REVIEW ARTICLE


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1. INTRODUCTION. In KL, Chomsky first offers an illuminative introduction to his general ideas on language and linguistics. Starting by defining the linguistic version of Plato's problem—the problem of poverty of stimulus in language acquisition, C sets as the focus of inquiry 'knowledge of language: its nature, origins and use' (3), emphasizing the priority of 'I(nternalized)-language' over 'E(xternalized)-language' as the object of study. C then proceeds to illustrate how his current principles-and-parameters approach manages to tackle Plato's problem, revising some of his former analyses developed in LGB (1981) and Concepts (1982). Notions of great theoretical significance are introduced, including, inter alia, 'full interpretation (FI),' 'licensing,' 'last resort,' etc. The book ends with philosophical remarks on rule systems plus an independent short essay which would interest the sociopolitically minded readers.

Barriers, on the other hand, is a highly technical monograph in which C focuses on the two subtheories of government and bounding. C seeks to bring them into a closer relation by defining a unified notion of barrier to replace the former notions of bounding node and barrier to government. The Subjacency Condition (henceforth Subjacency) and the Empty Category Principle (ECP) are reformulated in this framework of unified locality, with desirable consequences for a wider range of linguistic phenomena than have ever been investigated, including Huang's CED (Condition on Extraction Domains) and Travis's HMC (Head Movement Constraint). C departs from Concepts in his analysis of parasitic gap constructions and offers an alternative account in terms of chain composition.

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The two books have already been reviewed by celebrated linguists (McCawley 1988 and Lightfoot & Weinberg 1988). Furthermore, many of the proposals put forward in these books have been subjected to subsequent revisions and modifications (Chomsky 1987, 1988), which is certainly ‘a healthy phenomenon indicating that the discipline is alive’ (KL: 5). For these reasons as well as for the obvious one that the contents of the books should by now be fairly familiar to anyone who is involved in the study of generative grammar, in this review I will limit the recapitulation of C’s analyses to the minimum required and instead discuss the possibility of improving C’s current theory.

I will mainly focus on three principles of UG—binding theory, ECP, and Subjacency—and suggest a unifying approach to them. In particular, I will argue that by elaborating C’s Barriers program it will be possible to unify ECP and Subjacency, the possibility of which C does not take into serious account. Furthermore, I will suggest that one can extend this ‘unified locality & unified subsystem’ approach further to include binding theory too. In the resulting system, both the antecedent-anaphor relation and the head-tail relation of a chain link will be subject to basically the same requirement of local binding.

2. BINDING THEORY. In LGB, the binding principles A and B were formulated in such a manner that they conspired to predict complete complementary distribution between anaphors and pronominals. Cases where this complementarity fails have since constituted one of the main motives for subsequent revisions:

(1) \([IP \text{ they}_i \text{ saw } [NP \text{ pictures of them}_i/\text{each other}_i]]\)
(2) \([IP \text{ they}_i \text{ saw } [NP \text{ their}_i/\text{each other's}_i \text{ pictures}]]\)

In KL, C attempts to offer a principled account of these cases by combining Huang’s 1983 insight that the relevant governing category (henceforth GC) varies according to the binding status of the anaphor/pronominal in question with the assumption that an NP may contain a PRO-like element in the DET position. By introducing the notion ‘BT-compatibility,’ C revises his binding theory so that the GC for \(a\) is the least ‘complete functional complex’ (IP or NP) in which \(a\) could satisfy the relevant binding principle(s) under some hypothetical indexing. It now follows that in 2 NP is the GC for the pronominal but IP is the one for the anaphor, correctly predicting the legitimacy of the noncomplementarity. In 1, NP uniformly constitutes the GC, in which the pronominal is free by being contraindexed with the postulated hidden pronominal in DET, and
by coindexation with the latter the anaphor is bound as required. 1
is then assimilated to the following structures, in which the PRO-like ele-
ment is replaced by an overt expression:

(3) a. [IP they\textsubscript{i} saw [NP John\textquoteright s\textsubscript{j} pictures of them\textsubscript{j}]]
b. [IP they\textsubscript{i} saw [NP their\textsubscript{i} pictures of each other\textsubscript{i}]]

Suppose that the proposed PRO-like element is indeed PRO: the im-
possibility of 4, for example, then reduces to a property of control, pre-
sumably to something like a minimal distance principle:

(4) *they\textsubscript{i} believe that Mary thought that [PRO pictures of each
other\textsubscript{i}] were on sale

If this is true, C will in fact be merely shifting the burden of explanation
from binding theory to the theory of control, and I'm not sure that this
should count as an essential improvement, unless control is to be sub-
sumed under binding, perhaps along the lines of Bouchard 1985.

Independently, there is (theory-internal) good reason to believe that
this DET = PRO analysis cannot be maintained in the raw form. The
analysis is based on the widely accepted view that elements in the DET
position (whether lexical or not) can function as the local binder of an
anaphor in the postnominal position, which means that these elements
occupy an A-position since anaphors are A-bound. More recently, how-
ever, in an attempt to reduce the Specificity Condition to ECP (to which I
will return below), C has suggested that wh-movement may apply succes-
sive-cyclically through this same position, and this latter analysis requires
that NP subject be in an A\textquoteright s-position. Assume that this is correct. It is
no longer possible to take their in 3b, for example, to directly A-bind each
other.

