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# Minimalism is functionalism

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## Abstract

Noam Chomsky's most recent research paradigm, the Minimalist Program (MP), overtly proclaims continuity with earlier phases of transformational-generative linguistics. Despite its (limited) use of terminology from these earlier phases and its continued focus on many of the same issues with which Chomsky and his followers have always been concerned, at a conceptual level MP represents a dramatic break with earlier generative theories. MP adopts many of the assumptions and goals of the linguistic research projects that emerged before, alongside, and contrary to Chomsky's own, the ones which have come in the linguistic literature to be called functionalism. While this shift has had significant consequences in linguistics, in part driving convergences between functionalist and formalist approaches, its consequences have yet to be fully realized in fields like philosophy and cognitive science that have based many foundational assumptions on just those aspects of generativism now challenged by Chomsky's own theory.

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## 1. Introduction<sup>1</sup>

Since the mid-1990s, Noam Chomsky's work on linguistics has taken a conceptual turn whose full consequences inside and outside of the field have only started to become clear. Because Chomsky repeatedly writes that this turn, which he calls the Minimalist Program (MP; see [Chomsky \(1995, 1998, 2001, 2004, 2005a, 2007, 2008\)](#)), maintains the spirit of the transformational-generative (TG) program he inaugurated in the 1950s, researchers (especially Chomskyans) have emphasized the many visible continuities between MP and other

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generative frameworks. Granted these continuities, though, MP diverges in significant ways from other formulations of generative linguistics. Indeed, surprisingly, but as Chomsky has recently stated explicitly, MP is *not* directly a search for the nature of Universal Grammar (UG), the hallmark of his pre-MP programs, but instead “approaches UG from below” (Chomsky, 2007), searching for those aspects of the language faculty that come into being by dint of “virtual conceptual necessity” (of which Postal (2003), among others, is highly skeptical) and other *non*-linguistic factors, and thereby revealing the contents of UG largely by determining what is left over when these non-linguistic factors are ruled out.

Contrary to other generative programs, then, a major part of the point of MP is to investigate those aspects of language that do *not* require what were previously understood as innate linguistic mechanisms for their realization, but instead those which result purely from the shape of any putative interaction between two other aspects of the human mind whose existence is for Chomsky undeniable: the Conceptual–Intentional (CI) system, and the Sensory–Motor (SM) system. That is to say that MP investigates not just UG but also those aspects of human language that can be accounted for solely on the basis of the needs for transferring CI system objects into SM (and vice versa)—in other words, for speaking one’s thoughts aloud, and for understanding the thoughts of other people through their language (whether that language is spoken, signed, or conveyed via another means).<sup>2</sup> While there is no doubt that language-specific mechanisms remain of real interest to Chomskyans, the guiding methodology of MP is to proceed as if very few such mechanisms exist: ‘how little can be attributed to UG while still accounting for the variety of I-languages attained,’ Chomsky (2007, p. 3) asks, where I-language remains, as it has been throughout much of the history of TG, the technical term for that part of language processed by the individual’s language faculty.

The technical language in which Chomsky has expressed MP has led some to mistakenly see there principally a renewed investigation of UG, and there is a nominal sense in which this is true, but Chomsky is now clear that UG instead must be a list of ‘exceptions’ to what he calls the Strong Minimalist Thesis (SMT), those aspects of language necessitated by the SM–CI interface and by what Chomsky calls “virtual conceptual necessity.” Ideally, Chomsky writes, there would be nothing in UG at all—in this case language would be ‘perfectly designed,’ without ‘exceptions,’ and somehow, perhaps, perfectly reflective of the semantic operations of CI (since one view is that pure SM operations lack meaning unless assigned by some means to CI functions; see Culicover and Jackendoff (2005, pp. 94–102), on this aspect of the conceptual entailments of TG remaining in MP).<sup>3</sup> While much of the work in MP recasts familiar features of TG such as crossover effects, C-command, *wh*-extraction, and so on, in terms of what he calls external *Merge* and internal *Merge* (i.e., *Move*), Chomsky is at pains to point out that unlike in previous work, *Merge* might be *all there is* in UG, with almost all of what had previously been thought of as the contents of UG now implemented in other (more general) cognitive structures, especially conditions imposed by interactions between CI and SM.

Thus despite the desire to recast what had been operations of UG in terms of MP, Chomsky’s program has undergone a radical change. The idea that language consists *largely* of the necessary connections between whatever we call thought and the biological pressures of speaking/signing, along with minimal language-specific mechanisms, is a hallmark of a much wider range of thinkers than those with whom Chomsky is usually associated. In some forms, it can be found in thinkers as varied as Kant, Hume, Husserl, Bergson, Heidegger, Wittgenstein, Hilary Putnam, W.V. Quine, and even poststructuralists like Jacques Derrida—in general, all thinkers from whom Chomsky has been at pains to distinguish himself, precisely because of their linguistic views. This is of particular interest perhaps not primarily because of Chomsky’s linguistic work, but because of the general impact of Chomsky’s views on fields like philosophy and cognitive science, where much work still depends on the part of Chomsky’s work that underwrites the picture of a highly structured rule-based UG—which MP dispenses with almost completely (a movement which had already been underway, arguably, in Chomsky’s programs of the 1980s). In its conceptual entailments, MP is also remarkably close to the perspectives offered by Chomsky’s most prominent theoretical opponents in linguistics, today usually referred to as *functionalists* (see Butler (2003, 2005a,b, 2006), Bybee (2006), Newmeyer (1998, 2003, 2005)). In the remainder of this discussion, what is at issue is not the accuracy of MP, or of functionalism for that matter—indeed, I

<sup>2</sup> Burton-Roberts and Poole (2006) is a strong critique of the basic CI/SM split in terms of a straightforward mapping of sound to meaning, which they argue Chomsky carries over too uncritically from Saussure.

<sup>3</sup> See Chomsky (2005a,b).

am convinced that both approaches have much to offer linguistic inquiry. The point of this discussion is to understand the foundational underpinnings of the two research programs and how they compare with those of earlier varieties of TG, especially as these bear on more general theories of cognition, mind, and language. My argument is that sustained interaction with linguistic data and a real desire to craft an accurate theory have compelled Chomsky to dispense with exactly those foundational parts of his program that have, until now, been used to distinguish the “Chomskyan revolution” from the rest of linguistics, and that MP now stands in many ways as an argument *against* just that part of the revolution that has been most influential outside of linguistics.

## 2. MP as a research program

From its first incarnations, MP has struck at least some researchers as oddly placed in its philosophical and linguistic contexts. The goal of MP is *not* to describe directly the Faculty of Language (FL) but ‘the conditions imposed on FL by the systems with which it interacts’ (Chomsky, 2004, p. 105), because ‘if language is to be usable at all, its design must satisfy an “interface condition” IC: the information in the expressions generated by [a language] L must be accessible to other systems, including the SM and CI systems that enter into thought and action’ (Chomsky, 2004, p. 105). This means that the task of MP is ‘to examine every device (principle, idea, etc.) that is employed in characterizing languages to determine to what extent *it can be eliminated* in favor of a principled account in terms of general conditions of computational efficiency and the interface conditions that the organ must satisfy for it to function at all’ (Chomsky, 2004, p. 105, *emphasis added*). Here Chomsky describes the ‘extremely strong minimalist thesis SMT—too much to expect’ that UG is *empty*, so that every aspect of language could be explained by ICs themselves, and that the set of ‘unexplained elements of  $S_0$ ... is empty’ where  $S_0$  is just the ‘principled elements of FL,’ and the ‘unexplained elements of  $S_0$ ’ becomes another name for UG (Chomsky, 2004, p. 105).

