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Minimizing government: Deletion as cliticization*

DAVID LIGHTFOOT

Abstract

The rigors of the Minimalist Program eliminate movement operations, traces, and 1980s-style conditions of government. This article emphasizes poverty-of-stimulus problems, reviews lexical government effects, and captures them (and more) by treating certain deletion as cliticization. This analysis carves up the grammatical world differently, linking former "movement" conditions with phonological reductions, VP ellipsis, gapped verbs, some agreement relations, etc. The productivity of the analysis supports the rigors of the Minimalist Program.

1. Introduction

1.1. Three phases

Throughout the fifty-year history of generative grammar, grammatical theory and innateness claims have been keyed almost entirely to language acquisition. Linguists have been impressed with poverty-of-stimulus problems: children come to have a system (a "grammar") which ranges over an infinitude of data and is not fully determined by their initial experiences. Consequently we

* This article develops for a professional audience ideas sketched for a lay audience in chapter 3 of Anderson and Lightfoot (2002) and chapter 3 of Lightfoot (2006), with adaptations from what is outlined there. Many thanks to Steve Anderson and Norbert Hornstein for extended discussions about the issues discussed here and to audiences at the universities of London (School of African and Oriental Studies), Reading, Pennsylvania, Michigan, Indiana, and Tromsø. Liliane Haegeman, Jim McCloskey, and Jairo Nunes provided helpful comments on an earlier draft, as did Lucia Lobato before her recent, untimely death.

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have postulated that they must have certain information independently of experience, available generally to the species innately and enabling them to develop the kinds of grammars they have on the basis of their rudimentary experience in the first few years of life. Linguists have worked with the explanatory schema of (1).

(1) a. Primary Linguistic Data (UG → grammar)
b. Triggering experience (genotype → phenotype)

Children are exposed to primary data. The primary data are the kinds of things that any child could be expected to hear; they do not include negative data about what does not occur, nor information about paraphrase relations, entailments, and certainly not comparative data from other languages. That kind of "secondary data" is available to linguists and features in books, articles and argumentation generally, but is not available to young children. On the basis of exposure only to primary data and endowed with certain properties encoded somehow in the genetic material (Universal Grammar), children acquire a mature grammar, part of their phenotype, which varies depending on whether their initial experiences were in Tokyo or Toronto. This grammar is their language organ, in the terminology of Anderson and Lightfoot (2002), and it develops in accordance with the prescriptions of UG.

One can identify three phases in the kinds of claims made about the fundamental nature of UG. In the period of roughly 1955-1970, much energy was devoted to increasing the expressive power of grammars beyond that of the then-familiar phrase structure grammars, so that they might be adequate for the analysis of natural languages. UG was taken to provide machinery for children acquiring their language system and the machinery incorporated distinct levels of representation and derivational operations mapping one to another (the key claim of Chomsky 1957) and a lexicon (the major technical innovation of Chomsky 1965). Then in the period from the late 1960s to roughly 1990, the focus was on developing constraints on derivations, beginning with the A-over-A constraint of the early 1960s, through the conditions of Ross (1967), Chomsky (1973), and then the development of Government and Binding models and parameters of variation. Throughout that period, Ockham's methodological principle (entities may not be multiplied beyond necessity) minimized the elements invoked in analyses, but after about 1990 *substantive* economy principles were introduced under the Minimalist Program (Chomsky 1995) and elements of grammars needed to be motivated by interface requirements, as we see below. All of this influences the *form* of the innateness claims and they have differed significantly in each of these three periods.

Here I don Minimalist spectacles to review the 1980s notion of government, arguing that it can be dispensed with. I propose one simple principle of UG,

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which interacts with seven specific devices in the grammars of English speakers; that interaction yields a complex range of phenomena, which is shown to have a simple explanation. The principle of UG is that to delete something is to cliticize it. That is how certain deletion works and it is specified innately. The effects of government and much more follow from this simple idea.

The analysis requires more extensive discussion than a journal article allows, but this brief treatment suffices to make a discussable case while a monograph is prepared.

1.2. Poverty of stimulus

Before we examine the economies of the Minimalist Program, let us briefly consider the logic of the enterprise, often not sufficiently attended to, and isolate a simple, now classic poverty-of-stimulus problem. Children hear forms like (2a) with the verb sometimes pronounced in its full form *is* and sometimes reduced to '*s*. Hence they might deduce that there is a simple operation reducing the verb (2b). Likewise for other verbal forms (2c).

(2)
a. Kim is/'s happy
b. is → 's
c. am, are, has, have, had, will, would, shall
d. Kim is happier than Tim **is**
e. I wonder what the problem **is** (cf. The problem's twofold)
f. I wonder what that **is** up there (cf. That's a fan up there)
g. I wonder where the concert **is** on Wednesday (cf. The concert's on Wednesday)
h. **is** it here?

The problem comes when we observe that not all such verbal forms reduce, for example the boldface items in (2d-h). These data, negative data concerning contexts where *is* does not reduce, are not available to children directly, and that is the poverty-of-stimulus problem: the stimulus appears to be too poor to determine all the properties of the mature system. Children hear some instances of the reduced '*s*, but somehow come to know much more, namely that *is* may be reduced in (2a) but not in the boldface contexts of (2d–h).[1] Furthermore,

1. There are many interesting distinctions at work, as we shall see in Section 2.2. Compare, for example, *I wonder what is/'s that up there*, where reduction is possible. In this example there is no deletion site right-adjacent to *is* and *is* may be reduced. In (2f), however, the deletion site of *what* is between *is* and *up*, blocking reduction. Such distinctions will become clear as we proceed to the analysis in Section 2.2.
Reduction may be possible in (2h) but this is a fast speech phenomenon, occurring only in certain registers, and has quite different properties. The reduced form is always voiced ('*zit*

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Crain and Thornton (1998) show that children have this distinction as soon as they can be tested. If the external stimulus does not provide the relevant information, it must come from elsewhere, internally. So UG is supposed to provide the relevant information but the question then arises in what form. The poverty-of-stimulus problem shows that internal information is needed, but we must construct hypotheses about how the information is formulated, about the form of the information.

We return to this particular problem in a moment, but let us now introduce the notion of *government*, once a central part of linguistic theorizing but then eliminated on principled grounds.

1.3. Government

In its earliest formulation (Chomsky 1981), government was a sisterhood relation between a head and its complement (3a), or, in the case of an Inflection (I) element and Determiner (D),[2] a relation between a head and its Specifier (3b), plus Exceptional Case Marking (3c). In (3) the boldface head governs the italicized phrase. Already there was a significant range of structures covered by the notion.

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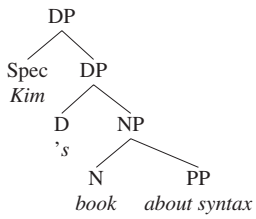
here? and not *'sit here?*), occurs only utterance-initial (**never 'zit here on Tuesdays*), and affects only a subset of the items that undergo the reduction in question (**'d he like to see her?* with reduced *would*, **'llit rain tomorrow?* with reduced *will*).

2. The analysis of determiners projecting to a Determiner Phrase is more recent than 1981 (Abney 1987; Horrocks and Stavrou 1987). They take a noun phrase as their complement and govern a Specifier. So *a book* has the structure of $_{DP}$[$_{D}$a $_{N}$book] and *Kim's book about syntax* has *'s* governing (and assigning Case to) *Kim* as well as $_{NP}$[book about syntax]:

(i)



I give the structure of ECM structures like *I expect her to win* as (3c), but there may be a CP above the IP indicated, depending on the analysis of expressions like *Who do you expect her to see?*

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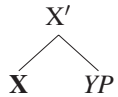
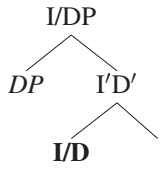
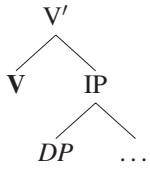
(3) a. 

b. 

c. 

Government had a pervasive role in grammars: it limited the assignment of thematic roles and Cases, determined the binding domains for the Binding Theory (called Governing Categories in those days), and conditioned morphological operations and cliticization (Aoun and Lightfoot 1984).

Soon government was elaborated further. Lasnik and Saito (1984) reformulated the Empty Category Principle (ECP), which required traces to be "properly governed", a sub-case of government. Proper government involved one of two forms, lexical government (4a) and antecedent government (4b).

