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CANONICAL GOVERNMENT AND THE SPECIFIER PARAMETER: AN ECP ACCOUNT OF WEAK CROSSOVER*

Current analyses of WEAK CROSSOVER (WCO) focus on properties of the antecedent-variable binding relation (bijection) or of the variables themselves (homogeneity), or on the structural relation between the trace and pronoun involved (c-command). All of these theories fail in a significant case, that in which both bound positions are canonically governed. Here, there is frequently no WCO effect. This paper pursues a government-theoretic account, analyzing the presence or absence of the WCO effect in terms of an ECP which incorporates canonical government. The grammar in focus is that of Palauan, whose basic order is VOS. A principled distinction among SVO, VOS, and other grammars is provided by a *specifier parameter*, which sets the specifier position in relation to that of other constituents of the phrase and determines how specifiers are governed. The distribution of WCO effects follows from the interaction of the specifier parameter and canonical government.

0. INTRODUCTORY REMARKS

In this paper I will explore the idea that the D-structure position of the specifier of a phrase is determined by parametric choice, in a manner parallel to the way the position of complements is set. In the literature, much has been made to follow from the VO/OV setting for complements – not only generalized head-complement order, but also Case marking, the possibility of Wh-movement, and certain verb movements as well. However, it is well known that specifiers are often not governed in the same way, or in the same direction, that complements are. The superficial differences among the three kinds of VO languages, for example – SVO, VSO and VOS – are dramatic, and cannot be accounted for in terms of V/O order. Further refinement of the theory is needed to account for the position of the subject.

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I propose that UG includes what I will call the SPECIFIER PARAMETER, whose settings determine the position of the specifier with respect to other constituents of the phrase. In particular, I will propose that the specifier is positioned with reference only to its X' sister, regardless of the order within X'.

As is usual in a principles-and-parameters theory, certain facts follow in a predictable way from the setting of this parameter. For example, its settings generate both SVO and VOS grammars. Focussing on a VOS language (Palauan), I will show how important surface differences between Palauan and English can be traced to those settings. In particular, the constraints on extraction of subjects in the two languages, insofar as they can be accounted for by the specifier parameter, will provide new support for the notion of directionality of government.

The subject/object asymmetries in extraction in SVO languages, so well attested in the literature, arise in large part from the discrepancy in the direction of government of subject and object. Since a VOS language is uniformly head-initial, however, both complement and specifier are governed in the same direction. It will be shown that in such a language the possibilities for extraction, especially of and from within subjects, are greatly increased. In the terms of (Kayne 1983), all argument positions in a VOS language are properly (canonically) governed.

The relevance of directionality to the theory of government has been developed by Kayne and others (Horvath, 1981; Jaeggli, 1985; Stowell, 1985). Kayne (1983) incorporates into the statement of the EMPTY CATEGORY PRINCIPLE (ECP) (Chomsky, 1981) the notion of CANONICAL GOVERNMENT CONFIGURATION (CGC) – the direction of government between a verb and its complement(s). In VO languages, CGC is from left to right, in OV languages from right to left. In a given language, Kayne's ECP (the "Connectedness Condition") is satisfied, in essence, when every maximal projection on the path between the governor of a variable and its antecedent preserves the CGC of that language. In combining CGC with conditions on the path between variable and antecedent, this version of the ECP incorporates both head and antecedent government. Violations are structures that fail to observe connectedness as defined by the CGC.[1] In English, for example, a direct object trace satisfies connectedness: it is in CGC, and every maximal projection on the path between it and its antecedent is on a right branch. Constraints like Ross' Left Branch Condition and the Sentential Subject Constraint, on the other hand, reflect

[1] See the formal definitions in Kayne (1983).

the failure of subjects to be canonically governed: English is a VO language, thus right-governing, but the subject is to the left.

Implicit in the literature on extraction, from Ross to Kayne, is the idea that subjects and objects have different structural properties. In Kayne (1983), the notion of canonical or directional government accounts for these differences in government-theoretic terms. In English, subjects are governed contra-canonically, giving rise to left branch and sentential subject violations. In contrast, in a VOS clause, conditions for such violations are absent and thus they do not arise.

Although directionality analyses have been offered for a variety of phenomena, such analyses have sometimes lacked strong empirical support, and the recent literature has contained retreats from this type of explanation (see, e.g., Rizzi, 1990). This paper supports directionality in a particular case, in showing a contrast in the extractability of subjects that depends on the direction, or rather the CGC, in which they are governed. The conclusions of this paper recommend caution in appealing to the notion of directionality.

The second point to be established here is that, given the specifier parameter acting in concert with canonical government, a simple and natural analysis of weak crossover becomes possible. I will argue that weak crossover is not an independent phenomenon, and that structures that have been claimed to exhibit the weak crossover effect actually fall into more than one class. The core cases of weak crossover result from failure of proper government. The cases to be explained in these terms involve pronouns in specifier position or inside the specifier. Analyzing the pronouns as variables, I will argue that they are thereby subject to the Connectedness Condition, even though they are overt. Thus, in languages in which the subject branch satisfies the ECP, there is no weak crossover effect.

In sum, the paper first motivates the specifier parameter as necessary in accounting for some very basic differences among specific grammars, and then applies this parameter, motivated independently of weak crossover, to that particularly thorny problem in pronoun anaphora. The ability of the parametric approach to resolve the weak crossover problem, not standardly considered a government-theoretic phenomenon, is strong evidence in favor of that approach.

1. Extraction Evidence

We turn now to extraction in a particular VOS grammar, and to the empirical evidence it offers for a subject parameter.

1.1. *Extraction Phenomena in a VOS Grammar*

Consider the facts of Palauan, a Western Austronesian language spoken in Micronesia. Palauan is rigidly VOS (the morpheme *a* marks all NP constituents):[2]

(1)a. [$_{IP}$ I [$_{VP}$ t- oltoir a katu] [$_{NP}$ a beap]]
3*P chase cat mouse*

The mice are chasing the cat.
(*The cats are chasing the mice.)

b. [$_{IP}$ I [$_{VP}$ t- omes a 'arm] [$_{NP}$ a re'ad [$_{PP}$ er a siabal]]]
3*P look animals people of Japan*

The Japanese are looking at the animals.
(*The animals are looking at the Japanese.)

c. [$_{IP}$ I [$_{VP}$ ng- 'ilitii [$_{NP}$ a 'ole'esel a Naomi]] a John]
3*S throw pencil-her*
John threw out Naomi's pencil.

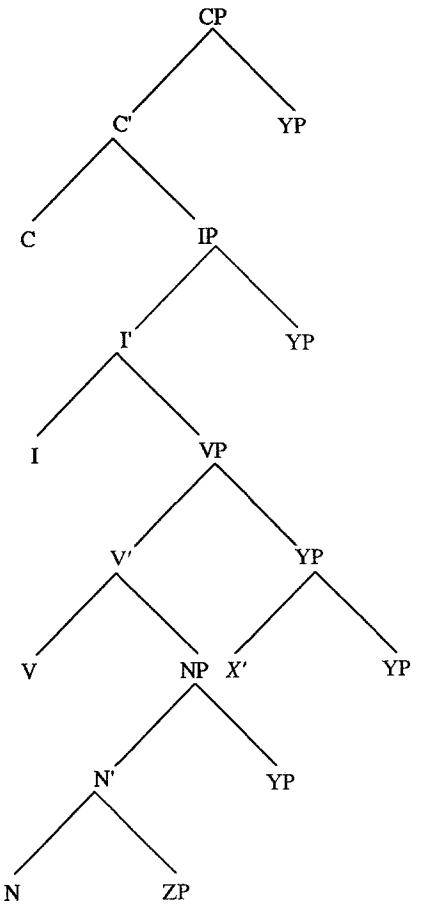
These examples show that all Palauan categories are head-initial (IP, NP, VP, and PP are illustrated). A representative D-structure tree for the Palauan clause is therefore the following, generated by the phrase structure schemata in (2) (after Chomsky, 1986):

(2) $XP = X'\ \ YP$ (order is *relevant*)
$X' = X\ \ ZP$
(where YP is specifier of X, ZP is complement of X, and X, Y, and Z range over all lexical and functional categories)[3]

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[2] These transcriptions follow the standard orthography, with the exception of the glottal stop, standardly written *ch*. The velar nasal is written *ng*. Many orthographic *e* represent schwa. For more information on the morphology and syntax of Palauan, see Georgopoulos (1985b, forthcoming) and Josephs (1975). Palauan morphology and morphophonemics are complex. Since it is often impossible to 'slice' words into morphemes, I will avoid introducing hyphens into the examples. For convenience, in the case of (1) I gloss agreement (Infl) as part of V, where it appears morphologically. I ignore tense and aspect morphology in this paper, though in the larger picture of Palauan grammar they are very important.

[3] In Georgopoulos (forthcoming) I argue that Spec(C), a scope-bearing position, is on the left in all languages in LF.



I assume, following Kuroda (1986), Koopman and Sportiche (1988), and others, that VP, like other categories, always has a specifier and that subjects of IP originate either in this D-structure position or in the position of the complement. (Nothing in what follows is affected by assuming the VP-internal subject hypothesis.) I also assume that both Spec(I) and Spec(N) are A positions.

Palauan allows topicalization of almost any NP. As (3e) illustrates, extraction sites governed by a preposition contain a resumptive pronoun (the language has only one preposition, *er*, which serves many functions):

(3)a. [a 'ermek] a soal el melim ____ (subject topic)
animal-my want-3S drink

My dog wants to drink.

(3)b. [a blai] a lesilsebii ____ a se'elik (direct object topic)
house burn *friend-my*
My friend burned down the house.

c. [a Naomi] a le'ilitii a 'ole'esel ____ a John (possessor topic)
throw *pencil-her*
John threw out Naomi's pencil.

d. [a blil a Irene] a ngar ngii a bung er a
house-her *exist there flower P*
medal ____ (oblique)
front-its
There are flowers in front of Irene's house.

e. [a bdelula'ang] a leble er **ngii** a
pier *came P it*
bilas (prepositional object)
boat
The boat came to the pier.

Example (3c) shows that the specifier of N can be extracted, just like any other NP. N always allows extraction of its specifier when N bears "possessor agreement", as it does in these examples.[4] Wh-extraction of Spec(N) is seen in (4a), while (4b,c) display extraction of embedded Spec(I):

(4)a. [ngte'a] a 'omulsa [$_{NP}$ a delal ____]
who *2-saw* *mother-3S*
Whose did you see mother?
(Lit. Who did you see ____'s mother?)

b. [ngte'a] a ledilu a sensei el kmo ng- milsa
who *3S-said teacher comp* *3S saw*
el meskak a buk
COMP gave-me book

[4] I do not consider agreement to be the element that in itself licenses these extraction sites. Rather, empty categories are licensed by a particular set of X^0 heads; these heads commonly, but not always, carry agreement morphology in Palauan and are the same heads that license *pro*. See Georgopoulos (1987; to appear) for cases of N-government of the subjects of psych nouns.

(4)b Who did the teacher say that she saw
that ____ gave me a book?

c. [a Merii] a kltukl el kmo ng- oltoir er a Moses ____
clear comp 3S love P
Merii (it's) clear that ____ loves Moses.

These examples show that an extraction site in specifier position is properly governed in this VOS language. N licenses extraction of Spec(N). With regard to Spec(I), the data suggest a straightforward case of proper government by I, for two reasons. First, I governs Spec(I) rightward, and their relation mediates agreement and Case marking. In addition, the lack of 'that-trace effects' in (4b) and (4c) argues that the subject is properly governed. In contrast, the specifier of N in English is unextractable, and extraction of – or from within – the specifier of I is limited. In fact Palauan shows none of the subject-object asymmetries found in extraction in English.

Note that not only subjects, i.e., Spec(I), but also other specifiers, including Spec(N), have the same orientation relative to the head within both the VOS and the SVO grammars. This fact is consonant with the hypothesis that only a single parameter, one referring to specifier position, is implicated in these phenomena. That is, the hypothesized parameter sets specifier position once and for all categories, just like the head-complement parameter does.