Despite Chomsky’s insistence that SMT is ‘too much to expect,’ much of the work in MP by Chomsky and others proceeds as if SMT were true. Another way of phrasing this fact is to say that there is very little in UG, or that many of the core operations of language are themselves not specifically coded in the language faculty, but rather in general structures of the brain and body, and conditions that emerge from physical necessity, on the order of bilateral symmetry, itself not coded-for but omnipresent in biological systems (Chomsky, 2005b). This allows Chomsky to posit what he calls the evolutionary (and also theoretical) ‘Great Leap Forward’ (Chomsky, 2005a, p. 12): ‘suppose, then, that we adopt the simplest assumption: the Great Leap Forward yields Merge’ (Chomsky, 2005a, p. 12)—in no small part because an extremely complex FL has come to seem unlikely on evolutionary grounds. Furthermore, Merge supplies what had been the fundamental Chomskyan operations of FL: unless some stipulation is added, there are two subcases of the operation Merge. Given A, we can Merge B to it from outside A or from within A; these are external and internal Merge, the latter operation called ‘Move,’ which therefore also “comes free,” yielding the familiar displacement property of language’ (Chomsky, 2005a, p. 12). Thus ‘that property had long been regarded, by me [Chomsky] in particular, as an “imperfection” of language that has to be somehow explained, but in fact it is a virtual conceptual necessity’ (Chomsky, 2005a, p. 12).

It is this turn in thought that characterizes what has been most compelling and also most controversial about MP. Until the 1990s, questions of ‘perfection’ had been at best covert within the generative program, perhaps most notable in the dictum that the lexicon is a ‘list of exceptions’ (see Chomsky (2004, p. 107)), suggesting that syntax was a set of nigh-perfect rules to which words were somehow “listed exceptions” (that is, English grammar includes a rule saying “add -ed at the end of a word to create a past tense,” so every word that functions differently must contain some kind of notation that it is an exception to this general rule). According to the tenets of SMT, and this is true with special emphasis in Chomsky’s most recent work (2004, 2005a,b, 2007, 2008), we learn that something like the operation Move  $\alpha$ —which had been posited as the most fundamental mechanism of TG (in Chomsky, 1981, 1982, 1986)—is produced not by a specifically coded mechanism but instead from constraints imposed from sources exterior to the FL (including ICs and ‘virtual conceptual necessity,’ Chomsky, 2004, p. 104). While there is no doubt that the willingness of researchers to quickly switch gears raises questions about the nature of the Chomskyan revolution (see Johnson and Lappin (1997), Lappin et al. (2001)), one reason it has succeeded is because while it retains much of the

Chomskyan operating procedure and its empirical concerns, what it rejects is exactly the controversial machinery of Chomsky's own earlier work—and what is left behind is very much like a 'pre-revolutionary' view of the character of language.

Thus, many of the most striking elements of TG that had survived through the 1980s Principles and Parameters (P&P) theory are now explicitly abandoned by MP. 'In this conception there is no Logical Form (LF): rather the computation maps a Lexical Array to  $\langle$ PHON, SEM $\rangle$ ' (Chomsky, 2004, p. 107) 'where PHON is accessed by SM and SEM by C-I. [A derivation] D converges if PHON and SEM each satisfy IC; otherwise it crashes at one or the other interface' (Chomsky, 2004, p. 106, emphasis in original). Many of the characteristics linguists associate with language *per se* become 'features' of PHON, distinguishable by whether they manifest syntactic relationships (and are therefore called *interpretable* in MP) or do not (and are therefore *uninterpretable*). MP tolerates 'a relation Agree holding between  $\alpha$  and  $\beta$ , where  $\alpha$  has interpretable inflectional features and  $\beta$  has uninterpretable ones, which delete under Agree' (Chomsky, 2001, p. 3). The 'relation Agree and uninterpretable features are *prima facie* imperfections' (Chomsky, 2001, p. 3), which is to say violations of SMT, so rather than trying to define ways in which FL may contain actual coding mechanisms for them, under MP Chomsky now attempts to find ways that SI-CM interface conditions require them. In particular, 'locality conditions,' which is to say the very requirement that linguistic computations are performed as efficiently as possible 'yield an intervention effect' in some (interpretable) cases, 'barring Agree,' i.e., accounting for circumstances where agreement does not occur, or does not appear on the surface; 'to the extent that this is true, uninterpretable features and the Agree relation are not true "imperfections," despite appearances' (Chomsky, 2001, p. 4).

While maintaining a rhetorical commitment to many of the principles that defined earlier phases of generativism and a theoretical commitment to certain principles of scientific procedure that arguably characterize all of Chomsky's programs (though see Johnson and Lappin (1997), Katz (1996), Katz and Postal (1991), Lappin et al. (2000, 2001), Postal (2003) for objections to various aspects of this assumption), and remaining concerned with many of the same linguistic phenomena that informed previous generative projects, MP diverges from older conceptions of TG in the view that a 'perfect' language would not require any kind of substantial, dedicated linguistic engine in the brain at all. Despite its claims to continuity with earlier projects, some words that occur in MP like 'imperfection' and 'computational efficiency' are not just new terms but new ideas in Chomsky's research, and point at least provisionally to a concern with issues that have been important for both critics of generativism and also for linguists working outside of the generative paradigms altogether.

### 3. Functionalism and syntactic autonomy

In an interesting and suggestive manner, *functionalism* in linguistics is not a term that can be easily ascribed to a discrete group of adherents. In this way it is not exactly like the term *generativism* or like other terms for various movements in any number of academic fields. Though it has particular adherents and even linguists who have explicitly taken on the name to describe their project, it is not clear that most functionalists approach the study of language in the same way, except at a very fundamental or conceptual level. Functionalism is an umbrella term for a general approach or set of approaches, rather than a particular theory, as are, for example, Generalized Phrase-Structure Grammar, Categorical Grammar, or GB or Chomsky's own Extended Standard Theory (EST/Y).

Such a frame is necessary because the true limits of the functionalist approach to linguistics are not clear, especially when we look to the past. If the term arises especially via its explicit use in the writings of Simon Dik (1980, 1989, 1997), Michael Halliday (1973, 1985), and Talmy Givón (1979, 1984, 1990), it is not even clear that these three authors have been in sustained dialogue with each other, or concerned with building any sort of comprehensive program beyond their own particular avenues of research. Indeed, these authors are quite different in their level of concern with precisely the issue that seems to be front and center for TG, namely the degree to which form can or should be the prominent concern of linguistics. Dik and the later Givón are extremely interested in form and even in what they explicitly call formalisms (despite very significant differences in their approaches to the subject), yet even in these modes it is hard to call them formalists in the sense that the term has been used.

