# Generative Grammar

## Theory and its history

**Robert Freidin**

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# Generative Grammar

This volume brings together for the first time papers by the distinguished linguist Robert Freidin, Professor of Linguistics at Princeton University. Robert Freidin's research is focused on generative grammar, which provides a formal theory of linguistic structure that underlies linguistic performance. This collection of papers deals with topics central to the study of generative grammar, including theories of movement, case and binding, as well as their intersections and empirical motivation. Also included are papers covering the broader history of generative grammar, which seek to understand the evolution of linguistic theory by careful investigation of how and why it has changed over the past sixty years. The history of the theory provides a context for a fuller understanding of current proposals, while current theoretical discussions contribute to the ongoing history and often provide important clarifications of earlier work.

*Generative Grammar* is an essential resource for those seeking to understand both the history of generative grammar and current developments in the field.

**Robert Freidin** is Professor of the Council of the Humanities at Princeton University.

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# Contents

# 1 Introduction

The biolinguistic approach to the study of human language is a fairly recent development in the history of linguistics, a perspective that developed within modern generative grammar (from LSLT to the present). This approach seeks to understand what presumably unique biological properties account for human language, more specifically its structure, use and biological origin. It has been pursued by postulating explicit computational models of what a speaker of a human language must know to be able to use the language, the knowledge of linguistic structure that underlies linguistic performance. Such models have been the subject of study in a subfield of linguistics called generative grammar.

The papers in this volume deal with central topics within the study of generative grammar—primarily, the theories of movement, case and binding, as well as their intersections and empirical motivation. They also cover the broader history of the field, which is rich and intricate. This history provides a context for a fuller understanding of current proposals, which after all also form an integral part of this history. Thus the separation of these essays into two parts, theory and history, is somewhat artificial. Current theoretical discussions simply contribute to the ongoing history and often provide important clarifications of previous work. Historical discussions usually clarify the past and often create a context in which to understand what progress, if any, has been or is being made. Furthermore, ideas that have been abandoned along the way can be resurrected and refurbished in the current context—the revival of generalized transformations being a spectacular example.

## A Theory

The syntactic cycle has played a central role in the theory of movement since its inception in Chomsky 1965. "Cyclicity and the theory of grammar" (1978) (chapter 2) resulted from research on how the cycle (in particular the Strict Cycle Condition of Chomsky 1973 (henceforth SCC)) operated under the trace theory of movement rules. The empirical motivation for the SCC discussed in Chomsky 1973 cited one example of what is commonly referred to as a *wh*-island violation. One derivation of this example violated no known

movement constraints and yet yielded deviant output. Thus the SCC appeared to be necessary to rule out this derivation. Under trace theory, however, this derivation yielded the same output as a derivation that violated some other constraints on movement (e.g., the Subjacency Condition). While the SCC could only be interpreted as a condition on derivations, Subjacency could also be interpreted as a condition on representations—more precisely, a locality condition on trace binding. Under this interpretation, the SCC becomes superfluous. "Cyclicity and the Theory of Grammar" generalized this result to other cases, not considered in Chomsky 1973, whose derivations also violated the SCC. It demonstrated how most wh-movement cases could be handled by Subjacency[1], whereas NP-movement cases involved other conditions.[2] By deriving the empirical results of the principle of the syntactic cycle from other independently motivated general principles of grammar, this paper demonstrated how the cyclicity of the computational system was in fact built into the general architecture of UG. This result also raised the issue of the derivational vs. representational interpretation of general principles and provided an argument for the latter interpretation, given that some violations of the SCC also violated Subjacency interpreted as a condition on representations.

Like the previous chapter, chapter 3, "Superiority, subjacency, and economy" (1995), concerns the potential for overlap among conditions—the two mentioned in the title and Chomsky's Shortest Movement economy constraint—as applied to the derivation of certain wh-island violations. For example, constructions like (1) might be derived in two different ways, one of which violates both the Subjacency and Superiority conditions while the other only violates the latter, depending on whether *who* moves to Spec-CP in the complement clause.

(1) *What did you forget who had borrowed?

This paper attempts to refine the analysis of *wh*-island violations by using wh-phrases of the form *which*-N instead of bare interrogative pronouns. The Superiority Condition does not apply to movement involving *which*-N phrases in single clauses, as illustrated by the well-formedness of examples like (2).

(2) Which books did which students borrow?

This result extends to such *wh*-phrases in complex sentences. Thus (3) in contrast to (1) appears to be relatively well-formed.

(3) Which books did you forget which students had borrowed?

