perfective clauses (see note 4). Note that **er** also marks oblique positions, where it is always present, regardless of the semantic features of its complement. Josephs (1975) analyzes these two cases of **er** as distinct morphemes.

Within NP, agreement may also be absent. There is a class of nouns in Palauan, of which many are borrowings, that do not register possessor agreement. Instead, their possessors are marked with **er**. An example of this is seen in the NP **a resensei er ngak**, 'my teachers' in (5b); another is seen in (6):

(6) ak-ʔiliu -ii [a buk er a ʔekabil]
1s PF-read 3s book P girl
I read the girl's book.

As the examples above show, the preposition **er** carries no inflection; it therefore is not a proper governor in Palauan terms. In Palauan, then, as in many languages (see Kayne, 1981), prepositional objects are not properly governed by P. Palauan grammar further requires that such objects be overt. (7a) illustrates this for a pronoun object in an imperfective clause, and (7b) for a possessor:

(7)a. ak-umes er ngii/*ak-umes er *pro*/*ak-umes *pro*
1s IM-see P him
I'm looking at him.

b. [a sensei er ngii]/*[a sensei er *pro*]
teacher P her
her teacher

This distinction between **er** and governors carrying agreement shows that Palauan supports the correlation drawn in GB between rich inflection and pro-drop possibilities (suggested in Chomsky, 1981): languages allowing null pronouns tend to be those with rich agreement systems (although this is only partially true, as Chomsky points out). The assumption is that the ECP in these languages is satisfied only by agreement forms that allow the content of a null pronoun to be locally determined.

To sum up, the distribution of null and overt pronouns correlates with the distribution of agreement; in general, overt pronouns and agreement inflection are in complementary distribution. The interest of the existence of the null pronoun *pro* in Palauan will become clear as the paper progresses; we will see ultimately that base-generated pronouns, empty or overt, are the only categories that become variables in Palauan unbounded dependencies.

3. Resumptive pronouns

The structures described as unbounded dependencies,[10] including topicalizations, relativizations, and Wh-questions, are very productive in Palauan. They share several important properties, a fact that justifies treating them as a class, although they do not display the clustering of properties usually postulated of unbounded dependencies created by Wh-movement (see, e.g., Chomsky (1977, 1981), and the discussion below.) One characteristic feature of these structures in Palauan is that resumptive pronouns occur regularly in all of them, suggesting a strong possibility of base generation for the entire class. While I will use the terms 'extraction' and 'extraction site' in the following discussion, I do so purely for convenience, applying them even to clauses with resumptive pronouns. I do not intend at any point to imply a movement analysis.

The resumptive pronouns in the examples below are morphologically the same as the object pronouns seen in the examples in section 2. The complete set is in (8):

(8) *Independent pronouns*

	Singular		Plural	
		Excl		Incl
1	ngak	kemam		kid
2	kau		kemiu	
3	ngii		tir	

In the examples in this section, as in all unbounded dependencies, the mood morphology of the verb (glossed *R* (realis) or *IR* (irrealis)) reflects a distinction between subjects and nonsubjects. The importance of this morphology to the overall analysis will be made clear in section 5; at this point, it should be noted simply that the *semantic* mood of these examples is not in question. The forms of subject agreement that are found on realis verbs were given in (2a); irrealis agreement forms are given in (9); grammatical number is not distinguished for second and third person:

(9) *Subject agreement* (*irrealis*)

	Singular		Plural	
			Excl	Incl
1	k(u)-		kimo-	do-
2		(ʔo)m(o)-		
3		l(e)-		

[10] I will use this term to refer to the class of structures that are analyzed in GB in terms of Wh-movement, i.e., instances of $\bar{A}$ binding.

A realis verb normally carries no subject agreement when a subject is extracted. In contrast, an irrealis verb always has subject agreement.[11]

3.1. *Wh-questions*

In a Wh-question, a question phrase may be either *in situ* or in a non-argument position to the left of the clause. Since I will be discussing Wh-*in situ* in detail in section 5, I will describe here only the second type of question, in which the Wh-phrase is in an $\bar{A}$ position. In Palauan, a left-dislocated Wh-phrase is in cleft position, and is prefixed with the cleft marker **ng**-.[12] In the example (10a), the Wh-phrase is a subject, and in (10b) it is a nonsubject (when the Wh-phrase c-commanding the verb is a subject, the verb lacks the subject agreement prefix):

(10)a. ng- te?a$_i$ [a kileld -ii a sub ——$_i$]
CL who R-PF-heat 3s soup
Who heated up the soup?

b. ng- ngera$_i$ [a le- silseb -ii ——$_i$ a se?el- il]
CL what IR-3 PF-burn 3s friend 3s
What did his friend burn?

The subject gap in (10a) is properly governed by its antecedent, and the object gap in the VP in (10b) is properly governed by object agreement. When an extraction site follows a preposition, in contrast, it always contains an overt pronoun. This is illustrated in (11): in (11a), the object of an imperfective verb is questioned:

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[11] The indicator of realis mood is therefore not the realis subject agreement form, but rather a separate realis morpheme (referred to in Josephs (1975) as the "verb marker"), which is an infix (**-o-**) in perfective verbs and a prefix (**me-**) on imperfectives. It often undergoes assimilation processes which make it difficult to isolate segmentally; it will simply be glossed *R*. When a realis agreement marker is present, the gloss is added to that marker. An irrealis verb lacks this morpheme.

[12] Compare the Wh-questions in (10) to the cleft sentences below.

i. ng- kemiu [a m?u er a kodall]
CL you(p) R-go P death
It's you who are dying.

ii. ng- ngalek [a omes er a bilis]
CL child R-IM-see P dog
It's the child who is looking at the dog.

(11)a. ng- ngera$_i$ [a 1- urruul er ngii$_i$ a rubak]
CL what IR-3IM-do P it old-man
What did the old man do?

and in (11b), the questioned phrase is an oblique:

(11)b. ng- ker$_i$ [a le- bilsk -au a buk er ngii$_i$ a Ruth]
CL where IR-3 PF-gave 2s book P it
Where did Ruth give you the book?

It is also possible to question a possessor NP constituent. Recall that there are two types of possessive NP in Palauan (section 2): the type in which the head is inflected to agree with the possessor (examples in (3)), and the type in which the possessor is object of **er** (example (6)). The results of questioning the possessor in each type is seen in (11c) and (11d):

(11)c. ng- te?a$_i$ [a ?omulsa [a del -al ——$_i$]]
CL who IR-2-PF-saw mother 3s
Whose mother did you see?
(*Lit.* Who did you see's mother?)

d. ng- te?a$_i$ [a longuiu [a buk er ngii$_i$]
CL who IR-3-IM-read book P her
tirkei el ngalek]
DEM-pl L child
Whose book are those kids reading?
(*Lit.* Who are those kids reading her book?)