If the subject in NP indeed occupies an A\textquoteright s-position, it then follows that
'NP movement' in nominals (the city's destruction, *John's belief to win,
etc.) is in fact an instance of A\textquoteright s-movement. Ignoring potential complexi-
ties it may raise, this reinterpretation seems to throw a new light on
examples like 5:

(5) they\textsubscript{i} saw [NP each other's\textsubscript{i} pictures t\textsubscript{j}]

By assuming the application of A\textquoteright s-movement from a postnominal A-posi-
tion, we can relate the grammaticality of 5 to that of 6, where the anaphor
has undergone another instance of A\textquoteright s-movement, namely Topicalization:

(6) each other\textsubscript{i}, they\textsubscript{i} like t\textsubscript{i}

What is peculiar about 6 is the fact that each other is not at all bound in
its surface position: rather, it seems natural to suppose that each other
satisfies the binding requirement in its original position. If this is cor-
rect, we can maintain that the relevant GC in 5 is NP, without extending it to the matrix clause, for whatever principle saves the anaphor in 6 may be operative in 5 too. What is needed in 5 is the existence of an NP-internal local A-binder for each other before it moves, as analogous to the pronoun they in 6. Without entering into the details, I conjecture that the DP analysis of Fukui & Speas 1986 and others may provide an account by assuming a PRO subject within N':

\[(7) \quad [\text{DP each other}_i [\text{D'} 's [\text{N'} \text{PRO}_i [\text{N'} \text{pictures } t_i]]]]\]

Note the striking parallelism between 6 and 7.

A problem remains with respect to the impossibility of a reflexive instead of a reciprocal in the SPEC of NP/DP, though Topicalization is again possible:

\[(8) \quad \begin{array}{l}
a. \ast[\text{themselves'} [\text{pictures } t]] \\
b. \text{themselves, } \text{they}_i \text{ like } t_i \end{array}\]

A Case theoretic account may be viable here. Unlike reciprocals, reflexives are, say, morphologically objective (thus himself but *heself or *hisself, etc., ignoring first and second person reflexives here), a plausible consequence of which is that when Case-marked otherwise (genitive, for example) a reflexive will be in a state of ‘Case-incompatibility.’ Similar discrepancy in NIC (the Nominative Island Condition) violations seems to be susceptible of the same explanation:

\[(9) \quad \begin{array}{l}
a. \ast[\text{they think that each other will win} \\
b. **[they think that themselves will win] \text{ 9b will be a double violation of binding theory and Case theory, accounting for its more degraded status as compared with 9a.} \end{array}\]

Turning now to the concept of BT-compatibility, relativizing the definition of GC in the proposed manner has the consequence that contrary to what C still seems to believe (KL: 183), the ungoverned status of PRO (the PRO theorem) no longer follows from binding theory:

\[(10) \quad [\text{IP they}_i \text{ read } [\text{NP PRO}_i [\text{N'} \text{books}]]]\]

In 10, PRO as an anaphor has IP as its GC, but as a pronominal it chooses NP instead, and the binding principles A and B are both satisfied nontrivially without contradiction. Whether this poses a serious problem is dubious, however, since the status of the PRO theorem is not at all clear (for example, PRO subject of an infinitive is governed by the heads of CP and IP; the distinction between lexical and nonlexical governors may be crucial here). I will not discuss this matter any further. On other grounds, the notion of BT-compatibility is well supported, and below I will suggest a further application of this notion.
The redundancy between binding theory and ECP has long been one of the main concerns among generative linguists. Consider:

(11) a. *John thinks that himself will win
   b. *John seems that t will win

11b will be ruled out either by the binding principle A (in the same manner as 11a) or by ECP. This and other considerations have led Aoun 1985, for example, to propose the theory of generalized binding to dispense with ECP entirely. Some others have attempted to eliminate the redundancy by introducing a 'division of labor' maneuver: according to this latter view, binding theory only regulates relations between elements in distinct chains, while ECP remains essentially a chain-internal principle, one result being that binding theory and ECP will take care of 11a and 11b, respectively.

IN KL, C proposes to strengthen the predictive coverage of ECP, and hence weaken that of binding theory, by assuming LF movement of lexical anaphors to INFL (and possibly to other positions as well). As a result of this LF raising, 11a will be associated with the following LF structure:

(12) John himself-INFL thinks that t will win

And 12 will be ruled out by ECP, so C contends. C’s proposal is then that the chain-external relation of antecedent-anaphor at S-Structure is reinterpreted at LF as a chain-internal relation of anaphor-trace, to which only ECP should be relevant. NIC is thus reducible to ECP, not to binding theory. By extension, SSC (the Specified Subject Condition) may also follow from ECP, provided that proper government exclusively refers to antecedent government, as suggested in Barriers and elsewhere:

(13) a. *John thinks that Mary loves himself
   b. John himself-INFL thinks that Mary loves t

In 13b, t does not meet the requirement of antecedent government.

