

# 1 *The minimalist project*

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## 1.1 The point of this book

This book is an introduction to the art of minimalist analysis. What we mean by this is that it aspires to help those with an interest in minimalism to be able to “do” it. Partly this involves becoming acquainted with the technology that is part and parcel of any specialized approach. Partly it involves absorbing the background assumptions that drive various aspects of the enterprise. However, in contrast to many earlier approaches to grammar, we believe that “doing minimalism” also involves developing an evaluative/aesthetic sense of what constitutes an interesting problem or analysis and this is not a skill that one typically expects a text to impart. So, before we begin with the nuts and bolts of the Minimalist Program, we’ll spend some time outlining what we take the minimalist project to be and why its ambitions have come to prominence at this time.

But before we do that, let us briefly address who this book is for. It aims to introduce the reader to the minimalist approach to the theory of grammar. It doesn’t start at zero, however. Rather, it presupposes an acquaintance with the large intellectual concerns that animate generative linguistics in general and some detailed knowledge of generative syntax in particular. Our optimal reader has a good background in the Principles-and-Parameters (P&P) approach to grammar, in particular the model generally referred to as Government-and-Binding (GB) theory.<sup>1</sup> However,

1 For early introductions to generative grammar, see, e.g., Jacobs and Rosenbaum (1968), Perlmutter and Soames (1979), and Radford (1981) in the framework generally known as (Extended) Standard Theory; for earliest introductions to the incarnation of the P&P model referred to as GB, see van Riemsdijk and Williams (1986) and Lasnik and Uriagereka (1988). Two good comprehensive and accessible textbooks on GB, which we recommend as useful companions to this book to brush up on some concepts that we do not deal with in detail here, are Radford (1988) and Haegeman (1994). Roberts (1996), and Carnie (2001) also offer solid introductions to GB and include a number of early minimalist ideas as well.

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we've tried to make the discussion accessible even to the reader whose familiarity with GB is a little more wobbly. For this purpose, each chapter starts off with a quick review of the GB approach to the main topic. This review is not intended to be comprehensive, though. Its purpose is to reanimate in the reader knowledge that he or she already has but may have mislaid in memory. It'll also serve as a starting point for the ensuing discussion, which outlines an alternative minimalist way of looking at the previously GB-depicted state of affairs. The bulk of each chapter presents conceptual and empirical reasons for shifting from the GB to the minimalist perspective. Most importantly, the material contained in this book does not presuppose familiarity with or even exposure to the Minimalist Program. To help the reader move from passive participant to active collaborator, we offer exercises as the discussion gets technical. These should allow the reader to practice "doing" some minimalism in a safe and controlled setting. To aid memory, we list all minimalist definitions at the end of the book.

### 1.2 **Some background**

Since the beginning, the central task of generative grammar has been to explain how it is that children are able to acquire grammatical competence despite the impoverished nature of the data that is input to this process. How children manage this, dubbed *Plato's problem* (see Chomsky 1986b), can in retrospect be seen as the central research issue in modern generative linguistics since its beginnings in the mid-1950s.

Plato's problem can be characterized abstractly as follows. Mature native speakers of a natural language have internalized a set of rules, a *grammar*, that is able to generate an unbounded number of grammatical structures. This process of grammar or language acquisition is clearly influenced by the linguistic data that the native speaker was exposed to as a child. It's obvious to the most casual observer that there's a strong relation between growing up in Montreal, Conceição das Alagoas, or Herford, for instance, and speaking (a variety of) English, Brazilian Portuguese, or German. However, slightly less casual inspection also reveals that the grammatical information that can be gleaned from the restricted data to which the child has access, the *primary linguistic data (PLD)*, is insufficient to explain the details of the linguistic competence that the mature native speaker attains. In other words, the complexity of the attained capacity, the speaker's grammatical competence, vastly exceeds that of the PLD, all the linguistic information available to and taken in by the child.

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To bridge the gap between the attained capacity and the PLD, generative grammarians have postulated that children come biologically equipped with an innate dedicated capacity to acquire language – they are born with a language faculty.<sup>2</sup> The last five decades of research can be seen as providing a description of this faculty that responds to two salient facts about human natural language: its apparent surface diversity and the ease with which it's typically acquired despite the above noted poverty of the linguistic stimulus. In the last two decades, a consensus description of the language faculty has emerged which is believed to address these twin facts adequately. It goes as follows.