The position of the specifier, which makes it canonically rather than contra-canonically governed, yields a grammar in which the Empty Category Principle is automatically satisfied at all selected extraction sites. Island effects that pertain in SVO languages to improperly governed domains, such as the islandhood of sentential subjects or of NPs in general, do not exist in Palauan (cf. (3c) and (4a,c)). Subjects pattern with complements, rather than with adjuncts, because VOS subjects satisfy the ECP.[5]

Having had a brief look at the phrase structure and extraction structures of a VOS grammar, we turn now to an issue which is implicated in

[5] See Huang (1982); Lasnik and Saito (1983). The extractability of specifiers in the VOS grammar removes much of the objection to canonical government in, e.g., Rizzi (1990). Rizzi suggests that where canonical government holds of subjects, they should be freely extractable and there should be no *that*-trace effects. In addition, Rizzi adopts a version of minimality in which I by definition *never* governs its specifier. Since I don't adhere to minimality here, and have shown that all subjects are extractable in the VOS grammar under consideration, these objections to canonical government disappear. See also Section 7.

anaphora in general and in the weak crossover analysis in particular – the distinction between linear order and c-command.

1.2. *Precedence and c-command*

One might expect, given the history of the development of c-command conditions on binding, that linear order would not play a role in anaphora rules in any language. With respect to subjects, a reasonable prediction would be that one at the right edge of a clause would participate in c-command conditions in the same way as one at the left edge. After all, they each c-command the VP. Consider, in light of this prediction, the following facts of Palauan.

First, we examine binding by a subject; the QNP is in bold face (quantifiers like 'every' bind only a plural pronoun in Palauan; the morpheme *el* is a RELATOR or LINKER):

(5)a. *[$_{IP}$ te-[$_{VP}$ mengull er a rtonari er
3P respect P neighbors P
tir$_i$ [$_{NP}$ a **rebek el 'ad**]$_i$]]
their every person
(Everyone$_i$ respects their$_i$ neighbors)

b. a **rebek el 'ad**$_i$ [$_{IP}$ a mengull er a rtonari er tir$_i$ [____$_i$]
every person respect P neighbors P their
Everyone$_i$ respects their$_i$ neighbors.

Example (5a) is a sentence in the basic VOS order. In this structure, the subject does not precede the pronoun 'their' in the complement to the verb, and cannot be coindexed with it, though it does c-command the pronoun. Example (5b) has a topicalized (and quantified) subject, which *can* be coindexed with the pronoun. In other words, it appears that coindexing between a quantified NP or A′-bound variable and a pronoun is completely grammatical when the quantified NP, the ultimate antecedent, precedes (and c-commands), but not when it follows and simply c-commands.

The following examples display similar phenomena, this time with respect to Wh-quantification and topicalization of non-quantified NPs. As the examples show, a Wh-phrase in Palauan may be either in argument position or be preposed; in NPs which carry possessor agreement, the

possessor pronoun is phonologically null (see the sources cited and section 2.2.1):

(6)a. ??ngmengull er [a rengelekel pro$_i$] a **te'ang$_i$**
3S-respect P students-3S who
(Who$_i$ respects his$_i$ students?)

b. ngte'a$_i$ [a mengull er [a rengelekel pro$_i$] ——$_i$]
who respect P students-3S
Who$_i$ respects his$_i$ students?

(7)a. *ngmengull er [a rengelekel pro$_i$] a **Ngiraklang$_i$**
3S-respect P students-3S
(Ngiraklang$_i$ respects his$_i$ students.)

b. a **Ngiraklang$_i$** [a mengull er [a rengelekel pro$_i$] ——$_i$]
respect P students-3S
Ngiraklang$_i$ respects his$_i$ students.

When no pronominal anaphora is involved, both the Wh-phrase and the name in these examples are perfectly grammatical in subject position (see below). The examples make it clear, however, that in cases of binding a pronoun, the grammar strongly prefers antecedents that precede as well as c-command.

It is important to note that (5) through (7) have *no bearing* on issues of crossover, since the subject variable c-commands the pronoun. Thus we have no account as yet for (5a)–(7a).

Before proceeding, let us consider the notion (SYNTACTIC) VARIABLE. In standard definitions, such as the following,

α is a variable if α is in an A position and is locally A′ bound,

the variable is the element whose local c-commanding binder is in an A′ position. Thus in a sentence like 'Who$_i$ t$_i$ thinks that he$_i$ will win?', the trace is a variable, while the pronoun, not being locally A′ bound, is simply A-bound by the trace. Turning to structures with quantified NPs like 'Everyone$_i$ thinks that he$_i$ will win', the position of the quantifier is assumed to be replaced by a trace after LF-movement, yielding '[Everyone$_i$ [t$_i$ thinks that he$_i$ will win]]'. Again, by the definition above, the trace and not the pronoun is the variable. This is standard usage, though potentially confusing, since in a semantic theory the pronoun might also be considered a variable. Moreover, there are many structures in which

there is more than one position coindexed with an A′ antecedent, leading this essentially configurational definition to make wrong predictions. I focus on this problem in Section 6 below. For now, the definition above will do as well as any other.

Returning now to the binding in (5) through (7), it is often assumed that a pronoun can be construed as a bound variable when it is coindexed with a c-commanding "true" variable (the variable which occupies the A position of a quantified NP). The statement below from Stowell (1987) articulates the conditions on binding of the pronoun; see also Stowell and Lasnik (1987); Saito and Hoji (1983); Hoji (1985); and others.

(8) If a pronoun *P* and a variable *V* are bound by the same quantifier, then *V* must c-command *P*.

The binding of pronouns and variables in (5a) through (7a) conforms to (8) in LF, and should therefore be well formed. It is clear that c-command is not sufficient in the Palauan case, however, since both subject and topic positions satisfy this statement equally. However, (5) through (7) may reflect a requirement that a c-commanding antecedent be to the left. If so, while such a requirement might in general hold vacuously in a subject-initial language, its effect would be immediately apparent in a subject-final one.[6,7]

The inability of a lexical subject to bind a pronoun to its left raises important questions for the study of anaphora. It may very well be necessary to add linear precedence to the c-command condition on binding, though I will not attempt to formalize such a constraint in this paper. In connection with this, see Barss & Lasnik's (1986) proposal, which is based on phenomena within the VP of double-object constructions, that precedence be included in the definition of bound anaphora domains. Inclusion of a precedence statement for bound anaphora might also facilitate the account of why languages with Comp on the right have no Wh-

[6] Recall that *c*-command does not involve precedence, and therefore dispenses with the *precede* relation as in, e.g., Langacker (1969).

[7] Reinhart (1976) cites Keenan's work on Malagasy (also VOS) as evidence that simple c-command, without mention of precedence, might be sufficient for anaphora between subject and complement positions. The example given involves coreference with names. In Palauan sentences without subject preposing definite anaphora between a name in the subject position and a pronoun in the complement is marginally possible for some speakers. However, anaphora with indefinites, the focus of this paper, is, as we have seen, as described in the text: marginal or completely impossible.

movement, and are limited to scrambling to Spec(I) (e.g., Japanese).[8] Before the exact status of such a condition can be known, however, a wider range of languages and constructions showing precedence effects must be analyzed.

In sum, there is a precedence condition operating in Palauan grammar that accounts at least in part for the contrasts in (5) through (7).[9] The parameter settings responsible for ordering in this VOS grammar are clearly not the direct cause of the precedence effect, since the subject is not always forced to move. In any case, the purely hierarchical relation of c-command is inadequate to account for the binding facts illustrated here.

We turn now to one of the most striking and unexpected differences between SVO and the VOS grammars: the lack of the weak crossover effect in the latter.

2. Weak Crossover

This section provides data from a number of languages in which the expected WCO effect is absent. We begin with Palauan. Once allowance is made for the precedence condition described above, it will be clear that Palauan has no WCO effect. The section will close with an examination of data from Hungarian, German, Lakhota, and Warlpiri, which also lack WCO effects.

2.1. *The Weak Crossover Analysis*

The term WEAK CROSSOVER EFFECT (Wasow, 1979) refers to the impossibility of coindexing between a pronoun and a variable in a structure in which both NPs are bound by the same quantifier but neither NP c-

[8] Saito & Hoji (1983) argue that scrambling *is* subject to WCO (which suggests that scrambling is an instance of Move α). But the facts are far from clear. First, many examples involve names, which are presumably not involved in WCO. Second, they are forced to stipulate a distinction between "true" quantifiers and "quasi" quantifiers. Third, the third person pronoun *kare* cannot be bound, so there are no WCO examples with *kare*. The form *zibun* 'self' occurs as a variable, but the examples with *zibun* that supposedly show the WCO effect have factive (*koto*) subjects, not the simple genitive ones. Can *zibun* otherwise be bound inside a *koto*-clause? What are the conditions allowing binding of *zibun* to a WHP or a QNP? At any rate, Saito and Hoji note that the WCO effect in Japanese is weaker than in English. Kuno (1991) argues that Japanese does not have WCO.

[9] A reviewer suggests that the ungrammaticality of (5a)–(7a) is not due to precedence but rather to the need for pronouns coindexed with a Q-NP or WH-NP to be A′ bound (at S-structure). Though I don't pursue it here, I find this an intriguing suggestion, in particular because of its similarity to (8).

commands the other. The paradigm in (9) typifies the phenomenon (coindexed positions are in italics):

(9)a. **His* mother loves *everyone*.
b. **Who* does *his* mother love *t*?
c. *His* mother loves *John*.

The examples in (9) show that the weak crossover effect is triggered by movement of logical quantifiers like *every* as well as Wh-quantifiers. They also show that only quantified expressions, but not expressions involving names, give rise to weak crossover.[10]

In the usual analysis of WCO, sentences like (9a) undergo Quantifier Raising (May, 1985), so that (9a) and (9b) present the same configuration of pronoun and trace in Logical Form, as shown schematically in (10):

(10)a. **everyone* (*his* mother love *t*)
b. **who* (*his* mother love *t*)

In the last dozen years or so, a number of analyses have been proposed to account for the ungrammaticality of this pronoun-trace relation. Four important approaches will be introduced briefly here, and will later be discussed in more detail.

(A) Chomsky's (1975) leftness condition views weak crossover effects in terms of linear precedence, and suggests that a pronoun cannot precede the trace which is its antecedent:

A variable cannot be the antecedent of a pronoun to its left.

(B) Koopman and Sportiche (1983) regard both trace and pronoun in (10) as variables, and propose that a single quantifier cannot simultaneously bind more than one variable:

The bijection principle: There is a bijective correspondence between variables and A′ positions.

(C) Safir (1984) assumes the same definition of variable as Koopman and Sportiche, but suggests a less restrictive constraint that the variables must be "parallel" in the sense that both are lexical or both null:

If O is an operator and x is a variable bound by O, then for any y, y a variable bound by O, x and y are [α lexical].

(D) Stowell (1987) and Stowell & Lasnik (1987) propose that the c-command statement in (8), applying at LF, is the condition accounting

[10] But see Reinhart (1983), who argues that names do trigger WCO.

for WCO (this is an extension of the basic c-command condition on bound anaphora):

> If a pronoun *P* and a variable *V* are bound by the same quantifier, then *V* must c-command *P*.

Despite the theoretical advances that these analyses represent, work continues on weak crossover; see, for example, Higginbotham (1980), Saito and Hoji (1983), Hoji (1985), and elsewhere. Below I show that no analysis proposed so far accounts for the cross-linguistic distribution of weak crossover effects, and present an analysis that does. In this analysis, the core weak crossover effects arise as ECP violations; since WCO effects can be accounted for in ECP terms, devices that have been added to the grammar specifically to deal with this phenomenon can be dispensed with.

The discussion of weak crossover proceeds as follows: First, I demonstrate that weak crossover effects are not universal, a fact that is damaging to the theories mentioned above. I also show that a variable need not c-command a pronoun in order to be coindexed with it, contrary to (8). I then argue that the weak crossover effect is observed in constructions in which the ECP, formulated in terms of directionality of government, cannot be satisfied, and is not observed in constructions that do satisfy the ECP. The interaction of the ECP and the specifier parameter, then, accounts for WCO in a particularly elegant way: nothing new is added to the grammar that is specific to crossover.

The ECP account works only if all the NPs involved in the WCO configuration, i.e., not just movement variables but also bound pronouns, are subject to the ECP. Arguments are presented that this is in fact the case.

A residue of cases is then discussed which the ECP theory appears not to account for. I will show that these cases are heterogeneous, and discuss how they might be analyzed independently of WCO issues.