Compare extraction from such NPs in English (described in Chomsky, 1981), which is ungrammatical without pied-piping of the entire NP:

(11)e. [whose mother]$_i$ [did John see ——$_i$]?
f. *whose$_i$ [did John see [——$_i$ mother]]?

Since possessor position in English is not properly governed, the extraction attempted in (11f) is impossible. Comparison with the Palauan (11c) shows a striking contrast in the extraction possibilities in the two languages, produced by the distribution of agreement. The resumptive pronoun in (11d) avoids an ECP violation, but is otherwise unremarkable in Palauan (see below).

3.2. *Relative Clauses*

A relative clause follows the head NP and is introduced by the complementizer **el**; there is no relative pronoun. The binding relation between the head and its coindexed argument in the relative clause has the same effects as the binding relation in a Wh-question, described above. In particular, a relativized position that is properly governed is empty:

(12)a. ak- medengel -ii *a* ʔad$_i$ [el milʔer -ar *tia*
R-1s PF-know 3s man COMP R-PF-buy 3s DEM
el buk ——$_i$]
L *book*
I know the person who bought that book.

b. a buik$_i$ [el k- ʔillebed-ii [a ʔobok -ul ——$_i$]]
boy COMP IR-1s PF-hit 3s older-brother 3s
a seʔel -ik
friend 1s
The boy whose brother I hit is my friend.

The subject gap in (12a) is properly governed by the coindexed antecedent, and the possessor gap in (12b) by agreement. Positions following **er** contain an overt pronoun:

(12)c. ak- ulmes er a buk$_i$ [el l- uleme?ar er ngii$_i$
R-1s IM-see P book COMP IR-3 IM-buy P it
a Helen]
I saw the book that Helen bought.

d. tilʔa el blai$_i$ [el *l-* ulnga er a ngikel
DEM L house COMP IR-3 IM-eat P fish
er ngii$_i$ a buik]
P it boy
That's the house that the boy was eating the fish in.

Where agreement is present, a pronoun may not appear:

(12)e. ak- mla- mesa sei el buk$_i$ [el
R-1s PST PF-see DEM L book COMP
1- lil?es -ii ——$_i$ (*er ngii$_i$) a Carol]
IR-3 PF-write 3s P it
I saw that book that Carol wrote.

3.3. *Topicalization*

The Palauan topicalization strategy is especially productive, and accounts for observed SVO, OVS, and other surface word orders. The topicalized phrase is found in a non-argument position to the left of the clause. At this point it may come as no surprise to find that the topic may be linked to either a gap or a resumptive pronoun, depending on the structural features of the extraction site. This may be observed in the examples in (13). The first, (13a), contains a subject in topic position, which, as antecedent, properly governs the subject position:

(13)a. a sensei$_i$ [a omes er a rengalek ——$_i$]
teacher R-IM-see P children
The teacher is looking at the children.

The extraction site in (13b) is the possessor position, governed by a head carrying possessor agreement;[13] an overt pronoun may not appear here:

(13)b. a Naomi$_i$ [a le- ?ilit -ii [a ?ole?es-el ——$_i$]
IR-3 PF-throw 3s pencil 3s
(*ngii$_i$)] a John]
her
John threw away Naomi's pencil.

The topic in (13c) is the object of an imperfective verb,[14] and the topic of (13d) is a possessor. Both extraction sites are structurally objects of a

[13] Though extraction from a complex NP is possible, as illustrated in (13b), the head of such an NP cannot be extracted. It appears that proper government of the complex NP does not percolate to the head, so that extraction of the head would leave a gap that is not properly governed. This finding is contrary to some theories of government (see, e.g., Lasnik and Saito, 1984), and raises interesting questions which will not, however, be pursued here.

[14] From the point of view of Josephs (1975), (13c) would be analyzed as a passive, whose subject is the preposed NP. Waters (1979) has shown that Josephs' passive analysis cannot be sustained. In addition, Palauan has intransitive constructions that are more naturally analyzed as passive (what Josephs calls "ergative" constructions).

preposition, therefore neither is governed by agreement, and a resumptive pronoun appears in both cases:

(13)c. a rengalek$_i$ [a l- omes er tir$_i$ a sensei]
children IR-3 IM-see P them teacher
The teacher is looking at the children.

d. a ʔekabil$_i$ [a k- ʔiliu -ii [a buk er ngii$_i$]]
girl IR-1s PF-read 3s book P her
I read the girl's book.

Pronouns, as well as full NPs, may be topics, as seen in (13e); note that this example has exactly the properties of other topicalizations.[15]

(13)e. kid$_i$ [a l- ullasem [el l-omekdakt er kid$_i$]]
us IR-3 try COMP IR-3 IM-scare P us
They're trying to scare *us*!

3.4. *Discussion of Section* 3

The facts in (10) through (13) demonstrate that a gap appears wherever an extraction site is properly governed; a pronoun may not appear in such a position, although a pronoun *must* appear in a position governed by a preposition. Otherwise gaps and resumptive pronouns have precisely the same syntactic behavior: they occur with equal regularity, and they occur in the same structures. In the following sections we will see that their parallel behavior extends to other phenomena of Palauan grammar, such as extraction from islands (section 4) and the triggering of the special agreement rule for unbounded dependencies (section 5).

This complementarity of gap and resumptive pronoun is similar to the complementarity of null and overt pronouns described in section 2 above, where we saw that the presence or absence of agreement was crucial. Agreement is now seen to play an analogous role in extraction: the features of the antecedent must be recoverable at the extraction site. Recoverability is satisfied by a local antecedent, by the person and number markers in agreement (thereby satisfying the ECP), or indirectly by a resumptive pronoun, which also bears the person and number features of the antecedent. It appears, then, that the recoverability

[15] Example (13e) also demonstrates that the NPs following **er** are indeed independent pronouns, and not another form of agreement. Full pronouns may appear outside of prepositional phrases; for example, they may be conjoined in subject phrases.

requirement extends beyond null pronouns, the focus of discussion of the pro-drop parameter (e.g., Chomsky, 1982), to Wh-traces. In a language like Palauan, gaps in unbounded dependencies must be locally 'identified' just as *pro* must. Extraction in Irish appears to be under similar constraints (see McCloskey and Hale, 1984). That Wh-gaps are subject to recoverability in some languages is contrary to assumptions generally held in GB (see Chomsky, 1981; Huang, 1983).[16] To go further into the matter here, however, would unfortunately take us too far afield.

The data in (10) through (13) also suggest a base-generation rather than a transformational analysis of Palauan unbounded dependencies, if we adopt the EST assumption that transformations do not insert lexical material (see, e.g., Chomsky, 1977). The base-generation analysis is maximally simple and general, since it avoids postulating two distinct accounts (base generation for the resumptive pronouns and movement for the gaps) for data that make no syntactic distinction between gaps and resumptive pronouns. Base generation allows for the fact that resumptive pronouns and gaps in this language are equally productive in all types of unbounded dependency, their distribution being determined only by the properties of their governors. In the next section I will discuss island constraints, which in many languages condition the appearance of resumptive pronouns.