To the degree that there exists an overt contrast between formalism and functionalism (see Darnell et al. (1999a,b), Newmeyer (1998)) that adherents to both programs might acknowledge, it can be said to follow

a deeply entrenched philosophical tension—a foundational and conceptual tension. Formalists tend to see language as primarily emerging in the service of cognition, as befits the rationalist tradition of which Chomsky is an explicit follower; functionalists tend to see language primarily emerging in communicative contexts, a position relatively familiar in the philosophically opposed empiricist tradition. From this contrast a deeper one emerges:

The central, and most general, tenet of functionalism is that language is first and foremost a means of human communication in sociocultural and psychological contexts, and that this fact must determine our view of how language should be modeled. In other words, there is a strong consensus among functionalists that the linguistic system is not self-contained, and so autonomous from external factors, but is shaped by them. (Butler, 2003, p. 4).

There is no clear way in which functionalists as a group hold to the idea that much of the detail of language emerges from any particular function, let alone that direct social or even communicative functions can be imputed to large-scale linguistic structures like case or agreement. It is also not possible to assert that functionalists are uninterested in or not committed to form; as already noted, both Dik and Givón at times adopt formalisms quite close to some of Chomsky's and are at all times more interested in form than are other linguists who are today also called functionalists; Halliday, too, although interested in form, tends to examine formal issues more consistently in terms of interaction with other linguistic, social, and cognitive systems. Recent functionalists like Van Valin and LaPolla (1997) and Croft (2001) are profoundly interested in form.

It is in fact with regard to the *interaction* of form with other parts of language that perhaps the clearest line of demarcation between formalism and functionalism can be drawn, in no small part because of the way in which certain principles are almost always explicitly adopted in Chomskyan linguistics. The principle most at issue is that of the autonomy of syntax, which can also be understood as a kind of modularity principle: there is simply an FL whose only domain of operation is syntax, which is at least somewhat modular with regard to context and meaning (indeed, context and meaning may be unavailable to FL), which by itself virtually exclusively defines the human language faculty or what Chomsky calls Internal (I)-language, and which is cut off from other linguistic operations. Whatever we want to call semantics, pragmatics, and context, they are not part of this autonomous syntax module FL; the commitment to such a characterization has remained nearly uniform throughout all of Chomsky's work, though at various times it has been emphasized more and less strongly.

Newmeyer (1998) follows the functionalist Croft (1995) in drawing out fine distinctions among the various autonomy theses, arguing that many functionalists in fact adopt some forms of these theses and that some of the basic theses trace back not to Chomsky but to Saussure and perhaps even further. Newmeyer summarizes what he considers the three core autonomy theses as follows:

the *autonomy of syntax*, which holds that there exists a cognitive system of non-semantic and non-discourse-derived syntactic elements whose principles of combination make no reference to system-external factors; the *autonomy of linguistic knowledge from use*, which postulates a system embodying knowledge of language that is characterizable independently of language use; and the *autonomy of grammar as a cognitive system*, namely the idea that there is a cognitive system exclusively dedicated to language. In each case, I have argued that the hypothesis is correct. (Newmeyer, 1998, p. 94).

While it is not clear that many formalists, even Chomsky, would adhere to these principles, as Newmeyer himself admits, arguably it is just the rejection of these intuitions, or more precisely their sufficiency for explaining much of human language as a whole, that joins functionalists as a group, and that connects them historically with figures who predate Chomsky.

While Newmeyer claims to adhere to all three versions of the autonomy thesis, his discussion of the issues is more nuanced and ranges more broadly in the literature than do typical discussions in the generative literature. On its surface, the very idea of autonomy would seem to be a hallmark of Chomskyan grammar, and the idea of autonomous syntax in particular has been one Chomsky has appeared to endorse throughout his career and that most functionalists define themselves against. But the substantive thesis is the one that must bear the more significant weight, or that at least has more clear restrictions on its content: if one believes that there is a syntactic system that operates without reference to external factors, one is more constrained than if

one believes simply that some external factors interact with or constitute syntactic operations ‘all the way down’—whether there are rules operating independent of semantics in FL, or whether FL consists of mechanisms that cannot operate without reference to the other parts of language. Reasonable doubt would seem to be on the side of the anti-autonomist, since we need only show that syntax is in some sense not autonomous to raise problems for autonomy.

Nevertheless, something like a ‘pure’ autonomy thesis continues to be a rhetorical goal of Chomskyan linguistics, even as many functionalists grant that some part of the autonomy intuition must be correct. Functionalists are not *prima facie* ‘mysterians’ in their rejection of the autonomy thesis, who believe that language is somehow beyond explanation; rather, they are generally committed to a view according to which language evolved along with other cognitive capabilities, so that despite the human being’s extraordinary capability to use and create language, in practice we are going to be able to find very few examples of actual language that can or should be divorced analytically from other cognitive procedures and operations. For Chomsky, on the other hand, the interesting parts of language (or the mental representations of language) are those that can be isolated from the rest of cognition in this way. Thus Newmeyer is able to point out that Givón certainly seems to endorse something like the third version of autonomy, the ‘autonomy of grammar as a cognitive system,’ while maintaining a deep and sustained interest in biological and evolutionary principles that, while often invoked by Chomsky and his followers, are rarely explored by them in detail—or have rarely been until MP.

Among the surprising characteristics of functionalism, then, is that it is often just as if not more committed to the facts of biological organization and adaptation as is formalism. Because Chomsky in particular claims so often that his studies are done in the pursuit of making linguistics ‘scientific,’ it can seem disarming to realize how rarely biology and evolution are discussed in his work and, conversely, how often they are discussed in much of the functionalist literature, not least of all the work by Givón. Without delving into the multiple reasons for this misunderstanding, it is easy to see on the surface why a relatively minimal view of autonomy might please those with an interest in evolution: even if the concept were comprehensible, we do not seem to see any examples of evolved animals with something like the human cognitive capacity but without language, or vice versa. Not only is the concept hard to comprehend—itsself a powerful clue—but to some extent we don’t have much trouble imagining that cognition and language are powerfully connected. Dolphins may be highly intelligent, *and* they may have a system of language or language like communication. Apes of many species are highly intelligent, *and* they seem both to make use of and to be able to learn many aspects, but not all, of human language. Intelligence and language seem to accompany each other in the animals, rather than often occurring independently of each other.

It is also, clearly, more parsimonious to imagine that a single change, or a series of small but significant and interconnected changes, produced both human cognition and human language as we understand them at about the same time—exactly what Chomsky refers to as a ‘Great Leap Forward,’ which is to say some reasonably plausible story about how UG could have emerged under the known facts and principles of primate evolution. Again, we speak of there being a transition to *Homo sapiens* (as well as an ever-more-interesting series of earlier transitions) that involves both language and cognition; I am not even familiar with a thesis that puts forward two distinct evolutionary transitions, one involving cognition and then (on Chomsky’s version of the autonomy thesis) a later transition that involved language but otherwise did not involve speciation. Like much in Chomsky’s machinery, this development would be unique and highly unusual in evolutionary history, whereas the relatively rapid advent of language-and-cognition together, although a development whose consequences may not have been thoroughly explored, remains a much clearer, more straightforward, and more evolutionarily plausible story of human development.