I then briefly address the issue of STRONG CROSSOVER (SCO), showing that even languages that fail to show WCO effects do have SCO (Section 6). This fact will be shown to support the focus on government of specifiers. It also argues that, contrary to some recent treatments, WCO cannot be explained as a special case of SCO.

2.2. *Languages Without Weak Crossover*

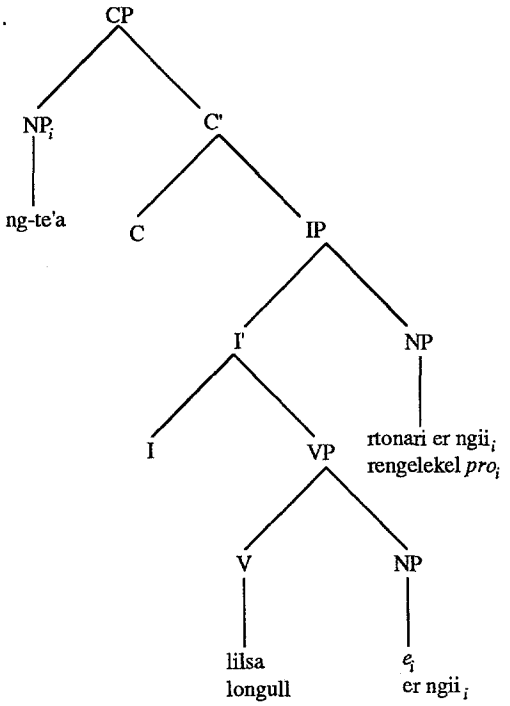
2.2.1. *The Palauan case.* Consider the following sentences of Palauan, which instantiate the weak crossover configuration described above:

(11)a. ng-te'a$_i$ a lilsa ——$_i$ a rtonari er ngii$_i$
who 3-*saw*-3*S* *neighbors P her*
Who$_i$ did her$_i$ neighbors see ——$_i$?

b. ng-te'a$_i$ a longull er ngii$_i$ a rengelekel pro$_i$
who 3-*respect P her* *children*-3*S*
Who$_i$ do her$_i$ children respect ——$_i$?

A representative LF tree of these structures follows (some detail omitted):

(11)a',b'.



Both sentences are parallel to (9b): a bound variable and coindexed pronoun are in non-c-commanding A positions, bound by the same quantifier. Examples (11) also present some conditions more particular to Palauan but relevant to the overall analysis. As I have shown elsewhere (Georgopoulos, 1985a,b), Palauan has an overt resumptive pronoun following a preposition (the preposition *er* in (11b)); such a pronoun is for all syntactic purposes a Wh-variable (see Section 3.2.2).[11] I have also

[11] See Chomsky (1982) for an analysis (relevant for languages like English) in which resumptive pronouns are not bound until LF'.

shown that positions governed by agreement can contain *pro* in Palauan; thus the possessor in the subject of (11b), coindexed with third person singular agreement on 'children', is null. In general in Palauan, pronouns are either null or overt, depending on their position, and the same is true of variables.

In other words, (11a) and (11b) are equivalent insofar as the analysis of WCO is concerned: both contain an object variable and a coindexed specifier of the subject, parallel to (9b). Unlike (9b), however, and contrary to expectation, the sentences in (11) are grammatical.

Now, one of the unusual properties of Palauan grammar is that Wh-phrases need not be preposed at S-structure, but can optionally remain in situ. Nothing in the grammar forces Move α to apply to Wh-phrases prior to S-structure, so both (12a) and (12b) are grammatical:[12]

(12)a. ng- omele'a a ngera er a mlai a Sabeth
3*s* *put* *what* *P* *car*
What did Sabeth put in the car?

b. ng-ngera$_i$ a l-omele'a ____$_i$ er a mlai a Sabeth
what 3 *put* *P* *car*
What did Sabeth put in the car?

This being the case, we would expect that sentences like (11) would be equally grammatical when the Wh-phrases are in situ. That is, a Wh in situ is normally possible; since sentences equivalent to (11) but with in situ Wh have the same LF as those in (11), their status should be the same from the point of view of theories of WCO. This is not the case, however:[13]

[12] A preposed Wh-phrase (as in (12b)) bears the cleft morpheme *ng-*. On the variations in verb morphology that reflect A′ binding, see, e.g., Georgopoulos (1985b), or Section 3.2.2 below.

[13] N. Chomsky (personal communication) suggests an alternative analysis of examples like (11) and (13) in which IP has a subject position on the left. Then in (11), e.g., the Wh-phrase moves to (or through) this position, avoiding a WCO violation, while in (13) the Wh-phrase triggers the WCO effect under LF raising. This alternative is difficult to maintain when the facts of Wh-agreement are considered (see below), and since the present analysis is available for *all* structures involving Q-NPs and pronouns, not just the WCO configurations, I will continue to pursue the latter.

(13)a. ??te-milsa a te'a$_i$ a rtonari er ngii$_i$
3p saw-3S who neighbors P her

(Who did her neighbors see?)

b. ??te- mengull er a te'a$_i$ a rengelekel pro$_i$
3P respect P who children-3S

(Who do her children respect?)

With the coindexing indicated, the sentences with WH in situ are marginal, at best, and their counterparts in (11) are strongly preferred. Since (11) are fine, and (11) and (13) have equivalent LF structures, it cannot be the WCO effect that degrades the grammaticality of the examples in (13). Nor is it simply that the Wh-phrase must be preposed in WCO structures, as we will see.

Next we observe a similar set of facts involving the logical quantifiers, represented by NPs with 'every'; again, what is at issue is the coindexing relation between variable and pronoun (recall that an expression containing 'each', 'all', or 'every' in Palauan can be coindexed only with a plural pronoun). Examples (14a,b) parallel (9a), but the (a) and (b) sentences differ in the S-structure position of the quantifier:

(14)a. *te-mengull er a **rebek el 'ad**$_i$ a rtonari er tir$_i$
3p respect P every person neighbors P their

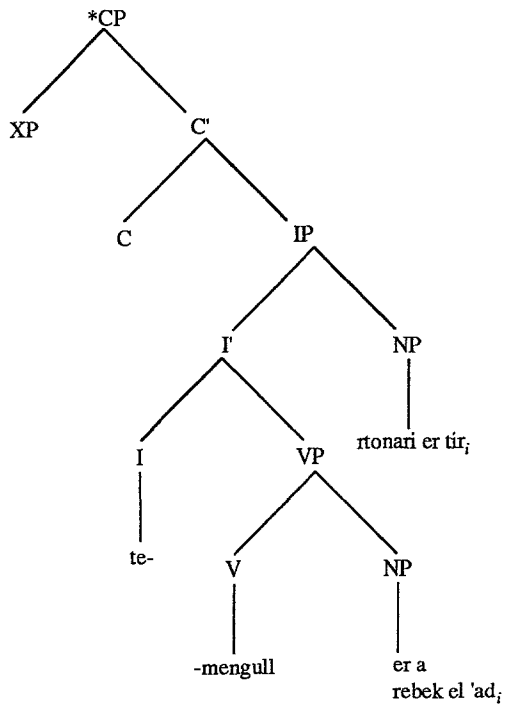
(Their$_i$ neighbors respect everyone$_i$.)

b. a **rebek el 'ad**$_i$ [$_{IP}$ a lo- ngull er tir$_i$ a rtonari er tir$_i$]
every person 3 respect P them neighbors P their

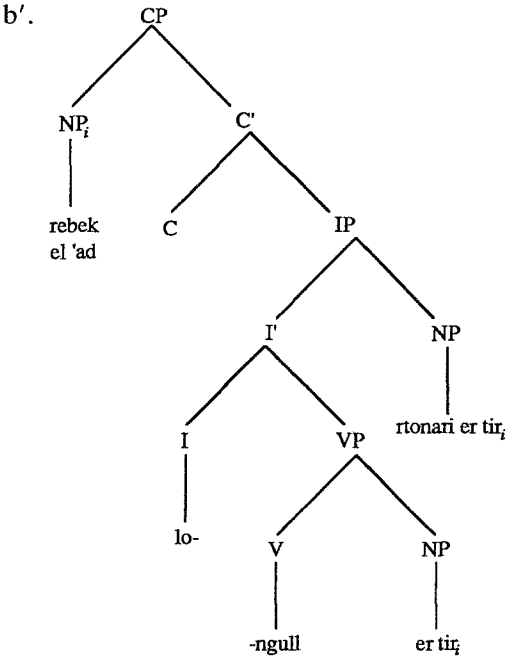
Their$_i$ neighbors respect everyone$_i$.

Trees for 14 follow:

(14)a′.


*CP
XP
C'
C
IP
I'
NP
I
VP
rtonari er tir$_i$
te-
V
NP
-mengull
er a
rebek el 'ad$_i$

b′.


CP
NP$_i$
C'
rebek
el 'ad
C
IP
I'
NP
I
VP
rtonari er tir$_i$
lo-
V
NP
-ngull
er tir$_i$

Example (14a) is impossible as it stands,[14] but if the quantified object is topicalized, as it is in (14b), the sentence is grammatical. As in the case of the contrast between (11) and (13), there is no account of the ungrammaticality of (14a) in terms of WCO theories, since (14b) is fine and both examples must have the same structure at LF. In fact, the weak crossover configuration in (14b) actually *improves* grammaticality! This conclusion also holds for (11), as compared to (13). (In the appendix to this paper I review arguments that these structures are not to be analyzed as involving parasitic gaps.)

Compare the patterns of grammaticality in (11) and (14) with the patterns illustrating the importance of precedence presented earlier, in (5) through (7). The same behavior is represented. In (13) and in (14a), the antecedent precedes the pronoun but does not c-command it. Examples (11), (13) and (14) taken together therefore confirm my earlier conclusion that binding of pronouns in Palauan requires both precedence and c-command of the antecedent.

It is clear that the difference between (11) and (13), and (14a) and (14b), is due to this conjunctive requirement, and *not* to weak crossover. This is crucial to understanding the data displayed. The ungrammaticality of (13) and (14a) is determined exactly as in (5) through (7). But recall that (5) through (7) did not involve the WCO configuration. This should be clear from the fact that (5b), (6b), and (7b), like (11) and (14b), are all grammatical. The precedence effect goes beyond WCO issues to all quantifier-pronoun coindexing; there is no weak crossover pattern here.

2.2.2. *Impact on WCO theories.* The Palauan facts bear on all the WCO theories mentioned in Section 2.1. On the one hand, the leftness condition appears to be validated, since the configuration it rules out does not arise: Palauan being VOS, extraction of an object does not leave a variable to the right of its pronoun in these sentences (see, e.g., (11)). On the other hand, the facts are a problem for the accounts which focus on multiple variable binding by a single quantifier, i.e., bijection and parallelism: not only does one quantifier bind multiple variables, but also the variables are nonparallel (one is lexical and one is null).

The failure of the c-command theory (stated in (8)) requires a bit more comment, since it leads us to an important conclusion. This theory reflects the widely-held assumption that not only the quantifier itself but also its variable must c-command a pronoun in order for A′ binding of the pro-

[14] The examples in (13) are better than (14a) (?? vs. *) apparently because Wh-phrases, but not other quantified NPs, can be interpreted in situ as having scope over the whole sentence.

noun to be well formed. However, examples like (11) and (14b), though grammatical, are violations of this c-command condition, and examples (5a) through (7a) are ungrammatical even though they satisfy it.

Thus (8) is neither necessary (viz. (11)–(14)) nor sufficient (viz. (5)–(7)) to account for the patterns of grammaticality displayed here. Version (8) is also unable to account for the difference between these Palauan structures and their English counterparts. The WCO effect does not necessarily arise from the failure of a variable to c-command a coindexed pronoun. Since such non-c-commanding relations in Palauan are possible, I conclude that multiple variable binding is not ruled out in principle, and that well-formed A′ binding of variables and pronouns at LF depends on c-command by the quantifier but does not require c-command of a pronoun by a variable.