This ECP account of NIC (and SSC) may be rejected for the following reason, however. As there is nothing to preclude the successive-cyclic application of the proposed anaphor movement, the offending trace can in fact be antecedent governed.1 To assume that this anaphor raising

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1 The anaphor not only can but in fact must move cyclically if, for example, (a) is to be associated with the well-formed LF structure (b):

(a) John loves himself
   (b) John himself-INFL [vp t' [vp loves t]]

Without the VP-joined intermediate trace t', t would fail to be antecedent governed because of the M-barrier VP (see below).
applies only in one step would lead to a serious loss of generalization, for ECP requires wh-in-situ, for example, to move cyclically at LF. (I will discuss a related problem directly.) Any attempt to block the cyclic application by taking the raising rule to be A-movement must be abandoned too, since, if this were the case, the resulting anaphor-trace chain would never satisfy C's general Chain Condition:

\[(14) \text{A maximal A-chain } (a_1, \ldots, a_n) \text{ has exactly one Case-marked position (namely, } a_1) \text{ and exactly one } \theta\text{-marked position (namely, } a_n). \text{ (Barriers: 63, see also KL: 137)}\]

I will suggest below that it is possible to bypass this problem and still retain the spirit of C's proposal, simply by extending the requirement of antecedent government directly to lexical anaphors without raising them at LF:

3. ECP. As mentioned above, in Barriers and subsequent works C attempts to elaborate ECP by limiting proper government to antecedent government, excluding both lexical and \(\theta\)-government. This, however, does not mean that traces are not subject to any other government condition, and in Chomsky 1987 C suggests the existence of an independent \(\lambda\)-marking principle which requires a trace to be lexically governed.

A recalcitrant problem arises with respect to the trace of wh-in-situ moved at LF:

\[(15)\]
\[a. \text{ who saw what} \]
\[b. *what did who see \]

\[(16)\]
\[a. [\text{CP what}_j \text{ who}_i [\text{IP t}_i [\text{VP t}'_j [\text{VP saw t}_j]]]] \]
\[b. [\text{CP who}_i \text{ what}_j [\text{IP t}_j \text{ saw t}_j]] \]

The problem is how \(t'_j\) in the LF structure 16a (corresponding to the S-Structure 15a) can satisfy ECP, given that \(t_i\) in 16b (corresponding to 15b) is not antecedent governed to the extent that the Superiority Condition is reducible to ECP. Suppose that ‘\(\gamma\)-marking applies anywhere in the derivation’ (Chomsky 1987). In 16a \(t_j\) will be \(\gamma\)-marked exactly when \(\text{what}_j\) adjoins to VP, and then the latter moves further without leaving a potential offending trace. The defect of this ‘successive-cyclic \(\gamma\)-marking’ (Epstein 1987) approach is that 17a will be incorrectly permitted:

\[(17)\]
\[a. *\text{what do you think who saw} \]
\[b. [\text{CP what}_j [\text{IP you think [CP who}_i [\text{IP t}_i \text{ saw t}_j]]]] \]
\[c. [\text{CP who}_i \text{ what}_j [\text{IP you think [CP [IP t}_i \text{ saw t}_j]]]] \]

At the intermediate stage of 17b \(t_i\) will be antecedent governed by \(\text{who}_i\), and subsequent movement without trace creation will generate 17c as a
Closely related to this problem is the following speculation about certain scopal interaction between a *wh*-phrase and a quantifier phrase:

\[(18)\]
\[
\begin{align*}
\text{a. } & \text{who does everyone like} \\
\text{b. } & \text{who likes everyone}
\end{align*}
\]

18a manifests a scopal ambiguity, while 18b does not. Citing May’s 1985 analysis, C (Barriers: 7) attempts to attribute this contrast to the ill-formedness of the LF structure 19 corresponding to the wide scope interpretation of *everyone* in 18b:

\[(19)\] 
\[
[CP \ \text{who}_i \ [IP \ \text{everyone}_j \ [IP \ ti \ \text{likes} \ tj]]]
\]

In 19, C apparently believes, *ti* violates ECP, in essentially the same manner as *ti* in 16b. This belief is misguided in two respects; *ti* has already been marked [+γ] before QR applies, and even in the structure 19 there is no barrier at all to prevent whoᵢ from antecedent governing *ti*.

It seems to me that the correct solution of these problems is to extend binding theory to the operator-variable relation at LF, especially by exploiting C’s BT-compatibility. Assume that at LF *wh*-in-situ is adjoined to [+wh] CP rather than to the *wh*-phrase specifying the CP. This is a natural assumption and in fact is a required one if, for example, *what*ᵢ is to bind *ti* in 16a: C’s licensing theory requires an operator to bind a variable, and a variable to be bound (more precisely, ‘strongly bound’) (KL: 93). Deletion of every intermediate trace that may exist (this deletion is obligatory to form a legitimate operator-variable chain, and hence is applicable, according to C’s conception of Affect ₉ as a ‘last resort’) will yield the following LF structures for 15a,b respectively:

\[(20)\] 
\[
\begin{align*}
\text{a. } & [CP \ \text{what}_j \ [CP \ \text{who}_i \ [IP \ ti \ \text{saw} \ tj]]] \\
\text{b. } & [CP \ \text{who}_i \ [CP \ \text{what}_j \ [IP \ ti \ \text{saw} \ tj]]]
\end{align*}
\]

Notice that there is no ECP violation in these structures. Assume now that in the resulting two operator-variable chains (whoᵢ, ti) and (whatᵢ, tj), the following binding condition must be met:

\[(21)\] 

A variable is bound to its minimal possible operator.