The autonomy theses, especially in their strongest forms, have therefore surprisingly put functionalists on the side of biological and evolutionary plausibility, while also not committing them to the view that there is *nothing at all* particularly adapted in the human brain for language.<sup>4</sup> Thus in a series of recent essays, for

<sup>4</sup> Here see the recent exchanges between Chomsky et al. (Hauser et al., 2002; Fitch et al., 2005) and Jackendoff and Pinker (Jackendoff and Pinker, 2005; Pinker and Jackendoff, 2005), where Jackendoff and Pinker, both former (and perhaps even current) formalists, take what I am arguing here is both the functionalist position and a reasonable, if tendentious, interpretation of the logical and empirical consequences of MP and the role of that theory in Chomsky et al.’s arguments about evolution.

example, Givón has argued that there are close ties between the language capacity and the ways human beings process visual information, that ‘most neurological mechanisms that support language learning and change in humans are phylogenetically old and functionally generalized’ (Givón, 2002, p. 36). While parts of the brain were adapted for language and cognition in the transition to *Homo sapiens*, this did not make human beings radically unlike all other animals or create an entirely new ‘language organ’ that is unlike and unconnected to the other parts of the brain. Rather,

the mechanisms relevant to human language are neither new nor language specific but have been recruited into the novel linguistic use from multiple functionally amenable pre-linguistic domains. Many of these still perform their older pre-linguistic functions. And in the relevant domains of language processing, these mechanisms may still retain many of their older properties. (Givón, 2002, p. 36).

If we want to understand language in a full sense, we need to know not merely what changed in the brain to enable what we call language, but what all the mechanisms were that already existed and which are either still used by or have been repurposed for language and cognition. Put more simply, whether or not pre-human primates can think in the human sense, human thinking is built on and includes the primate and mammalian cognitive capacities; it is not a wholly separate kind of thing, and human language is similarly built on existing cognitive structures.

#### 4. The biology and evolution of language in MP

Though it has been a part of all his research programs, there is a rhetorical re-emphasis in MP to what Chomsky calls a ‘biolinguistic perspective’ (Chomsky, 2005a, p. 1), which ‘began to take shape over 20 years before [i.e., 1954, 20 years prior to the 1974 MIT ‘Debate on Bio-Linguistics’] in discussions among a few graduate students who were much influenced by developments in biology and mathematics in the early post-war years,’ including Eric Lennenberg (Chomsky, 2005a, p. 1) As Chomsky puts it, ‘one of the basic questions to be asked from the biological point of view, is the extent to which apparent principles of language . . . are unique to this cognitive system or whether similar “formal arrangements” are found in other cognitive domains in humans or other organisms’ (Chomsky, 2005a, pp. 1–2). Although this is certainly a way of framing the autonomy thesis, it is also quite similar to the topic Givón and others have been discussing in recent work, though of course pursued along different lines: while Chomsky has been profoundly interested in just those parts of language that do not yoke into service existing or otherwise-purposeful cognitive structures and capacities, functionalists like Givón are interested in looking at the parts of language that *do* interact with the rest of cognition. Framed this way, formalism and functionalism suddenly appear to be halves of the same project rather than projects competing for the same territory, most especially because Chomsky no longer seems to insist that Language-with-a-capital-L—whatever that might be—is exclusively composed of modularized functions that serve no non-linguistic purpose.

Indeed, in a typology of the current questions which must be addressed by linguistics, Chomsky now assigns the questions of most interest to a category which he had hardly considered in earlier work:

Assuming that the faculty of language has the general properties of other biological systems, we should, therefore, be seeking three factors that enter into the growth of language in the individual:

1. Genetic endowment, apparently nearly uniform for the species, which interprets part of the environment as linguistic experience, a non-trivial task that the infant carries out reflexively, and which determines the general course of the development of the language faculty. Among the genetic elements, some may impose computational limitations that disappear in a regular way through genetically timed maturation. Kenneth Wexler and his associates have provided compelling evidence of their existence in the growth of language, thus providing empirical evidence for what Wexler calls “Lennenberg’s dream.”
2. Experience, which leads to variation, within a fairly narrow range, as in the case of other subsystems of the human capacity and the organism generally.
3. Principles not specific to the faculty of language.

The third factor falls into several subtypes: (a) principles of data analysis that might be used in language acquisition and other domains; (b) principles of structural architecture and developmental constraints that enter into canalization, organic form, and action over a wide range, including principles of efficient computation, which would be expected to be of particular significance for computational systems such as language. It is the second of these subcategories that should be of particular significance in determining the nature of attainable languages. (Chomsky, 2005a, p. 6).

Arguably, the entire Chomskyan project until Minimalism had been devoted specifically to what he here calls type 1: the specific genetic endowment for language. Yet Minimalism is no longer interested in this project; rather, principles of type 3, those ‘not specific to the faculty of language,’ are the main objects of analytic interest.

In a recent article in the journal *Science* written with two biologists (Hauser et al., 2002), that does not extensively discuss MP, Chomsky reveals how dramatically his thinking has shifted on the object of linguistic inquiry, the nature of language as we receive it in the world, and the ways in which Chomsky’s own project interfaces with the rest of scientific inquiry. Chomsky’s work is replete with distinctions (like the ones between I-language and E-language, between Deep and Surface Structure, and between competence and performance) that seem in part driven by a desire to find some kind of computational engine ‘underneath’ the messy detail of sociolinguistic practice. For the first time in his published writings, here Chomsky draws a distinction in which the ‘messy’ parts of language now appear at least arguably intrinsic to human language in every way. Hauser, Chomsky and Fitch distinguish between the Faculty of Language-Broad Sense (FLB) and the Faculty of Language-Narrow Sense (FLN), which very much resembles the older distinctions and also analytic philosophy’s distinction between wide and narrow content. But in describing the two systems the authors, closely recapitulating the arguments in Chomsky’s recent MP works, write:

FLB includes an internal computational system (FLN, below) combined with at least two other organism-internal systems, which we call ‘sensory-motor’ and ‘conceptual-intentional.’ Despite debate on the precise nature of these systems, and about whether they are substantially shared with other vertebrates or uniquely adapted to the exigencies of language, we take as uncontroversial the existence of some biological capacity of humans that allows us (and not, for example, chimpanzees) to readily master any human language without explicit instruction. FLB includes this capacity, but excludes other organism-internal systems that are necessary but not sufficient for language (e.g., memory, respiration, digestion, circulation, etc.).

FLN is the abstract linguistic computational system alone, independent of the other systems with which it interacts and interfaces. FLN is a component of FLB, and the mechanisms underlying it are some subset of those underlying FLB.

Others have agreed on the need for a restricted sense of ‘language’ but have suggested different delineations. [Philip] Lieberman (1984) and his associates have argued that the sensory-motor systems were specifically adapted for language, and hence should be considered part of FLN. There is also a long tradition holding that the conceptual-intentional systems are an intrinsic part of language in a narrow sense. *In this article, we leave these questions open, restricting attention to FLN as just defined but leaving the possibility of a more inclusive definition open to further empirical research.* (Hauser et al., 2002, pp. 1570–1571; emphasis added).