In sum, all the theories of WCO proposed so far, except leftness, have been invalidated by the facts of Palauan. Whatever the ultimate analysis of the Palauan data might be, its interest to the overall theory would be reduced if this language were an isolated case. I will now describe briefly certain data from Hungarian, German, Lakhota, and Warlpiri (languages from four distinct language families), which also seem to lack the weak crossover effect. I do so cautiously, since some of this data has been disputed, but I believe that such data should at least be considered, and it is important to recognize a range of cases which all seem to converge on the same point. Furthermore, since beginning this research, I regularly hear of new cases.[15] Previously, the 'lack' of WCO was unexplained and therefore rarely mentioned, except in occasional footnotes. These cases are now coming out of the footnotes; in Section 3, I will show how they, and Palauan, can all be accounted for in the same terms.

2.2.3. *The Hungarian case.* The analysis of Hungarian is not uncontroversial. Researchers disagree not only on the issue of whether or not Hungarian is configurational, but also on crucial grammaticality judgments. Nonnative speakers can therefore only weigh the strength of the various analyses, offer provisional (re)interpretations where appropriate,

[15] Van Valin (1987, n. 7) also mentions Plains Cree and Warlpiri as languages failing to have the WCO effect. I have not investigated Plains Cree; see Section 2.2.6 on Warlpiri. Arabic also lacks WCO in certain structures (Mohammed, 1988). For lack of WCO in clitic doubling structures in Uruguayan Spanish, see Hurtado (1984), described in Jaeggli (1986) and Suñer (1988). Pandit (1985) describes the lack of WCO in Hindi (an SOV language), but not enough information is given to assess the matter. Purported WCO effects in Japanese may also be susceptible to the precedence effect described earlier (Kuno, to appear). Hoji's 1985) analysis of grammatical but WCO-like structures in Japanese as parasitic gap structures can also be seen in terms of linearity (see the Appendix).

and wait to see how they stand up after more facts are in. In the case of WCO, quite a strong case has been made by E. Kiss (1987) that Hungarian has no WCO effects (see Horvath (1981) for an opposing analysis of Hungarian; E. Kiss and Horvath for details of Hungarian grammar). Consider (15) below, in which, as in Palauan, both WH and logical quantifiers fail to trigger WCO:[16]

(15)a. kit$_i$ szeret t$_i$ az pro$_i$ anyja
whom loves the mother-his
Whom$_i$ does his$_i$ mother love?

b. mindenkit$_i$ szeret t$_i$ az pro$_i$ anyja
everybody-ACC loves the mother-his
His$_i$ mother loves everybody$_i$.

The lack of WCO effects in Hungarian is not accountable for in bijection terms, since the sentences above would contain two variables whatever their other differences from English sentences.[17] Presumably it is no problem for Safir (1984), since both variables are [−lexical] (as Ian Roberts reminds me).[18] Whether or not the c-command approach is affected by (15) depends upon the arguments for c-command relations in Hungarian; see the references cited, and Section 3 below.

2.2.4. *The German case.* It has occasionally been suggested that German, a SOV language, does not have weak crossover. That is, both sentences (16a) and (16b) are judged by informants to be acceptable:[19]

[16] E. Kiss theorizes that the trace is adjacent to the verb; its actual position is not important here. I thank S.-Y. Kuroda for calling the Hungarian case to my attention.

[17] E. Kiss has a different view of the applicability of bijection: she suggests that, since the "propositional component" is flat, the object trace binds the genitive pronoun in the subject, making the pronoun an A-bound anaphor rather than a variable, thereby forestalling a bijection violation. Note, however, that both positions are still locally A′ bound, so some additional device is needed to maintain this analysis.

[18] Safir (1984, n. 13) concludes that resumptive *pro* is lexical, in order to deal with Romance null subject languages; on this view, the Hungarian examples are as damaging to parallelism as to bijection.

[19] There is a lack of consensus as to whether or not German has WCO effects. It is clear to me that the issue of the relation of verb-second phenomena and a directional ECP needs to be taken into account, a matter for further research. The analysis of surface VSO languages like Irish and Chamorro will also be illuminated by determining the interaction of verb movement and government phenomena. See Section 4.1.

(16)a. wen_i liebt [seine_i Mutter t_i t_v]
who-ACC love his mother
Who_i does his_i mother love t_i?

b. wer_i liebt [t_i seine_i Mutter t_v]
who-NOM love his mother
Who_i t_i loves his_i mother?

Example (16a) violates the leftness condition, the bijection principle, the parallelism constraint, and the c-command condition discussed above. Haider (1985) offers further examples (t_i in (17b) is the trace of fronted 'each'):

(17)a. ??dass seine_i Mutter jedem_i schreiben darf
that his mother each-DAT write can

b. dass jedem_i nur seine_i Mutter t_i schreiben darf
that each-DAT only his mother write can

Examples (17a) and (17b) have LF configurations that are equivalent as far as WCO theories are concerned. Yet there is a marked difference in grammaticality, contrary to leftness, bijection, and so on. This example is very much like the Palauan case, suggesting that precedence differences (resulting from topicalization), and not WCO, are responsible for the contrast.

2.2.5. *The Lakhota case.* Lakhota (Teton Dakhota) is a Siouan language whose unmarked word order is SOV; order of subject and object is relatively free on the surface (Van Valin, 1987; Williamson, 1984). Lakhota has been described as not having a VP on the basis of several considerations: the lack of subject-object asymmetries in extraction, the free scrambling of NPs, the apparent absence of a c-command condition on coreference, and the lack of the WCO effect. The following illustrates the WCO structure (Van Valin's (13)):

(18) Ø- tha- khóla- ku ki tuwá wayáka he?
3 *POSS friend POSS the who 3SG-see-3SG Q*

Relying on the c-command account of WCO, Van Valin sees the grammaticality of (18) as an argument against postulating a VP in Lakhota: if there is no VP, the (LF) trace of 'who' c-commands the pronoun, avoiding violation of a condition like (8). Apart from the VP question, however,

the Lakhota example is troublesome to all WCO accounts, not just c-command.

2.2.6. *The Warlpiri case.* Farmer, Hale, and Tsujimura (1986) report that there is no weak crossover effect in Warlpiri, the notorious 'nonconfigurational' language. Here is an example (=FHT's (3), subscripts added):

(19) ngana ka nyanungu-nyangu maliki-rli
whom PRES he POSS dog ERG
wajilipi-nyi
chase NONPAST
Who$_i$ is his$_i$ dog chasing?

Warlpiri, then, is another language that must be taken into account by any approach to WCO.

In sum, we have seen five cases, from five different language families, in which the WCO effect is conspicuously absent. In all of them, more than one position can be operator-bound, and in all the c-command account fails. Though typologically disparate, these languages are alike in a crucial way: the next section shows how the facts discussed here fit into a unified account.

3. A Unified Account

3.1. *Canonical Government, the ECP, and WCO*

Ungrammatical WCO structures typically illustrate the subject-object asymmetries that have revealed so much about the nature of government: in these structures the coindexed pronoun is typically in the subject, and the variable is in the complement; when the variable is (in) the subject and the pronoun (in) the complement, there is no crossover effect. This type of asymmetry suggests an ECP account.

Some recent formulations of the ECP impose directionality of head-government (i.e., canonical government as described in the introduction to this paper), and in addition have replaced the earlier disjunction of the ECP with a conjunction: traces must be both head-governed *and* antecedent governed (Jaeggli, 1982, 1985; Rizzi, 1987; Stowell, 1985; Aoun et al., 1987). In this paper, I adopt a conjunctive ECP, with the explicit condition on head government that it be canonical. Such an ECP, interacting with the position of the specifier, accounts directly for the distribution of WCO effects I've discussed.

In essence, the proposal is this: A specifier may be either initial or final in the phrase, and is thereby governed either canonically or contra-canonically; the WCO effect results from the failure of a specifier pronoun, construed as a variable, to be governed canonically. This proposal captures what we have observed so far: In a uniformly right-governing VOS language, all variables, pronominal or otherwise, are canonically governed, extraction is free, and WCO does not arise. Specifiers in a language like English, in contrast, are not in a canonically governed position, and English has WCO and related effects. Similarly, in SOV languages like German and Lakhota, government of specifiers is canonical, with heads governing uniformly leftward. Again, WCO appears not to arise.

The connection between canonical government and WCO seems inescapable. Constructions that show the WCO effect involve a position that is not governed in the proper direction. No other account has been proposed that distinguishes between English on the one hand and German, Lakhota, and Palauan on the other in a way that predicts this distribution of WCO effects.

The absence of WCO in Hungarian and Warlpiri is predicted by the ECP analysis as well. In Hungarian, this follows from the analysis (E. Kiss, 1987) in which arguments have no fixed linear order and there is no VP. E. Kiss claims that grammatical relations in Hungarian occur in a flat structure and that there are none of the subject/object asymmetries found in languages whose GRs bear hierarchical relations to each other.[20] The lack of subject/object asymmetries is highly suggestive. It seems that all argument positions satisfy the ECP under the same conditions. Since order is free, there is *no* canonical government configuration, and the directional part of the ECP applies vacuously.[21]

Similarly for Warlpiri: if this language is truly nonconfigurational, government is not canonical in Kayne's sense, and the ECP must be

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[20] In E. Kiss' analysis, Hungarian sentence structure has a "propositional component", conforming to the schema [V X''*], in which the order of postverbal arguments is arbitrary. She claims further that

> . . . the subject has no distinguished position but is on a par with the object and the rest of the maximal major categories. . . . the subject and object . . . have the same distribution, they are affected by syntactic operations in identical ways, etc. (1987, p. 44)

In addition, according to this author, there are a number of preverbal NP slots which are landing sites for movement of topic and focus arguments that are generated to the right of V. Thus preverbal positions are operators which do c-command argument positions.

[21] Empirical evidence that Spec(N) satisfies the ECP in Hungarian is found in E. Kiss' (1987, 46 ff.) demonstration that this position is a landing site *and* a launching site for Spec(N)s that appear elsewhere on the surface. In other words, Spec(N) is properly governed.

satisfied in some way that does not rely on structural relations (the ECP must be reformulated for such languages, or directionality applies vacuously).

It is important to see how this analysis bears on certain arguments against the existence of a VP in a particular language. Canonical government of both subject and object, including subject of NP, would account for the lack of subject-object asymmetries in extraction mentioned in the analysis of Hungarian, Lakhota and Palauan, without it being necessary to assume that there is no VP. Languages in which extraction is possible from any argument position are languages in which those positions all satisfy the ECP; it is the BINDING-THEORETIC facts (principles A and B), relying on asymmetric c-command from subject to object positions, which will indicate the existence of a VP in these languages.

It is interesting to note that Chomsky's (1975) early directional account of WCO, the leftness condition, is really based on the position of subjects relative to objects, and in that sense is a precursor of the connectedness account proposed here. It should be kept in mind, however, that the outcome of the application of structure-based principles like leftness or connectedness depends on the way ordering parameters have been set.[22] Whether a language is VO or OV has widespread effects throughout the grammar of that language, and the claim of this paper is that the position of the specifier relative to the head is equally influential. Both ordering parameters determine in large part the effect of government-theoretic principles.

To sum up, in a uniformly governing language (whether right-governing or left-governing), all argument positions satisfy the ECP, so no WCO effect is observed as long as other conditions are satisfied. The distribution of common WCO effects thus follow directly from the ECP.[23]

Of course, generalization of the ECP to overt pronouns needs motivation of its own; such motivation is crucial to my analysis. I argue in the next section that a principle like the ECP should, and in fact already does, apply to all A′ bound positions, null or overt. The result of these arguments will be not only to ground firmly the claim that WCO is an ECP effect, but also to add fuel to the controversy over how null and overt categories are distinguished.

Section 5 below will address cases that differ structurally from those

[22] In this sense, setting of phrase-structure parameters is prior to application of government-theoretic principles like the ECP.

[23] A language that has no canonical government (e.g., Warlpiri) simply lacks the directional requirement.

analyzed so far. We turn now to arguments that bound pronouns are subject to the ECP.

3.2. *Resumptive Pronouns Subject to the ECP*

In this section I will first consider the theory-internal reasons why the ECP should apply to overt variables, and then turn to some empirical support for this extension.[24] The empirical support includes evidence that pronouns can be A′ bound and thereby construed as variables at S-structure in Palauan.

3.2.1. *Theory of resumptive pronouns as syntactic variables.* Since in virtually all of the current literature the ECP is stated so as to apply to traces, we will first focus on the issue of the overtness of the variables involved in WCO. I will show that a resumptive pronoun is equivalent to a trace by all the syntactic criteria identifying traces. We will see that the level at which a pronoun is A′ bound is crucial to establishing that equivalence.