Where:

\[(22)\] 

*α* is a possible operator for *β* iff *α* could locally O(perator)-bind

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2 Note that the mechanism of successive-cyclic γ-marking makes intermediate traces of *wh*-movement virtually unnecessary for ECP purposes. Thus to ensure the movement of whoᵢ to the complement CP specifier in 17b, it can be assumed that the position is vacant from the beginning. Whether or not a potentially occupying intermediate trace of *what*ᵢ is susceptible of subsequent LF deletion is simply irrelevant.
A variable must then be bound to the closest operator which could license the variable, which is a direct extension of the idea of BT-compatibility to the operator-variable relation. 20b violates 21 since \( t_j \) is not bound to its minimal possible operator, namely \( \text{what}_j \); by hypothetical coindexation, \( \text{what}_j \) could locally O-bind \( t_i \). In contrast, 20a satisfies 21; in particular, \( \text{who}_i \) is not a possible operator for \( t_j \) because, if they were coindexed, \( t_j \) would in fact be A-bound by \( t_i \), precluding the possibility of local binding by \( \text{who}_i \). Essentially the same explanation holds of 19, in which \( t_i \) is not bound to \( \text{everyone}_j \). This approach should be taken to be a proposal to extend Aoun's generalized binding to include the notion O-binding in addition to A- and A'-binding.3

If this line of analysis is correct, then Superiority reduces to binding theory, not to ECP. The so-called pure Superiority effect strongly supports this conclusion:

(23) a. who did you tell to read what

3 An EL reviewer cited the following as counterexamples to 21:

(a) SS: what did you talk to whom about
   LF: [whom, [what, [you talked to \( t_j \) about \( t_i \)]]]

(b) SS: *who fixed the car how
   LF: [how, [who, [\( t_j \) fixed the car \( t_i \)]]]

In (a), \( \text{what}_i \) will be the minimal possible operator for \( t_j \) and the structure will be ruled out incorrectly. Consider also (c), as compared with 15:

(c) what did which man see

At present I have no principled account for these cases, but here is one possibility presumably worth pursuing: Suppose that LF \( wh \)-movement may involve pied piping, which is in fact a familiar proposal from other contexts. Intermediate LF structures for (a) and (c) will then be (d) and (e), respectively:

(d) \([\text{PP to whom}] [\text{what}, [\text{you talked tPP about } t_i]]\]

(e) \([\text{NP which man}] [\text{what}, [\text{tNP saw } t_i]]\]

Notice at this point that the moved PP and NP are not operators themselves. Rather, the operators are contained in them, yet to be raised to an operator-position. Subsequent operator movement will yield the following LF representations, in which there will be no violation of 21:

(d') \([\text{whom}, [\text{PP to } t_j], [\text{what}, [\text{you talked tPP about } t_i]]]\]

(e') \([\text{NP which man}, [\text{what}, [\text{tNP saw } t_i]]]\]

Returning to (b), I follow Chomsky 1987, 1988 and assume that adjuncts like \( \text{how} \) and \( \text{why} \) do not form an operator-variable structure at LF. The consequence is that condition 21 is simply irrelevant to (b). The ungrammaticality of (b) should then be attributed to some other reason, probably related to the property of \( \text{how} \) as an adjunct. Assume, for example, that CP adjunction is permitted only for operator movement. If this restriction is viable on other grounds, \( \text{how}_j \) in (b) must adjoin to \( \text{who}_i \) and then the ungrammatical status of the sentence follows in an obvious way.
b. *what did you tell who to read

(24) a. \[ CP \text{ what} \ [CP \text{ who} \ [IP \text{ you tell } t_i \text{ to read } t_j]] \]

b. \[ CP \text{ who} \ [CP \text{ what} \ [IP \text{ you tell } t_i \text{ to read } t_j]] \]

23–24 are susceptible of exactly the same account as 15 and 20.

In *Barriers*, C proposes as one mode of barrier formation the Minimal-
ity Condition (henceforth MC, and a barrier defined by MC will be re-
ferred to as an M-barrier), according to which the immediate projection of a
governor of a is a barrier for a blocking government from outside. The re-
sult is that among potential governors only the closest one is the actual
governor. C then attempts to accomodate the that-trace effect to MC:

(25) a. *whoi do you think \[ CP \text{ t'} \ [CP \text{ that} \ [IP \text{ t} \text{ will win}]] \]

b. whoi do you think \[ CP \text{ t'} \ [IP \text{ t} \text{ will win}]] \]

In 25a, C' is an M-barrier blocking antecedent government of ti by t'. In
contrast, 25b lacks C' because of the featureless status of the head C and
antecedent government holds as required. Exactly the same account
seems to carry over to the fact that Subject-Aux Inversion does not apply
when the matrix subject is wh-extracted:

(26) a. *[CP whoi [c' didj [IP t t t leave]]]

b. [CP whoi e [IP t t will win]]

In Chomsky 1987, C suggests the possibility of extending this approach
to derive the Specificity Condition, and also to account for the impossibility
of raising in nominals:

(27) a. *who did you see \[ NP \text{ John's} \ [NP \text{ pictures of t}]]

b. who did you see \[ NP \text{ t'} \ [NP \text{ pictures of t}]]

(28) *[NP \text{ John's} \ [NP \text{ belief} \ [IP \text{ t} \text{ to be wise}]]]

According to C's revised MC (whose exact formulation need not concern
us here), NP in 27a and N' in 28 constitute M-barriers, while N' in 27b
does not.

Consider a simple case of NP-movement:

(29) \[ IP \text{ John}i [I' \text{ seems}j [VP \text{ t}v j [IP \text{ t} \text{ to win}]]] \]

29 involves another instance of A-movement, i.e. V-raising to I. By MC, VP
is an M-barrier and antecedent government of ti by Johni is blocked,
an ECP violation if C is correct in limiting proper government to anteced-
ent government. C's solution is by invoking the notion 'SPEC-head
agreement (henceforth SHA)' in IP and CP, a consequence of which is
that in 29 i = j and ti is now antecedent governed by tvj.