This is a remarkable about-face from the rhetoric of nearly all of Chomsky’s prior writings, in which it is exactly the possibility that SM and CI might be ‘intrinsic’ parts of FLN that is at issue. Unlike any of the programs before MP, in this article Chomsky rightly says that his current research might be compatible with the view that either parts of SM or CI might be part of what he calls FLN and what we have been calling more informally ‘language all the way down’: that is to say that there is no part of the human language capacity that does not take up mechanisms from other cognitive capabilities—or, to put it in Hauser, Chomsky, and Fitch’s terms, FLN and FLB might be largely or even completely identical. (Indeed, not mentioned by the authors, Lieberman’s (1984) discussion of the biology of the speech system, along with other work by Lieberman, is explicitly presented as a strong counter-argument to the FLN-is-everything perspective of generativism.)

So where in earlier work Chomsky was renowned for arguing that Language in its strongest sense was exactly those parts of FLN that could be distinguished from the rest of the brain, he now appears to be arguing a much less controversial thesis, namely that FL simply includes some mechanisms that are adapted for language, and that these mechanisms might even have other uses in the brain. Indeed, such an admission is implicit in the rhetoric of MP, since there is ‘a long tradition’ believing that some part of the CI systems might be strongly connected to language, and that it will be hard if not impossible to craft principled distinctions at any level between those systems, since they are constantly making use of each other. This ‘long tradition’ against which Chomsky no longer offers counterarguments cannot be said to be exactly the same line of thought as Functionalism proper, but it does happen to capture exactly the ideas of the philosophers and linguists who have objected all along not to the analytic aspects of Chomsky’s work but precisely to its philosophical commitments—to its (according to many philosophers and linguists) unmotivated or at least under-motivated adherence to the intuition that at some ‘deep’ level language can be separated from other parts of cognition and communication (see Katz (1996), Katz and Postal (1991)).

Hauser et al. (2002) is mainly and famously devoted to questions about recursion and discrete infinity that have fascinated Chomsky from the beginning and that are consistently invoked in the MP literature: ‘Why did humans, but no other animal, take the power of recursion to create an open-ended and limitless system of communication? Why does our system of recursion operate over a broader range of elements or inputs (e.g., numbers, words) than other animals?’ (Hauser et al., 2002, p. 1578). Here again the answer is surprising: ‘one possibility, consistent with current thinking in the cognitive sciences, is that recursion in animals represents a modular system designed for a particular function (e.g., navigation) and impenetrable with respect to other systems. During evolution, the modular and highly domain-specific system of recursion *may have become penetrable and domain-general*’ (Hauser et al., 2002, p. 1578, *emphasis added*). Now, even in contrast with the reasoning offered earlier in the article, FLN itself—or pure recursion, as the article suggests several times—may be a property of domain-general capabilities rather than a highly specialized module that is exactly ‘impenetrable with respect to other systems.’ Such ideas are not at all remarkable in philosophy or even in linguistics, but for Chomsky’s own program, within which they have until very recently been something like anathema.

Thus, where in the past for Chomsky FLN was the only object of interest and a capability like recursion was represented through a complex formal architecture, FL, that had a real if not necessarily localizable presence in the human brain, for Hauser, Chomsky, and Fitch FLB is much like the recognizable language faculty we see in work by Givón et al. as well as philosophers like Putnam, Wittgenstein, and perhaps even Kant, for whom the identification and pursuit of a unique and uniquely isolated language capacity is likely misbegotten. For Hauser, Chomsky, and Fitch, language is something it has never been for Chomsky before: built on and inclusive of a range of general cognitive capacities, many if not most of which are apparent throughout much of vertebrate life, including vocal imitation, sound production and discrimination, theory of mind, number, and ‘shared mechanisms across different cognitive domains’ (Hauser et al., 2002, p. 1573). Not just this extensive list of capabilities, but others more remote from language—such as facial recognition, gesture recognition (Hauser et al., 2002, p. 1574), and spatial navigation and foraging ability (Hauser et al., 2002, p. 1578)—may all play critical roles in the evolution of language and the current state of the human FL.

In a critical sense, this just is the functionalist thesis—which must be understood here, again, not as the view that every aspect of language has a specific functional relevance for particular aspects of communication, but rather that language as a whole and specific languages develop in large part to mediate between various communicative, cognitive, and social needs. Sometimes these needs may be extremely remote and sometimes particular features may develop for reasons that cannot be traced back to particular needs at all—a process that evolutionary scientists and now some linguists, including Hauser, Chomsky, and Fitch, call ‘exaptation,’ as opposed to adaptation. On this view, based on work by Stephen Jay Gould and Richard Lewontin (see Gould and Lewontin (1979), Gould (1997), exaptations are evolutionary explanations, but cannot be directly understood as adaptations with a single purpose, and may reflect multiple repurposings of features that developed for adaptive reasons that may no longer even be evident. Most Functionalists openly admit that many aspects of language may have emerged through a process like exaptation, but this view has typically been taken as a strong counter-argument to the Chomsky formalist program (e.g., Bouchard, 2005), rather than as an explicitly accepted part of it.

## 5. MP and the Nature of FL

The Chomskyan program as defined in the recent MP literature adjusts the objects and methods of linguistic inquiry quite remarkably. What Chomsky still calls UG ‘must provide, first, a structured inventory of possible lexical items that are related to or perhaps identical with the concepts that are the elements of the “cognoscitive powers”’ (Chomsky, 2005a, p. 4); in other words, if language is a computational system of rules operating over a series of discrete, atomic objects we conventionally call words, it is now conceivable that the part of the brain that manages the lexicon—in a sense the most apparent physical component of FL—is actually located in CI (and therefore part of FLB), not in FLN. The second component of UG is ‘means to construct from these lexical items the infinite variety of internal structures that enter into thought, interpretation, planning, and other mental acts’ (Chomsky, 2005a, p. 4). This sounds very much like the computational system of FLN. But in his latest work Chomsky now turns his eye toward the entire history of TG and its proposals for FLN and its role in UG (indeed, in the earliest work, one would be forgiven for thinking that UG and FLN were the same thing). Now Chomsky writes that in LSLT (the revision of the 1955 manuscript from which his dissertation—Chomsky, 1957—was excerpted, and that still stands as the most extensive version of his original TG model), ‘the assumption . . . was that higher levels of linguistic description, including morphemes, are determined by a general format for rule systems provided by UG, with selection among them in terms of a computational procedure that seeks the optimal instantiation, a notion defined in terms of UG principles of significant generalization’ (Chomsky, 2005a, p. 7). While this general perspective persisted throughout the Standard Theory and EST/Y of TG through the late 1970s, work by Chomsky and several of his followers including Richard Kayne, Howard Lasnik and others ‘crystallized in a radically different approach to UG, the P&P framework, which . . . sought to *eliminate the format framework entirely*, and with it, the traditional conception of rules and constructions that had been pretty much taken over into TG’ (Chomsky, 2005a, p. 8; *emphasis added*). This version of history cannot be pleasing to the most hard-core followers of classical generativism, as the idea that UG is in some principled way highly structured is part of what is thought to distinguish formalism from functionalism, and until the MP writings it has not been clear that Chomsky sees P&P as ‘eliminate[ing] the format framework entirely,’ though that has certainly been at least one way of construing the approach.