4. Islands

The island constraints (see Ross, 1967) have been an integral part of the EST analysis of unbounded dependencies. In that analysis, unbounded dependencies arise via Wh-movement, which obeys the Subjacency Condition (Chomsky, 1977, 1981, 1982). Subjacency is a universal locality principle that, in effect, prohibits movement across more than one NP or clause node. Island phenomena result from subjacency, as island violations occur when more than one bounding node must be crossed in any one movement. In this section we will consider the evidence of island phenomena in Palauan, and we will see that this evidence strongly supports our tentative conclusion of the last section, that base generation is the analysis of choice.

Consider the topicalization sentences in (14). Examples (14a, b) have a topic linked to a position within a sentential subject; in (14a) the subject is extracted, and in (14b) the object is extracted:

[16] For comments on the fact that 'identification' does not uniquely distinguish pronouns from variables, see Chung (1984).

(14)a. a Mary$_i$ [a kltukl [el kmo ng- oltoir
R-clear COMP R-3s IM-love
er a John ——$_i$]]
P
Mary, (it's) clear that —— loves John.

b. a John$_i$ [a kltukl [el l- oltoir er ngii$_i$ a Mary]]
R-clear COMP IR-3 IM-love P him
John, (it's) clear that Mary loves (him).

In (14c, d), topics are linked to object position within a relative clause:

c. a buk$_i$ [a ku- dengel -ii [a redil [el
book IR-1s PF-know 3s woman COMP
ulduruk -ii ——$_i$ [el mo er a del -ak]]]]
R-PF-send 3s COMP go P mother 3s
The book, I know the woman who sent —— to my mother.

d. a buk$_i$ [a ku- dengel -ii a ʔad [el uleme?ar
book IR-1s PF-know 3s man COMP R-IM-buy
er ngii$_i$]]
P it
The book, I know the man who bought (it).

Examples (14e, f) show that extraction is possible from embedded questions. In (14e), the topic **delak** 'my mother' is extracted from a clause headed by the Wh-phrase **ngera** 'what', and in (14f), the topic **stoang** 'store' is extracted from a clause headed by **lsekum**, 'if':

(14)e. a del -ak$_i$ [a diak ku- dengei [el kmo ng- ngera$_j$
mother 1s NEG IR-1s IM-know COMP CL what
[a bo lo- ruul ——$_j$——$_i$ el mo belsoil]]
IR-FUT IR do L go dinner
My mother, I don't know what —— will cook for dinner.

f. a stoang$_i$ [a l- uleker er a tonari a buik
store IR-3 IM-ask P neighbor boy
[a lsekum e ng- mo er ngii$_i$]]
if PTC R-3s go P it
The store, the boy asked the neighbor if she's going to (it).

Finally, (14g) illustrates extraction from an adverbial clause:

(14)g. [til?a el buk]$_i$ [a u?ei er ?om- ?iu -ii ——$_i$
DEM L book before P IR-2 PF-read 3s
[e besk -ak]]
PTC IR-2-give 1s
This book, before you read ——, give (it) to me.

Each of the sentences in (14) is a violation of one of the well known island constraints, although each is grammatical in Palauan: (14a, b) violate the Sentential Subject Constraint, (14c, d) the Complex NP Constraint, and (14e, f) the Wh-island Condition, while (14g) shows that in Palauan, in contrast to many languages, adjuncts are not islands.

It should be remarked in connection with the examples of (14) that not only does Palauan grammar allow island violations, but it allows them using *either* a gap *or* a resumptive pronoun. Thus (14a, c, e, and g) contain gaps, while (14b, d, and f) contain resumptive pronouns, objects of **er**. Clearly, resumptive pronouns are not 'marginal' in Palauan as they are in English and many other languages. We will just note this unusual fact here, and develop its theoretical relevance in section 5.

There are a number of ways of dealing with the lack of subjacency effects in Palauan. One possible approach would involve 'parametrizing' the bounding nodes for subjacency. In the recent literature, island violations in various languages have been accounted for in this way. Rizzi (1982), for example, showing that Italian disallows extraction from relative clauses but permits extraction from embedded questions, proposes that S is not a bounding node for Italian. Similarly, in recent lectures, Chomsky has argued that a node dominating an adjunct (such as an adverbial clause) is an absolute barrier to extraction, while a node subcategorized by some phrasal head may allow movement across it. Such an approach tends to weaken the explanatory power of subjacency. Even if we were to attempt an analysis of Palauan along these lines, we would not get far, as the data in (14) show that the correct generalization for Palauan is not found in making certain bounding nodes exceptional. Rather, we observe that Palauan ignores all the movement-related island constraints, and it is *this* fact that must be accounted for.

The facts about island violations support the tentative conclusion we reached at the end of the section on resumptive pronouns, that all Palauan unbounded dependencies should be analyzed in terms of base generation. There, the analysis was motivated by the parallel occurrence of gaps and resumptive pronouns in all types of extraction. In this

section, it is motivated by the lack of locality effects due to subjacency. As the Subjacency Condition constrains only movement rules, base-generated structures would not be expected to exhibit its effects.[17] And since island configurations freely admit unbounded dependencies with either gap or resumptive pronoun, not even the structures containing *gaps* can be analyzed in terms of movement. We conclude, therefore, that all the unbounded dependencies we have observed contain a base-generated pronominal, null or overt, at the extraction site.

5. Evidence for S-structure variables

Up to this point we have observed that Palauan grammar generates a full range of S-structures corresponding to those generated in other languages by Wh-movement, but which in Palauan must be analyzed in terms of the rules of the base. These structures contain pronominals linked to $\bar{A}$ antecedents, and we must now describe the evidence concerning the variable-binding relation.

In GB theory, $\bar{A}$-bound pronominals are coindexed to their antecedents by a rule of predication in Logical Form (LF). Palauan grammar, in contrast, provides us with evidence that these pronominals are bound variables at S-structure. Before turning to that evidence, however, it will be useful to review the GB analysis of $\bar{A}$ binding, an analysis which makes a number of distinctions relevant to the Palauan case.

In the movement analysis of unbounded dependencies, Move α generates a relation between an antecedent in a non-argument position (usually COMP) and its trace, a gap. Move α also coindexes antecedent and trace. As this coindexing relation is interpreted in LF as operator-variable binding, we can refer to the antecedent as an operator and the trace as a variable. However, it is assumed in GB that the requirements of the binding theory must be met at S-structure (Chomsky, 1981); a coindexed Wh-trace may therefore be referred to as a variable at S-structure.