Though SHA itself is a natural device on conceptual grounds, it casts
some doubt on C's MC analysis mentioned above. Thus if SHA is oper-
ative in 26a, ti will then be antecedent governed by didj=i. The same will
be true in 25a, if the overt complementizer can bear an index at all. For 27–28, it seems legitimate to assume that SHA does not apply in NP, but the foregoing consideration clearly indicates that C's ECP analysis as a whole does not fare well.

Consider a possible application of the idea of SHA to cases involving lexical anaphors:

\[(30)\]
\[\begin{align*}
  a. & \quad [\text{IP John}_i \ [\text{VP loves}_i \ \text{himself}_i]] \\
  b. & \quad *[\text{IP John}_i \ \text{thinks}_i \ [\text{CP} \ [\text{C'} \ \text{that} \ [\text{IP himself}_i \ \text{will win}]]]] \\
  c. & \quad *[\text{IP John}_i \ \text{thinks}_i \ [\text{CP} \ [\text{C'} \ \text{that} \ [\text{IP Mary}_j \ [\text{VP loves}_j \ \text{himself}_j]]]]]
\end{align*}\]

The anaphor is now antecedent governed in 30a, but not in 30b, c. Suppose then that we generalize ECP to 31:

\[(31)\] Bound Category Principle (BCP):

Traces and lexical anaphors are antecedent governed.

To the extent that 31 generally holds, C’s artifact of anaphor raising at LF can be dispensed with, and the problem of its presumed noncyclicity does not arise at all.

31 bears a striking resemblance to the binding principle A, especially to Aoun’s version, and in fact it is possible to state 31 in binding theoretic terms, on the assumption that V or its trace, for example, can function as a binder for anaphors. It now follows that the anaphor is locally A-bound in VP in 30a, while in 30b, c it is not in C' (or CP, if only X^{max} can be an M-barrier, as suggested below) and VP, respectively. Thus the two notions of GC and barrier coincide, an important case of unified locality.

Returning to 25–26, a binding theoretic account is now available. Given SHA, that in 25a and did in 26a are coindexed with \(t_i\). If the C head occupies an A-position, as implied by C’s conclusion that ‘head-to-head movement forms an A-chain’ (Barriers: 79), \(t_i\) will then be locally A-bound, in violation of the binding principle C. This is another case of binding theory taking care of what was originally attributed to ECP.

Two important consequences now follow. One is that we can limit M-barriers, and hence barriers in general, to X^{max}, excluding X’ projections, and thus simplifying the formulation of MC. The other is that we can dispense with C’s unnatural stipulation that IP is not a possible adjunction site for wh-movement: even if who moves via adjunction to IP in 25a and 26a, the original trace still violates the binding principle C. Consider the first consequence. An apparent problem is presented by 28, in which N’ is taken to be an M-barrier. Note, however, that 28 is independently ruled out by C’s Uniformity Condition:

\[(32)\] If \(\alpha\) is an inherent Case-marker, then \(\alpha\) Case-marks NP if and
only if \( \theta \)-marks the chain headed by NP. \( (KL: 194) \)

In 28, belief does not \( \theta \)-mark John and therefore genitive Case (which C assumes to be an inherent Case) cannot be assigned or realized under 32. It is now safely concluded that only \( X^{\text{max}} \) can be an M-barrier. This has the advantage of dispensing with C’s rather ad hoc assumptions concerning X-bar schemata that ‘choice of X’ is forced when there is a specifier, otherwise optional’ \( (Barriers: 4) \), ‘X’ is present only when its head has features’ \( (48) \), etc.

Turning to the second consequence, that adjunction to IP need no longer be prohibited, it should be mentioned that C is forced to stipulate another eccentric property of IP, ‘the defective character of the I system’ \( (Barriers: 48) \) with respect to barrierhood:

\[
\[ \text{CP what } \text{[C'} \text{do [IP you [t_1 [VP t' [VP [V' want t]]]]]]} \]
\]

In order for what to antecedent govern \( t' \), neither IP nor I’ should constitute a barrier. We need not state this property as such; IP is not a barrier since adjunction to IP is permitted, and I’ is not since only \( X^{\text{max}} \) can be an M-barrier.

The consequence of the general availability of IP adjunction is far-reaching. Consider the subject/adjunct asymmetry with respect to the that-trace effect:

\[
\[ \text{why do you think } \text{[CP t'' [C that [IP John will [VP t' [VP win t]]]]]} \]
\]

The grammaticality of 34, in contrast to the ungrammaticality of 25a, has presented a mystery for any ECP account. Lasnik & Saito 1984 have attempted to derive this asymmetry from their assumption that \( \gamma \)-marking need not apply to an adjunct trace until LF, combined with the deletability of semantically empty elements (like the complementizer that) at that level. More recently, C has suggested the existence of an LF VP-raising rule which adjoins VP to IP \( (Chomsky 1987) \), yielding an LF structure for 34 in which there will be no barrier to block antecedent government of \( t' \) by \( t'' \). The option of IP adjunction renders all these complexities unnecessary. This means that adjunct traces can now be \( \gamma \)-assigned and \( \gamma \)-checked at S-Structure, which in turn strongly suggests that ECP applies at S-structure.