To account for the contrast between (1) and (3) within a minimalist feature checking analysis circa 1994 this paper adopts a rather radical stance, including the Form Chain analysis of Chomsky 1993, countercyclic movement

(which reinforces the conclusion of the previous chapter that the SCC cannot be a primitive, but rather its appropriate empirical effects are derived from other principles of grammar), and the rejection of the Shortest Move condition, which ought to block (3) and possibly (2) as well.[3]

Between the publication of chapter 2 in 1978 and the publication of "Cyclicity and minimalism" (chapter 4) in 1999, the theory of phrase structure underwent a radical revision. Starting in 1979 it became clear that PS rules redundantly stipulated properties that followed from the interaction of general principles of grammar (e.g., the Case Filter and the $\theta$-Criterion) and idiosyncratic properties of individual lexical items (Chomsky, class lectures 1979; see also Stowell 1981). Thus phrase structure rules were abandoned as the mechanism for building phrase structure. However, it took over a decade before the notion of generalized transformation was revived as the mechanism for constructing phrase structure from lexical items (Chomsky 1993, 1995b).[4]

With PS rules, derivations of phrase structure were purely top-down, whereas with Merge, these derivations are exclusively bottom-up. This fundamental difference prompted a reevaluation of how cyclic derivation worked as well as the empirical motivation for a cyclic principle and the possibility of deriving its empirical effects from other independent principles of grammar, the major topics of chapter 4.

It is interesting to note that a cyclic principle (e.g., the SCC) ensures that the phrase marker of sentence will be processed strictly bottom-up (i.e., from smaller to larger domains) even (or especially) when phrase structure is constructed top-down. Under minimalist analysis the strictly bottom-up creation of phrase structure is determined by an extension condition (Chomsky 1993), which requires that each step of a derivation extends the right or left edge of the phrase marker affected.[5] This applies to movement operations as well, and thereby serves as a replacement cyclic principle (to the SCC) without mentioning the notion of cyclic domain. In effect, Chomsky's Extension Condition (1993, p. 22) provides another way to derive the empirical effects of a cyclic principle.

Under minimalism the details of derivations involving multiple movements (e.g., the derivation of the *wh*-island violations covered in the previous two chapters) are both more complicated and less well determined by the theory of grammar because of the wide choice of analytic options. Is movement the result of Move or Attract? Do some features move independently of the rest of the constituent they occur in, which then undergoes displacement by some form of generalized pied piping (Chomsky 1995d) or do whole constituents move to check features? Is there a strong/weak feature distinction in addition to the interpretable/uninterpretable distinction? And if so, does an unchecked strong feature cancel a derivation—an analysis that leads to a further, perhaps questionable, distinction between deletion and erasure?

Chapter 4 attempts to sort through these options for constructions whose derivations constitute SCC violations—including super-raising, the Head Movement Constraint (HMC, see Travis 1984) and Constraint on Extraction

Domains (CED, see Huang 1982) violations, as well as *wh*-islands. It shows how, under current minimalist analysis, the empirical evidence for cyclic derivation follows from other independently motivated grammatical principles, and thus eliminates the need to stipulate an independent cyclic principle. For example, in the case of *wh*-island violations, if [+*wh*] is a strong feature of C that motivates movement to Spec-CP, then if the feature is not checked immediately after it enters the derivation, the derivation cancels. If the feature is checked immediately after it enters the derivation, then it is no longer active and hence cannot motivate a further counter-cyclic movement of a *wh*-phrase. In this case the empirical effects of cyclicity follow from the principles of feature checking and so there is no need to invoke an independent cyclic principle.[6]

Chapter 4 also discusses three additional proposals for deriving cyclicity from other principles of grammar. Kitahara 1995 proposes that the economy condition requiring shortest derivations always blocks a countercyclic movement because it involves an extra derivational step. Collins 1997 suggests that countercyclic movements result in configurations that violate the Linear Correspondence Axiom of Kayne 1994. Chapter 4 identifies potential flaws in these proposals and proposes instead that countercyclic Merge might be ruled out because the elementary operation that performs merger is incapable by its nature of applying countercyclically. Thus no condition on derivations or on representations is needed to block countercyclic operations. The formulation of the elementary operation suffices, an optimal solution on minimalist assumptions.

