

Determinist Inquiries: Debates on the Foundation of Language

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Abstract

The present article intends to discuss the important determinist traditions in linguistic thought and theorizing. It will show that (1) there is a significant language-internal approach to determinism and relativity introduced by Saussure and ignored by almost all language scholars; (2) the recent trend introduced by Chomsky within the generative enterprise known as the Minimalist Program has opened a new front which makes possible an attempt to be made with the aim to reconcile, yet not to fuse, the apparently conflicting and contradictory relativist and universalist approaches to language; (3) both the Saussurean and Chomskyan conceptions of ‘sentence,’ ‘creativity,’ and hence ‘language’ are misguided and misleading; and (4) we may suggest a minimalist version of Universal Grammar, called Unified Theory of Parameters (UTP) which on the one hand in pursuit of minimalist aims sets as its objective to dispense with ‘principles’ altogether and on the other hand allows no/bi-valuation possibilities for parameters. Such a version will accommodate a perspective from which nature—genetic/innate foundation of language is complementary to nurture—environmental forces of change and adaptation

The Minimalist Program (MP) introduced in the early years of the last decade of the 20th century was in certain respects a departure from earlier models of the Chomskyan generative enterprise and even from the Government-Binding (GB) theory which may be considered as the only linguistic *theory* offered within the framework of the Principles and Parameters (P & P) approach. In fact, although Chomsky’s most recent attempt—i.e. MP—made in his studies of the human language faculty (FL) shows to have still retained the same fundamental assumptions about FL offered in the earlier P & P model, it has given the approach a new direction, which I should like to call them ‘departures’ from previous theorizing. The most important departure in my view is Chomsky’s discussion of ‘legibility conditions’ imposed by the performance systems (PS) on FL as the only determining output conditions on language; therefore, heralding a era of Internalist Functionalism (IF) in Epstein’s terms and Minimalist Functionalism (MF) in mine.

This paper intends to investigate the repercussions of such a departure and discuss aspects of linguistic determinism. A bell of caution is to be rung here: by linguistic determinism, I do not mean the kind of hypothesis put forward by Sapir and Whorf only. What I have in mind when using such a phrase is any kind of determinist factor related to language, including the Whorfian Hypothesis. Also, the remarks presented below will be ‘inquiries,’ emphasizing the probing nature of the arguments to be made here in the broader context of conflicting, yet attractive, ideas and assumptions about the foundation of language. In other words, such inquiries focus on re-examining relevant issues and concerns motivating claims about language. More research will be required in this regard as the programmatic nature of minimalism manifestly denotes.

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The paper is structured as follows: in section 1, I shall argue that there are at least five approaches to determinism in linguistics in the sense explained above and explain each; in section 2, I will discuss MP's new direction—i.e. MF—and show that it may offer a particular reading not necessarily incompatible with relativist conceptions. Then, in line with minimalist aspirations, I will suggest a new model to replace the P & P: the Unified Theory of Parameters (UTP). Finally, in section 3, I will summarize the main points discussed to serve as the concluding part to this article.

1. Deterministic Approaches

I will below sketch the main approaches to determinism within linguistics. They are in order of appearance in this paper as the following: empiricist, relativist—both Sapir-Whorfian, and Saussurean—functionalist and rationalist.

1.1. Empiricist Determinism

Empiricism as we know it is actually not a single, totally coherent set of ideas agreed upon by all empiricists. Therefore, there are areas of disagreement among empiricists. However, such differences are well beyond the scope of this paper. Also, regarding the various issues of interest to empiricists, I will limit myself to that of epistemology—i.e. the theory of knowledge—and again to the question of how one comes to know anything. Hence, what follows will be both limited in scope and to some extent an idealized version of empiricism.

Using the famous metaphor used by Leibniz to draw a distinction between rationalist tradition—of which he was a founder—and empiricists, the latter are said to believe that mind—if such a term can even be appropriate in the eyes of an empiricist to be of any value—is a 'tabula rasa'—i.e. a blank slate. This is the capacity which distinguishes human from non-human. And all knowledge that a human being may gain comes from observation/experience via his/her senses and written on the tablet. There is no knowledge prior to and beyond experience of sense-data available in the environment. From this perspective, knowledge of language, like other types of human knowledge, is determined by the kind of environmental experience s/he is exposed to. Let's call this E-(x)ternalist determinism.