Suppose that the latter conclusion is correct. Suppose furthermore that this holds of BCP 31 as well. C’s LF anaphor-raising rule now makes no sense: an anaphor may be antecedent governed at LF by moving to a position where it can enter into a government relation with its antecedent (as in C’s analysis), but that will be too late since antecedent government must hold at S-Structure. Very importantly, applying ECP at S-Structure
may yield the effect that Subjacency reduces to ECP, as will be suggested in the next section.

3. **Subjacency.** A long-standing puzzle concerning Subjacency is whether we should interpret it as a condition on Move or on representation. C does not give a clear decision in *Barriers* but the proposed formulation implies the latter choice:

(35) If \((a_i, a_{i+1})\) is a link of a chain, then \(a_{i+1}\) is \([1-]\)-subjacent to \(a_i\).

Where:

(36) \(\beta\) is \(n\)-subjacent to \(\alpha\) iff there are fewer than \(n+1\) barriers for \(\beta\) that exclude \(\alpha\). (**Barriers**: 30)

Chomsky 1987, on the other hand, argues that Subjacency should rather be conceived of as a condition on movement. I believe that the representational conception is to be preferred, for reasons that should be clear from the following discussion.

In *Barriers*, C illustrates how a large number of island violations can be subsumed under Subjacency, but with some doubtful assumptions. C contends, for example, that MC is not relevant to Subjacency, noting that ‘its [=MC’s] essential function is to reduce ambiguity of government, a factor not relevant to the theory of movement’ (10). This claim is challenged by the thesis of unified locality. (In fact, C’s revised MC is intended to work for Subjacency as well.) Another doubtful assumption is that ‘wh-phrases may not adjoin to IP’ (32), which I have dismissed above as an unnecessary stipulation.

Consider the following two cases of CED effects, the Subject Condition and Adjunct Condition violations:

(37) a. \(*_{[CP\ who\ [C'\ did\ ([IP\ t')]\ [IP\ [NP\ t'\ pictures\ of\ t]\ amuse\ John]]]}\)

   b. \(*_{[CP\ to\ whom\ [C'\ did\ ([IP\ t'])\ [IP\ you\ leave\ [PP\ before\ [CP\ t'\ [IP\ you\ spoke\ t]]]]]}\)

In 37a an intermediate trace (\(t'\)) may exist in the NP specifier position, in conformity with C’s 1987 analysis. Precluding adjunction to IP, Subjacency accounts for these examples as follows: NP in 37a and PP in 37b are ‘intrinsic’ or ‘inherent’ barriers by C’s definition, since they are \(X^{\text{max}}\) not \(L\)-marked (i.e. not \(\theta\)-marked by a lexical category). IP in both examples is then an ‘inherited’ barrier, a barrier by inheritance from an immediately dominated potential barrier. The resulting link (\(who, t'\)) violates 35 in either case since there are two intervening barriers. Adjunction to IP nullifies this account, of course.

Notice that even if adjunction to IP is allowed, these structures poten-
tially violate ECP; $t'$ will not be antecedent governed by $t''$ because of the intervening I(nherent)-barrier. The violations are only 'potential' in C’s framework which, following Lasnik & Saito, assumes that intermediate traces of $wh$-movement (excluding adjunct traces) are deleted at LF without actually violating ECP. Suppose that such a potential ECP violation is indeed what constitutes a Subjacency violation. This amounts to saying that ECP is a ‘multilevel’ principle, in that it requires a trace to be antecedent governed at every syntactic level where it is present. In particular, a trace present at S-Structure is subject to ECP at that level, a possibility already suggested in the foregoing discussion. Subjacency then reduces to ECP, and unified locality is attained in a more simplified manner; since Subjacency now involves only one barrier (which is sufficient to block antecedent government), C’s notion of inherited barrier is dispensable.

A potential problem for this multilevel ECP analysis is how the effect can be maintained that an ECP violation is ‘typically stronger’ than a Subjacency violation. I believe that this can be attributed to C’s principle of FI which ‘requires that every element of PF and LF ... must be licensed’ ($KL$: 98). In the present context, FI requires LF representations to be minimal in the sense that they contain no element that is not properly licensed. Suppose then that an offending trace present at S-Structure remains at LF; the structure will violate FI since it contains an element not properly licensed, i.e. a trace not antecedent governed. Suppose on the other hand that the offending trace is deleted at LF; now there is no violation of FI. The former case is a strong violation, while the latter is a weak one, and these may be taken to correspond to the (strong) ECP violation and (weak) Subjacency violation, respectively.

Now given C’s 1987, 1988 Last Resort Condition on Affect $\alpha$, one consequence being that traces deletable at LF are limited to intermediate argument traces of $wh$-movement, the correct effect follows that 37a, b are weak violations since the offending trace $t'$ is deleted at LF, whereas adjunct extraction from an adjunct clause, for example, is a strong violation since the offending trace remains at LF:

(38) *[CP how [C did [IP $t''$ [IP you leave [PP before [CP $t'$ [IP you fixed the car $t$]]]]]]]

C cites 39a as an example showing that Subjacency violations are ‘cumulative’ ($Barriers$: 38), a more articulated structure being 39b:

(39) a. *what did you wonder [CP who knew [CP who saw $t$]]

b. what did you [VP $t''$ [VP wonder [CP who [IP $t''$ [IP $e$ [VP $t$]]]]]]
[vp knew [cp who [ip t' [ip e saw t]]]]

The more degraded status of 39 can now be attributed to the fact that the structure contains two offending traces, namely t'' and t': CP and CP' should count as M-barriers, under some proper formulation of MC (e.g. X^{max} is an M-barrier for \( \alpha \) iff X^0 is the minimal governor of \( \alpha \)).