Consider the syntactic properties of NPs involved in WCO. The extraction-site variable, or Wh-trace, is often defined as follows (Chomsky, 1981, and much other literature):

(20)a. α is a variable if α is in an A position and is locally A′ bound.

In Section 1.2 above I suggested that this definition might not uniquely identify variables. A different characterization of variable is found in the typology of NPs in Chomsky (1982, p. 84, reworded):

(20)b. A locally A′ bound empty category is [−pronominal, −anaphor].

Definition (20a) is strictly configurational, while (20b) refers to a variable's internal properties. The features mentioned in (20b) define a type of NP, and may identify that NP type either within its syntactic configuration (contextually) or by inherent properties (intrinsically). What is crucial is that it identifies the NP by its syntactic features, the features 'visible' to

[24] A reviewer notes that May (1985, 146 ff.) also suggests an analysis of WCO that includes subjecting A′-bound pronouns to the ECP and imposes a path condition (à la Pesetsky, 1982) on their relation to the antecedent. I was not aware of this passage when writing the current paper, but important differences in our approaches, and particularly my appeal to the combination of canonical government and the specifier parameter, reduce their similarity considerably.

the syntax.[25] I propose that it is only (20b) which states the features that define an element subject to the ECP. I propose further that such an element must by definition have the minus value for both features but that its overtness is not syntactically relevant.

As Koopman and Sportiche (1983) have pointed out, definition (20a) also holds for the offending pronoun in WCO, since it too is in an A position and is locally A′ bound. This makes the pronoun resumptive. (I repeat (10) here; the genitive pronoun is resumptive, by (20a)):

(10)a. **everyone* (*his* mother love *t*)
b. **who* (*his* mother love *t*)

By virtue of being A′ bound, the pronoun has the syntactic feature values [−pronominal, −anaphor], that is, it also conforms to (20b). Being a bound variable, the resumptive pronoun lacks the possibility of referentiality it would have as a simple pronoun. Like a trace, the pronoun depends on its binder for its denotation; it is neither referring nor bound from a θ position.

Another important property of the resumptive pronoun in a WCO configuration is that it has no A binder: this follows from the fact that in WCO configurations there is no c-command relation between the two A positions. I have already discussed the failure of the c-command account of WCO; it is evidently not an additional requirement on the binding of pronouns that they be coindexed with a c-commanding variable in order to have a bound interpretation. The pronoun can be bound directly by its operator, without the intermediary of a c-commanding trace.

What all this amounts to, intuitively, is that resumptive pronouns are subject to the same recoverability requirements as traces, in that both lack referential features and neither can find its denotation in terms of any A position; thus both must have a local A′ antecedent.

Summing up, we now have concluded the following:

(21)i. Variables are [−pronomial, −anaphor].
ii. Variables are null or overt.
iii. Variables, null or overt, are directly bound by the A′ antecedent.

Given these three points, it would be more of a problem to restrict the

[25] Both lexical R-expressions (referring expressions like names) and variables have the feature values [−pronominal, −anaphor], however. The difference between an R-expression and a variable is that the variable has no (independent) reference and depends on its binder for its denotation.

ECP to just those categories that actually are phonologically empty than to those that are simply [−pronominal]. The ECP has no mechanism to discern a category that is without phonemes; the word 'empty' in its name is merely a descriptive label.[26] This principle constrains elements that are [−pronominal, −anaphor], have no intrinsic reference, are construed as variables.[27] These elements can be null or overt in phonological terms, but the distinction may be syntactically inert. Thus WCO resumptive pronouns, correctly, are within the realm of application of the ECP.

Put another way, the "nonpronominal" stipulated in some definitions of the ECP means [−pronominal] rather than "nonlexical". This is clear in the larger context of GB theory.[28] Lexicality does not uniquely distinguish pronouns from variables. On the one hand, there are [+pronominal] nonlexical categories (PRO and *pro*) that are exempt from ECP jurisdiction because their reference can be recovered without antecedent binding (and because of their [+pronominal] feature). On the other hand, there are lexical categories that are [−pronominal], such as resumptive pronouns (not to mention reflexives and so on). The ECP constrains the [−pronominal] elements in regulating A′ dependencies: an A′ binder provides the range of values that can be assigned to an A′-bound position, that position not having any referential or anaphoric value of its own. Functionally, the ECP is a recoverability condition; in A′ binding, it relates an element having the minus value for both syntactic features with its antecedent.

Why, then, is the idea that a resumptive pronoun is equivalent to a trace not more widely held? The reason has primarily to do with their productivity, and the level at which they are A′ bound. Resumptive pronouns in Palauan are A′-bound at S-structure. This is the subject of the next section.

3.2.2. *Evidence for syntactic binding of resumptive pronouns.* Empirical support for the ECP analysis of WCO comes from the phenomena associated with resumptive pronouns in Palauan. In this section I will summarize the evidence that resumptive pronouns in Palauan are A′ bound (and therefore interpreted as variables subject to the ECP) at S-structure. (For more detail, see Georgopoulos (1985a;b).

The first piece of evidence is the fact that resumptive pronouns are

[26] If the ECP applies only in LF, it is further limited in this arena, as it has no access to PF.

[27] The ECP also constrains [+anaphor] elements, such as NP-trace; the context of this paper is limited to A′ binding, however.

[28] Jaeggli (1985) gives another view of these issues. See also Chomsky's (1981) definition of the term 'pronominal' (p. 330, ex. (11)).

regular and productive in all types of Palauan constructions. For example, even when the antecedent is within the local CP, A′ binding requires a resumptive pronoun whenever the bound site is a prepositional object; compare (22a) with (22b), and (22c) with (22d):[29]

(22)a. ng-Basilia$_i$ a mengaus [er tia el tet] ——$_i$
3S weave P DEM L bag
It's Basilia who's weaving this bag.

b. ng-sualo$_i$ a longaus [**er ngii**$_i$] a reme'as
3S basket 3-weave P it women
It's the basket that the women are weaving.

c. ng-ngera$_i$ a lesilsebii ——$_i$ a rubak
what 3-burn-3S old man
What did the old man burn?

d. ng-ngera$_i$ a luruul [**er ngii**$_i$] a rubak
what 3-do P it old man
What was the old man doing?

Extraction of the subject of (22a) and the object of (22c) leaves a gap, while extraction of the object in (22b) and (22d) leaves an overt pronoun; in the latter case, the element extracted is the object of a preposition. This illustrates the only distinction determining the occurrence of resumptive pronouns in the language; their appearance is not related to island constraints.

Specifier position may also involve a resumptive pronoun. First, recall that positions like specifier of N and specifier of I can contain variables under conditions not possible in English ((23a,b) repeat (4a,c)):

(23)a. ngte'a$_i$ a 'omulsa [$_{NP}$ a delal ——$_i$] pro
who 2-saw mother-3S
Whose did you see mother?
(Lit. Who did you see's mother?)

b. a Merii$_i$ a kltukl [el kmo ngoltoir er a Moses [——$_i$]]
clear COMP 3S-love P
Merii (it's) clear that —— loves Moses.

[29] See also the discussion below (11).

The specifiers of some nouns (borrowings, and optionally possessed nouns) are marked with a preposition, and in these cases A′ binding of the specifier involves a resumptive pronoun. Compare (23a) with the examples below:

(24)a. ngte'a$_i$ a longuiu [a buk **er ngii$_i$**] tirkei el ngalek
who 3-read book P her those L child
Whose book are those kids reading?
(Lit. Who$_i$ are those kids reading her$_i$ book?)

b. a Carol$_i$ a k'iliuii [a buk **er ngii$_i$**] pro
1S-read book P her
I read Carol's book.

Again, these pronouns appear even in simple clauses. The sentences in (24) correspond to the sentences involving binding of empty specifiers in (23). The resumptive pronoun is canonically governed (ultimately by the head N) and locally (and grammatically) A′ bound. Its distribution is equivalent to that of the gaps that occur in other positions. It is not a marginal strategy or a long-distance filler, as in English; it occurs inside of and outside of islands, and is simply obligatory after P. The gaps and the overt pronouns in (22) through (24) have equivalent distribution, however, so must ultimately be treated alike by the grammar of A′ binding.

P's restricted properties do not involve the Connectedness Condition directly. I assume that the *[$_{PP}$ P ___] effect reflects a fact about P's recoverability properties: the language has *one* preposition; it is non-thematic, does not assign Case, and does not carry agreement morphology (contrast V and N). In other work (Georgopoulos, 1985b; forthcoming), I have shown that gaps in A′ binding structures occur where *pro* can occur, and overt resumptive pronouns where (free) overt pronouns occur. So the fact that this preposition does not license an empty position is a reflection of the conditions on *pro*, not a condition on variables.

Furthermore, I argue elsewhere that even the gaps in Palauan A′ binding are resumptive pronouns – a conclusion based on the absence of island effects and on other considerations that argue against a movement analysis of any Palauan A′ binding structures.[30] So both gaps and overt pronouns are resumptive in this language. Now, note that such pronouns do not

[30] Georgopoulos (1985b; forthcoming) proposes a typology of resumptive pronoun binding that distinguishes Palauan-type languages from English-type languages.

observe Principle B of the binding theory, further evidence of their [−pronominal] nature. I repeat example (6b) below, which illustrates this:

(6)b. ngte'a$_i$ [a mengull er [a rengelekel pro$_i$] pro$_i$]
who respect P students-3S
Who$_i$ ——$_i$ respects his$_i$ students?

A [+pronominal] category must be free in a simple clause (cf. "*Who$_i$ does he$_i$ respect Mary?", "*Who$_i$ does Mary respect him$_i$?"). So the subject of (6b) cannot be [+pronominal]. If the bound position contains a resumptive pronoun, it must of course be [−pronominal]. Certainly an empty resumptive pronoun in any language is an A′ bound, nonpronominal, empty category, which is exactly what a trace is. These are the categories to which the ECP applies.

Perhaps the most unusual evidence for S-structure A′ binding in Palauan is Wh-agreement (Chung, 1982; Chung & Georgopoulos, 1988; Georgopoulos, 1985a,b, forthcoming; see also Haïk). This is an agreement system that is triggered by variables in Wh-questions, topicalizations, relativizations, and similar (Wh-movement) structures. Wh-agreement in Palauan applies alike to structures with A′-bound gaps and to those with overt A′-bound pronouns. Briefly, the agreement rule has the following effect: the surface form of the verb in A′ binding depends on whether the variable is Nominative or non-Nominative.

I repeat some of the earlier data below, this time explicitly glossing Wh-agreement. The morphemes involved are not segmentable; in the glosses, "Wh+nom" indicates that the variable is Nominative, "Wh−nom" that it is non-Nominative. Compare (5b) with (14b), and (6b) with (11b):[31]

(5)b. a rebek el 'ad$_i$ [$_{IP}$ a mengull er a
every person ***WH+nom-respect P***

[31] For comparison, I provide an example with no extraction site, and in which Wh-agreement has therefore not applied:

(i) te-mengull er a rngalek a rsensei er kid
3Prespect P students teachers P us
Our teachers respect the students.

The verb in (i) has the prefixed realis subject morpheme *te-*, '3p'. In contrast, a verb agreeing with a subject variable, i.e., a verb exhibiting Wh+nom agreement, lacks such subject marking. A verb agreeing with a nonsubject variable, i.e., one bearing Wh−nom agreement, has a special (irrealis) form of subject agreement (*lo-* in (14b) and (11b) is a member of this paradigm).

(5)b rtonari er tir [____$_i$]]
neighbors P their

Everyone respects their neighbors.

(14)b. a rebek el 'ad$_i$ [$_{IP}$ a lo-ngull er tir$_i$ [a
every person ***WH−nom-respect*** *P them*
rtonari er tir]]
neighbors P their
Their neighbors respect everyone.

(6)b. ngte'a$_i$ [$_{IP}$ a mengull er a rengelekel pro [____$_i$]]
who ***WH+nom-respect*** *P students-3S*
Who respects his students?

(11)b. ngte'a$_i$ [$_{IP}$ a lo-ngull er ngii$_i$ a rengelekel pro
who ***WH−nom-respect*** *P 3S students-3S*
Who do her students respect?