(4) *a* properly governs *b*
iff *either* (a) *a* governs *b* and *a* is a lexical category (V, N or A, but not I or P) (lexical government)
or (b) *a* is a phrasal category c-commanding and locally coindexed with *b* (antecedent government)

Antecedent government was a curious extension to the theory, because the structures bore little resemblance to those of (3). However, Lasnik and Saito showed implicitly that their ECP solved poverty-of-stimulus problems (a striking feature of the generative literature is how little explicit discussion there is of poverty-of-stimulus problems). The information of (4) may not have been particularly elegant but it had some desirable empirical effects. In (5a) *who*$_i$ antecedent-governed the intermediate e_i but did not govern it lexically; similarly the lower *who* in (5d), when moved covertly at LF, antecedent-governs its trace, which is not lexically governed. (5b) was ill-formed because the deleted complementizer, *e*, failed to be either lexically or antecedent-governed (cf 5c).

(5) a. Who$_i$ did you say [e_i e [Kim saw e_i]]?
b. *Who$_i$ did you say last week in Chicago [e_i e [Kim saw e_i]]?
c. ?Who$_i$ did you say last week in Chicago [e_i that [Kim saw e_i]]?
d. who wondered [who left]?

Not pretty, but precise and adequate for the particular problems discussed.[3]

3. Hornstein and Lightfoot (1991) elaborate a number of the many complications entailed by Lasnik amd Saito's analysis. Lightfoot (1992) also details the complicating history of government.

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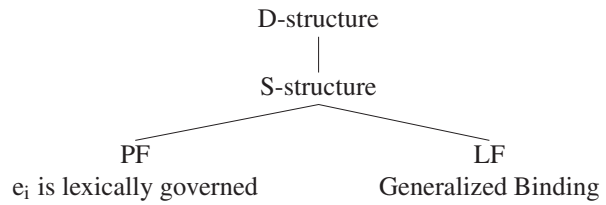
Aoun et al. (1987) argued that antecedent government (4b), requiring a trace to be locally coindexed with a c-commanding phrasal category, looked identical to Principle A of the binding theory and that a binding theory generalized to include wh-traces as anaphors, as developed by Aoun (1985), and holding at the level of LF, made antecedent government superfluous. They adopted the model of (6), where government was simplified from (4) to be a condition on traces at PF, where they needed to be lexically governed (4a).

(6)



Even that more constrained notion of government is minimalistically suspect, going beyond the head-complement and head-specifier relations of bare phrase structure, but it is more tractable than Lasnik and Saito's version, and I will take it as a starting point. Lasnik and Saito's (1984) notion of antecedent government can be subsumed under Aoun et al.'s (1987) notion of Generalized Binding, and it looks as if the effects of Principle A and the separate Control Theory of the GB models of the 1980s can be treated productively under a Minimalist analysis along the lines of Hornstein (2000).

Hornstein construes obligatory control (7) and binding (8) phenomena as resulting from movement, which he construes as copying and deletion (see below). So, if we dispense with any notion of D-structure, in (7a), we can treat the subject of *to win* as copied to the subject of *try* and then deleted. That accounts for the fact that what we used to think of as "PRO" must have an antecedent (7b), which must be local (7c) and c-commanding (7d), subject to a "sloppy" interpretation in ellipsis (7e), and does not permit split antecedents (7f). *John* ends up with two Θ-roles, one checked by *win* and one by *try*.

(7)
a. John [tried [~~John~~ to win]]
b. PRO must have an antecedent
Kim$_i$ tried [PRO$_i$ to wash herself$_i$]
*Kim$_i$ tried [PRO$_{j:arb}$ to wash oneself$_j$]
c. The antecedent must be local
Kay$_i$ thought [that Kim$_j$ failed [PRO$_{j/*i}$ to wash herself$_j$]]
d. The antecedent must c-command the PRO
Kim's$_i$ mother$_j$ tried [PRO$_{j/*i}$ to win]

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e. Obligatory control PRO requires a sloppy interpretation in ellipsis
John expected [PRO to win] and Bill did, too.
f. Obligatory control PRO does not have split antecedents
*Jim$_i$ told Kim$_j$ [PRO$_{i,j}$ to leave together]

Anaphors work in a similar way (8). Here two cases are checked, accusative by *himself* and nominative by *John*. See Hornstein (2000) for the details and for the impressive empirical range of the proposals (and Culicover and Jackendoff 2001 and Landau 2001 for alternative analyses).

(8) a. John$_j$ [hurt himself$_j$]
b. The anaphor must have an antecedent
*John arrested herself.
c. The antecedent must be local
*John thinks that Mary arrested himself.
d. The antecedent must c-command the anaphor
*John's mother arrested himself.
e. The anaphor requires a sloppy reading under ellipsis
John likes himself and Bill does, too.
f. Anaphors do not allow split antecedents
*John told Mary about themselves.

1.4. Minimalism

Hornstein's analysis of binding and control assumes Chomsky's (1995) bottom-up approach to bare phrase structure. Elements drawn from the lexicon are *merged* into structures one-by-one. So the verb *visit* may be merged with the noun *London* to yield a VP (9a). Then the inflectional element *will* is merged with that VP to yield an IP (9b), and the (pro)noun *you* is merged with that IP to yield another IP (9c).[4]

4. In this article I ignore the internal subject hypothesis, whereby a simple object-extraction like *What did Sally buy?* has a structure (i). I have nothing to say about the deletion of the lower *what* and *Sally* in such structures. Similarly, the lower *did* needs to delete, and, as noted below in the main text, that deletion falls under our cliticization analysis. The article shows that a number of instances of deletion are subject to poverty-of-stimulus problems suggesting a cliticization analysis. Other instances of apparent deletion are not subject to comparable poverty-of-stimulus problems and do not fall under the cliticization treatment. In some cases we understand why, and in some cases we do not, and so work remains to be done on why the cliticization analysis works in some cases and not in some others. The poverty-of-stimulus problems identified are real and require at least the information postulated here, but the analysis requires further elaboration, of course. I leave for future work some aspects of the question of why the analysis works in certain contexts but not in oth-

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(9) a. $_{VP}$[$_{V}$visit $_{N}$London]
b. $_{IP}$[$_{i}$will $_{VP}$[$_{V}$visit $_{N}$London]]
c. $_{IP}$[$_{N}$you $_{IP}$[$_{i}$will $_{VP}$[$_{V}$visit $_{N}$London]]]

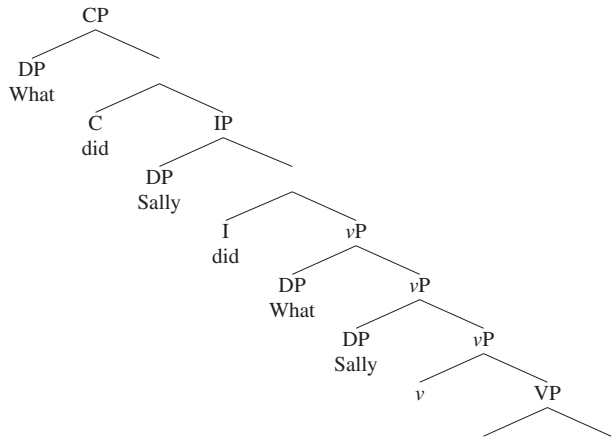
An expression like (10a) is built bottom-up in the same way. At a certain point the IP *you did buy what* is built. *Buy* merges with *what* to yield a VP; then *did* is merged with the VP to yield a IP, and then *you* is merged with the IP to yield another IP, as in (9). Then *did* is copied and merged, and *what* undergoes the same process. In each case, the copied element is later deleted in the original position from which it was copied, as indicated by the strike-through. Under this approach, there is no primitive operation of movement as such, but a copied element may be merged and then subsequently deleted. This is crucial for everything that follows.

(10) a. What did you buy?
b. [what$_{i}$ [did$_{j}$ $_{IP}$[you ~~did~~$_{j}$ buy ~~what~~$_{i}$]]]

I also adopt the proposals of Nunes (1995, 2004), namely that deletion of the copied element follows from the linearization of chains. Linearization is a PF operation that converts a syntactic structure into a sequence of X′ items in consonance with Kayne's (1994) Linear Correspondence Axiom (LCA). The two *what*s in (10b) are non-distinct and therefore must both precede and be preceded by *buy*, etc. That is a contradiction (*what* cannot both precede and be proceded by *buy*), and it is the failure to yield a linear order that renders

ers. Many possibilities come to mind for structures like (i), but I will not resolve them here.

(i)



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the structure ill-formed, unless one of the *what*s is deleted; and it must be the lower *what* that is deleted for reasons of the binding theory. Consequently, the fact that there are no chains at PF with more than one overtly realized link entails that the lower *what* in (10b) must be deleted. Nunes offers a rich analysis, noting exceptional cases where multiple *wh*- items are pronounced; there he shows that it is only intermediate *wh*- items that may be pronounced and, indeed, that they have clitic-like qualities (see Nunes 2004: 38–43 for discussion).

So far, so good, but now the question is: *how* is *what* is deleted? The question used to be why items could move from one position but not from others, but now the question is quite different, and we cannot simply recast the lexical government restriction on traces (4a); there is no movement and there are no traces. In fact, traces would be undefinable under the bare phrase structure approach: phrases are built with lexical items being merged into structures. Nonetheless, we still need to capture the effects of the lexical government restriction. So let us first review some of those effects and see how we might capture them with the economy and elegance that the Minimalist Program encourages.