Like the analysis of cyclicity, the analysis of grammatical Case has played a fundamental role in a theory of syntactic movement. The theoretical importance of Case for modern generative grammar was first spelled out in an unpublished letter by Jean-Roger Vergnaud to Chomsky and Lasnik about their paper "Filters and Control" (1977).[7] Chomsky 1980 adapts Vergnaud's Case theory in a formulation of a Case filter, which limits the distribution of NPs with phonetic content (as opposed to phonetically empty NPs—e.g., trace and PRO) to Casemarked positions. The Case filter analysis provides a more general and more principled account of the distribution of phonetically realized NPs, as well as a principled motivation for the movement of nominal expressions in general. Thus, NPs with phonetic content that enter a derivation in a Caseless position must move to a Casemarked position to yield a legitimate syntactic construction.

Chapter 5 ("Core Grammar, Case Theory, and Markedness" (1981)), an early study of the new Case theory, works out some ramifications of the Case filter analysis. In particular, it is concerned with the interaction (and hence the ordering) of Case-assignment and Deletion, and also of the Case Filter and Deletion. The paper identifies empirical evidence that determines how these mechanisms must be ordered. It also demonstrates how Case theory distinguishes between NP-trace and wh-trace, where only the latter is subject to the Case Filter. This distinction is further supported by Binding Theory, as discussed in chapter 8. This result raised a question about the nature of the

Case Filter, which had been assumed to apply only to phonetically realized NPs. The inclusion of wh-trace, which is obviously not phonetically realized, suggests that the Case filter analysis may not be properly formulated. This concern led to a "visibility" approach to Case (Chomsky 1981, 1986) that integrates Case theory and $\theta$-theory. This approach attempts to explain the evidence from wh-movement as a violation of the $\theta$-Criterion rather than the Case filter.[8]

Initially Case theory was formulated primarily on the basis of English, a language without a rich morphological Case system. Expanding Case analysis to languages that have rich morphological Case systems (e.g., Russian and Icelandic) revealed a further general principle as well as some refinements of Case theory. Such languages usually manifest two distinct types of morphological Case: configurational and lexical (a.k.a. quirky Case). Configurational Case is assigned purely in terms of syntactic position, whereas lexical Case is assigned via selection by a specific lexical head (where different heads of the same category may select different lexical Cases). In constructions where configurational and lexical Case could be in conflict (e.g., the object of a verb that assigns lexical Case), the lexical Case assignment must be satisfied and therefore the configurational Case is morphologically suppressed. This follows from the principle of Lexical Satisfaction of Freidin & Babby 1984, the ramifications of which are investigated in chapter 6, "Lexical case phenomena" (1991). Furthermore, lexical Case phenomena establish a distinction between Case assignment and Case licensing. In a clause whose main verb selects a lexically Casemarked subject, that lexically Casemarked subject must occur in a position that is configurationally licensed for Case. It is necessary but not sufficient that the subject bears the appropriate lexical Case. Thus a phonetically realized NP must be Case licensed as well as Casemarked. For configurational Case, licensing and Casemarking appear to be indistinguishable, but for lexical Case these are distinct processes.

Under minimalism, the Case Filter has been replaced by the Principle of Full Interpretation (FI), which has subsumed its empirical effects.[9] This follows given that all phonetically realized NPs enter a derivation with unvalued Case features and that because these features are uninterpretable at PF and LF (with or without values), they must be eliminated via checking during the course of the derivation. If not, these unchecked features violate FI at PF and LF. It is further assumed that the valuation and checking of Case features is a reflex of the checking of agreement features (henceforth $\phi$-features). Nominative Case is valued and checked via the $\phi$-features of T, and accusative Case via the $\phi$-features of $v$.

The role of Case in the theory of movement has also changed significantly under minimalism. In the initial discussions of Case theory it was assumed that NP-movement (e.g., passive and raising) were driven by the need for a NP with phonetic content to be Case-marked. Under minimalism, Case-marking (i.e., valuation of Case features) is a secondary effect, the result of agreement of $\phi$-features. Whether movement is driven by the need to check uninterpretable

$\phi$-features depends on whether agreement only obtains under a local Spec-head relation or can occur long distance (as in Chomsky 2000b). If the latter, then movement is motivated by neither agreement nor Case considerations. Instead, movement must be driven by some other general requirement—presumably the Extended Projection Principle (EPP) of Chomsky 1982 (see also Chomsky 1981, p. 27).