Kids come biologically equipped with a set of principles for constructing grammars – principles of *Universal Grammar (UG)*. These general principles can be thought of as a recipe for “baking” the grammar of a particular language  $G_L$  by combining, sifting, sorting, and stirring the primary linguistic data in specifiable ways. Or, to make the same point less gastronomically, UG can be thought of as a function that takes PLD as input and delivers a particular grammar (of English, Brazilian Portuguese, German, etc.), a  $G_L$ , as output. This is illustrated in (1):

$$(1) \quad \text{PLD} \rightarrow \boxed{\text{UG}} \rightarrow G_L$$

More concretely, the principles of UG can be viewed as general conditions on grammars with open parameters whose values are set on the basis of linguistic experience. These open parameters can be thought of as “on/off” switches, with each collection of settings constituting a particular  $G_L$ . On this view, acquiring a natural language amounts to assigning values to these open parameters, i.e. “setting” these parameters, something that children do on the basis of the PLD that they have access to in their linguistic environments.<sup>3</sup>

Observe two important features of this proposal. First, the acquisition process is sensitive to the details of the linguistic/environmental input as

2 This faculty of language is one of the domains in our brains specialized for cognitive processes, alongside other faculties each specialized for things like colors, numbers, vision, etc. For an approach to the “modularity of mind” from a general cognitive/philosophical point of view, see the influential work of Fodor (1983); for a more linguistic perspective, see, e.g., Curtiss (1977), Smith and Tsimpli (1995), and Jenkins (2000); for latest views within minimalism, see Chomsky (2000, 2001, 2004). See also Carston (1996) and Uriagereka (1999b) for a discussion of the Fodorian and Chomskyan notions of modularity.

3 For expository purposes, this brief presentation oversimplifies many issues regarding parameter setting (for relevant discussion, see Hornstein and Lightfoot 1981, Manzini and Wexler 1987, Lightfoot 1991, Meisel 1995, Baker 2001, Crain and Pietroski 2001,

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it's the PLD that provides the information on the basis of which parameter values are fixed. Second, the shape of the knowledge attained is not restricted to whatever information can be garnered from the PLD, as the latter exercises its influence against a rich backdrop of fixed general principles that UG makes available.

Observe further that each characteristic of this model responds to one of the two basic features noted above. The fact that particular grammars are the result of setting parameter values in response to properties of the PLD allows for considerable diversity among natural languages. If UG has a tight deductive structure, then even a change in the value of a single parameter can have considerable ramifications for the structure of the particular  $G_L$  being acquired.<sup>4</sup> Thus, the fine details of a native speaker's linguistic competence will always go way beyond the information the PLD may provide.<sup>5</sup> In sum, a speaker's linguistic capacities are a joint function of the environmental input *and* the principles of UG, and though these principles can be quite complex, they need not be learned as they form part of the innately endowed language faculty.

Davis 2001, and Fodor 2001, among others). For instance, one has to properly identify which properties of languages are to be parameterized in this way and which structures should count as positive evidence to the learner for purposes of parameter setting. One must also determine whether the parameters are all available at birth or some parameters may "mature" and be activated before others. In either scenario, it's still possible that in order to activate a given parameter  $P_1$ , another parameter  $P_2$  must be set on a specific value. Besides, parameters need not have only binary on/off options and it may be the case that (some) parameters establish one of its options as the default setting to be assumed in absence of disconfirming evidence. Further complexities are easily conceived. For problems of computational complexity arising in the parameter model, see Berwick (1985), Clark and Roberts (1993), Gibson and Wexler (1994), and Dresher (1998), among others. Some useful introductory texts on child language acquisition in a generative framework can be found in Cook and Newson (1996) and Crain and Lillo-Martin (1999). Other works that illustrate this approach more thoroughly include Crain and Thornton (1998), Lightfoot (1999), and Guasti (2002).

4 Take, for example, the null-subject or *pro*-drop parameter (see Rizzi 1980), arguably one of the better studied ones (see the papers collected in Jaeggli and Safir 1989 for pertinent discussion). It has been argued that languages that have an "on"-setting, thus allowing for null-subjects, also show lack of *that*-trace effects and overt expletives, and allow for free subject inversion, long *wh*-movement of subjects, and empty resumptive pronouns in embedded clauses (see Chomsky 1981: 240ff.).

5 That the complexity of a native speaker's competence vastly exceeds the complexity of the linguistic environment is transparently shown by the emergence of creoles, which have all the properties of natural languages but take a drastically impoverished linguistic environment, a pidgin, for input. For a discussion of the differences between the grammatical properties of creoles and pidgins, see among others Holm (1988, 2000), Bickerton (1990), Lightfoot (1991), deGraff (1999a), and the collection of papers in deGraff (1999b).