2. Analysis

2.1. Head-complement relations

In fact, let us formulate things consistently as poverty-of-stimulus problems. A child might hear the sentences of (11a–c) pronounced with or without the complementizer *that*. Such experiences would license an operation (11d) whereby *that* may delete or be unpronounced; the operation is learnable on exposure to sentences like those corresponding to (11a-c). French, Dutch and German children have no such comparable experiences and hence no grounds to postulate a comparable device in their grammars; nothing like (11d) would be triggered.

(11) a. Peter said [that/0 Kay had left already].
b. The book [that/0 Kay wrote] arrived.
c. It was obvious [that/0 Kay left].
d. That → 0

However, a linguist may observe that the generalization (11d) breaks down at certain points and *that* may not be null in the contexts of (12). The crucial data here are negative data, data about what does not occur, and hence not available to children.[5] UG must be playing some role.

5. This assumes, of course, that the child is not a conservative learner, postulating a grammar

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(12) a. Peter said yesterday [that/*0 Kay had left already].
b. The book arrived yesterday [that/*0 Kay wrote].
c. [that/*0 Kay left] was obvious to all of us.
d. Fay believes, but Kay doesn't, [that/*0 Ray is smart].
e. Fay said Ray left and Tim $_{V}$e [that/*0 Jim stayed].
f. Fay said [that/0 [that/*0 the moon is round] is obvious].

In the early days of the GB model, the deletion of *that* was conditioned by lexical government, but if we don't appeal to government, we can see that *that* is deleted if its clause is the *complement* of an overt, adjacent word. In (12a, b) the clause is the complement of *said* and *book* respectively, neither adjacent.[6] In (12c), the clause is the complement of nothing. In (12d) it is the complement of *believes*, which is not adjacent, and in (12e) it is the complement of a verb that is not overt. In (12f) the lower complementizer may not be null, because its clause is not the complement of *said*.[7]

The same condition holds for what we used to think of as traces of wh-movement. English-speaking children learn that *wh*-elements are displaced, i.e., pronounced in a position other than where they are understood, on hearing and understanding a sentence like *What did Jay see?* In (13a, b) the lowest e_i is the complement of the adjacent verb, and the intermediate e_i in (13b) is also adjacent to *say* and in its complement.

(13) a. Who$_i$ did Jay see e$_i$?
b. Who$_i$ did Jay say $_{CP}$[e$_i$ that Fay saw e$_i$]?
a′ Who$_i$ did Jay see ~~who~~$_i$?
b′ Who$_i$ did Jay say $_{CP}$[~~who~~$_i$ that Fay saw ~~who~~$_i$]?

---

that generates only what she has heard. Children, like adults, often to the despair of adults, innovate and say things that they have never heard.
A referee notes that German allows forms like *Ich glaube Du spinnst* 'I think you are crazy,' with no complementizer present. However, such forms are verb-second and there is no reason to believe that *Du spinnst* is a complement of *glaube*.

6. I assume here that restrictive relative clauses are complements to nouns, distinguishing (11b, 12b), and below (Note 15) I will take nonrestrictive relatives to be non-complements, i.e., adjuncts. This recalls analyses from the early days of generative grammar (for a survey, see Stockwell et al. 1973, Ch. 7), but need not be taken literally. We need a syntactic distinction between restrictive and nonrestrictive relative clauses, and restrictive relatives have some properties of complement clauses. What I am calling complement structures may be captured through Kayne's (1994) raising analysis of restrictive relatives, where a restrictive relative headed by *that* is the complement of D and the 'head' raises out of the relative clause. For a good discussion of relative clauses and the problems they pose for modern theories of phrase structure, see Borsley (1997).
7. Bošković and Lasnik (2003), adopting ideas from Pesetsky (1991), an unpublished extension of Pesetsky (1995), treat null complementizers as resulting from a PF affixation operation. For them, affixation requires adjacency, but the data of (12) show that head-complement relations are crucially involved.

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Assuming the Minimalist structures of (13a′, b′), *who*$_i$ is deleted when it is the complement of an adjacent, overt word or in its complement. If that is the condition, it will predict, with no further learning, that (14a) is ill-formed, because the boldface **who** is undeletable; it is in a clause which is the complement of *apparent*, but it is not adjacent (henceforth boldface indicates an undeletable element). The lowest *who* is the complement of the adjacent, overt *seen*, hence deletable. Also, if *yesterday in Chicago* were not present in (14a), then *who would* be in the complement of and adjacent to the overt *apparent*, hence deletable; this yields the well-formed (14b).

(14) a. *Who$_i$ was it apparent yesterday in Chicago $_{CP}$[**who**$_i$ that [Kay had seen ~~who~~$_i$]]?
**Who was it apparent yesterday in Chicago that Kay had seen?*
b. Who was it apparent that Kay had seen?

We solve the poverty-of-stimulus problem posed by (14a): in this way, children learn simply that *wh*-items may be displaced and the UG condition causes the derivation of (14a) to crash with no further learning: Nunes' requirements force deletion but deletion is not possible.

Now when considering some other contexts where lexical government was invoked in Aoun et al. (1987), we see more evidence that items may be deleted if they are the complement or in the complement of an overt, adjacent word. So *which man* is deletable in the leftmost conjunct of (15c) (the complement of the adjacent *introduce*) but not the boldface **which woman** in the rightmost conjunct (the complement of a non-overt verb). So the corresponding sentence is ill-formed. Similarly in (15d, e, and g), the boldface element fails to meet the condition for deletion because the relevant verb is not overt. These structures involve wh- movement (15c, d), readily learnable as noted above, heavy DP shift (15e, g), learnable on exposure to simple expressions like *John gave to Ray his favorite racket*, and gapping (15c, d, e, g), learnable on exposure to something like (15b, f); the UG principle then solves the poverty-of-stimulus problems of (15c, d, e, g).[8]

8. Notice that *Which man did Jay introduce to Ray and Jim to Tim?*, analogous to the ill-formed (15c), is well-formed. Here only one wh- phrase is overt and it moves across-the-board. One way of thinking of this is that across-the-board movement takes place on a three-dimensional structure before the two clauses are linearized; at that point *which man* is the complement of *introduce* (Williams 1978).
The data of (15) involve gapped verbs but pseudogapping sentences are equally bad with an auxiliary present (e.g., **Which man did Jay introduce to Ray and which woman did Jim to Tim?* analogous to (15c), **Jay wondered what Kay gave to Ray and what did Jim to Tim* analogous to (15d)). Pseudogapping structures are often analyzed very differently (see Lasnik 1999: Ch.7, who treats them as VP ellipsis), and I avoid them here.
Translations of (15) are grammatical in languages with V-to-I copying, and we shall address that in Section 2.6.

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(15) a. Jay introduced Kay to Ray and Jim introduced Kim to Tim.
b. Jay introduced Kay to Ray and Jim $_{V}$e Kim to Tim.
c. *Which man$_i$ did Jay introduce ~~which man~~$_i$ to Ray and which woman$_j$ Jim $_{V}$e **which woman**$_j$ to Tim?
**Which man did Jay introduce to Ray and which woman Jim to Tim?*
d. *Jay wondered what$_i$ Kay gave ~~what~~$_i$ to Ray and what$_j$ Jim $_{V}$e **what**$_j$ to Tim.
**Jay wondered what Kay gave to Ray and what Jim to Tim.*
e. *Jay admired [~~his uncle from Paramus~~]$_i$ greatly [his uncle from Paramus]$_i$ but Jim $_{V}$e **[his uncle from New York]**$_j$ only moderately [his uncle from New York]$_j$.
**Jay admired greatly his uncle from Paramus but Jim only moderately his uncle from New York.*
f. Jay gave his favorite racket to Ray and Jim $_{V}$e his favorite plant to Tim.
g. *Jay gave [~~his favorite racket~~]$_i$ to Ray [his favorite racket]$_i$ and Jim $_{V}$e **[his favorite plant]**$_j$ to Tim [his favorite plant]$_j$.
**Jay gave to Ray his favorite racket and Jim to Tim his favorite plant.*

The same condition explains why a complementizer may not be null if it occurs to the right of a gapped (non-overt) verb (16b); nor does one find a deleted copy in that same position (the boldface **who** in 16c).