Chomsky casts the abandoning of the ‘format framework’ as a rejection of the part of TG that was a ‘traditional conception of rules and constructions [and] that had been pretty much taken over into TG,’ but arguably it was the unusually rigid and formal view of rules and constructions that distinguished pre-P&P TG from other linguistic approaches, and in fact P&P and MP are both much more accommodating to ‘traditional’ linguistic notions than were their precursors. To begin with, P&P and GB were developed in part to accommodate the large amount of typological diversity that linguists like the late Kenneth Hale had brought to bear on the generative apparatus. In early TG, ‘there is a “natural position of interpretation” for each item (Chomsky, 1998), and this “natural position of interpretation” is the one occupied by similar elements in sentences where the semantic relation is expressed by a “conceptually natural” syntactic relation. This “natural position of interpretation” generally happens to correspond to an English surface position’ (Bouchard, 2005, p. 1687). P&P at least allowed formalists to suggest that there might be something ‘natural’ about languages that do not follow the same syntactic structure as does English, something which had rather remarkably continued to be at issue throughout all the prior phases of TG.

In MP, especially, we are now finally told that such ‘formats’ can be discarded. Already this is a remarkable change from the prior versions of Chomskyan linguistics, and militates against those views of P&P/GB that saw it continuing to hold on to a strongly transformational core for grammatical theory (though this was always a tendentious position). ‘Acquisition,’ Chomsky now writes apropos of P&P, ‘is a matter of parameter setting and is therefore divorced entirely from the remaining format for grammar: the principles of UG. There is no longer a conceptual barrier to the hope that UG might be reduced to a much simpler form, and that the basic properties of computational systems of language might have a principled explanation instead of being stipulated in terms of a highly restrictive language-specific format for grammars’ (Chomsky, 2005a, p. 8). Even Chomsky’s supporters in the audience for his recent lectures (e.g., Chomsky, 2005b) have reacted with some surprise to hear him make statements like this, not least because he now speaks of ‘principled explanations’ that are not specific to language, and because the invocation of non-linguistic cognitive powers throughout

language has until now been a hallmark of Chomsky's opponents, going back as far as the Generative Semantics dissent if not further (Harris, 1995; also see Culicover and Jackendoff (2005, pp. 94–102)).

Today, however, Chomsky does not just suspect that both cognitive capacities and even more general human ones might contribute a great deal to the structure of language, but he has come to desire the explicit elimination of just about anything that looks like a structured FL, despite his continued use of that terminology (in an ambiguous manner, since he sometimes uses it to refer to FLB and sometimes to FLN, and it is sometimes difficult to determine which of these objects he means to address). From the MP framework, Chomsky now writes that

the operations forming complex expressions should consist of no more than a rearrangement of the objects to which they apply, not modifying them internally by deletion or insertion of new elements. If tenable, that sharply reduces computational load: what has once been constructed can be “forgotten” in later computations, in that it will no longer be changed. That is one of the basic intuitions behind the notion of cyclic computation. The EST/Y-model and other approaches violate this condition extensively, resorting to bar levels, traces, indices, and other devices, which both modify given objects and add new elements. A second question, then, is whether all of this technology is eliminable, and the empirical facts susceptible to principled explanation in accord with the “no-tampering” condition of efficient computation. (Chomsky, 2005a, p. 11).

As clear as this is, it manages to sneak in a definition of MP that must be received with some shock in those parts of the intellectual world relying on earlier versions of TG, because what Chomsky proposes should be ‘eliminated’ in the spirit of MP is almost all the machinery that Chomskyan grammar had previously developed.

Thus in one important sense, exactly what is minimized in MP is the very apparatus Chomsky spent the first forty years of his career building; what is eliminated is TG itself:

Other questions arise about the variety of operations—phrase structure, transformations, reconstruction, and so on; about the crucial reliance on such notions as government that seem to have no principled motivation; and about many principles that are hard to formulate except in terms specific to the language faculty. The general question is, How far can we progress in showing that all such language-specific technology is reducible to principled explanation? (Chomsky, 2005a, p. 11).

Now, the highly structured computer FLN that performed so many elegant calculations and transformations is said to violate a kind of Occam's razor principle—it appears to be implausible both biologically and scientifically—and all the highly detailed apparatus that Chomsky and his followers spent 40 years developing is eliminated in the name of principle. This has of course been a great part of the objection that non-Chomskians have made against formalism on both evolutionary and linguistic grounds—how exactly could such a complex piece of computational machinery have developed biologically, and what might the intervening forms look like between animal and human language?

Despite his protestations, the principle that Chomsky's recent work now considers unavoidable is exactly one of those which his opponents and apostates have been advocating all along: it makes little sense to presume that the human mind has elaborate built-in mechanisms for language production, but instead relies on a single or very small number of changes (some available to cognition in general, and perhaps a few available “only” to language, however exactly we cash out that restriction) that make language and language learning possible—something close to what Hilary Putnam once called, in a very early debate with Chomsky, ‘heuristics, i.e., learning strategies’ (Putnam, 1967, p. 21). In Hauser et al. (2002), the authors suggest that some version of recursion might be all that is needed to enable language; in Chomsky (2005a) as well as the earlier *Science* article, he is clear that this capability might be cognitively general, and so available to many parts of the brain and evident in many activities besides language—again, just as most functionalists have always argued. In much of Chomsky's recent work (e.g., Chomsky, 2005a,b, 2007, 2008) it looks as if recursion and Merge are functionally identical, and that since Move is simply a special case of Merge, UG consists almost exclusively of recursion (along with the ability to detect “edge features”).

What becomes of the detailed Chomskyan apparatus without the highly structured FL of earlier phases of generativism? It is here that the rhetoric and activity of MP help to obscure what is really happening under

the surface. The writings of Chomsky and his followers are still full of phrase–structure diagrams, several new sets of technical vocabulary (especially the ‘phase’ and ‘probe-goal’ terminology), and reference to existing machinery like C-command, the Extended Projection Principle (EPP), movement, spec-head relations, TP and CP as phase heads, and so on. The work continues to make a strong argument that there are certain highly general sentence patterns that can be found even in highly divergent languages, but only when seen at an extremely high level of abstraction. What is especially fascinating is another new feature of the Chomskyan terminology, especially the ideas of ‘interpretable’ and ‘uninterpretable’ features and the notion of probe-goal ‘matching.’ Thus in a full rehearsal of the current picture of the operation of FL, Chomsky writes:

We would like to determine whether all internal levels are dispensable, with the five cycles of the EST/Y-model reduced to one—better still unformulable, as D-Structure is. That will follow if computation relies solely on Merge, perhaps pair- as well as set-Merge, yielding syntactic objects that, at some point in the derivation, are transferred to the two interfaces [CI and SM]: transfer to the sound interface is often called “Spell-Out.” Let us call the syntactic objects that are transferred “phases.” Optimally, once a phase is transferred, it should be mapped directly to the interface and then “forgotten”; later operations should not have to refer back to what has already been mapped to the interface—again, a basic intuition behind cyclic operations. We therefore hope to be able to establish a “Phase Impenetrability Condition,” which guarantees that mappings to the two interfaces can forget about what they have already done, a substantial saving in memory.

If these general ideas are on the right track, then all internal levels are unformulable, hence dispensable in the strongest sense. We are left with only the interface levels, and the five cycles of the EST/Y-model are reduced to a single one, based on Merge. The cyclic properties of the interface follow without comment. Pure cyclic computation is also required for the simplest account of uninterpretable features. Their values are redundant, determined by an Agree relation with interpretable features. (Chomsky, 2005a, pp. 16–17).