Since the focus of these examples is the correspondence between the agreement form and the Case of the argument extracted, I have indicated only coindexing with the position that triggers Wh-agreement. Thus in (5b) and (6b) that position is a gap, and in (14b) and (11b) it is lexical.

The Wh-agreement rule is indifferent to the phonological form of the bound position. Both A′-bound gaps and A′-bound pronouns trigger the Wh-agreement morphology, wherever they occur. In other work I have shown that both gaps and pronouns co-occur in coordination and in parasitic gap structures, and both occur inside of and outside of syntactic islands. Above we saw that they both occur in simplex clauses. In sum, they are both fully productive syntactic options, triggering the same agreement phenomenon. Since Wh-agreement has both morphological and interpretive effects (the latter identifying the position and the grammatical function of the variable), it must apply at S-structure.

This conclusion is congruent with Kayne's (1983) arguments that the CONNECTEDNESS CONDITION (CC) applies at S-structure. I will assume the correctness of his arguments here, and conclude that the CC applies to both null and overt bound pronouns at S-structure. Though P cannot locally license an empty object, its resumptive pronoun object is connected to its antecedent along a path of canonically governed projections as required by the CC. The CC also applies to gaps, such as the subject of (6b), at S-structure.

The criterial feature values [−pronominal, −anaphor] in Palauan, which employs the resumptive pronoun strategy exclusively, are thus visible in S-structure representations. This in no way suggests or entails that pronouns *change* their feature values. Presumably NPs are unspecified for these values at D-structure and until application of the principles which refer to them.

In sum, Palauan grammar has a mechanism for recognizing an A′-bound position at S-structure, whether that position is null or overt. S-structure is therefore the level at which the bound position is read as [−pronominal, −anaphor] and at which the Connectedness Condition (the ECP) applies to that position.

Resumptive pronouns in English and many other languages, in contrast, do not have these properties at S-structure, but are read as (free) pronouns at that level (Chomsky, 1982). As for the specifier pronouns in the languages illustrated in Section 2, there may or may not be a way to show, via overt morphology such as Wh-agreement, that they are variables at S-structure. But the facts of Palauan Wh-agreement have shown that there is a way of demonstrating that certain pronoun-like forms are A′ bound at the same level that the Connectedness Condition applies, providing strong support for the general claim that the ECP can apply to lexical forms.

This discussion can perhaps shed some light on the issues of homogeneity and multiple variable binding, mentioned in Section 2. As noted, Safir (1984) suggested a relaxation of Koopman & Sportiche's (1983) bijection analysis to the effect that multiple variable binding is allowed so long as all variables bound by the same quantifier are [α lexical]. Since Safir takes resumptive *pro* to be lexical, however, the lexicality distinction is weakened in his approach. But the homogeneity approach would work if the variables were parallel, or homogeneous in their *syntactic* feature composition. Palauan illustrates this, since both overt and null variables are defined in terms of the features [−pronominal, −anaphor], and co-occur in A′ binding structures (at S-structure). Resumptive pronouns in English would not be homogeneous with traces in these features, since in English RPs are bound by a late LF rule of predication (Chomsky, 1982).

4. The Specifier Parameter

4.1. *The Parameter*

We have now seen how the interaction of the specifier position with the principles of government theory accounts for the core cases of WCO. At

this point it is appropriate to gather together the properties of the proposed parameter that have been exposed in this paper, to see if they are at least descriptively harmonious with current assumptions:

(25) Properties of the proposed specifier parameter:
a. A single setting has wide-ranging effects throughout the grammar (e.g., effects on government and extraction phenomena of various kinds).
b. The parameter accounts for surface (typological) variation among languages (e.g., accounts for ordering of S, V, and O).
c. The parameter gives theoretical substance to distinctions previously made on the observational level (e.g., accounts for the position of the subject).

These are just the types of properties that have been attributed to other parameters proposed in the literature. So far, then, the issue of the position of the specifier does seem to conform to a parametric analysis.

Let us now turn to the form in which the specifier parameter should be stated. First, assume that the head-complement parameter can be stated in terms of schemata showing the two settings available, e.g.:

(26) The Head Parameter
$X' = X\ ZP$ or
$X' = XP\ X$

The specifier parameter should be similarly schematized, as in (27):

(27) The Specifier Parameter

$XP = X'\ YP$ or
$XP = YP\ X'$

This statement is simpler than one that also mentions the position of the head and its complement. Likewise, it is not necessary to mention the order within X', because the setting of the head parameter defines canonical government.[32] Thus the specifier parameter need only make reference to the relative position of X' and YP. The specifier is canonically governed if it is governed in the direction determined for the head-complement parameter, otherwise not. (No extrinsic ordering relation between the two is necessary.) I will assume, therefore, a statement of the parameter along

[32] One question posed in current literature is whether all phrase structure rules are derivable from the lexicon; related to this is the proposal that all parameters are lexical (Borer, 1983). The specifier parameter does not seem lexical or lexically derivable.

the lines of (27). The settings of the two parameters (26) and (27) are independent.[33]

The two word order parameters taken together yield the following four grammars; UNIFORM and SPLIT refer informally to the presence or absence of canonical government of all A positions:[34]

(28)

I		II	
uniform		*split*	
(VOS) $X\text{P} = X'\ \ Y\text{P}$		(OVS) $X\text{P} = X'\ \ Y\text{P}$	
$X' = X\ \ Z\text{P}$		$X' = Z\text{P}\ \ X$	
(SOV) $X\text{P} = Y\text{P}\ \ X'$		(SVO) $X\text{P} = Y\text{P}\ \ X'$	
$X' = X\text{P}\ \ X$		$X' = X\ \ Z\text{P}$	

The consequences for government that are manifested in these four grammars follow automatically from the settings of (26) and (27).

OVS languages are of course very rare, and an SVO language is prone to more constraints on movement than, say, a VOS language. What of VSO and OSV languages? Perhaps there are none. VSO grammars have been convincingly argued to be generated from underlying SVO order by V-fronting (e.g., Sproat, 1985; Chung & McCloskey, 1987),[35] or by movement of S from basic VOS order (Chung, to appear). OVS languages, like OSV, either do not occur or are extremely rare (see Derbyshire & Pullum, 1986). Such languages in any case could not be generated by one of the grammars in (28). If the approach to ordering taken in this paper is correct, underlyingly VSO and OSV languages (i.e., those without a VP) are eliminated in principle, or are radically different from other types and would require special phrase structure principles.

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[33] The question of the relation between (26) and (27) brings to mind the question of EXHAUSTIVE CONSTANT PARTIAL ORDERING (ECPO) in GENERALIZED PHRASE STRUCTURE GRAMMAR (GPSG). According to Gazdar et al. (1985, p. 49), grammars having ECPO have the same linear order in each category; ECPO thus seems to be derivable by (26) and (27). ECPO is not considered to be a linguistic universal by these authors. But if the presence or absence of ECPO is as presented here, i.e., derived from parametric settings, ECPO itself is derived within the core grammar of UG.

[34] In an earlier version of this paper I suggested that the split-government grammars, SVO and OVS, were *marked* in contrast to the canonically governing grammars VOS and SOV. I no longer consider that this contrast is appropriately described as a case of markedness.

[35] Chung and McCloskey currently assume that there are two types of VSO languages: ones that are SVO at S-structure (like Irish) and ones that are VOS at S-structure (like Chamorro) (personal communication). My claim would be that WCO should be seen in the Irish type but not in the Chamorro type. Chung informs me that Spec(N) is not extractable in Chamorro, but that, more generally, nothing can be extracted out of a Chamorro NP. Clearly, there are other factors involved in extraction than what we have pursued here.

4.2. *Does the Specifier Parameter have a Default Value?*

It has been suggested (Hyams, 1986) that parameters have default settings (Hyams' term is "initial" settings). In the case of the head parameter, it is likely that the default setting is VO. Many government phenomena prefer left-to-right ordering, for both head and antecedent government. Examples are verb/infl movements, Wh-movements, clitic movements, case marking, and topicalization and subjectivization. Many OV languages have Spec(C) and/or C on the left (e.g., German). Antecedents are seldom on the right, and rightward movements are much reduced for OV languages.[36]

If VO is default, then the default for the specifier parameter should be $XP = X'\ YP$, the two default settings yielding uniform direction of government and a VOS grammar. All selected positions are canonically governed (from the left) in such a grammar, making it, in terms of these two parameters alone, the most likely to occur. But VOS languages are by no means common. We have seen that even the presumably unmarked VOS grammar of Palauan has a preference for being NP-initial, a preference that goes beyond binding. SVO and other NP-V-NP (topicalized) sentence types are common in Palauan.[37] Other devices that have been proposed for changing deep VOS order to other surface orders include verb-fronting (Sproat, 1985; Chung & McCloskey, 1987) and subject-adjunction to V (Chung, to appear). Note that all of these approaches posit a basic VOS order, however. Thus it is reasonable to suppose that an underlying VOS order is more common than usually thought, and that it does in fact represent default phrase structure settings.

To conclude this section, we can now add the following properties of the specifier parameter to the list begun above:

(25)d. The parameter can be argued to have a default setting.
e. The parameter is category-neutral (sets specifier of XP).
f. The parameter is independent.

Again, these are properties hypothesized of the class of parameters in general. The proposed specifier parameter, then, fits in well with the parametric approach to superficial syntactic diversity.

[36] These are mainly statistical arguments. I would be interested to hear of empirical ones (e.g., from acquisition) that VO is the initial setting.

[37] This suggests that topicalizing processes may be historically responsible for changes from VOS to, say, SVO.

5. The Residue of WCO

I have argued above that WCO does not exist as an independent phenomenon, and that most cases described as WCO violations are actually ECP violations. While most of the structures commonly accounted for in WCO terms are readily analyzable in terms of connectedness, the class of supposed WCO cases is in fact not homogeneous. The analysis of some of these cases depends on heterogeneous factors. Examples of the remainder are constructions in English in which the two coindexed A positions are in a non-c-commanding relation, but in which, unlike the cases described above, each position is (arguably) properly governed. Here are some examples:

(29)a. ?Who$_i$ did photographs of his$_i$ sister embarrass t$_i$?
b. ?Who$_i$ did the news stories about him(self)$_i$ embarrass t$_i$?
c. The fact that Ronnie dislikes him$_i$ amuses every senator$_i$.
d. ??Who$_i$ did Mary want to show his$_i$ pictures to t$_i$?
e. ??Who$_i$ did you expect to return his$_i$ pictures to t$_i$?
f. Who$_i$ did you regret giving his$_i$ grades to t$_i$?

There may be several kinds of violation represented by these constructions, and judgments are less uniform than for the cases analyzed earlier. First, any structures like (29a) and (29b) can in fact be analyzed as violations of the Connectedness Condition, as the pronoun is within the subject, and subjects in English are on a left branch. Compare (29c), where the pronoun is in a (governed) noun complement. In current theories of psych predicates (Belletti & Rizzi, 1988; Georgopoulos, 1987), this subject also is a D-structure object of *amuse*, making it a properly governed domain. In contrast, the subjects of the psych predicate *embarrass* in (29a) and (29b), though themselves D-structure objects, contain heads (*photographs*, *news stories*) that are not proper governors, and extraction from their prepositional complements also presents difficulties for proper government. Examples (29d) and (29e) also contain the non-governing head N *picture*, so that the pronoun specifier fails to satisfy the ECP in this case also. Finally, there is a special relation (almost surely involving precedence; cf. Barss & Lasnik (1986)) that holds between the complements of a verb like *give* in (29f); when the antecedent precedes the pronoun, as in this Wh-question, such a relation is well formed.

Certainly all the binding issues embodied in these (and other) examples must be resolved before the entire WCO issue can be put to rest. I will not analyze such examples further here, since I believe they are not a homogeneous group. However, I expect that all residual cases, those in

(29) and others, will be shown to be derivable from general principles, just as in the case of specifiers. In any event, it seems clear that what was once seen as a homogeneous class is not one, and an analysis of an important subset follows directly from the notion of canonical direction of government.

6. Some Comments on Strong Crossover

It is common to think of strong crossover and weak crossover as being independent phenomena, despite their historical association and their label. Strong crossover (SCO) is an effect of principle C of the binding theory or an equivalent c-command condition, which prevents a variable or an r-expression from having an antecedent in a c-commanding A position:

(30)a. *Who$_i$ does he$_i$ love t$_i$?
b. *Who$_i$ does he$_i$ think Ivan said Mary threatened to sue t$_i$?