(16) a. Jay thought Kay hit Ray and Jim $_{V}$e $_{CP}$[that Kim hit Tim].
b. *Jay thought Kay hit Ray and Jim $_{V}$e $_{CP}$[**0** Kim hit Tim].
c. *Who$_i$ did Jay think Kay hit ~~who~~$_i$ and who$_j$ Jim $_{V}$e $_{CP}$[**who$_j$** (that) [Kim hit ~~who~~$_j$]]?
**Who did Jay think Kay hit and who Jim (that) Kim hit?*

So children exposed to some form of English have plenty of evidence that a *that* complementizer is deletable (11d), that *wh*-phrases may be displaced (copied), and that heavy DPs may be copied to the end of a clause (15e, g), but they also know *without evidence* that complementizers and copies may not be deleted unless they are the complement or in the complement of an adjacent, overt word. And the data of (11–16) suggest that this is the information that UG needs to provide, and head-complement relations are crucial. The convergence of that information with the grammar-specific devices which delete a *that* complementizer and allow a *wh*-phrase and a heavy DP to be copied, yields the distinctions we have noted and solves the poverty-of-stimulus problems. However, again, postulating that information at the level of UG leaves open the form that it must take, and we turn now to that matter.

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2.2. Implementation

We know that elements may cliticize to the left and become an indissoluble part of their host. That happens with the reduced *is* that we discussed earlier in (2).[9] When *is* reduces, its pronunciation is determined by the last segment of the word to which it attaches (17a): voiceless if the last segment is voiceless, voiced if the last segment is voiced, and syllabic if the last segment is a sibilant or affricate. Precisely the same is true of the plural marker (17b), the possessive (17c), and the third person singular ending on a verb (17d).

(17) a. Pat's happy, Doug's happy and Alice's here.
b. Cats, dogs and chalices.
c. Pat's dog, Doug's cat and Alice's crocodile.
d. Commits, digs and misses.

Children understand *Pat's happy* as 'Pat is happy,' *Pat* being the subject of the phrase 'is happy.' However, *is* is pronounced indissolubly with *Pat*, and children parse what they hear as (18a), i.e. with reduced *is* attached to the noun, with normal pronunciation applying. (18a) expresses a cue (18b), a piece of structure that serves to determine the shape of the emerging grammar, showing particularly that elements may be cliticized (Lightfoot 1999, 2006). So from hearing and understanding an expression like *Pat's happy*, children learn that *is* may be reduced and absorbed into the preceding word.

(18) a. $_{N}$Pat+'s
b. noun+clitic

Similar factors affect the pronunciation of *to* in reduced *wanna*: the *to* cliticizes to *want*, to form an indissoluble word, but here the cliticization affects an element of the IP that is the complement of an adjacent *want*, reminiscent of the phenomena discussed in the last section. In (19b, c) *to* does not meet this condition and is not reducible: speakers of most forms of English would not say **Who do you wanna visit Rio?* or **I don't wanna win games to be our only goal* (with the exception of speakers of the "liberal" dialects discussed by Postal and Pullum 1982, who would say the former). In (19b) the intervening *wh*-word blocks adjacency of *want* and *to* and in (19c) the lower IP is not the complement of the adjacent *want*.[10]

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9. The phonological cliticization affecting *is* in (17a) *Pat's happy*, where *is* is not the complement of *Pat*, is a different kind of cliticization from the one subsuming the deletions discussed above. But see the discussion of V-to-I movement below (Section 2.6).

10. In (19b) the lower *who* deletes but that does not allow *to* to incorporate into *want*. Compare the derivation of (19a), which has an abstract structure: Where do you ~~do~~ want [~~where~~ [~~you~~ to go ~~where~~]]; here the lowest *where* incorporates into *go* and the intermediate *where* and

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(19) a. Where do you want to go?
b. Who$_i$ do you want [~~who~~$_i$ to visit Rio]?
c. I don't want $_{IP}$[$_{IP}$[to win games] to be our only goal].

So our complement condition affects the formation of *wanna* reductions and we will analogize the deletion phenomena discussed so far to that form of cliticization, recognizing that there are many forms of cliticization (we shall discuss another form in Section 2.6).

If we draw (17) together with (20), we now find something interesting: copies do not delete if they are to the right of a cliticized verb. In (20), the copied *wh*-phrases may be deleted if *is* is in its full form, but not if it is reduced; the corresponding sentences with '*s* do not occur.[11]

(20) a. Kim is happier$_i$ than Tim is ~~what~~$_i$.
Kim is happier than Tim is/'s.*
b. That is a fan up there.
c. I wonder what$_i$ that is ~~what~~$_i$ up there.
I wonder what that is/'s up there.*
d. I wonder where$_i$ the concert is ~~where~~$_i$ on Wednesday.
I wonder where the concert is/'s on Wednesday.*

This suggests again that a deleted copy is incorporated into the element of which it is the complement. In (20), if *is* cliticizes on to the subject noun and becomes part of that noun, it no longer heads a phrase of which *what/where* is the complement and no incorporation is possible, hence no deletion if deletion is incorporation.

That idea enables us to capture another subtle and interesting distinction. The sentence (21a) is ambiguous: it may mean that Mary is dancing in New York or just that she is in New York, but working on Wall Street and not dancing. The former interpretation has a structure with a deleted verb (21b) (but perhaps an instance of VP ellipsis; see below). If deleted verbs are incorporated, there must be an appropriate host. There is an appropriate host in (21b), where the deleted verb incorporates into a full verb, but not in (21c), where the boldface verb has no appropriate host; **dancing** isn't the complement of *Mary's*, therefore no incorporation is possible and no licensing of a deleted verb. Consequently

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you successively into *want* and this does permit *to* to cliticize on to *want* to yield *Where do you wanna go?* This long-noted distinction (Lightfoot 1976) has been keyed to Case-marking (Jaeggli 1980), in a not altogether satisfying way, and I have nothing new to suggest here. Pullum (1997) offers a different, "morpholexical" analysis for *to*-contraction, treating *wanna* etc. as a derived lexeme subcategorized for 'an immediately following bare infinitival subjectless complement' (1997: 95), which would also make the needed distinction.

11. I adopt the analysis of Chomsky (1977), under which the gap in comparatives like (20a) is a *wh*- phrase.

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(21d) unambiguously means that Mary is in New York, occupation unspecified, because there is no empty, understood verb. Again, it is inconceivable that children *learn* such distinctions purely on the basis of external evidence.

(21) a. Max is dancing in London and Mary is in New York.
b. Max is dancing in London and Mary is ~~dancing~~ in New York.
c. *Max is dancing in London and Mary's **dancing** in New York.
d. Max is dancing in London and Mary's in New York.

Further distinctions follow from this analysis. English allows ellipsed VPs and children have plenty of evidence to that effect (22a). In (22a) the empty VP is the complement of *did*. In fact, there must be an overt head to license the null VP, suggesting that empty VPs occur only where they are incorporated into a host like null complementizers and deleted copies.[12] (22b) is not an instance of VP ellipsis, but rather of Stripping (Sag 1976). (22c) is ill-formed because part of the VP remains, *for Naples*, and there is no null VP. In the ungrammatical structures of (22d, e) the null VP is separated from its potential host, hence failure to incorporate. An ellipsed VP may occur in a subordinate clause (22f), to the left of its antecedent (22g), in a separate sentence from its antecedent (22h), or within a complex DP (22i), when its antecedent is contained in a relative clause (22j), or even without any overt antecedent (22k), but it must be the complement of an overt head immediately to the left.

(22) a. Max left on Wednesday but Mary did $_{VP}$e as well.
b. Max introduced Fred to Phil, and Reuben as well.
c. *Max left for Rio but Mary didn't $_{VP}$[e for Naples].
d. They denied reading it, although they all had $_{VP}$e.
vs.
*They denied reading it, although they had all $_{VP}$e.
e. They denied reading it, although they often/certainly had $_{VP}$e.
vs.
*They denied reading it, although they had often/certainly $_{VP}$e.

12. Lobeck (1990, 1995) and Zagona (1988) offer good discussions of VP ellipsis and invoke the Empty Category Principle (4). As noted below in the main text, VP ellipsis, unlike gapping and sluicing, seems to be unusual crosslinguistically.
Potsdam (1997) observes the distinction between (ia) and (ib), where *not* licenses an ellipsed VP, and a referee notes the distinction between (iia) and (iib), where *to* licenses an ellipsed VP.

(i) a. *It is possible to eat this fruit, and we recommend that you $_{VP}$e.
b. It is possible to eat this fruit, and we recommend that you not $_{VP}$e.

(ii) a. *Kim began signing a song before Jim began $_{VP}$e.
b. Kim began to sing a song before Jim began to $_{VP}$e.

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f. Max left for Rio, although Mary didn't $_{VP}$e.
g. Although Max couldn't $_{VP}$e, Mary was able to leave for Rio.
h. Susan went to Rio.
Yes, but Jane didn't $_{VP}$e.
i. The man who speaks French knows $_{DP}$[the woman who doesn't $_{VP}$e].
j. People who appear to support mavericks generally don't $_{VP}$e.
k. Don't $_{VP}$e!