Couched in technical vocabulary, this boils down to something like an elimination of all of the formal machinery to which functionalists have objected in the generative program all along. Instead of levels and cycles, FL operates almost exclusively in consideration of the needs of the brain and the articulatory apparatus, and no less of the structural aspects of the language the person has learned, which may not even be visible to FL at all.

Uninterpretable features operate via ‘an Agree relation,’ which might also be understood as a variety of phenomena with which all linguists are familiar: agreement, gender, concord, and other aspects of morphology that are found throughout world languages, in some cases with much higher frequency than they are found in English. In the early heyday of transformationalism it was thought that features like these might be eliminated in terms of complex syntactic operations that ultimately generate features like Case from a ‘natural position of interpretation’ as found in English. Instead, under MP we find that ‘structural Case’ [Case that encodes information, as opposed to being redundant] ‘may be present even when not spelled out. . . a very strong version of this thesis holds that inflectional features are in fact universal’ (Chomsky, 2005a, p. 17). Of course languages like English display many features that look like Case and Agreement, that may even perhaps be Case and Agreement; what is new is that Chomsky no longer thinks these facts out of typological and historical studies of world languages can be eliminated in favor of a complex syntactic engine that ultimately creates them. Instead, to satisfy the demands of computational efficiency, what must now be eliminated from grammar is exactly what functionalists have all along said was unnecessary and unnecessarily elaborate.

The consequences of this shift have been notable in both formalist and functionalist linguistics, precisely because it entails the abandonment of the conceptual principle on which earlier versions of TG (especially the Standard Theory and EST/Y) had rested. Already, the parameter-setting machinery of P&P had helped to give rise to Optimality Theory (OT), first in phonology but then later in syntax and morphology, and while Chomsky has worked hard to distance himself from the theory, its emphasis on economy and “violable constraints” (as opposed to rules) as the basic principles of linguistic construction showed a convergence between functionalist and formalist thinking (indeed, it is not clear whether OT should be properly called a formalist or

functionalist theory). Most functionalists have never denied that there is something biologically substantive in the human brain that enables language, so that the very limited nature of FLN under MP leads to additional thoughts of convergence.

One of the more ambitious recent programs in linguistic theory, the one conducted by the former orthodox generativist Jackendoff (see especially Jackendoff (1997) and Culicover and Jackendoff (2005)), very much resembles MP, overtly so, although without the rhetoric suggesting that the current program retains the substance of earlier TG. Culicover and Jackendoff put forward what they call the “Simpler Syntax Hypothesis,” which sounds almost exactly like MP: ‘the most explanatory syntactic theory is one that imputes the minimum structure necessary to mediate between phonology and meaning’ (Culicover and Jackendoff, 2005, p. 5). This hypothesis ‘is a radical break from the spirit of mainstream generative grammar’ (Culicover and Jackendoff, 2005, p. 5). The reason is not because UG still exists, in a highly minimized form: it is because the rest of language, which Chomsky has long put aside and even, in earlier writings, suggested were in some way epiphenomenal performance “errors” in the individual production of language, now comes to seem every bit as important to language itself as it had to pre-Chomskyan researchers. Thus, both Hauser et al. (2002) and Fitch et al. (2005) show a great deal of interest in the nature of *both* FLN and FLB, where the Chomsky of as late as 1978 was likely to write that a grammar is ‘a system of rules that provides representations of sound and meaning (among others)... our task is to discover the representations that appear and the rules operating on them and relating them... and more important, to discover the system of UG that provides the basis on which they develop’ (Chomsky, 1980, p. 65).

Under MP it seems misguided to call UG a “system.” It is instead a set of operations, Merge and Move (along with edge-feature detection), that enable everything we call language to be built up on top of them. They may be necessary for language but they are not sufficient; they require a host of cognitive, productive, and articulatory mechanisms to result in what we recognize as a human language like English or Japanese, and it is not possible to decompose or see through these languages down into as system of hard-wired rules (for example, rules for passivization, nominalization, or C-command) that exist independently of the rest of the individual’s cognitive capacity. Thus functionalist theories that acknowledge a minimal amount of computation as part of language—Construction Grammar as practiced today by Croft (2001), or Van Valin’s (Van Valin and LaPolla, 1997; also see Butler (2003, 2005a)) Rule and Reference Grammar—look very much like modern generative theories, generative theories without the conceptual commitments of early Chomskyanism (indeed, Culicover and Jackendoff, 2005, p. 1ff, include both theories as varieties of generativism, despite the fact that none of today’s orthodox Chomskyan describe them this way), like Jackendoff’s own theory. Language is syntax, to be sure, but it is also all those other phenomena—case, pragmatics, morphology, phonology, discourse, and so on—that TG is thought to have long ago discarded. For the same reason, both functionalists and formalists have started to notice a great deal of convergence in not merely the objects that interest them but also in their analytical methods (see Carnie and Mendoza-Denton (2003), Darnell et al. (1999a,b); also see Seuren (2004, pp. 125–149), who argues that this convergence demonstrates the weaknesses of MP as a research program).

After 50 years of the Chomskyan revolution, linguistic theory is returning to the generalizations and observations that Chomsky told the whole world would be eliminated in favor of computational abstraction. Perhaps the only surprise is that it is Chomsky himself who is leading the return, discovering that phenomena like case and agreement are not epiphenomenal but instead uneliminable parts of language—unlike the highly structured syntactic computer on whose existence he insisted for many of those 50 years. Without its highly structured, rule-following FL, generativism has lost claim to much of what distinguished it from its precursors—so that Chomskyan theory, in its conceptual foundations, has become hard to distinguish from functionalist theories. It remains to be seen if this shift will have the same influence outside of linguistics enjoyed by Chomsky’s earlier research.

## References

- Bouchard, D., 2005. Exaptation and linguistic explanation. *Lingua* 115, 1685–1696.
- Burton-Roberts, N., Poole, G., 2006. “Virtual Conceptual Necessity,” feature-dissociation and the Saussurian legacy in generative grammar. *Journal of Linguistics* 42, 575–628.