Resumptive pronouns in English are not coindexed by Move α, and are not interpreted as variables at S-structure. Rather, they are coindexed with an antecedent by a rule of predication in LF (Chomsky, 1982). In a relative clause, for example, this rule matches the index of the head with that of the resumptive pronoun, making the pronoun a variable

[17] The Palauan case, in fact, demonstrates that subjacency must be a condition on *movement rules* rather than a condition on *structures*. See the discussion in, for example, Chomsky (1981).

controlled by the head, and the clause a predication 'about' the head.

Such an account of the 'resumptive pronoun strategy' distinguishes resumptive pronouns and gaps in three ways: they are coindexed by different types of rule (a movement rule for gaps, and an interpretive rule for resumptive pronouns); they become bound variables at different levels (S-structure for gaps, LF for resumptive pronouns); and resumptive pronouns occur only in structures of predication (e.g., relative clauses, but not questions).

The separate treatment of resumptive pronouns and gaps is the theoretical correlate of their different behavior with respect to the syntax. In English (as in many languages), the use of resumptive pronouns is marginal: sentences in which they appear are on the fringe of grammaticality, and they arise in positions where a gap would cause an island violation, or in some deeply embedded position where a gap would be 'too far' from its antecedent. In other words, use of resumptive pronouns is viewed as a device to circumvent some syntactic or parsing constraint. Some examples are found in (15):

(15)a. We're going to dinner tonight with people who I never can remember where **they** live.
b. Which of your neighbors would you like to have enough courage to ask **them** to leave?
c. This guitar, I've sung folk songs and accompanied myself on **it** all my life. (from Ross, 1967)

Since resumptive pronouns cannot be interpreted as variables bound to any antecedent at S-structure, the level at which bounding theory applies, they do not violate island constraints.

A number of cases have been described in the recent literature of languages which use resumptive pronouns in a different way from English.[18] In these languages it can be argued that the resumptive pronouns are syntactically bound, i.e., that they are variables at the level of S-structure, which is the output of the syntax. For example, Zaenen *et al.* (1981) conclude that both resumptive pronouns and gaps in Swedish are bound in the syntax on the basis of two types of evidence: both may be coindexed with a reflexive properly contained in a fronted Wh-phrase, and resumptive pronoun and gap may cooccur in coordination. McCloskey (1979) demonstrates that, in Irish, the binding relation between an

[18] Not all languages with a productive resumptive pronoun option use the pronouns for the same purposes, however. See Engdahl and Ejerhed (1982) for the facts of Scandinavian languages; McCloskey (1979) for Irish; Borer (1979) for Hebrew.

antecedent and a gap, as well as that between an antecedent and a resumptive pronoun, must be defined at S-structure in order to account for the morphology of complementizers. The Palauan evidence that pronouns are bound variables at S-structure is based on the facts of verb agreement within unbounded dependencies, the subject of the following sections.

5.1. *The Agreement Rule*

Arguments that distinguish S-structure from the levels of the LF component rest on the fact that, in the model of grammar developed in GB, S-structure representations feed into both the LF and PF (Phonetic Form) components, but LF and PF are independent of each other. Properties of sentences that can be attributed to representations at S-structure result from syntactic operations, and may have both semantic and morphological or phonological effects. $\bar{A}$ binding in Palauan has morphological as well as semantic consequences, and so must take effect at S-structure.

The special verb morphology in extraction domains was mentioned briefly in section 3 above. Interestingly enough, Palauan grammar marks the difference between subject extraction and nonsubject extraction, not by an asymmetry in ease of extraction, but by a distinction in *mood*. Subjects and objects (and other NPs) are equally extractable, but a clause with a subject variable takes realis morphology, while a clause with a nonsubject variable takes irrealis morphology. This mood morphology reflects a purely formal syntactic distinction based on grammatical function, and is independent of the factors governing semantic mood.[19] A comparison of pairs such as (13a) and (13c), and (16a, b) (both pairs given below) confirms that the crucial distinction rests on grammatical function alone. A subject is topic in (13a), a nonsubject in (13b); in the former, the verb is realis (R), and in the latter, irrealis (IR):

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[19] Outside of extraction, the conditions governing mood in Palauan are not unusual. Declarative statements and yes/no questions are realis; negations, conditionals, commands, and some adverbial clauses are irrealis:

i. ak- ulriid a klas er ngak
R-1s lost glasses P me
I lost my glasses.

ii. ng- dimlak ku- riid a klas er ngak
NEG PAST IR-1s lost glasses P me
I didn't lose my glasses.

A clause that is semantically irrealis will also have irrealis morphology even if its subject is extracted.

(13)a. a sensei$_i$ [a omes er a rengalek ——$_i$]
teacher ***R****-IM-see P children*

The teacher is looking at the children.

c. a rengalek$_i$ [a l- omes er tir$_i$ a sensei]
children ***IR****-3 IM-see P them teacher*

The teacher is looking at the children.

The pair in (16) illustrates the same contrasts in grammatical function and mood:

(16)a. a Naomi$_i$ [a rirell -ii a kliou ——$_i$ el mo er ngak]
R*-PF-make 3s dessert L go P me*

Naomi made a dessert for me.

b. a kliou$_i$ [a l- lirell -ii ——$_i$ a Naomi el mo er ngak]
dessert ***IR****-3 PF-make 3s L go P me*

Naomi made a dessert for me.

The subject/nonsubject distinction made by Palauan grammar can be described in terms of abstract Case: subjects are assigned Nominative Case and other grammatical functions receive some non-Nominative Case.[20] Since verb morphology in unbounded dependencies depends on this distinction, we may hypothesize an **agreement rule** referring to Case, stated informally in (17):

(17) **The agreement rule** (preliminary version):

In the structural domain between an $\bar{A}$ binder and its variable, the verb agrees with the Case of the variable.

Note that this rule is stated on unbounded dependencies (the 'domain'),[21] and is therefore independent of other agreement rules (the ones responsible for subject and object agreement, for example). Adopting the informal terminology applied to agreement phenomena, let us refer to the variable mentioned in (17) as the CONTROLLER since it is the features of the variable that (in part) determine the form of the verb. The morphological effects of the agreement rule may then be stated as in (18)

[20] Note that reference is made to *abstract* Case and not to morphological case. Palauan does not have a case-marking system in the latter sense.

[21] The domain in which the rule takes effect is what Zaenen (1983) refers to as the "binding domain". See also Chung and Georgopoulos (1984).

(always bearing in mind that (18) applies to *syntactic* phenomena and realis events; see note 19):

(18) *Morphological effects of the agreement rule*:

The verb is realis when the controller is Nominative, and irrealis otherwise.