This suggests that, like null complementizers, deleted copies and the deleted verb of (21b), an ellipsed VP incorporates to the left, to an adjacent, overt item of which it is the complement (23).[13] Where that is not possible, there is no ellipsis, as indicated by the contrasts of (22d, e).

(23) Max could visit Rio and Susan $_{INFL}$could+$_{VP}$e.

That, in turn, now explains the non-occurrence of (24a), noted by Zagona (1988): the ellipsed VP needs an appropriate host, a full phonological word, of which it is the complement, as in (24b); in (24a) *has* has become part of the noun *John* and no longer heads a phrase of which $_{VP}$e is the complement.

(24) a. *I haven't seen that movie, but John's $_{VP}$e.
b. I haven't seen that movie, but John has+$_{VP}$e.

Here I am dealing with the distribution of ellipsed VPs, not their interpretation. Their interpretation raises many interesting issues which are independent of this account.

2.3. Incorporation

So copies are deleted in PF in order to satisfy linearization requirements and our analysis takes deletion to be an instance of incorporation, which allows the analysis to generalize to certain null elements that are not copies. In (25a) the complement incorporates into the adjacent *see*, and in (25b) *Jay* is in the complement of *expected*, adjacent to it, and accordingly incorporates into it.

(25) a. Who$_i$ did Jay see ~~who$_i$~~?
b. Jay$_i$ was expected [~~Jay$_i$~~ to win]

13. A referee notes the grammaticality of (ia), which might reflect the fact that verbs may move with their clitics (ib).

(i) a. . . . but why couldn't you $_{VP}$e?
b. Jean l'embrasse souvent e.

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The analysis appeals to head-complement relations and adjacency.

This analysis captures many other distinctions. For example, English-speakers' grammars typically have an operation whereby a "heavy" DP is displaced to the right, as we have noted. Under our approach, that now means copying and reducing the copied element to silence by absorbing it clitic-like into a host. In (26a) the copied element is the complement of *introduced*, hence incorporated successfully; in (26b) it is in the complement of the adjacent *expect*; but in (26c) the element that needs to delete is neither the complement nor contained in the complement of anything, and the derivation is ill-formed and crashes.

(26) a. I introduced [~~all the students from Brazil~~]$_i$ to Mary [all the students from Brazil]$_i$
I introduced to Mary all the students from Brazil.

b. I expect [[~~all the students from Brazil~~]$_i$ to be at the party][all the students from Brazil]$_i$
I expect to be at the party all the students from Brazil.

c. *[**[all the students from Brazil]$_i$** are unhappy] [all the students from Brazil]$_i$
**Are unhappy all the students from Brazil.*

Our UG principle, that deletion of this kind is incorporation, solves the poverty-of-stimulus problem of (26c): children simply learn that heavy DPs may be copied to the right and the UG condition accounts for the non-occurrence of (26c) with no further learning or experience needed.

Consider now "objective genitives" like (27). An expression like *Jay's picture* is three-ways ambiguous: Jay may be the owner of the picture, the painter, or the person portrayed. The latter reading is the so-called objective genitive and is usually analyzed as in (27), where *Jay* is copied from the "object" position to the Specifier of the DP. The operation is specific to grammars of English-speakers and does not occur in French, for example. This much is learnable: children hear expressions like *Jay's picture* in contexts where it is clear that Jay is pictured.

(27) $_{DP}$[Jay$_i$'s $_{NP}$[picture ~~Jay~~$_i$]]

A curious thing is that comparable expressions like *The picture of Jay's*, *The picture is Jay's*, and *The picture which is Jay's* (28) show only a two-way ambiguity, where Jay may be the owner or the painter but not the person portrayed. This is yet another poverty-of-stimulus problem, because it is inconceivable that children are systematically supplied with evidence that the objective interpretation is not available in these cases. We now have an explanation for this, because the structure of these expressions would need to be as in (28).

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(28) a. *the picture of $_{DP}$[Jay's $_{NP}$[e **Jay**]]
(*The picture of Jay's*)
b. *the picture is $_{DP}$[Jay's $_{NP}$[e **Jay**]]
(*The picture is Jay's*)
c. *the picture which is $_{DP}$[Jay's $_{NP}$[e **Jay**]]
(*The picture which is Jay's*)

A preposition like *of* is always followed by a DP, a possessive like *Jay's* occurs only as the Specifier and head of a DP (see Note 2), and Ds always have a NP complement, even if the noun is empty, as it is here (where it is understood as 'picture'). Now we can see why the structures are ill-formed: the copied *Jay* has no host to incorporate into, hence boldface and the derivation crashes. *Jay* is the complement of the adjacent noun, but that noun is not overt, hence not a viable host.

(29) reflects another distinction provided by our account. (29a) is well-formed and involves no deletion of a copied element, whereas (29b) involves two instances of DP-copying and deletion (to yield the passive constructions). The leftmost instance is well-formed, because the copied *Jay* is in the complement of the adjacent *known* and therefore deletes; however, in the rightmost conjunct, the copied *he* has no overt host to incorporate into and therefore cannot delete, hence boldface and leading the derivation to crash.

(29) a. It is known that Jay left but it isn't $_{V}$e that he went to the movies.
b. *Jay$_i$ is known [~~Jay$_i$~~ to have left] but he$_i$ isn't $_{V}$e [**he$_i$** to have gone to the movies]
**Jay is known to have left but he isn't to have gone to the movies.*

And there is more: it is well-known that an expression like *They were too angry to hold the meeting* is ambiguous, meaning either that they were too angry for them or for some unspecified person to organize the meeting; the ambiguity lies in who was going to organize the meeting (Chomsky 1986: 33). The former reading has the structure of (30a), where *they* is copied and deleted; the CP is the complement of *angry* and *they* is in that complement and adjacent to *angry*, hence incorporated. The other reading has arbitrary PRO as the subject of *hold* (30b): nothing is copied and that would not be possible because the clause is an *adjunct* to *angry*, not a complement (represented here by boldface brackets).

(30) a. They$_i$ were too angry $_{CP}$[~~they$_i$~~ to hold the meeting]
They were too angry to hold the meeting.
b. They were too angry **$_{CP}$[**PRO$_{arb}$ to hold the meeting**]**
c. Which meeting$_i$ were they$_j$ too angry $_{CP}$[~~which meeting$_i$~~ [~~they$_j$~~ to hold ~~which meeting$_i$~~]]

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Which meeting were they too angry to hold?

d. *Which meeting$_i$ were they$_j$ too angry $_{CP}$**[which meeting$_i$** [PRO$_{arb}$ to hold ~~which meeting$_i$~~]**]**

However, the corresponding question *Which meeting were they too angry to hold?* is unambiguous and has only the anaphoric reading under which they are going to hold the meeting (30c). It lacks the meaning of an arbitrary subject for *hold* and (30d) is ill-formed. Where the reading is anaphoric (30c), the clause is the complement of *angry* and therefore *which meeting* in that complement can be incorporated into *angry* and thus deleted. Likewise, the copied *they* deletes successively in (30a) (see the next section). However, where the subject of *hold* is the non-obligatory control, arbitrary PRO$_{arb}$, the clause is an adjunct to *angry* and therefore the boldface **which meeting** cannot be incorporated and is undeletable.

This treatment of extraction licensed by incorporation requirements on elements at the front of a complement suggests an explanation for the observation by Chung (1983) that the effects of the Sentential Subject Constraint (Ross 1967) are systematically absent from VSO languages. This would be expected under the approach adopted here if the relevant structure has the inflected verb fronted as in (31).

(31) I+V $_{CP}$[~~I+V~~ $_{IP}$[. . . ~~I+V~~. . .]]

2.4. *Clitics versus affixes*

So far we have been talking about deletion sites as involving incorporation into a host, as if the deleted item were some kind of clitic. Indeed, it is profitable to view the incorporated items as clitics.

Zwicky and Pullum (1983) distinguish between *clitics* and *affixes*, and their distinction permits some further understanding. Specifically, they argue that the English reduced negative *n't* is an affix: so in our terms *isn't*, for example, is formed in the lexicon and merged directly into syntactic structure. That distinguishes between (32b), where *isn't* is merged with *here* to form a constituent, and the ill-formed (32c).

(32) a. John's not here.
b. John isn't here.
c. *John'sn't here.

Two of Zwicky and Pullum's criteria for their distinction are given in (33); (F) says that affixes may not attach to material already containing clitics, hence the non-occurrence of (32c).

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(33) E. Syntactic rules can affect affixed words, but cannot affect clitic groups.
F. Clitics can attach to material already containing clitics, but affixes cannot.

This allows us to distinguish between the structures of (34): (E) allows a syntactic copying operation (what we used to think of as displacement or movement) to affect *couldn't*, an affixed form, but not *could've*, where *'ve* is cliticized on to *could* (hence the grammaticality of the corresponding *Could Kim've seen that?* but not **Could Kimn't see that?*).