Weak crossover does not involve this c-command relation.

Stowell (1987) introduces an interesting analysis in which WCO is reduced to a special case of SCO, via an extension of the device of slash indexing (Haïk, 1984; Safir, 1984). He suggests that a slash index may be given to any phrase containing a bound variable. The subject in a WCO configuration would then have not only its own index but also that of the bound position it contains, and the latter index would c-command the index of the trace, violating strong crossover (Stowell's examples):

(31)a. *Who$_i$ does his$_i$ boss dislike t$_i$
b. *Who$_i$ does [[his$_i$ boss]$_{k/i}$ dislike t$_i$]

To see why this reduction cannot work, we must first consider Sportiche's (1985) analysis of strong crossover constructions. The argument proceeds as follows: Sportiche proposes to dispense with Principle C in the analysis of SCO. In describing how this approach fails to work for Palauan, I show how the Palauan facts argue for retention of Principle C. In doing so, I demonstrate that Palauan has SCO. Since Palauan does not have WCO, however, Stowell's reduction is invalidated.

Sportiche argues that, given the usual definitions of variable and pronominal,

(32)a. α is a variable if α is in an A position and is locally A′ bound.
b. α is a pronominal if α is in an A position and is free, or locally A bound by an element with an independent θ role.
(Chomsky, 1982)

principle C is superfluous to the account of strong crossover. Sportiche points out that in a sentence like (33), it is the pronoun *he* that is locally A′ bound and therefore construed as the variable, while the empty category *e* is A bound by *he* and therefore construed as the pronominal:

(33) *Who$_i$ did he$_i$ see e$_i$?

According to Sportiche, the definitions in (32) are sufficient to rule out this sentence without principle C, since English allows neither resumptive subject pronouns (in such contexts), nor empty object pronominals. Note that this analysis relies crucially on *overtness*. Also crucial to Sportiche's analysis is the purely contextual definition of variable in (32) (cf. Section 1.1), which forces *he* in (33) to be taken as a variable. The Palauan facts show reliance on this definition to be mistaken (and see Brody (1984, 1985), who also argues against the contextual definition).

Obviously, Sportiche's analysis does not generalize to languages that allow either resumptive subject pronouns or object *pro*. Palauan, among other languages, allows both (see Georgopoulos (1985b) for details). However, the Palauan equivalent to (33) is also ungrammatical:

(34) *ng-te'a$_i$ a lbilsang e$_i$ pro$_i$
who 3*S-saw-3S*

Who$_i$ did he$_i$ see e$_i$?

Both subject and object positions contain what is a null pronoun at D-structure. Either could independently be A′ bound. Except for intrinsic features, this sentence would be indistinguishable from the otherwise equivalent – and grammatical – *Who$_i$ e$_i$ saw him(self)$_i$*. Given intrinsic features which distinguish variables, a structure with the coindexing in (34) can be ruled out by a principle relying on c-command, since the variable cannot be c-commanded by the coindexed A-position pronoun. It is not ruled out, however, in an analysis based on (32). Principle C is still necessary to the grammar.

The same point can be made another way. Consider the contrasts exhibited in (35) and (36), noting the subscripts:

(35)a. ng-te'a$_i$ [a dilu [el kmo ngmerau pro$_i$] pro$_i$]
who *said* *COMP* 3*S-rich*

Who$_i$ ——$_i$ said that he$_i$ is rich?

(35)b. ng-te'a$_i$ [a ldilu [el kmo ngmerau pro$_i$] pro$_j$]
who *3S-said* *COMP* *3S-rich*
Who$_i$ did he$_j$ say ——$_i$ is rich?

(36)a. Who$_i$ did he$_i$ say he$_i$ is rich?
b. Who$_i$ did he$_j$ say he$_i$ is rich?

The sentences in (36) are literal translations of those in (35); (36a) corresponds to (35a), and (36b) to (35b). The English sentences are both ungrammatical, as English does not allow subject resumptive pronouns. But the inflectional morphology in the Palauan examples (see the discussion of Wh-agreement above) tell us that in (35a) the Wh-phrase binds the subject of *say*, and that in (35b) it binds the subject of *rich*, even though both bound positions are pronouns. That is, the variable has intrinsic features, features that are visible to the syntax (and the Wh-agreement rule) in the same way as such categorial features are visible on any other NP. Both sentences are grammatical. In the former case, the matrix variable c-commands the embedded pronoun, and in the latter case the only possible construal is that in which the matrix subject is disjoint in reference from the embedded subject, the bound variable. Again, principle C ensures this result, and the analysis proposed by Sportiche cannot, since at D-structure both subjects are pronouns.[38] Clearly, in Palauan and probably universally, a pronoun cannot bear the same index as a variable it c-commands. The c-command relation, and not the overtness of NPs, is the crucial factor in the disjoint interpretation of A positions in (35b).

It is clear how this discussion bears on Stowell's proposal to reduce WCO to SCO: it shows that Palauan has SCO. But we concluded earlier that Palauan has no WCO.[39] The two effects therefore have different accounts. It is likely that SCO is present in all languages, while WCO, as we have seen, is not.

7. Conclusions

This paper has established that weak crossover does not figure in the grammars of some languages, and has questioned whether WCO exists at all. The paper has also raised two issues that have to do with linear relations: on the one hand I have incorporated the notion of canonical

[38] In Palauan any pronoun can be a variable, so Principle C (or its equivalent) is necessary to rule out some choices of variable.

[39] Hungarian, for example, corroborates this claim, since Hungarian, already argued to be a language without WCO effects, does have SCO (see Horvath, 1987).

government into the analysis accounting for the lack of WCO in certain languages; on the other hand I have described the fact that quantifiers precede the pronouns they bind in Palauan. One might wonder whether there is any connection between the two important relations, directionality and precedence. In this concluding section I would like to pursue the issue of directionality a bit further; I will argue that there is no syntactic relation between directionality and precedence, and I will conclude by recommending that directional analyses be undertaken with caution.

First, there is a functional distinction between the two relations: precedence seems to be a factor in anaphora, while directionality of government (e.g., the CGC) is basic to licensing extraction.

Second, directionality and precedence are different *by definition*. The direction of government can be either from left to right or from right to left, but precedence is necessarily from left to right. Analyses that appeal to directionality must therefore maintain the independence of the two notions. The precedence requirement in Palauan, for example, cannot derive from the canonical government configuration, since even in a VOS grammar the terms are distinct. In contrast, motivating the analysis of the movement of V in an SOV language like German in terms of directionality of government of subject position is dubious, since German is not V-O. If directionality *is* involved, some additional explanation must be made (if, of course, any version of canonical government holds).

Rizzi (1990) reports that specifiers in SOV languages resist extraction; it could be that government from C^0 in Germanic languages makes up for some weakness in government from the right (cf. the implication in Section 4 that VO order is somehow preferred in UG). In this case, precedence (of the head) might be the explanation. However, there must be more to the V2 story than I-to-C movement, since C would be expected to be to the *right* of IP in an SOV language (compare Japanese). If V2 languages lack subject/object extraction asymmetries, it is the *V 2* property of C (as well as its unusual position) which accounts for this lack, and not necessarily the (lack of) canonical government.[40] A SOV language with V2 has in effect rejected its own canonical directionality in favor of government from the left. Other SOV languages need closer scrutiny to see how they can contribute to these questions.

[40] There are also historical reasons why the facts of German do not necessarily provide arguments against canonical government: German appears to be undergoing a change from OV to VO order. If it is truly SOV, it still has many head-initial properties. SOV languages like Japanese, without V2, do provide support for the general approach outlined here. See notes 8, 19, and Section 4.

APPENDIX: PARASITIC GAPS RATHER THAN WCO?

When the antecedent is in operator position, coindexing between two A positions is possible in Palauan, even when this A′ binding structure is the configuration that is expected to give rise to weak crossover effects. The unexpected grammaticality of these structures is suggestive of the case of scrambling in Japanese, described in Hoji (1985). Hoji shows that the leftward movement of NPs (scrambling) can create sentences with weak crossover configurations that are nevertheless grammatical. In order to account for this grammaticality, Hoji proposes that the empty pronoun over which the scrambled NP moves is actually a parasitic gap.[41] He points out that this empty category occurs in a position inaccessible to movement, and appears to be licensed by the movement of the scrambled NP. Parasitic gap structures are more acceptable than weak crossover structures, so if Hoji's theory is correct, the sentences in question would be expected to be grammatical.

Consider again the WCO paradigm, illustrated in (37):

(37)a. ngte'a$_i$ a longull er ngii$_i$ [a rengelekel pro$_i$]
who 3-*respect P* 3*S* *children*-3*S*
Who$_i$ do her$_i$ children respect t$_i$?

b. [a rebek el 'ad]$_i$ a loltoir er tir$_i$ [a rederir pro$_i$]
every person 3-*love P* 3*P* *mother*-3*P*
Their$_i$ mother loves everyone$_i$.

The first NP in each sentence is an A′ binder: it is a Wh-phrase in (37a) and a quantified phrase in (37b). The extraction site in these cases is occupied by an overt pronoun. Though weak crossover configurations, the sentences in (37) are grammatical.

According to Hoji's hypothesis, the coindexing of the specifier in (37) is parasitic on the coindexing between the resumptive pronoun and the A′ antecedent. It is true that when the object binder is in its D-structure position, the grammaticality of the construction is marginal. Compare (37) and (38), in which the antecedent is in situ at S-structure:

(38)a. ??temengull er a **te'a**$_i$ [a rengelekel pro$_i$]
3*P-respect P* *who* *children*-3*S*
(Who$_i$ do her$_i$ children respect t$_i$?)

[41] Engdahl (1983) makes a similar suggestion for English sentences in which a pronoun can be replaced by a gap.

(38)b. *toltoir er a **rebek el 'ad**$_i$ [a rederir pro$_i$]
3P-love P every person mother-3P
(Their$_i$ mother loves everyone$_i$.)

Since (37a, 38a), and (37b, 38b) have the same structure at LF, the usual WCO theories have no explanation for the grammaticality of structures like (37). Could the specifier in (37) in fact be parasitic?

If the facts of (37) and (38) can be accounted for in the way Hoji suggests for Japanese, the problem of the grammaticality of (37) would be solved rather simply. While this account works convincingly for Japanese, it does not seem to be available for Palauan, for a number of reasons. One is that nearly any NP position, including specifiers, can independently be A′ bound in Palauan. There is no sense in which the bound positions in the weak crossover-type structures above can be regarded as parasitic or otherwise inaccessible to binding.

A more serious obstacle to a parasitic gap analysis for Palauan is the fact that the constraint that forces the antecedent of a pronoun to be to the left and in an A′ position extends beyond weak crossover structures, for example to structures in which the antecedent is a subject. In these cases, when the subject c-commands the pronoun from its base position, it still cannot be coindexed with that pronoun:

(39)a. ??ngmengull er [a rengelekel pro$_i$] a te'ang$_i$
3S-respect P students-3S who
(Who$_i$ respects his$_i$ students?)

b. *toltoir er [a rederir pro$_i$] a rebek el 'ad$_i$
3P-love P mother-3P every person
(Everyone$_i$ loves their$_i$ mother.)

The examples in (39) are not weak crossover contexts. Coindexing should be unproblematic here, since the antecedent c-commands the pronoun. Yet the pattern of grammaticality in (39) is about the same as in (38). As was the case in contrasting (37) and (38) (and many contrasts observed earlier), sentences like those in (39) are grammatical when the subject is topicalized, as in (40):

(40)a. ngte'a$_i$ a mengull er [a rengelekel pro$_i$] ——$_i$
who respect P students-3S
Who$_i$ respects his$_i$ students?

(40)b. a rebek el 'ad$_i$ a oltoir er [a rederir pro$_i$] ——$_i$
every person love P mother-3P

Everyone$_i$ loves their$_i$ mother.