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This picture of the structure of the language faculty has been dubbed the *Principles-and-Parameters Theory*.<sup>6</sup> To repeat, it now constitutes the consensus view of the overall structure of the language faculty. The Minimalist Program adopts this consensus view. In effect, minimalism assumes that a P&P-architecture is a boundary condition on any adequate theory of grammar. Adopting this assumption has one particularly noteworthy consequence. It changes both the sorts of questions it's worthwhile focusing on and the principles in terms of which competing proposals should be evaluated. Let us explain.

As in any other domain of scientific inquiry, proposals in linguistics are evaluated along several dimensions: naturalness, parsimony, simplicity, elegance, explanatoriness, etc. Though all these measures are always in play, in practice some dominate others during particular periods. In retrospect, it's fair to say that explanatory adequacy, i.e. the ability to cast some light on Plato's problem, has carried the greatest weight. The practical import of this has been that research in the last decades has focused on finding grammatical constraints of the right sort. By *right sort* we mean tight enough to permit grammars to be acquired on the basis of PLD, yet flexible enough to allow for the observed variation across natural languages. In short, finding a suitable answer to Plato's problem has been the primary research engine within generative linguistics and proposals have been largely evaluated in terms of its demands. This does not mean to say that other methodological standards have been irrelevant. Simplicity, parsimony, naturalness, etc. have also played a role in adjudicating among competing proposals. However, as a practical matter, these considerations have been rather weak as they have been swamped by the need to develop accounts able to address Plato's problem.

In this context, the consensus that P&P-style theories offer a solution to Plato's problem necessarily affects how one will rank competing proposals: if P&P-theories are (to put it boldly) assumed to solve Plato's problem, then the issue becomes which of the conceivable P&P-models is best. And this question is resolved using conventional criteria of theory evaluation. In other words, once explanatory adequacy is bracketed, as happens when only accounts that have P&P-architectures are considered, an opening is created for simplicity, elegance, and naturalness to emerge from the long shadow cast by Plato's problem and to become the critical

6 See Chomsky (1981, 1986b) for a general outline of the model, the succinct review in Chomsky and Lasnik (1993), and the introductory texts listed in note 1.

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measures of theoretical adequacy. The Minimalist Program is the concrete application of such criteria to the analysis of UG. But this is no easy task. To advance in this direction, minimalism must address how to concretize these evaluative notions – simplicity, naturalness, elegance, parsimony, etc. – in the research setting that currently obtains. Put another way, the task is to find a way of taking the platitude that simpler, more elegant, more natural theories are best and giving them some empirical bite.

To recap, once P&P-theories are adopted as boundary conditions on theoretical adequacy, the benchmarks of evaluation shift to more conventional criteria such as elegance, parsimony, etc. The research problem then becomes figuring out how to interpret these general evaluative measures in the particular domain of linguistic research. As we concentrate on syntax in what follows, one important item on the minimalist agenda is to find ways of understanding what constitutes a more-or-less natural, more-or-less parsimonious, or more-or-less elegant syntactic account. Note that there's little reason to believe that there's only one way (or even just a small number of ways) of putting linguistic flesh on these methodological bones. There may be many alternative ways of empirically realizing these notions. If so, there will be no unique minimalist approach; rather, we'll have a family of minimalist programs, each animated by similar general concerns but developing accounts that respond to different specific criteria of evaluation or even to different weightings of the same criteria.

It would be very exciting if minimalism did in fact promote a research environment in which various alternative, equally "minimalist" yet substantially different, theories of grammar thrived, as it would then be possible to play these alternatives off against one another to the undoubted benefit of each. This possibility is worth emphasizing as it highlights an important feature of minimalism: minimalism is not a theory so much as a program for research. The program will be successful just in case trying to work out its main ideas leads to the development of interesting analyses and suitable theories. In this sense, there's no unique minimalist theory, though there may be a family of approaches that gain inspiration from similar sources. Theories are true or false. Programs are fecund or sterile. Minimalism aims to see whether it's possible to interpret the general methodological benchmarks of theory evaluation in the particular setting of current syntactic research in ways that lead in fruitful and interesting directions. The immediate problem is not to choose among competing implementations of these methodological yardsticks but to develop even a single, non-trivial variant.