(34) a. Couldn't Kim see that?
b. *Could've Kim seen that?

If *n't* is an affix, then phonologically reduced verbs (*'s*, *'ve*, *wanna*, etc.), ellipsed VPs, null complementizers, gapped verbs, and deleted copies are clitics. If clitics may attach to material already containing clitics (33F), we allow (35a–d) but not (35e), which has an affix attached to *could've*, in violation of (33F).[14]

(35) a. Kim visited NY and Jim could've $_{VP}$e.
b. Kim visited NY but Jim couldn't $_{VP}$e.
c. Kim visited NY but Jim couldn't've $_{VP}$e.
d. I'd've visited NY.
e. *Jim could've n't seen it.

There is a vast literature on clitics and many distinctions are drawn; indeed Arnold Zwicky has argued in his later work that there are no clitics (introduction to Nevis et al. 1994). I have drawn selectively from that literature in arguing that the deletion sites discussed so far are clitics along the lines of the *to* adjoined to *want* in *wanna*. That helps us to understand, for example, why successive incorporation is sometimes possible. Below I will suggest that reduced *is* is a different kind of clitic, which is the analog for V-to-I movement

14. Notice that (35a) is well-formed but (24a) is not. In (35a) the null VP is the complement of the adjacent *could've* but in (24a), it is not the complement of *John's*. This also accounts for the distinction in (i) below.

(i) a. Kim canceled her subscription, and I would've $_{VP}$e, too.
b. *Kim canceled her subscription, and I'd've $_{VP}$e, too.

A null VP following the reduced *'ve* in (ia) is the complement of *would've*, but a null VP following the reduced *'ve* in (ib) is not the complement of *I'd've*, where the reduced auxiliaries have been cliticized to the subject DP and are no longer in the position of I with a VP complement.

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and perhaps for gapping. However, it may be that the incorporation analysis of deletion (i.e. old-style traces and ellipsis sites) is correct but that the incorporated elements are not clitics; the claims are logically distinct.

2.5. Subjects

Thinking of the deletion of copied phrases as cliticization enables us to understand old puzzles about the fixed subject condition (Bresnan 1972) and the "that-trace" effect of the 1970s (Chomsky and Lasnik 1977), later subsumed under the agreement relations of Rizzi (1990). It also enables us to learn more about the cliticization operation. In general, subjects resist displacement; when they are copied into a displaced position, odd things happen.

In (36a) the complementizer contained in the clausal complement to *thought* cliticizes to *thought* straightforwardly and may be deleted (unpronounced). In (36b) the lowest *who* cliticizes to *saw*, the intermediate *who* to *think* and the complementizer cliticizes to *think+who*, again successively like the clitics of (35) and straightforwardly.

(36) a. I thought [that/0 Ray saw Fay]
b. Who$_i$ did you think [~~who~~$_i$ that/0 Ray saw ~~who~~$_i$]?
c. *Who$_i$ did you think [~~who~~$_i$ that **who$_i$** saw Fay]?
**Who do you think that saw Fay?*

However, in (36c) the intermediate *who* cliticizes to *think*, but the lowest (boldface) **who** apparently cannot cliticize to *that*, presumably because *that* does not take complements in the usual sense (despite the name "complementizer," the following clause does not "complete" the meaning of *that* in the way that *Fay* completes the meaning of *saw*) and is not an appropriate host. Likewise for equivalent complementizers in other languages, as we shall see.

Similarly in (37a) the boldface **who** may not cliticize to the complementizer *how*, because *how* has no complement. Hence the difference with (37b), where each copied element is deleted in the appropriate way, and the sentence is grammatical if not completely felicitous.

(37) a. *Who$_i$ do you wonder [~~who~~$_i$ how [**who$_i$** solved the problem]]
**Who do you wonder how solved the problem?*
b. What$_i$ do you wonder [~~what~~$_i$ how [John solved ~~what~~$_i$]]
What did you wonder how John solved?

Interestingly, Jim McCloskey points out that a complementizer (C) can be a host for clitics in some languages, 'notably German, where the positioning of weak pronoun clitics with respect to C grounds one of the most famous

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and most beautiful arguments for the analysis of V2 structures in terms of I-to-C raising' (personal communication). He notes that English *that* is not a "proper governor," nor is a raised auxiliary a proper governor; Luigi Rizzi (1990) showed that fronted auxiliaries do not save heavy DP shift from subject positions (38).

(38) *Will ___ apply for this position, all those PhD students who aren't yet employed.

However, Rizzi also argues that in German an inflected verb that has raised to C is a proper governor, unlike in English. So C, both a *that*-like complementizer and a fronted inflected verb, may vary from language to language in its ability to host a deletion site.

Not only do complementizers like *that* and *how* not generally host clitics, but neither do prepositions. This explains the well-known observation that generally prepositions do not licence movement sites (French **Qui as-tu parlé avec?*, Dutch **Wie heb je met gesproken?*, 'Who have you spoken with?'). In English, prepositions may be stranded but only where they are themselves re-analyzed into a complex verb, as in (39a) (see Hornstein and Weinberg 1981 for discussion of the re-analysis operation); compare the ill-formed (39b,c) where the PP is not the complement of an adjacent verb and consequently may not host the deleted copy.

(39) a. Who$_i$ did you $_V$talk+to ~~who~~$_i$
b. *Who$_i$ did you talk at the meeting to **who$_i$**?
**Who did you talk at the meeting to?*
c. *What$_i$ did you sleep during **what$_i$**?
**What did you sleep during?*

Let's return to the topic of subjects. We can also understand the distinction between (40a,b). In (40a) the boldface **who** may not be cliticized to the left-adjacent *what* because *what* (in the Spec of CP) does not take a complement. There is no comparable problem in (40b).

(40) a. *This is the student who$_i$ I wonder [what$_j$ **who$_i$** bought ~~what~~$_j$]
**This is the student who I wonder what bought.*
b. This is the sweater which$_i$ I wonder [who bought ~~which~~$_i$]
This is the sweater which I wonder who bought.

I adapt the analysis of Rizzi (1990) for structures like (41); it is well-formed because the lowest *who* agrees with the higher *who* (by co-indexing) and, there-

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fore, under this approach, cliticizes to it. The higher *who* is in the complement of *think* and cliticizes to the adjacent verb.[15]

(41) Who$_i$ did you think $_{CP}$[~~who~~$_i$ [~~who~~$_i$ saw Fay]?
Who did you think saw Fay?

In some languages that kind of complementizer-subject agreement is marked overtly. So in French if a subject *qui* is deleted, that is possible only if there is an agreeing form of the complementizer, *qui* instead of the usual *que* (42d). This is the phenomenon treated by the old, mysterious *que*-to-*qui* rule.

(42) a. Je crois $_{CP}$[que Marie a vu Jean].
'I believe that Mary has seen John.'
b. Qui$_i$ crois-tu $_{CP}$[~~qui~~$_i$ que Marie a vu ~~qui~~$_i$]?
Qui crois-tu que Marie a vu?
who believe you that Marie has seen
'Who do you believe Marie has seen?'
c. *Qui$_i$ crois-tu $_{CP}$[~~qui~~$_i$ que **qui$_i$** a vu Jean]?
**Qui crois-tu que a vu Jean?*
d. Qui$_i$ crois-tu $_{CP}$[qui$_i$ ~~qui~~$_i$ a vu Jean]?
Qui crois-tu qui a vu Jean?
'Who do you believe has seen John?'

Rizzi (1990) notes something similar happens in West Flemish, where a deleted subject is licensed by a special agreeing form of the complementizer *die* instead of the usual *da* (43b).

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15. The analysis predicts correctly that relative pronouns and complementizers are deletable if they introduce restrictive relative clauses, if restrictive relatives are complements of the head noun (as in (i) below), but not in non-restrictive relatives, if they are non-complement, adjunct clauses (ii). In (i) *which* cliticizes on to *book* and then *that* is free to do likewise. As observed in note 6, this used to be a standard analysis (Stockwell et al. 1973); it is no longer so but can be reconstructed through Kayne's (1994) raising analysis.

(i) This is the book (which) (that) Bill read.

(ii) I met Bill, *(who) Jill had introduced.

As with (ii), in general our analysis leads us to expect a *wh*-item at the front of an adjunct clause not to be deletable (hence **What did you go to Rome without reading?*), and I leave as an unresolved problem why a *wh*-item appears to be deletable at the front of an adjunct clause particularly in a parasitic gap construction, in the position of *x* in (iii) (*This is the book which I filed without reading*).

(iii) This is the book (which) I filed ~~which~~ $_{CP}$[x without reading ~~which~~].