- Butler, C.S., 2003. Structure and function: a guide to three major structural–functional theories. Part 1: approaches to the simplex clause. John Benjamins, Amsterdam and Philadelphia.
- Butler, C.S., 2005a. Focusing on focus: a comparison of functional grammar, role and reference grammar, and systemic functional grammar. *Language Sciences* 27, 585–618.
- Butler, C.S., 2005b. Functional approaches to language. In: Butler, C.S., Gómez-González, M.L.A., Doval-Suárez, S. (Eds.), *The Dynamics of Language Use: Functional and Contrastive Perspectives*. John Benjamins, Amsterdam and Philadelphia, pp. 3–17.
- Butler, C.S., 2006. On functionalism and formalism: a reply to Newmeyer. *Functions of Language* 13 (2), 197–227.
- Bybee, J., 2006. From usage to grammar: the mind's response to repetition. *Language* 82, 711–733.
- Carnie, A., Mendoza-Denton, N., 2003. Functionalism is/n't formalism: an interactive review of Darnell et al. (1999a, 1999b). *Journal of Linguistics* 39, 373–389.
- Chomsky, N., 1955. *The Logical Structure of Linguistic Theory*. Unpublished MS, University of Pennsylvania. Revised ed., Plenum Press, New York, 1975.
- Chomsky, N., 1957. *Syntactic Structures*. Mouton, Berlin.
- Chomsky, N., 1980. *Rules and Representations*. Columbia University Press, New York.
- Chomsky, N., 1981. *Lectures on Government and Binding*. Foris, Dordrecht.
- Chomsky, N., 1982. *Some Concepts and Consequences of the Theory of Government and Binding*. The MIT Press, Cambridge, MA.
- Chomsky, N., 1986. *Barriers*. The MIT Press, Cambridge, MA.
- Chomsky, N., 1995. *The Minimalist Program*. The MIT Press, Cambridge, MA.
- Chomsky, N., 1998. Minimalist inquiries: the framework, MIT occasional papers in Linguistics 18. In: *MIT Working Papers in Linguistics*, Cambridge, MA.
- Chomsky, N., 2001. Derivation by phase. In: Kenstowicz, M. (Ed.), *Ken Hale: A Life in Language*. The MIT Press, Cambridge, MA, pp. 1–52.
- Chomsky, N., 2004. Beyond explanatory adequacy. In: Belletti, A. (Ed.), *Structures and Beyond: The Cartography of Syntactic Structures*, vol. 3. Oxford University Press, New York, pp. 104–131.
- Chomsky, N., 2005a. Three factors in language design. *Linguistic Inquiry* 36, 1–22.
- Chomsky, N., 2005b. Problems and Prospects of the Minimalist Program. Lectures, MIT, July 25–27, 2005.
- Chomsky, N., 2007. Approaching UG from below. In: Sauerland, U., Gärtner, H.-M. (Eds.), *Interfaces + Recursion = Language?* Mouton, Berlin, pp. 1–29.
- Chomsky, N., 2008. On phases. In: Freidin, R., Otero, C.P., Zubizarreta, M.L. (Eds.), *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*. The MIT Press, Cambridge, MA, pp. 133–166.
- Croft, W., 1995. Autonomy and Functionalism Linguistics. *Language* 71, 490–532.
- Croft, W., 2001. *Radical Construction Grammar*. Oxford University Press, New York.
- Culicover, P.W., Jackendoff, R., 2005. *Simpler Syntax*. Oxford University Press, New York.
- Darnell, M., Moravcsik, E., Newmeyer, F., Noonan, M., Wheatley, K. (Eds.), 1999a. *Functionalism and Formalism in Linguistics*. General Papers, vol. 1. John Benjamins, Amsterdam and Philadelphia.
- Darnell, M., Moravcsik, E., Newmeyer, F., Noonan, M., Wheatley, K. (Eds.), 1999b. *Functionalism and Formalism in Linguistics*. Case Studies, vol. 2. John Benjamins, Amsterdam and Philadelphia.
- Dik, S.C., 1980. *Studies in Functional Grammar*. Academic Press, London.
- Dik, S.C., 1989. *The Theory of Functional Grammar*. Part 1: The Structure of the Clause. Foris, Dordrecht.
- Dik, S.C., 1997. *The Theory of Functional Grammar*. Part 2: Complex and Derived Structures. Mouton, Berlin.
- Fitch, W.T., Hauser, M.D., Chomsky, N., 2005. The evolution of the language faculty: clarifications and implications. *Cognition* 97, 179–210.
- Givón, T., 1979. *On Understanding Grammar*. Academic Press, New York.
- Givón, T., 1984. In: *Syntax: A Functional–Typological Introduction*, vol. 1. John Benjamins, Amsterdam and Philadelphia.
- Givón, T., 1990. In: *Syntax: A Functional–Typological Introduction*, vol. 2. John Benjamins, Amsterdam and Philadelphia.
- Givón, T., 2002. The visual information-processing system as an evolutionary precursor of human language. In: *Givón and Malle (2002)*, pp. 3–50.
- Givón, T., Malle, B.F. (Eds.), 2002. *The Evolution of Language out of Pre-Language*. John Benjamins, Amsterdam and Philadelphia.
- Gould, S.J., 1997. The exaptive excellence of spandrels as a term and prototype. *Proceedings of the National Academy of Science* 94, 10750–10755.
- Gould, S.J., Lewontin, R., 1979. The Spandrels of San Marco and the panglossian paradigm: a critique of the adaptationist programme. *Proceedings of the Royal Society of London B* 205, 581–598.
- Halliday, M.A.K., 1973. *Language in a Social Perspective: Explorations in the Functions of Language*. Edward Arnold, London.
- Halliday, M.A.K., 1985. *An Introduction to Functional Grammar*. Edward Arnold, London.
- Harris, R.A., 1995. *The Linguistics Wars*. Oxford University Press, New York.
- Hauser, M.D., Chomsky, N., Fitch, W.T., 2002. The faculty of language: what is it, who has it, and how did it evolve? *Science* 298, 1569–1579.
- Jackendoff, R., 1997. *The Architecture of the Language Faculty*. The MIT Press, Cambridge, MA.
- Jackendoff, R., Pinker, S., 2005. The nature of the language faculty and its implications for the evolution of language (reply to Fitch, Hauser and Chomsky). *Cognition* 97, 211–225.
- Johnson, D.E., Lappin, S., 1997. A critique of the minimalist program. *Linguistics and Philosophy* 20, 273–333.
- Katz, J.J., 1996. The unfinished Chomskyan revolution. *Mind & Language* 11, 270–294.

- Katz, J.J., Postal, P.M., 1991. Realism vs. conceptualism in linguistics. *Linguistics and Philosophy* 14, 515–554.
- Lappin, S., Levine, R.D., Johnson, D.E., 2000. The structure of unscientific revolutions. *Natural Language and Linguistic Theory* 18, 665–671.
- Lappin, S., Levine, R.D., Johnson, D.E., 2001. The revolution maximally confused. *Natural Language and Linguistic Theory* 19, 901–919.
- Lieberman, P., 1984. *The Biology and Evolution of Language*. Harvard University Press, Cambridge, MA.
- Newmeyer, F.J., 1998. *Language Form and Language Function*. The MIT Press, Cambridge, MA.
- Newmeyer, F.J., 2003. Grammar is grammar and usage is usage. *Language* 79, 682–707.
- Newmeyer, F.J., 2005. Review of C.S. Butler, *structure and function: a guide to three major structural–functional theories*. Part 1. Approaches to the simplex clause and part 2. From clause to discourse and beyond. *Functions of Language* 12 (2), 275–283.
- Pinker, S., Jackendoff, R., 2005. The faculty of language: what's special about it? *Cognition* 95, 201–236.
- Postal, P.M., 2003. (Virtually) conceptually necessary. *Journal of Linguistics* 39, 599–620.
- Putnam, H., 1967. The 'Innateness Hypothesis' and explanatory models in linguistics. *Synthese* 17, 12–22.
- Seuren, P.A.M., 2004. *Chomsky's Minimalism*. Oxford University Press, New York.
- Van Valin Jr., R.D., LaPolla, R.J., 1997. *Syntax: Structure Meaning and Function*. Cambridge University Press, New York.