While the proposed analysis may leave many delicate observations unexplained (which C relates to parametric variation concerning barrierhood to movement), I believe this to be a case of ‘proper idealization of complex phenomena’ (Barriers: 1) and the unification approach seems generally on the right track.

In Barriers, C suggests a further application of Subjacency to parasitic gap constructions. He proposes the following condition on chain composition involved in those constructions (67):

\[(40) \text{The operator of the parasitic gap must be 0-subjacent to the head of the A-chain of the real gap.}\]

Consider 41a, b:

\[(41) \begin{align*}
\text{a. what did you file t [pp o [pp before you read e]]} \\
\text{b. *who [ip t [vp left [pp o [pp before you spoke to e]]]]}
\end{align*}\]

In 41a O is 0-subjacent to t, while it is not in 41b, yielding the observed contrast. Note that this analysis will force C to the conclusion that Subjacency is a condition on representation, since here O is not related to t via movement.

The 0-subjacency condition is conceptually odd, especially in light of C's remark that 'the properties of these [parasitic gap] constructions are quite curious, and, precisely because of their marginality, it is highly unlikely that these are learned or that UG has a specific component concerned with them' (KL: 148). Furthermore, this condition makes wrong predictions. 42 is quoted from Lasnik & Uriagereka (1988: 75), with labeled bracketing added:

\[(42) \text{*[cp [pp o [pp without reading e]], [cp which report did you file t]]}
\]

In 42, O is 0-subjacent to t but the output is not grammatical.

It seems reasonable, then, to seek a possibility of reducing 40 to an in-

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4 The suggested formulation of MC is in fact too strong. For example, it predicts that (a)=27b will be a Subjacency violation:

\[(a) \text{ who did you see [np t' [n pictures of t]]}
\]

Here \textit{pictures} minimally governs t' and hence NP will be an M-barrier blocking antecedent government from outside. See Fujita 1989 for further elaborations of the condition to solve this problem as well as others that are related to C's revised MC.
dependent general principle. This is indeed viable, as we shall see. In fact, a first approximation is already at hand: above Subjacency has been shown to derive from ECP, and this automatically extends to 0-subjacency. Thus we have 43 instead of 40, as a tentative descriptive characterization:

(43) The operator of the parasitic gap must be antecedent governed by the head of the A-chain of the real gap.

43 will correctly distinguish 41a on one hand and 41b and 42 on the other. Obviously 43 need not be stated as such but naturally derives from ECP, if ‘ECP is in effect a chain phenomenon’ (Barriers: 80). Thus, given a composed chain \((wh, \ldots, t, O, \ldots, e)\) in parasitic gap constructions, ECP requires antecedent government to hold in its every link, especially in the link \((t, O)\). The fact that LF A’-movement does not license parasitic gaps is accordingly explained, since, I have argued, ECP applies at S-Structure (though this account implies that null operators must be antecedent governed, perhaps for reasons related to the strong binding of variables).

Examine the structure 41b closer. Here antecedent government of \(O\) is blocked by virtue of the VP-internal position of the adjunct clause, with VP as an M-barrier. This does not exhaust its possible positions, however, and if the adjunct is generated as an IP-daughter, \(O\) will be antecedent governed by \(t\), satisfying ECP. Notice that the resulting composed chain \((who, t, O, \ldots, e)\) still violates another principle, namely Binding principle C. This should be so because \(e\) is now A-bound by \(t\) in the domain of its ultimate operator \(who\). The anti-c-command requirement thus reduces to binding theory.

To the extent that this account is generally valid, example 41a needs reconsideration, in which the composed chain has been taken to be \((what, \ldots, t, O, \ldots, e)\). This should be a principle C violation, too. In fact, it follows from this binding theoretic analysis that a composed chain for a parasitic gap must not include the real gap as its member. Thus condition 43 in fact does not properly characterize the nature of these constructions. Suppose then that the correct structure for 41a is as follows, where the adjunct clause is immediately dominated by IP:

(44) \(\text{[CP what did [IP t' [IP you [VP file t] [PP O [PP before you read e]]]]]}\)

The composed chain is now \((what, t', O, \ldots, e)\), excluding \(t\) (which no longer governs \(O\)). Note that the chain conforms nicely to the format of A’-chains in general. In particular, antecedent government holds in the link \((t', O)\), as in every other link, with no principle C violation. Parasitic gap constructions now involve two independent A’-chains, for the real
and parasitic gaps respectively, sharing the overt wh-operator as the head. In default of evidence to the contrary, I conclude that this is indeed what is going on in these constructions.

In the above analysis, both ECP and binding theory have been invoked. Is it possible to avoid reference to one or the other? Yes, if antecedent government reduces to local binding under unified locality. I will briefly discuss this topic in the concluding section.

Some more comments are in order with regard to C’s treatment of parasitic gap constructions. In order to account for the contrast between 45a and 45b, C (Barriers: 58–60) resorts to the Vacuous Movement Hypothesis (VMH) to the effect that ‘vacuous movement is not obligatory at S-Structure’ (49–50):

(45) a. he’s a man that [everyone who [gives presents to e]] likes t
b. *this is a book that [any man to whom [we’ll give e]] will like t

In conformity with VMH, who remains in situ in 45a, thereby rendering the embedded CP specifier position available to the relative operator movement, while this is prohibited in 45b, in which movement of to whom is not vacuous. Adoption of VMH forces C to assume 46 as a parameter distinguishing English from Chinese-Japanese:

(46) At LF, wh-phrases move nonvacuously only to a position occupied by wh-.