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(43) a. *Den vent da Pol peinst [da Marie getrokken*
the man that Pol thinks that Marie photographed
heet]
has
'The man that Pol thinks that Marie has photographed.'

b. *Den vent da Pol peinst [die gekommen ist*]
the man that Pol thinks that come is
'The man that Pol thinks has come.'

Other grammars circumvent the difficulty of deleting subjects to the right of a complementizer by using resumptive pronouns. So Swedish requires a resumptive pronoun (*det*) in the subject position when the complementizer *hur* is present (44a) (Engdahl 1985); if it were a matter of deleting a copied *vilket ord*, there would be no host and the derivation would crash.

(44) a. *Vilket* ord_i *visste ingen [hur det/**vilket** ord_i*
which word knew no-one how *(it)
stavas]*?*
is-spelled
'Which word did no-one know how it is spelled?'

b. *Kalle*$_i$ *kan jag sla vad om* e_i*/*han kommer att*
Kalle can I bet about e/he is managing to
klara sig
ready be
'Kalle, I can bet (*he) is managing to be ready.'

Similarly, the West African language Vata adopts the same strategy, but here even for local movement in simple, unembedded clauses. Again we see the familiar subject-object asymmetry: an extracted subject is manifested by a resumptive pronoun (45a), but not a deleted object (45b).

(45) a. *Alo*$_i$ **(*o_i*) le saka la?*
who he eat rice WH
'Who eats rice?'

b. *Yi*$_i$ *Kofi le (*mi*$_i$*) la?*
what Kofi eat it WH
'What is Kofi eating?'

2.6. Verb movement

Interestingly, grammars with verb movement behave differently in certain ways (Note 8). Notice first that sentences like (15c), repeated here as (46a), are well-

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formed in Italian (46b). Since verbs typically move to the higher Inflection (I) position in such grammars, that suggests that what we used to view as an indexed empty verb (a trace) counts as overt (see also Merchant 2002 for the same conclusion) and may license a deleted *wh*-phrase (as opposed to the unmoved, gapped verbs in (15c,d,e,g)); under the present view, this means that a deleted copy may license a clitic like a deleted *wh*-phrase. So French *Que lit elle?* 'What is she reading?' has the structure of (46c); the lower *que* cliticizes to *lit*, which is in turn deleted after copying. And a verb-second (and object-verb) grammar like that of Dutch speakers has structures like (46d), where in *Wie doodde je?* 'Who did you kill?' the deleted *wie* cliticizes to *doodde*, which is subsequently deleted.

(46) a. *Which man$_i$ did Jay introduce ~~which man$_i$~~ to Ray and which woman$_j$ Jim $_V$e **which woman$_j$** to Tim?
b. Quale ragazzo Gianni ha presentato a Maria e quale ragazza tu a Paolo?
'Which boy has Gianni introduced to Maria and which girl have you to Paolo?'
c. que$_i$ lit$_j$ [elle ~~lit$_j$~~ ~~que$_i$~~]
d. wie$_i$ doodde$_j$ [je ~~wie$_i$~~ ~~doodde$_j$~~]

The copied verb is deleted in the cases of (46b–d). Similarly in (47a). However, that deletion does not fall under the *wanna*-style cliticization analysis that we have entertained: *lit* is not the complement or in the complement of *elle* in (46c) and *has* is not (in) the complement of *Jay* in (47a). Notice, however, that *has* may cliticize on to *Jay* in an expression like *Jay's read the book*, and as a deleted copy in (47a), even though it is not (in) the complement of *Jay*. So one might distinguish two kinds of cliticization, one found in *wanna* forms and the other in forms like *Jay's read the book*, each providing a model for deletion: the *wanna* cliticization provides a model for the deletion of phrasal copies, complementizers, and ellipsed VPs, and reduced *has* provides a model for deletion of raised verbs.[16] If these deletions result from a phonological operation, as

16. Perhaps the gapped verb in (i) is cliticized in this second fashion, attaching to the subject DP.

(i) Max speaks French and Mary $_V$e German.

Gapped verbs have a very different distribution from ellipsed VP, so they do not cliticize in the way that we have analyzed ellipsed VPs; compare (ii) with (22).

(ii) a. *Max speaks French, although Mary $_V$e German.
b. *Jim said that Max speaks French and Kim said that Mary $_V$e German.
c. *Max $_V$e French and Mary speaks German.
d. *The man who speaks French knows $_{DP}$[the woman who $_V$e German].
e. *Max drove to New York and Susan did $_V$e to Chicago.

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suggested by Chomsky (1995), analogous to the phonological cliticization in *Pat's happy* (see Note 9), then (47b and c) would not be generated (the deletion of *have* in (47b) and *be* in (47c) yield ill-formed structures) because they involve morphological discrepancies between the "copied" forms, so there can be no copying involved from the position indicated, hence the Head Movement Condition effects.

(47) a. $_{C}$has$_{i}$ $_{IP}$[Jay ~~has~~$_{i}$ read the book]
Has Jay read the book?
b. $_{C}$has$_{i}$ $_{IP}$[Jay could **have$_{i}$** read the book]
**Has Jay could read the book?*
c. $_{C}$is$_{i}$ [Jay have **be$_{i}$**-en singing]
**Is Jay have singing?*

3. Conclusion

Innateness claims depend on detailed distinctions between what a child may be supposed to garner from her environment and what needs to be specified internally, or innately. I have argued that English-speakers *learn* that certain verbs may be phonologically reduced, complementizers may be null, that *wh*-phrases may be displaced (pronounced in positions other than where they are understood), verbs may be gapped, that heavy DPs may be displaced to the right, VPs may be ellipsed, possessive noun phrases may have objective interpretations. These seven properties are readily learnable from the linguistic environment, and we can point to plausible primary linguistic data (PLD). Such data that all English-speaking children hear include sentences like *Kim's happy* (2), manifesting reduction; *Peter said Kay had left already* (11a), exhibiting a null complementizer; *Who did Jay see?* (13a) with a displaced *wh*-phrase; *Jay introduced Kay to Ray and Jim Kim to Tim* (15b), an example of gapping; *Jay gave to Ray his favorite racket* (15g), heavy DP shift; *Max could visit Rio and Susan could, too* (23), an ellipsed VP; and *Jay's picture*, meaning 'picture of Jay' (27).

The way to think of this, I believe, is that children identify certain structures, cues; some of these structures vary from grammar to grammar and they constitute the parameters of variation. Consider the object-verb/verb-object parameter. Under the cue-based approach, children find either $_{VP}$[DP V] or $_{VP}$[V DP] structures, very specific information. Children use structures or lose them: a child who encounters object-verb $_{VP}$[DP V] structures in the primary data, loses $_{VP}$[V DP] structures, which atrophy. Notice that children are reacting to abstract structures, elements of grammar, which are required to understand expressions that they hear (for extensive discussion of cue-based acquisition, see

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Lightfoot 1999, 2006; for a similar but slightly different view, see Fodor 1998, and see Dresher 1999 for similar ideas in phonology).[17]

As far as innateness is concerned, i.e., UG, we began by examining earlier notions of government, postulated to solve poverty-of-stimulus problems but enriched over time and becoming quite complex. There is nothing necessarily wrong with complexity, but notions of economy and elegance have proven successful in other areas, certainly for physicists; therefore, it is worth asking if things can be done differently. We asked whether we could re-think government in Minimalist terms and come up with different analyses, conforming to Minimalist conceptions of bare phrase structure and hypothesizing only elements that are motivated at one of the two interface levels, phonological and logical forms. I have argued that an empty element (a deleted phrasal copy, null complementizer, ellipsed VP, the ellipsed *dancing* in 21b, c) is incorporated or cliticized into an adjacent coindexed phonological head (N, V, I) of which it is (in) the complement. The old ECP effects are Linear Correspondence Axiom (LCA) effects and government is eliminated.

One simple idea at the level of UG interacts with seven grammar-specific devices, all demonstrably learnable, and that interaction yields a complex range of phenomena. This involves carving up the grammatical world differently. The proof of the Minimalist pudding lies in whether it permits productive analyses with good empirical coverage and I offer this analysis in that spirit.

The evidence I have offered has been drawn largely from English and a more extensive treatment will explore effects in other languages. However, if one follows the logic of the poverty of the stimulus argument, much can be learned from detailed analysis of a single language, if one attends carefully to issues of learnability.

We seek a single object: the genetic properties of the language organ (Anderson and Lightfoot 2002). They permit language acquisition to take place in the way that it does and that means that we must examine language variation along the lines of Baker (2001); that yields a wealth of empirical considerations. What we postulate must solve the poverty-of-stimulus problems that we identify and solve them for *all* languages as well. We also want our ideas to be as elegant and economical as is feasible. In addition, the grammars that our theory of UG permits must meet other demands.