Together (17) and (18) give us the verb morphology we have observed: a verb that registers agreement with a variable bearing Nominative Case takes realis form, while a verb registering agreement with a variable bearing non-Nominative Case takes irrealis form.[22]

The minimal pairs (13a, c) and (16a, b) have illustrated the working of the agreement rule in topicalization. To see its effect in Wh-questions, look again at (10a, b) and (11b), repeated below: In (10a), the subject, **te?a**, 'who', is questioned; its abstract Case is Nominative, so the verb form registers realis mood:

(10)a. ng- te?a$_i$ [a kileld -ii (*le-kileld-ii) a sub ——$_i$]
CL who R-PF-heat 3s IR soup

Who heated up the soup?

In (10b), a direct object, **ngera**, 'what', is questioned; because the object variable bears a Case other than Nominative, the verb registers irrealis mood:

(10)b. ng- ngera$_i$ [a le- silseb -ii (*silseb-ii) ——$_i$ a se?el -il]
CL what IR-3 PF-burn 3s (R) friend 3s

What did his friend burn?

Similarly in (11b), the variable of **ker**, 'where', (a resumptive pronoun in this case) is in an oblique position, its Case is non-Nominative, and the verb is irrealis:

(11)b. ng- ker$_i$ [a le- bilsk -au (*milsk-au) a buk
CL where IR-3 gave 2s (R) book
er ngii$_i$ a Ruth]
P it

Where did Ruth give you the book?

The agreement rule applies in relative clauses with exactly the same

[22] It may be worth recalling at this point that a realis verb usually lacks subject agreement; the realis morpheme is distinct from the realis subject agreement forms.

effects. In (12a, b), for example, which are repeated here, a relativized subject is accompanied by a realis verb:

(12)a. ak- medengel -ii a ?ad$_i$ [el mil?er -ar (*l-ul?erar)
R-1s PF-know 3s man COMP R-PF-buy 3s IR
tia el buk ——$_i$]
DEM L book
I know the person who bought that book.

while a relativized possessor, a position not assigned Nominative case, is accompanied by an irrealis verb:

(12)b. a buik$_i$ [el k- ?illebed -ii (*ak-?illebed-ii)
boy COMP IR-1s PF-hit 3s R
[a ?obok -ul ——$_i$]] a se?el -ik
older-brother 3s friend 1s
The boy whose brother I hit is my friend.

When we come to examine long-distance dependencies, those in which the antecedent and its variable are separated by more than one clause, we find that the formulation of the rule in (17) is not quite adequate. While it is always true that a verb agrees with the Case of a variable that is within the same S, not every verb within the dependency does so. Rather, verbs in higher clauses register agreement with the Case of *the sentential complement containing the variable*, and do not agree with the variable itself. To see this, look at the pattern of mood morphology in the examples in (19).

(19)a. a Mary$_i$ [a kltukl [el kmo ng- oltoir
R-clear COMP R-3s IM-love
er a John ——$_i$]]
P
Mary, (it's) clear that —— loves John.

b. a John$_i$ [a ?emolt [el l- oltoir
R-obvious COMP IR-3 IM-love
er ngii$_i$ a Mary]]
P him
John, (it's) obvious that Mary loves (him).

In (19a), the embedded verb **ngoltoir** '(she) loves', is realis because its Nominative subject, **Mary**, is the topic of the sentence; the matrix verbal,

kltukl 'clear', is also realis, registering the Case of the sentential subject containing the variable. In (19b), another case of extraction from a clausal subject, the variable is that of **John**, a nonsubject, so that the lower verb **loltoir** '(she) loves', is irrealis; the matrix verbal **?emolt** 'obvious', is realis, however, as it is a Nominative (subject) complement that contains the variable.

In the long-distance Wh-questions in (20), we see a slightly different pattern of agreement. In both, the higher verb takes a clausal *object*. The most embedded clause in (20a) contains an object variable (**ngii**) and has irrealis morphology, as predicted. The higher verbs in this example are also irrealis, however: the form **lulengiil** 'they were waiting', registers the non-subject function of its complement **el bo kuruul er ngii** 'that I do (it)', which contains the variable; the form **?omulemdasu** 'you think', likewise agrees with *its* non-subject complement, which also (ultimately) contains the variable:

(20)a. ng- ngera$_i$ [a ?om- ulemdasu [el 1- ulengiil er ngak
CL what IR-2 PF-think COMP IR-3 wait P me
[el bo k- uruul er ngii$_i$]]]
COMP IR-FUT IR-1s IM-do P it
What do you think that they were waiting for me to do?

In (20b), on the other hand, the variable is Nominative, yielding realis morphology on **milnguiu** 'read', in the embedded clause; this clause is an object complement of **lilsa** '(she) saw', however, accounting for the fact that **lilsa** is irrealis:

(20)b. ng- te?a$_i$ [a 1- ilsa a Miriam [el milnguiu a buk
CL who IR-3 PF-see COMP R-IM-read book
er ngii ——$_i$]]
P her
Who did Miriam see reading her book?

Finally, observe the facts of agreement within the 'long' relative clauses in (21).

(21)a. a bung$_i$ [el 1- ulemdasu a del -ak [el
flowers COMP IR-3 think mother 1s COMP
1- omekeroul ——$_i$ a Remy er a sers -el]]
IR-3 grow P garden 3s
the flowers that my mother thought that Remy was growing in her garden

The most embedded irrealis verb in (21a), **lomekeroul** '(she) grows', reflects the Case of the (non-Nominative) object variable, while the higher irrealis verb **lulemdasu** '(she) thought', reflects the case of its object complement, which contains the variable.

(21)b. a test$_i$ [el mengesireng [el ble le- pas
test COMP R-surprising COMP IR-PST IR-3 pass
er ngii$_i$ a Tmerukl]]
P it
the test that it's surprising that Tmerukl passed

In (21b), the variable is again a nonsubject, inducing irrealis morphology in the lower clause, but this clause itself is a subject complement of **mengesireng** 'surprising', inducing realis morphology in the matrix.

Complicated as it may seem when described in prose, the phenomenon of agreement in unbounded dependencies in Palauan is reasonably simple. The controller of agreement is always local: it is either the $\bar{S}$ argument that *contains* the variable, or the NP argument that *is* the variable. Our original agreement rule should therefore be restated to take the $\bar{S}$ controller into account, which we do in (22):

(22) **The agreement rule** (final version):

In the structural domain between an $\bar{A}$ binder and its variable, the verb agrees with
a. the Case of the clausal argument containing the variable, or
b. the Case of the variable.

The morphological effects as described in (18) remain the same, *modulo* the addition of $\bar{S}$ as a controller.

There are several interesting descriptive generalizations about Palauan grammar that derive from the agreement rule. First, the addition of statement *a* ensures that *every clause* between an antecedent and its bound variable is affected: there is therefore a clause-by-clause chain of agreement forms that reflects the domain of the dependency. Second, the rule requires that both $\bar{S}$ and NP receive Case.[23] The assumption that Case is assigned to $\bar{S}$ as well as NP is based on the fact that both $\bar{S}$ and NP must be local controllers of agreement within the extraction domain.