46 is needed, for example, to account for the following contrast:

(47) a. I wonder [what [John saw t]]
b. *I wonder [[John saw what]]

Parameter 46 is somewhat bizarre, however, given C’s following remark: ‘It is difficult to imagine that rules of the LF component are subject to parametric variation, because it is unclear what evidence to fix their character might be available to the language learner’ (KL: 156). VMH is predictively inadequate, too. For example, it is not at all clear how C can still account for the cumulative character of Subjacency violations illustrated by 39 above. Furthermore, VMH does not explain the acceptability of 48, as observed by Shlonsky 1987:

(48) he’s a guy that [anything [you say to e]] annoys t

I therefore abandon C’s VMH account in favor of the following one. Schematically, the grammatical 45a and 48 and the ungrammatical 45b have the following LF operator-variable structures, respectively:

(49) a. ...wh, ... [ROj [tj ... ei]] ... ti
b. ... wh, ... [ROj [ei ... tj]] ... ti
Here $wh_j$ indicates the operator binding the real and parasitic gaps, $RO_j$ the relative operator of the embedded clause. Now, in 49a $e_i$ satisfies the O-binding principle 21 proposed above, while in 49b it does not: in 49b, $RO_j$ is the minimal possible operator for $e_i$.

4. Unified Locality & Unified Subsystem. The discussions so far should be understood to mean that C's current UG program contains considerable redundancies among the three principles examined here. A partial solution has already been proposed. Subjacency can be safely assumed to be reducible to ECP if the latter is a multilevel principle. Suppose that we extend this unification approach to the relation between ECP and binding theory. Considerations about parasitic gaps in the preceding section dictate that reduction of ECP to binding theory is mandatory. Recall that ECP is insufficient as a well-formedness condition on chains; binding principle C, in the case of A'-chains, requires that every member except the terminus be in an A'-position. Suppose now, as suggested above, that the two notions of barrier and GC can be unified. If antecedent government and binding involve the same version of 'command' (e.g. c-command) in their definitions, the consequence is that antecedent government means nothing but binding in GC. More than that, since binding distinguishes the two subclasses (A- and A'-binding) which antecedent government does not, and since this distinction is crucial in the statement of the chain condition, antecedent government now has no role to play.

The conclusion entails the divorce of antecedent government from the theory of government, the correctness of which should be obvious from the following consideration:

(50) *who$_i$ do you think [CP that [IP t$_i$ [I$_i$ likes$_j$ [VP t$_i$ [VP t$_Vj$ Bill]]]]]

C (Barriers: 87) refers to this unwanted derivation of a that-trace case where $t'_i$ incorrectly antecedent governs $t_i$, and subsequently suggests that 'antecedent government requires ... the stronger requirement of c-command.' Note that there is another potential antecedent governor for $t_i$, namely likes$_j$ in the I head position, since they are coindexed by SHA and are in a government relation for an obvious reason. Suppose then that government is defined in terms of m-command, while antecedent government is in terms of c-command, as is binding. This leaves no problem for 50, but then antecedent government obviously reduces to a case of local binding.

Binding theory now subsumes both ECP and Subjacency as the well-
formedness condition on chains. Largely following Aoun’s 1985 formulation of his generalized binding, and also exploiting Lasnik & Saito’s γ-marking convention, I will give a first approximation of the principles of this unified subsystem as follows, with the notion of GC understood to be the same as that of M-barrier (and perhaps of I-barrier):5

(A) An anaphor is $[+\gamma]$.
(B) A pronominal is $[-\gamma]$.

(52) An X-anaphor/X-pronominal is $[+\gamma]$ iff locally X-bound in its GC. (where X=A/A')

Given an X-chain $(\alpha_1, \ldots, \alpha_n)$, $\alpha_i$ $(i>1)$ is an X-anaphor and hence subject to 51A. Thus 51A replaces ECP and Subjacency as the chain-internal principle. Independently, $\alpha_1$ may or may not be subject to 51A or 51B. Note that marking convention must be maintained: for one thing, the traditional ECP/Subjacency discrepancy has to be captured along the lines suggested above in light of the multilevel ECP. For another, lexical anaphors which are marked $[-\gamma]$ at S-Structure must not be turned to $[+\gamma]$ at LF by successive-cyclic raising; otherwise such anaphors would not violate FI, yielding only milder deviancy. 51 and the O-binding principle 21 will constitute an extended theory of X-binding, where X = A/A'/O.

I will not discuss the consequences of this approach, ignoring many potential problems. However, this seems a promising program on both empirical and conceptual grounds, and to the extent that this is so, the present proposal deserves anyone’s serious consideration if he is concerned with the enhancement of the explanatory force of C’s theory of UG.

REFERENCES

BOUCHARD, DENIS. 1985. PRO, pronominal or anaphor. LI 16.471-77.

5 The assumption that GC coincides with a barrier implies that accessible SUBJECTs play no role in the theory of binding. I believe this can be maintained for the relevant cases, in the manner illustrated above. The elimination of the concept of an accessible SUBJECT also follows from C’s revised binding theory (see KL: 176-77).
—. 1987. Kyoto lectures. (Lectures delivered at Kyoto University of Foreign Studies, January 28, 1987.)
—. 1989. On deriving the Subjacency effects from the ECP. Studies in English Literature 65.229–43.