One last point. There's no a priori reason to think that approaching grammatical issues in this way guarantees success. It's possible that the language faculty is just "ugly," "inelegant," "profligate," "unnatural," and massively redundant. If so, the minimalist project will fail. However, one can't know if this is so before one tries. And, of course, if the program proves successful, the next question is *why* the language faculty has properties such as elegance and parsimony.<sup>7</sup>

### 1.3 Big facts, economy, and some minimalist projects

The question before us now is how to implement notions like elegance, beauty, parsimony, naturalness, etc. in the current linguistic context. One way into this question is to recruit those facts about language that any theory worthy of consideration must address. We can then place these "big facts" as further boundary conditions on theoretical adequacy. We already have one such big fact, namely that the theory have a P&P-architecture. Other big facts regarding language and linguistic competence that afford additional boundary conditions to structure a minimalist inquiry of UG include the following:

- F<sub>1</sub>: Sentences are basic linguistic units.
- F<sub>2</sub>: Sentences are pairings of form (sound/signs) and meaning.
- F<sub>3</sub>: Sentences are composed of smaller expressions (words and morphemes).
- F<sub>4</sub>: These smaller units are composed into units with hierarchical structure, i.e. phrases, larger than words and smaller than sentences.
- F<sub>5</sub>: Sentences show displacement properties in the sense that expressions that appear in one position can be interpreted in another.
- F<sub>6</sub>: Language is recursive, that is, there's no upper bound on the length of sentences in any given natural language.

F<sub>1</sub>–F<sub>6</sub> are uncontentious. They are properties that students of grammar have long observed characterize natural languages. Moreover, as we'll see, these facts suggest a variety of minimalist projects when coupled with the following two types of economy conditions. The first comprise the familiar methodological "Occam's razor" sort of considerations that relate to theoretical parsimony and simplicity: all things being equal, two primitive

<sup>7</sup> See, e.g., Uriagereka (1998, 2002), Chomsky (2000, 2001, 2004), and Lasnik and Uriagereka with Boeckx (2005).

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relations are worse than one, three theoretical entities are better than four, four modules are better than five. In short, more is worse, fewer is better. Let's call these types of considerations principles of *methodological economy*.

There's a second set of minimalist measures. Let's dub these principles of *substantive economy*. Here, a premium is placed on least effort notions as natural sources for grammatical principles. The idea is that locality conditions and wellformedness filters reflect the fact that grammars are organized frugally to maximize resources. Short steps preclude long strides (i.e. Shortest Move), derivations where fewer rules apply are preferred to those where more do, movement only applies when it must (i.e. operations are greedy), and no expressions occur idly in grammatical representations (i.e. Full Interpretation holds). These substantive economy notions generalize themes that have consistently arisen in grammatical research. Examples from the generative history (see the texts suggested in note 1 for more details on these) include, for example, the A-over-A Condition (Chomsky 1964), the Minimal Distance Principle (Rosenbaum 1970), the Subjacency Condition (Chomsky 1973), the Superiority Condition (Chomsky 1973), Relativized Minimality (Rizzi 1990), and the Minimal Binding Requirement (Aoun and Li 1993). It's natural to reconceptualize these in least effort terms. Minimalism proposes to conceptually unify all grammatical operations along these lines.

These two kinds of economy notions coupled with the six big facts listed above promote a specific research strategy: look for the simplest theory whose operations have a least effort flavor and that accommodates the big facts noted above. This proposal actually has considerable weight. Consider some illustrative examples of how they interact to suggest various minimalist projects.

The fact that the *length* of sentences in any given natural language is unbounded (cf.  $F_6$ ) implies that there's an infinite *number* of sentences available in any given natural language: for instance, you can always create another sentence by embedding and re-embedding it. This, in turn, implies that grammars exist, i.e. rules that can apply again and again to yield an unbounded number of different structures. The fact that sentences have both form and meaning properties (cf.  $F_2$ ) implies that the sentential outputs of grammars "interface" with systems that give them their articulatory and perceptual (A-P) properties and those that provide them with their conceptual and intentional (C-I) characteristics.<sup>8</sup> More specifically, if

8 The term *articulatory-perceptual* (or *sensorimotor*) is to be understood as independent of the modality of the output system, in order to capture both spoken and sign languages (see Chomsky 1995: 10, n. 3).

one is considering a theory with levels, e.g. a *Government-and-Binding* (GB)-style theory, this implies that there must exist grammatical levels of representation that interface with the cognitive systems responsible for A-P and C-I properties. In effect, the levels Logical Form (LF) and Phonetic Form (PF), sometimes also called Phonological Form, must exist if any levels exist at all.<sup>9</sup> In this sense, LF and PF are conceptually necessary. Further, as methodological economy awards a premium to grammatical theories that can make do with these two levels alone, one minimalist project would be to show that all levels other than LF and PF can be dispensed with, without empirical prejudice.