In languages like English the interactions of Case, agreement, and EPP considerations tend to overlap and hence it is difficult to tease apart the unique effects of each. However, in languages with rich morphological Case systems (e.g., Russian and Ukranian) we find phenomena (dubbed accusative unaccusative constructions) whose analysis yields a separation of the former two factors from the latter. This constitutes the focus of chapter 7, "The subject of defective T(ense) in Slavic" (2002). Russian, for example, has constructions in which accusative NP occurs in subject position but does not agree with the finite verb. Instead, the verb manifests a default agreement, indicating a lack of agreement between the syntactic subject and the verb. The accusative Case-marking is configurational, therefore established by agreement with $v$ rather than T. The displacement of the accusative NP to Spec-TP cannot be motivated by a Case or agreement relation with T. Therefore the movement appears to be purely the result of the EPP.

This result provides some independent empirical motivation for the EPP. It argues against recent attempts to reduce EPP effects to properties of Case and agreement systems. Furthermore, it suggests that the EPP does not fall under checking theory, where in recent formulations (e.g., Chomsky 2000b) probe/goal relations are restricted to active elements (i.e., two elements that each contain at least one unvalued feature). The analysis of these accusative unaccusative constructions further contradicts the claim that once the Case feature of NP have been valued, that NP is frozen in place. If this analysis is correct, then the freezing effect for some Case-marked NPs must be derivable from some other principle. Chapter 7 explores a prohibition against multiple agreement (as proposed in chapter 17) as an alternative.

In the late 1970s, when the modular approach of the Principles and Parameters framework was just coming into focus, various attempts were made to connect different modules by utilizing the concepts in one to formulate principles for another. The formulation of the Nominative Island Condition (NIC) of binding theory (Chomsky 1980) is one obvious example. Furthermore, the major thrust of theorizing, as usual, was for the most general application of these principles across the widest range of phenomena. In particular, researchers attempted to explain the distribution of various empty categories (e.g., trace vs. PRO) in terms of the binding principles that were independently motivated for an account of lexical expressions (anaphor vs. pronoun). The accuracy of the empirical analyses as well as the viability of the particular formulations of principles remained to be determined. The following four chapters provide an explication and partial critique of the binding theory as it has developed over the past two and a half decades.

The research reported in chapter 8, "Disjoint reference and wh-trace" (1981), began with two observations concerning May's demonstration (1979, 1981) that certain violations of the COMP-to-COMP condition on wh-movement (Chomsky 1973) yielded a trace with a contradictory index. Details aside, May's analysis was based on the argument in Chomsky 1976 that a wh-trace functions as a variable, on a par with a name. The empirical evidence for this argument involved the analysis of strong crossover constructions—e.g., (4) as compared to (5) (examples from Chomsky 1976).

(4) Who did he say Mary kissed?
(5) Who said Mary kissed him?

While (5) allows for two distinct interpretations—a question about three people or two, (4) can only be interpreted as a question about three people. Chomsky's analysis correlated the possible interpretations of (4–5) with corresponding interpretations for (6–7).

(6) He said Mary kissed John.
(7) John said Mary kissed him.

(6) is a statement about three people, but (7) could also be a statement about just two (i.e., where *him* is anaphoric on *John*). The fact that a pronoun must be disjoint in reference from a name (or variable) that it c-commands accounts for the limitation on the interpretations of (4) and (6). Building on Chomsky's analysis, May established an analytic connection between strong crossover phenomena and the COMP-to-COMP condition on *wh*-movement. However, like the discussion in Chomsky 1976, May's analysis was limited to *wh*-movement out of object position. In discussing May's result, Lasnik and I realized immediately that if it was viable then it would apply as well to violations of the COMP-to-COMP condition where the wh-phrase moves out of a complement finite clause subject position. And given the connection between COMP-to-COMP condition violations and strong crossover, there must be a strong crossover case involving movement of a wh-phrase from the subject of a finite clause—e.g., (8) (cf. (9)), with the corresponding interpretative possibilities.

(8) Who did he say likes Mary?
(9) Who said he likes Mary?

Chapter 8 spells the ramifications of these observations for the theory of grammar, leading to a simplification of the current theories of binding and indexing.

One important ramification concerned the NIC (as above), which Chomsky and others wanted to use to derive the empirical effects of the *that*-trace filter (Chomsky and Lasnik 1977). This required that a wh-trace in the subject

position of a finite clause be analyzed as an anaphor and therefore in violation of the NIC. Chapter 8 demonstrates definitively that this analysis is not viable, thereby undercutting some of the motivation for the NIC as the correct formulation of the binding principle that covered anaphors in the subject position of a finite clause.[10] (See also chapter 5 for further discussion against the NIC.)

The NIC did, however, have an empirical advantage over its predecessors (e.g., the TSC)—namely, it distinguished (10) from (11), which were both excluded under the earlier proposals.