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17. To illustrate the abstractness of the structures, consider the fact that Dutch has $_{VP}$[DP V] structures (i.e., is an object-verb language). If children are also degree-0 learners (Lightfoot 1989), sensitive only to simple structures, then sentences like *Hoe belt hij Peter op?* 'How does he call Peter up' expresses the $_{VP}$[DP V] cue: the analysis is *hoe belt hij*$_{VP}$*[Peter op~~belt~~]*, where the separable particle *op* marks the position of the deleted verb (which children do not hear). Cues are identified only in unambiguous structures (Lightfoot 1999, 2006).

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To take just one example, they must allow speech comprehension to take place in the way that it does. That means that considerations of parsing might drive proposals. That hasn't happened much yet, but there is no principled reason why not, and the situation might change. Similarly, evidence drawn from brain imaging or even from brain damage might suggest grammatical properties. In fact, the proposals here look promising for studies of on-line parsing. When a person hears a displaced element, say a *wh*-phrase at the beginning of an expression, she needs to search for the deletion site, the position in which it needs to be understood. The ideas developed here restrict the places that she can look. I cannot examine the consequences of this at this time, but they look potentially useful for parsing studies. In fact, perhaps somebody could have arrived at such proposals from the study of on-line parsing.

One uses what looks like the best evidence available at any given time, but that will vary as research progresses, and consequently the form of our innateness claims will vary. There are many basic requirements that our hypotheses must meet, and there is no shortage of empirical constraints, and therefore many angles one may take on what we aim for. In this article I have taken one angle and progressed beyond where government took us: to delete an element is to cliticize it. This is certainly not the end of any story, but a reasonable way to proceed and an improvement on earlier accounts.

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References

Abney, Steven (1987). The English NP in its sentential aspect. Unpublished Ph.D. dissertation, MIT.

Anderson, Stephen R. and David W. Lightfoot (2002). *The Language Organ: Linguistics as Cognitive Physiology*. Cambridge: Cambridge University Press.

Aoun, Joseph (1985). *A Grammar of Anaphora*. Cambridge, MA: MIT Press.

Aoun, Joseph and David W. Lightfoot (1984). Government and contraction. *Linguistic Inquiry* 15 (3): 465–473.

Aoun, Joseph, Norbert R. Hornstein, David W. Lightfoot and Amy S. Weinberg (1987). Two types of locality. *Linguistic Inquiry* 18 (4): 537–577.

Baker, Mark A. (2001). *The Atoms of Language*. New York: Basic Books.

Borsley, Robert (1997). Relative clauses and the theory of phrase structure. *Linguistic Inquiry* 28 (4): 629–647.

Bošković, Želko and Howard Lasnik (2003). On the distribution of null complementizers. *Linguistic Inquiry* 34 (4): 527–546.

Bresnan, Joan W. (1972). Theory of complementation in English syntax. Unpublished Ph.D. dissertation, MIT.

Chomsky, Noam (1957). *Syntactic Structures*. The Hague: Mouton.

— (1965). *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.

— (1973). Conditions on transformations. In *A Festschrift for Morris Halle*, Stephen R.Anderson and Paul Kiparsky (eds.), 232–286. New York: Holt, Rinehart and Winston.

Brought to you by | Georgetown University
Authenticated | 141.161.13.77
Download Date | 4/15/13 6:36 PM

— (1977). On wh movement. In *Formal Syntax,* Peter Culicover, Thomas Wasow and Adrian Akmajian (eds.), 71–132. New York: Academic Press.
— (1981). *Lectures on Government and Binding*. Dordrecht: Foris.
— (1986). *Barriers* (Linguistic Inquiry monographs 13). Cambridge, MA: MIT Press.
— (1995). *The Minimalist Program*. Cambridge, MA: MIT Press.
Chomsky, Noam and Howard Lasnik (1977). Filters and control. *Linguistic Inquiry* 8: 425–508.
Chung, Sandra (1983). The ECP and government in Chamorro. *Natural Language and Linguistic Theory* 1: 207–244.
Crain, Stephen and Rosalind Thornton (1998). *Investigations in Universal Grammar: A Guide to Experiments on the Acquisition of Syntax and Semantics*. Cambridge, MA: MIT Press.
Culicover, Peter and Ray S. Jackendoff (2001). Control is not movement. *Linguistic Inquiry* 32 (3): 493–512.
Dresher, B. Elan (1999). Charting the learning path: Cues to parameter setting. *Linguistic Inquiry* 30: 27–67.
Engdahl, Elisabeth (1985). Parasitic gaps, resumptive pronouns, and subject extractions. *Linguistics* 23: 3–44.
Fodor, Janet D. (1998). Unambiguous triggers. *Linguistic Inquiry* 29: 1–36.
Hornstein, Norbert R. (2000). *Move! A Minimalist Theory of Construal*. Oxford: Blackwell.
Hornstein, Norbert R. and David W. Lightfoot (1991). On the nature of lexical government. In *Principles and Parameters in Comparative Syntax,* R. Freidin (ed.), 365–391. Cambridge, MA: MIT Press.
Hornstein, Norbert R. and Amy S. Weinberg (1981). Case theory and preposition stranding. *Linguistic Inquiry* 12: 55–91.
Horrocks Geoffrey and Melita Stavrou (1987). Bounding theory and Greek syntax: Evidence for *wh*-movement in NP. *Journal of Linguistics* 23 (1): 79–108.
Jaeggli, Oswaldo (1980). Remarks on *to* contraction. *Linguistic Inquiry* 11: 239–246.
Kayne, Richard (1994). *The Antisymmetry of Syntax*. Cambridge, MA: MIT Press.
Landau, Idan (2001). Control and extraposition. *Natural Language and Linguistic Theory* 19: 109–152.
Lasnik, Howard (1999). *Minimalist Analysis*. Oxford: Blackwell.
Lasnik, Howard and Mamoru Saito (1984). On the nature of proper government. *Linguistic Inquiry* 15: 235–289.
Lightfoot, David W. (1976). Trace theory and twice-moved NPs. *Linguistic Inquiry* 7: 559–582.
— (1989). The child's trigger experience: degree-0 learnability. *Behavioral and Brain Sciences* 12 (2): 321–334.
— (1992). Government: The long and short of it. *Journal of Linguistics* 28: 185–197.
— (1999). *The Development of Language: Acquisition, Change and Evolution*. Oxford: Blackwell.
— (2006). *How New Languages Emerge*. Cambridge: Cambridge University Press.
Lobeck, Anne (1990). Functional heads as proper governors. In *Proceedings of NELS 20*, Juli Carter and Rose-Marie Déchaire (eds.), 348–362. GLSA, UMass, Amherst.
— (1995). *Ellipsis*. Oxford: Oxford University Press.
Merchant, Jason (2002). PF output constraints and elliptical repair in SAI comparatives. In *WCCFL 21: Proceedings of the 21st West Coast Conference on Formal Linguistics,* Line Mikkelson and Chris Potts (eds.), 292–305. Somerville, MA: Cascadilla Press.
Nevis, Joel, Brian Joseph, Dieter Wanner and Arnold M. Zwicky (eds.) (1994). *Clitics: A Comprehensive Bibliography*. Amsterdam: Benjamins.
Nunes, Jairo (1995). The copy theory of movement and linearization of chains in the minimalist program. Unpublished Ph.D. dissertation, University of Maryland.
— (2004). *Linearization of Chains and Sidewards Movement*. Cambridge, MA: MIT Press.
Pesetsky, David (1991). Zero Syntax II: An Essay on Infinitives. Unpublished ms, MIT.
— (1995). *Zero Syntax*. Cambridge, MA: MIT Press.

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Download Date | 4/15/13 6:36 PM

Postal, Paul M. and Geoffrey K. Pullum (1982). The contraction debate. *Linguistic Inquiry* 13 (1): 122–138.
Potsdam, Eric (1997). NegP and subjunctive complements in English. *Linguistic Inquiry* 28: 533–541.
Pullum, Geoffrey K. (1997). The morphological nature of English *to*-contraction. *Language* 73 (1): 79–102.
Rizzi, Luigi (1990). *Relativized Minimality*. Cambridge, MA: MIT Press.
Ross, John R. (1967). Conditions on variables on syntax. Unpublished Ph.D. dissertation, MIT.
Sag, Ivan (1976). Deletion and logical form. Unpublished Ph.D. dissertation, MIT.
Stockwell, Robert, Paul Schachter and Barbara Partee (1973). *The Major Syntactic Constructions of English*. New York: Holt, Rinehart and Winston.
Williams, Edwin (1978). Across-the-board rule application. *Linguistic Inquiry* 9: 31–43.
Zagona, Karen (1988). Proper government of antecedentless VP in English and Spanish. *Natural Language and Linguisitic Theory* 6: 95–128.
Zwicky, Arnold M. and Geoffrey K. Pullum (1983). Cliticization vs. inflection: English *n't*. *Language* 59 (3): 502–513.

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