The contrasts of (39) and (40) show that the parasitic gap hypothesis for sentences like (37) cannot be maintained. This hypothesis rests on the structural similarity of weak crossover and parasitic gap structures: both involve non-c-commanding coindexed A positions. The difference between them is that weak crossover structures contain a pronoun and a trace, while parasitic gap structures contain two gaps, one presumably licensed by the other (and, by hypothesis, two operators). The reinterpretation proposed by Hoji involves, essentially, a switch in the identity of the pronoun. Examples (39) and (40) do not have the structure necessary to this analysis, at any level. Since the same constraint must be at work in all the examples in (37) through (40), the question of assimilating the weak crossover issue to the parasitic gap analysis is irrelevant to the Palauan case.

A third difficulty in applying Hoji's approach to the Palauan case lies in the fact that Palauan grammar distinguishes variables from pronouns in a way that can be seen morphologically. As we have seen, both variables and pronouns in Palauan can be either null or lexical. Therefore it is not by their (phonological) form that these two elements are distinguished, but rather by other properties. The extraction-site variable triggers Wh-agreement (described above), the agreement rule that distinguishes between Nominative and non-Nominative extraction sites. This can be seen in the examples repeated here (the *resumptive* pronoun is in boldface; Wh-agreement is also bold, and is explicitly glossed):

(41)a. a rebek el 'ad [a lo-ngull er **tir** [a
every person ***WH−nom****-respect P them*

retonari er tir]]
neighbors P them

Their$_i$ neighbors respect everyone$_i$.

b. a rebek el 'ad [a oltoir er a rederir pro [**pro**]]
every person ***WH+nom****-love P mother-3P*

Everyone$_i$ loves their$_i$ mother.

The surface morphology of the verb depends on the Case of the extraction site (or the Case of the argument *containing* the extraction site). In (41a)

the extraction site is assigned a non-Nominative Case, and therefore the verb bears non-Nominative agreement. The specifier 'their' in (41a) is within the Nominative NP, however, so if the specifier were extracted *it* would trigger Wh-subject agreement. Conversely in (41b): the resumptive pronoun is a subject, therefore Nominative, and the verb bears the appropriate Wh-agreement; the pronoun in the object NP has no effect on verb morphology. If (41a) represented a parasitic gap structure, the parasitic element would be construed as a variable, just as it is in other parasitic gap structures in Palauan (Georgopoulos, 1985b; forthcoming). It should therefore have an effect on Wh-agreement.[42] Since it does not (and *cannot*, without altering the interpretation of these sentences), the facts of (41) must count as another obstacle to the parasitic gap analysis.

Note also that the contrast in (41) further illustrates the fact that the WCO configuration (41a) is subject to the same analysis as the structure that does not involve WCO (41b). That is, questions of WCO are essentially irrelevant to the analysis of (41), as they are to (37) and (38).

The foregoing argument suggests that the non-extraction-site pronoun in WCO structures is not a variable, since it does not trigger Wh-agreement. Only the A position that shares its θ role with the A′ binder (the extraction site) triggers this agreement. Thus the strictest possible view of Wh-agreement is that it applies only to a single θ role or chain. Though many structures may have multiple variables from the point of view of the Connectedness Condition, only one variable in each chain is visible to Wh-agreement. This seems to be an irreducible fact about this unusual agreement rule, and suggests that there is more to the issue of the intrinsic definition of 'variable' than previously assumed.

References

Aoun, A., N. Hornstein, D. Lightfoot, and A. Weinberg: 1987, 'Two Types of Locality', *Linguistic Inquiry* **18**, 537–577.

Barss, A. and H. Lasnik: 1986, 'A Note on Anaphora and Double Objects', *Linguistic Inquiry* **17**, 347–354.

Belletti, A. and L. Rizzi: 1988, 'Psych Verbs and Theta Theory', *Natural Language and Linguistic Theory* **6**: 3, 291–352.

Borer, H.: 1983, *Parametric Syntax*, Foris, Dordrecht.

Chomsky, N.: 1975, 'Conditions on Rules of Grammar', pp. 3–50 in *Current Issues in Linguistic Theory*, R. Cole (ed.), Indiana University Press, Bloomington.

Chomsky, N.: 1981, *Lectures on Government and Binding*, Foris, Dordrecht.

[42] In the sources cited I show that real parasitic gaps in Palauan *do* trigger Wh-agreement.

Chomsky, N.: 1982, *Some Concepts and Consequences of the Theory of Government and Binding*, MIT Press, Cambridge, Massachusetts.

Chomsky, N.: 1986, *Barriers*, MIT Press, Cambridge, Massachusetts.

Chung, S.: 1982, 'Unbounded Dependencies in Chamorro Grammar', *Linguistic Inquiry* **13**: 1, 39–77.

Chung, S.: 1990, 'VPs and Verb Movement in Chamorro', in *Natural Language and Linguistic Theory* **8**: 559–619.

Chung, S. and J. McCloskey: 1987, 'Government, Barriers, and Small Clauses in Modern Irish', *Linguistic Inquiry* **18**: 2, 173–237.

Derbyshire, D. and G. Pullum, eds.: 1986, *Handbook of Amazonian Languages*: *Volume I*, Mouton de Gruyter, Berlin, New York, Amsterdam.

Engdahl, E.: 1983, 'Parasitic Gaps, Subject Extractions, and the ECP', ms., Lund University.

Farmer, A., K. Hale, and N. Tsujimura: 1986, 'A Note on Weak Crossover in Japanese', *Natural Language and Linguistic Theory* **4**: 1, 33–41.

Gazdar, G. et al.: 1985, *Generalized Phrase Structure Grammar*, Harvard University Press, Cambridge.

Georgopoulos, C.: 1985a, 'Variables in Palauan Syntax', *Natural Language and Linguistic Theory* **3**, 59–94.

Georgopoulos, C.: 1985b, *The Syntax of Variable Binding in Palauan*, Doctoral dissertation, University of California at San Diego.

Georgopoulos, C.: 1987; to appear, 'Psych Nouns', *Proceedings of NELS* **17**, Cambridge, MIT. 1991 (revised) as 'On Psych Predicates', in *Interdisciplinary Approaches to Language*: *Essays in Honor of S.-Y. Kuroda*, C. Georgopoulos and R. Ishihara (eds), Kluwer, Dordrecht, pp. 217–238.

Georgopoulos, C.: forthcoming, *Syntactic Variables*: *Resumptive Pronouns and A' Binding in Palauan*, Kluwer, Dordrecht.

Haider, H.: 1985, 'The Case of German', pp. 65–101 in J. Toman (ed.), *Issues in German Grammar*, Foris, Dordrecht.

Haïk, I.: 1984, 'Indirect Binding', *Linguistic Inquiry* **15**, 185–223.

Haïk, I.: 1990, 'Anaphoric, Pronominal, and Referential INFL', *Natural Language and Linguistic Theory* **8**: 3, 347–374.

Higginbotham, J.: 1980, 'Pronouns and Bound Variables', *Linguistic Inquiry* **11**: 4, 679–708.

Hoji, H.: 1985, *Logical Form Constraints and Configurational Structures in Japanese*, Doctoral dissertation, University of Washington.

Horvath, J.: 1981, *Aspects of Hungarian Syntax and the Theory of Grammar*, Doctoral dissertation, University of California at Los Angeles.

Horvath, J.: 1987, 'On Models with a VP-less Phrase Structure and Two (A)Symmetry Phenomena', in *Approaches to Hungarian*, Volume Two: *Theories and Analyses*, I. Kenesei (ed.), Jate Szeged, pp. 133–165.

Huang, J.: 1982, *Logical Relations in Chinese and the Theory of Grammar*, Doctoral dissertation, MIT.

Hurtado, A.: 1984, 'On the Properties of LF', *Cornell Working Papers in Linguistics* **5**.

Hyams, N.: 1986, *Language Acquisition and the Theory of Parameters*. D. Reidel Publishing Company, Dordrecht.

Jaeggli, O.: 1982, *Topics in Romance Syntax*, Foris, Dordrecht.

Jaeggli, O.: 1985, 'Subject Extraction and the Null Subject Parameter', in *Proceedings of NELS* **14**, Amherst, University of Massachusetts.

Jaeggli, O.: 1986, 'Three Issues in the Theory of Clitics', in Syntax and Semantics 19: *The Syntax of Pronominal Clitics*, H. Borer (ed.), Academic Press, Orlando, Fla.

Josephs, L.: 1975, *Palauan Reference Grammar*, University Press of Hawaii, Honolulu.

Kayne, R.: 1981, 'ECP Extensions', *Linguistic Inquiry* **12**, 93–133.

Kayne, R.: 1983, 'Connectedness ' *Linguistic Inquiry* **14**, 223–249.

Kiss, K.: 1987, *Configurationality in Hungarian*, Studies in Natural Language and Linguistic Theory, Reidel, Dordrecht.
Koopman, H. and D. Sportiche: 1983, 'Variables and the Bijection Principle', *The Linguistic Review* **2**, 139–160.
Koopman, H. and D. Sportiche: 1988, ' Subjects', ms., UCLA.
Kuno, S.: 1991, 'Against Pied Piping in LF', in *Interdisciplinary Approaches to Language: Essays in Honor of S.-Y. Kuroda*, C. Georgopoulos and R. Ishihara (eds.), Kluwer, Dordrecht, pp. 373–396.
Kuroda, S.-Y.: 1969, 'English Relativization and Certain Related Problems', in D. A. Reibel and S. Schane (eds.), *Modern Studies in English*, Prentice Hall, Englewood Cliffs, NJ.
Kuroda, S.-Y.: 1986, 'Whether We Agree or Not', *Linguisticae Investigationes* **12**: 1, 1–47.
Langacker, R.: 1969, 'On Pronominalization and the Chain of Command', in D. A. Reibel and S. Schane (eds.), *Modern Studies in English*, Prentice Hall, Englewood Cliffs, NJ.
Lasnik, H. and M. Saito: 1984, 'On the Nature of Proper Government', *Linguistic Inquiry* **15**: 2, 235–289.
May, R.: 1985, *Logical Form*, MIT Press, Cambridge.
Mohammed, M.: 1988, 'Conditions on Pronominal Coreference in Arabic', paper presented at the 2nd Symposium on Arabic Linguistics, U of Utah.
Pandit, I.: 1985, 'Exceptions to Weak and Strong Crossover in Hindi' *Linguistic Inquiry* **16**: 4, 678–681.
Pesetsky, D.: 1982, *Paths and Categories*, Doctoral dissertation, MIT.
Reinhart, T.: 1976, *The Syntactic Domain of Anaphora*, Doctoral dissertation, MIT.
Reinhart, T.: 1983, *Anaphora and Semantic Interpretation*. U Chicago Press.
Rizzi, L.: 1986, 'Null Objects In Italian and the Theory of pro', *Linguistic Inquiry* **17**, 501–557.
Rizzi, L.: 1987, 'Relativized Minimality', ms., University de Genève.
Rizzi, L.: 1990, *Relativized Minimality*, MIT Press, Cambridge, Massachusetts.
Safir, K.: 1984, 'Multiple Variable Binding', *Linguistic Inquiry* **15**, 603–638.
Saito, M. and H. Hoji: 1983, 'Weak Crossover and Move α in Japanese', *Natural Language and Linguistic Theory* **1**: 2, 245–260.
Sportiche, D.: 1985, 'Remarks on Crossover', *Linguistic Inquiry* **16**, 460–469.
Sproat, R.: 1985, 'Welsh Syntax and VSO Structure', *Natural Language and Linguistic Theory* **3**: 2, 173–216.
Stowell, T.: 1985, 'Null Antecedents and Proper Government', *Proceedings of NELS 16*, Montreal, McGill University.
Stowell, T.: 1987, 'Adjuncts, Arguments, and Crossover', ms., UCLA.
Stowell, T. and H. Lasnik: 1987, 'Weakest Crossover', ms., UCLA and UConnecticut.
Suñer, M.: 1988, 'The Role of Agreement in Clitic-Doubled Constructions', *Natural Language and Linguistic Theory* **6**: 3, 391–434.
Van Valin, R. D.: 1987, 'The Role of Government in the Grammar of Head-Marking Languages', *IJAL* **53**: 4, 371–397.
Wasow, T.: 1972, *Anaphoric Relations in English*, Doctoral dissertation, MIT.
Wasow, T.: 1979, *Anaphora in Generative Grammar*, Ghent: E. Story-Scientia.
Williamson, Janis: 1984, *Topics in Lakhota Grammar*, Doctoral dissertation, University of California at San Diego.

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