(10) *John thinks that himself is clever.
(11) John thinks that pictures of himself are always unflattering.

Formulations of binding theory after the NIC handled the difference between (10) and (11) in terms of a notion of accessible "subject", attempting to unify the prohibition against nominative anaphors with the SSC. This was achieved by treating the agreement element of the Inflection category as another instance of "subject" on a par with the syntactic subject. According to the binding principle for anaphors, an anaphor must be bound to an antecedent in the domain of an accessible SUBJECT (either syntactic subject or agreement element (i.e., in a finite clause)). The agreement element would be accessible to the syntactic subject it was linked to, but not to another NP properly contained within the syntactic subject, thereby accounting for (10) vs. (11).[11]

Chapter 9, "On the Fine Structure of the Binding Theory: Principle A and Reciprocals" (1983), demonstrates that the notion of accessible syntactic subject should be further refined. It shows that pleonastic syntactic subjects (non-referential *it*) do not function as accessible subjects for the binding principle for anaphors. The fact that a reciprocal expression can be properly bound across non-referential *it* suggests that only referential or $\theta$-marked subjects are relevant to the binding principle for anaphors. Presumably only syntactic subjects that are potential antecedents function as accessible syntactic subjects. This is somewhat unexpected given that the agreement element, which is clearly not a potential antecedent, can also function as an accessible subject for binding theory.

This analysis of pleonastic subjects makes it possible to test whether the agreement element is generally an accessible subject for anaphor binding. Notice that there are two cases to consider. One involves the NIC effect, where the anaphor in question is directly linked to the agreement element (via Spec-head agreement). The second concerns an agreement element that is linked to a pleonastic subject. The pleonastic subject is not accessible, but the agreement element could be, provided the resulting coindexing would not result in an i-within-i configuration, as in (12).

(12) They expected it would be reported to each other that John was lying.
(12) contrasts with the deviant (13).
(13) *They expected John would be reported to each other to be lying.

While (13) clearly violates the binding principle for anaphors, (12) does not, even though the anaphor is not antecedent-bound in the domain of an accessible SUBJECT (i.e., the agreement element of the sentential complement of *expected*). This shows that the binding principle for anaphors requires a fundamental reformulation, as is discussed in chapter 9, which also examines the noncomplementarity of anaphor vs. pronoun binding, as well as the divergence between NP-trace binding and anaphor binding.

Chapter 10, "Fundamental issues in the theory of binding" (1986), provides a critical explication of GB binding theory, expanding on the critical investigations of binding theory presented in the previous two chapters. It argues against the standard view of the complementarity of binding for anaphors and pronouns—namely, that the principles for anaphors and pronouns have the same binding domain, and tries to show how the near complementarity follows from the overlap between two different binding domains. It examines how the theory of binding might apply to empty categories and thereby provide a typology for empty categories on a par with the typology of lexical NPs it yields. This section includes some critical discussion of the PRO-Theorem of Chomsky 1981, as well as a comparison of the functional determination of empty categories vs. their derivational determination. Finally, the paper addresses the question of the level(s) of representation at which the various binding principles apply. Based on evidence from reconstruction phenomena, the paper argues that binding principles apply solely at LF.

The claim in chapter 10 that binding theory held at LF was based on empirical evidence. With the advent of the Minimalist Program (MP) in 1992, this analysis was further supported by an overwhelming conceptual argument—namely, given the elimination of D-structure and S-structure, LF was the only level of representation available at which binding theory could apply. The MP also ruled out indices as a grammatical device on the grounds that they violated a core requirement of minimalist analysis, an inclusiveness condition that restricted any structure formed by the computational system of human language (i.e., PF and LF) to only those elements already present in the lexical items selected, hence barring the introduction of new syntactic objects such as indices.

Chomsky's Inclusiveness Condition also bears directly on the theory of movement, specifically trace theory. In previous discussions traces were conceived of as "empty categories" left behind when a constituent was moved to another syntactic position. Traces were represented in analyses as an indexed symbol $t$ or $e$, the index being necessary to identify the antecedent of the trace (i.e., a non-empty constituent). The elimination of indices rendered the empty category analysis of traces problematic because there was now no simple way to identify its antecedent. Furthermore, inclusiveness itself prohibits representations of traces as special symbols (i.e., $t$ or $e$). Whether it also rules out bare categorial features (e.g., [+N, −V] for an NP-trace) is not obvious. And even if such syntactic objects were allowed under inclusiveness, the empty category interpretation of trace (i.e., the syntactic element that movement