More concretely, in the context of a GB-style theory, for example, this would amount to showing that D-Structure (DS) and S-Structure (SS) are in principle eliminable without any significant empirical loss. This in turn would require reconsidering (and possibly reanalyzing) the evidence for these levels. For instance, in GB-style theories recursion is a defining characteristic of DS. Given  $F_6$ , a mechanism for recursion must be part of any grammar; thus, if DS is to be eliminated, this requires rethinking how recursion is to be incorporated into grammars. We do this in chapters 2 and 6.

Consider a second minimalist project. The above considerations lead to the conclusion that grammars must interface with the C-I and A-P systems. Given this, there's a premium on grammatical principles that originate in this fact. For example, if some sorts of grammatical objects are uninterpretable by the C-I or A-P interface, then the grammatical structures (e.g. phrase markers) that contain these might be illegible to (i.e. non-readable by) these interfaces. It would then be natural to assume that such structures would be ill-formed unless these wayward objects were dispatched before the structures that contained them gained interpretation at these interfaces. If so, we could regard the interfaces as imposing bare output conditions that all grammatical objects have to respect. On this view, accounts exploiting bare output conditions to limit grammatical structures would be very natural and desirable. See especially chapters 2, 7, and 9 for more elaboration.

Let's push this one step further. Substantive economy prompts us to consider how strings are generated ("What are the relevant derivational

<sup>9</sup> For minimalist approaches that attempt to eliminate all levels of representation, see, e.g., Uriagereka (1997, 1999c), Epstein, Groat, Kawashima, and Kitahara (1998), and Epstein and Seely (2005).

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resources and how are they economized?”), as well as how they are interpreted (“What are the bare output conditions of the interfaces and what restrictions do these place on the structure of grammatical outputs?”). In other words, we should examine how derivations might be “minimalized” and how exactly Full Interpretation is to be understood.<sup>10</sup> For example, we should consider theories that have a least effort flavor, e.g. requiring that derivations be short, or movements be local or operations be simple or that there be no vacuous projections or operations, etc. In sum, given the general setting outlined above, we would begin to look for two kinds of conditions on grammars: conditions that correspond to the filtering effects of the interfaces (bare output conditions) and conditions that correspond to the derivational features of the grammar (economy conditions). Filtering mechanisms that resist interpretation in one of these ways are less favored. See especially chapters 4 through 7 and chapter 10 on this.

Consider another set of questions minimalist considerations lead to. What are the basic primitives of the system, i.e. the basic objects, relations, and operations? If phrases exist and if they are organized in an  $X'$ -format, as standardly assumed, then a set of privileged relations is provided. In  $X'$ -Theory, phrases have (at least) three parts – heads, complements, and specifiers – and invoke (at least) two relations, head-complement and specifier-head. Given the obvious fact that natural languages contain phrases (cf.  $F_4$ ), UG should make reference to phrases and the pair of relations phrase structure exploits. Therefore, parsimony counsels that at most these objects and relations should be part of UG. This implies, for example, that sentences be analyzed as types of phrases and not as idiosyncratic structures. This is essentially the conclusion GB has already drawn. Labeling sentences as IPs or CPs embodies this consensus.

<sup>10</sup> Throughout the book we'll be assuming that the computational system of the language faculty is “weakly” derivational (weakly in the sense that it admits the levels of PF and LF, which are representations by definition). See Brody (1995) for a weakly representational version of the Minimalist Program and Epstein, Groat, Kawashima, and Kitahara (1998) and Uriagereka (1999c), for example, for strongly derivational alternatives. Beyond the occasional remark, we'll discuss some arguments in favor of derivational approaches in chapter 10. For critical comparison between strongly representational approaches, such as constraint-based frameworks like Pollard and Sag's (1994) Head-driven Phrase Structure Grammar (see Sag and Wasow 1999 for a comprehensive introduction) and derivational implementations of minimalism, see Johnson and Lappin (1997, 1999). From within the P&P camp/minimalism, Lasnik (2001a) offers a brief summary of some of the issues involved in the derivational/representational debate.