[23] The examples below contain $\bar{S}$-complement-taking verbs registering transitive morphology (the object agreement morpheme is in boldface). The fact that these verbs are

(The Case-assigning property is also suggested by the transitive morphology of verbs taking $\bar{S}$ complements; see note 22.) This assumption is somewhat controversial within GB, but seems necessary in the Palauan case.

Perhaps the most important property of the agreement rule in (22) is that in referring to "variable" it does not distinguish a gap from an overt pronoun. It is evident from the discussion in section 3 that, in fact, extraction in Palauan does not make this distinction. That resumptive pronouns in long extraction affect mood morphology exactly as gaps do is clearly illustrated in (19) through (21). For example, while the gap strategy is used in the topicalization in (19a), the pronoun strategy is used in (19b), but, crucially, both strategies trigger the agreement rule. The same is true of the Wh-questions in (20) and the relativizations in (21). We may hypothesize, on the basis of the facts presented so far, that the mechanism responsible for variable binding will apply simultaneously to gaps and pronouns. Some tests of this hypothesis are outlined in the following sections.

5.2. *Surface Position of the Wh-phrase*

In Palauan Wh-questions, the surface syntactic position of a Wh-phrase need not reflect its semantic scope: a Wh-phrase with scope over the entire question may appear *in situ* or in a nonmatrix COMP at S-structure:

(23)a. t- oumerang [el ked- omdasu [e ng- mo
R-3p believe COMP R-1p think PTC R-3s go
er a siabal a te?ang]]
P Japan who

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transitive suggests that they assign Case to their object complements, whether NP or $\bar{S}$.

i. ng-sebe?-em [el o?ot **-ii** er ngak [el kmo ak-mekera e mo
ability 2s COMP R-show 3s P me COMP I-do-what? PTC R-go
er a beluu]]
P town
Can you show me how to get to town?

ii. ke- medengel **-ii** [el kmo ng- te?a a mlo er a stoang]
R-2s know 3s COMP CL who R-PST-go P store
(Do) you know who went to the store (?)

b. t- oumerang [el ked- omdasu [ng- te?a$_i$ a mo
R-3p believe COMP R-1p think CL who R-go
er a siabal ——$_i$]]
P Japan

c. ng- te?a$_i$ [a l- oumerang [el do- mdasu [e
CL who IR-3 believe COMP IR-1p think PTC
ng- mo er a siabal ——$_i$]]]
R go P Japan
Who do they believe that we think will go to Japan?

All three are legitimate ways of posing a direct Wh-question formed on the embedded constituent te?a, 'who'; in English only the equivalent of (23c) – in which the Wh-phrase has wide scope at surface structure – would be grammatical.

It is important to observe that the sequence of verb forms registering the effects of the agreement rule in these questions extends only as far as the S-structure position of the Wh-phrase. When the Wh-phrase, **te?a** 'who', is *in situ*, as in (23a), all the verbs are in the realis mood. This subject Wh-phrase may also appear at the head of the embedded clause, as in (23b); in this case the lowest verb, **mo** 'go', is still realis, since the variable is Nominative. In both (23a) and (23b), however, the two higher verbs are unaffected by the agreement rule. In contrast, in (23c), where the Wh-phrase is in the highest COMP, *every* verb in the sentence is affected by the rule: **domdasu** 'we think', is irrealis because the clause holding the variable is a sentential object (ignoring the Case of the variable itself), and **loumerang** 'they believe', is irrealis for the same reason; **ngmo** '(who) goes', however, is realis, as predicted.

The questions in (24) are parallel to those in (23). Once again, this time with respect to the surface position of the Wh-phrase, we find that overt pronouns participate in the same agreement phenomena that gaps do. Example (24) displays four versions of the constituent question corresponding to *What did Moses say that he was waiting for me to do*?. The questioned phrase **ngerang** 'what', is, consecutively, *in situ* (24a), in the lowest COMP (24b), in the intermediate COMP (24c), and in the highest COMP (24d). In these examples, the extraction site contains an overt pronoun variable:

(24)a. a Moses ng- dilu [el kmo ng- milngiil er ngak [el
R-3s said COMP R-3s IM-wait P me COMP
mo meruul er a ngerang]]
R-FUT R-do P what

b. a Moses ng-dilu [el kmo ng-milngiil er ngak [el ng- ngera$_i$ a
CL what
bo ku- ruul er ngii$_i$]]
IR-FUT IR-1s do P it

c. a Moses ng-dilu [el kmo ng- ngera$_i$ a l- ulengiil er ngak
CL what IR-3 IM-wait P me
[el bo k- uruul er ngii$_i$]]
COMP IR-FUT IR-1s do P it

d. ng- ngera$_i$ a le- dilu a Moses [el kmo ng- milngiil
CL what IR-3 said COMP R-3s IM-wait
er ngak [el bo k- uruul er ngii$_i$]]
P me COMP IR-FUT IR-1s do P it

What did Moses say that he was waiting for me to do?

Neither the variable itself nor any of the clauses containing it are Nominative arguments, so that in every clause where the agreement rule applies, the verb should be irrealis. Again, the effects of the rule are observed *only* up to the S-structure position of the Wh-phrase.[24] (In (24d), the middle clause unexpectedly has realis morphology. This is because the complementizer **el kmo** requires that an immediately adjacent verb be realis. Note, however, that both the matrix verb *and* the most embedded verb in (24d) are irrealis.)

Although the Wh-phrase in all of the examples in (23) and (24) has semantic wide scope, and therefore is assumed to take structural wide scope in LF (see May, 1977), Palauan grammar obviously does not require that this scope be expressed at S-structure. It is the *S-structure* position of the Wh-phrase, however, that the agreement rule refers to. This rule, furthermore, only applies when a variable is present, and is not

[24] These effects also extend only down to the extraction site: verbs below the clause holding the variable are not affected, a fact not illustrated here.

triggered by other pronouns. This claim, which has been implicit in the discussion up to this point, can be substantiated in a sentence like (25), in which there are several occurrences of *pro* but no Ā variables; the agreement rule does not apply here:

(25) ak- ʔillebed -qu e le u?ul ke- kill -ii a kel- ek
R-1*s* *PF-hit* 2*s* *because reason* *R*-2*s* *ate* 3*s* *food* 1*s*
I hit you because you ate my food.

Since the rule applies at S-structure, it follows that variable binding is at S-structure. And since the rule applies indifferently to both null and overt pronouns, both are S-structure variables.

Recall that both the gaps and the overt pronouns in Palauan unbounded dependencies have been shown to be base-generated pronominals (section 4). It is only pronominals, then, either *pro* or a pronoun, that become variables in this language. There are no traces of Wh-movement at S-structure, where binding takes place, and LF movements do not affect the agreement rule,[25] which translates the binding relation into phenomena observable at the S-structure level.

Further evidence that gaps and pronouns are syntactically bound variables in Palauan comes from cases of multiple variable binding, which I will illustrate with the coordination facts.[26]

5.3. *Coordination*

In view of our conclusion that the null and overt pronouns in Palauan extraction are syntactically equivalent, having the same derivation and bound at S-structure, it should be possible to conjoin a clause with a gap variable and a clause with a pronoun variable. The existence of such coordinate structures would support the claim that both types of variable are bound in the syntax, since the recognized conditions on coordination would otherwise rule these structures out. In fact, we do find the predicted cooccurrence in coordinate structures. We also find that

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[25] The description of LF effects in Palauan is outside the scope of this paper.

[26] Other multiple-variable-binding structures in Palauan resemble the parasitic gap structures described in Engdahl (1983) (see also Kayne, 1983). In Palauan, perhaps not surprisingly, all four possible combinations of gap and pronoun may be found in these constructions. Such combinations would only arise if coindexing of all variables were at S-structure (see the arguments in Engdahl (1984)). Since none of the examples I have involve island violations, however, it is not clear that any of the variables in question can be identified as parasitic in the way that Engdahl identified parasitic gaps in English. For a fuller treatment of these structures in Palauan, see Georgopoulos (1984a).

Palauan obeys the syntactic conditions constraining coordination universally.

Palauan observes the Coordinate Structure Constraint (CSC) (Ross, 1967), which prohibits extraction from just one constituent of a conjoined structure:

(26) *a del -ak [a uleker er ngak [el kmo ng-ngera$_i$
mother 1*s* *R-PST-IM-ask P me COMP CL what*
[a sensei a milsk -ak a buk] me [a se?el -ik
teacher R-PST-PF-give 1*s* *book and friend* 1*s*
a ulter -ur ——$_i$ er ngak]]]]
R-PST-PF-sell 3*s* *P me*
*My mother asked me what the teacher gave me a book and my friend sold —— me.

However, Palauan allows Across-the-Board extraction (Ross, 1967; Williams, 1978), the general exception to the CSC that allows extraction from both conjuncts.[27]

(27) [a del -ak a uleker [el kmo ng- ngera$_i$
mother 1*s* *R-ask COMP CL what*
[a l- ulter -ur ——$_i$ a Latii el me er ngak]
IR-3s PF-sell 3*s* *L come P me*
me [a Tmerukl a ulter -ur ——$_i$ el mo er a Toiu]]]
and *R-PF-sell* 3*s* *L go P*
My mother asked what Latii sold ——$_i$ to me and Tmerukl sold —— to Toiu.

The example in (27) appears to be the familiar sort of across-the-board extraction structure, in which two gaps are bound by a single antecedent. However, we know that in Palauan these gaps are not Wh-traces but rather (null) resumptive pronouns. Since their overt counterparts must appear as prepositional objects, structures like that in (28) are also

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[27] It is also possible to extract from a conjoined NP when a resumptive pronoun replaces the extractee. I consider this case to be similar to that described in note 13: the position of the pronoun in (i) is not properly governed, so does not support a gap.

i. [a Naomi$_i$ [a kau- se?elei [$_{NP}$ ngii$_i$ me a Chris]]]
RECIP friend *she and*
Naomi and Chris are friends.

The possibility of this type of structure was pointed out by one of the *NLLT* reviewers.

grammatical. In (28), across-the-board extraction has taken place from clauses of different aspect (recall that the object of a perfective verb is linked to person and number agreement on the verb, but the object of an imperfective verb is governed by a preposition):[28]

(28) [ng- ngera$_i$ [mirruul er ngii$_i$ a Sie] e [a ʔoʔod -al
CL what R-IM-make P it and sister 3s
a meʔer -ar ——$_i$]]
R-PF-buy 3s
What did Sie make and her sister buy?

These examples can be assumed not to violate the Coordinate Structure Constraint only if extraction has taken place in both conjuncts (see Williams, 1978). If just the gap in (28) were bound at S-structure, and the resumptive pronoun were a free NP at that level, the sentence would be ruled out by the CSC. Since the CSC, like other constraints on extraction, is assumed to apply to syntactic representations, the coordination facts in Palauan support the claim that both gap and pronoun are syntactic variables. The cooccurrence of both types of variable in a single structure rules out the solution in Chomsky (1982), summarized at the beginning of section 5, which requires one binding mechanism for gaps at S-structure, and another for pronoun in LF. In Palauan, a base-generated pronoun *may* be bound at S-structure.

Palauan's observance of the Coordinate Structure Constraint is in contrast to its violation of other island constraints. This contrast reflects the fact that the CSC is a constraint different *in kind* from those that are analyzed in terms of Bounding Theory (i.e., in terms of subjacency). Island violations that result from the crossing of more than one bounding node have been observed in many languages (see, for example, the various articles on extraction in Scandinavian languages in Engdahl and Ejerhed (1982)). It seems to be the case, however, that all languages

[28] The sort of gap/pronoun extraction illustrated in (28) does not depend on this difference in aspect; either the overt pronoun or the gap may be an oblique NP. Nor is there any constraint on the order (gap/pronoun or pronoun/gap) of the variables. For the sake of brevity I do not illustrate all the possible surface types of conjoined structure.

It is not clear to me how Safir's (1984) Parallelism Constraint on Operator Binding (PCOB) applies to such sentences as (28) (or to the nonparallel 'parasitic gaps' described in Georgopoulos (1984a)). Safir does not recognize the possibility of *pro* becoming a variable, but his PCOB requires that all variables bound by the same antecedent be [α lexical]. Although [lexical] is not defined, it seems to be a property of base-inserted NPs. If this is correct, both types of Palauan variable would be [+lexical] according to Safir, even though one is null and one is overt.

observe the CSC, which imposes some kind of *matching* requirement on the conjuncts (see Williams, 1978; Goodall, 1984).[29]

6. The locality effect

In the standard analysis of unbounded dependencies, the relation between antecedent and trace obeys a locality constraint, formulated in the Subjacency Condition. Palauan unbounded dependencies do not observe this constraint. They do, however, rigorously obey the rule at (22), which has an effect in every clause between antecedent and extraction site. This is clearly a locality effect, although of a different type from the locality effects usually associated with unbounded dependencies. The facts of Palauan grammar suggest that the existence of locality constraints on unbounded dependencies is independent of the Wh-movement transformation: although not produced by movement, Palauan unbounded dependencies are strictly constrained by the locality requirement embodied in the agreement rule.

The local (clause-by-clause) effect of the agreement rule provides the same type of evidence that has been appealed to in order to establish the presence of locality conditions in other languages. Kayne and Pollock (1978), for example, argue that stylistic inversion in French supports an analysis in terms of bounded and iterative Wh-movement because extraction from embedded clauses may produce inversion in every clause between the antecedent and the gap. McCloskey (1979) describes a pattern of complementizer alternation in Irish that affects every clause between antecedent and gap. Reinhart (1981) notes that in Hebrew a relative pronoun may appear in any COMP between antecedent and gap, and concludes that this is proof of "overt iterative movement to COMP". Finally, Chung (1982a) describes a chain of agreement in Chamorro extraction very like that in Palauan, which she calls "Wh-agreement", and which supports her argument that Wh-movement is bounded and successive cyclic in Chamorro. (Similar discussions abound in the literature; see also, for example, Taraldsen (1978) and Torrego (1984).)

The Palauan agreement facts, therefore, would provide a strong

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[29] Goodall (1984) argues that coordination is the union of simple clauses, in which each conjunct must be independently well formed. In (26) in the text, for example, the conjunct *...what my friend sold me* is well formed, but the conjunct *...what the teacher gave me a book* is not. At LF, the latter would be an instance of vacuous quantification (and a θ-Criterion violation; see Goodall for details). Note that this solution does not involve Bounding Theory, and allows the CSC facts to fall out from more general principles.

argument for bounded movement, if a movement analysis were tenable to begin with. But they still argue that long-distance dependencies are locally constrained in this language, just as the arguments for successive cyclicity mentioned in the paragraph above support locality, whether or not the phenomena described are produced by movement. I will assume, then, that the agreement rule establishes the existence of a locality constraint on Palauan unbounded dependencies (see also Georgopoulos, 1984b).

6.1. *Summary*

To sum up sections 5 and 6, we have demonstrated that both gaps and overt pronouns in Palauan unbounded dependencies are S-structure variables, on the basis of their interaction with the agreement rule. Both pronouns and gaps occur in all types of extraction, and cooccur as variables bound by the same antecedent in coordinate structures. This distribution is not predicted by the GB analysis of resumptive pronouns, which assumes that the pronouns are bound separately, by a predication rule at LF. Since Palauan extraction is base-generated, however, there is nothing to prevent null and overt pronouns from being freely generated together in any sort of structure, and the agreement facts are evidence that the pronouns are coindexed with their antecedents in the syntax. Despite the lack of movement, this coindexing obeys a locality constraint that takes effect in each clause.

7. Discussion and conclusions

We have arrived at an analysis in which unbounded dependencies in Palauan are attributed the properties in (29).

(29)a. The dependency is generated by the rules of the base.
b. The variable may be either a gap or an overt pronoun.
c. The dependency obeys some locality condition distinct from subjacency.
e. A gap is properly governed by its antecedent or by agreement.

In contrast, the GB analysis attributes to unbounded dependencies created by movement a different set of properties, those in (30) (Chomsky, 1982); this analysis accounts for the facts of a language like English.

(30)a. The dependency is generated by Move α.
b. Movement leaves a gap coindexed with the antecedent.
c. The dependency obeys subjacency.
d. The gap is properly governed.

The characterization in (29) and that in (30) have more in common than it might seem, however. First, they each represent one of the alternative analyses, base generation and movement, that are available within GB theory. We had recourse to the base generation account of the Palauan facts without making any new stipulations; the lack of subjacency effects which we have observed are entailed by the base-generation analysis. Second, the gap in both cases satisfies the ECP, a principle which appears to have general validity beyond the class of unbounded dependencies. More generally, both (29) and (30) are descriptions of $\bar{A}$ binding, thus they are classed together by what Chomsky (1982) terms the "essential distinction" in syntactic dependencies, that between A and $\bar{A}$ binding.

The differences between (29) and (30) are obvious. One is that unbounded dependencies appear to be subject to different locality conditions in the two characterizations: Palauan to the condition, formalized in the agreement rule, which affects the mood of the clause, and English to the Subjacency Condition. I have little to say about this here, except to suggest that both constraints may reflect a more general locality condition in universal grammar, whose reflexes in particular grammars may vary along some as yet undescribed parameter (see also Georgopoulos, 1984b).

7.1. *A Parameter of Pronoun Binding*?

The essential difference between (29) and (30) is that (30) excludes resumptive pronouns from relevance to the syntax, while (29) treats them on a par with gaps. It is this difference that appears to be crucial in distinguishing a language like English, in which resumptive pronouns are not productive, from languages like Swedish, Hebrew, Irish, and Palauan, in which resumptive pronouns have the same syntactic relation to an antecedent as gaps do.

This typological distinction depends upon the level at which resumptive pronouns and gaps are indistinguishable to rules that are sensitive to binding relations. In English, it is evident that resumptive pronouns do not have the status of bound variables at S-structure: they do not license parasitic gaps, they do not cooccur with gaps in coordination, and so on. In Palauan, it is equally evident that resumptive pronouns do have bound

variable status at S-structure, as they participate in all the syntactic phenomena that gaps do.

The most important evidence for the binding of variables provided by Palauan grammar is the agreement phenomenon described in section 5. There we saw that the agreement rule that operates in all clauses between an antecedent and a variable has two crucial properties: it holds at S-structure, and it is equally sensitive to gaps and overt pronouns. In Palauan, then, resumptive pronouns must be bound variables at S-structure. The properties of resumptive pronouns that we have observed in Palauan follow from this conclusion.

In effect, Palauan has given us a new view of S-structure: it is not only a level derived from D-structure via movement and containing Wh-traces, but may also be a level differing from D-structure only to the extent that it contains variables that were D-structure pronominals.

It may be that all languages in which resumptive pronouns are productive have a rule (not necessarily a movement rule) that ensures coindexing between an $\bar{A}$ antecedent and a pronominal, null or overt, and that holds at S-structure. We obviously need such a rule for Palauan, which has no movement but which has the full range of $\bar{A}$ binding constructions at S-structure. Any language in which resumptive pronouns have the properties of syntactic variables must have such a rule, or its equivalent.[30]

We may regard this rule as part of a parameter of pronoun binding; languages vary in having, or not having, the rule. In testing to see if a given language allows pronouns to be bound in the syntax, we need only determine the phenomena that depend on S-structure binding relations. If these phenomena treat both gaps and resumptive pronouns as variables, then $\bar{A}$ coindexing is possible in the grammar of that language at S-structure. Note that we must test syntactic representations, not those generated by the rules of LF, for presence of the rule. After operation of the LF predication rule described above, which is responsible for coindexing a resumptive pronoun with its antecedent in a language like English, both gap and resumptive pronoun are bound variables. The typological distinction among languages described in this paper therefore does not hold at the level of LF.

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[30] In contrast, Chao and Sells (1983) propose that in "resumptive pronoun languages", pronouns can be true variables, while in languages like English they are not true variables at *any* level.

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