Yet at a closer look we may argue that there are innate elements of some sort in such an approach. First is the blank tablet itself. Empiricists talk about certain operations such as induction, abstraction and analogy, which we can assume to be properties of the tablet. On the other hand, there are human senses, the biological mechanisms and channels through which experience is internalized. Therefore, they will restrict our types of knowledge. We may not know everything. So besides the environment, there are two more factors determining what we know: some general logical operations and biologically specified senses especially in terms of biochemical and neurobiological. These factors are interestingly not external to human beings but constituting part of what and how they are.

A note of caution is needed to be raised. Not all empiricists are anti-mentalist. That is, empiricism does not necessitate anti-mentalism. Empiricists like John Locke (1690) and Putnam (1967) are obviously mentalists. It is a radical version of empiricism—i.e. logical positivism or materialism—which denies mind as an entity, and it is on this version that behavioral psychology, or behaviorism, of Watson and later Skinner was established. Although Chomsky's initial attack targeted extremist empiricism in his well-known "Review of Skinner's Verbal Behavior" (1959), Chomsky and his rationalist advocates have been criticizing empiricism in all its forms [cf. Chomsky (1980) and (1991), Hornstein (2005), McGilvray (2005)].

What all empiricists, however, agree on is the claim that no knowledge-forming ideas are innate and all human knowledge is shaped by experience. Nevertheless, there is an issue here to which I would like to return. Let me first quote Hornstein (2005:145) on empiricism

All simple primary ideas are formed (fashioned or molded) in the mind by the action of the environment through the medium of the senses.

My version would read

All human knowledge is formulated by the joint action of human receptive biological apparatus—i.e. senses—and internal mechanisms *on* the environment.

I am not claiming that this is the formulation that empiricists offered. What I am trying to say is that, putting aside the issue of theory of truth as part of any epistemological endeavor, one may postulate an empiricist view which is both biological and internalist in the above sense. In this view then environment simply makes available to human beings the raw data to be processed. Here, they are not passive receptacles of what exists outside but impose shape on what they receive according to their biological specifications and limitations. This is essential especially in light of recent Chomskyan claims for the knowledge of language to be biologically and internally driven. I will return to the issue and discuss it in section 2.

The best and to my knowledge the only empiricist approach to determinism within linguistics in the 20th century is the (post-)Bloomfieldian Structural Linguistics, which subscribing to the Behaviorist tenets of language and language learning take language as ‘verbal behavior’ in the sense of B.F. Skinner. Based on such a doctrine, firstly, language differs from other non-human communication systems in complexity rather than quality; in other words, the difference is quantitative, not qualitative. And secondly, it is use-bound since it is a kind of behavior. Therefore, there is nothing internal or innate to language. It is stimulus-bound and data-driven.

1.2. Relativist Determinism

Relativist determinism can be succinctly defined as an approach in which language establishes the scope and perimeters of one’s thought. In what follows, I shall discuss two versions of such an approach, which although related and similar, are not the same and have been developed out of quite different motivations. The reader will also see an anachronism in the order of my discussion. Although Saussure’s relativist determinism precedes that of Sapir-Whorf’s, I will start with the latter.

1.2.1. Sapir-Whorfian Determinism

In late 1930’s Sapir and Whorf claim that unlike the approach taken by the empiricist linguists, in particular the Bloomfieldian Structuralists, it is language which determines thought. This hypothesis is known as ‘Language Determinism’ in a proper sense of the term or better identified as the ‘Sapir-Whorf Hypothesis’ in linguistics. The hypothesis as we know it today was heavily influenced by the work of Franz Boas, the founder of anthropology in the United States and therefore is considered by many—e.g. Edgar G. Polome (1990)—as an anthropological approach to language and linguistics. Therefore, their model is anthropologically motivated, and although adopting a virtually a mentalist view, can be considered as an externalist approach.

In short, Sapir-Whorf Hypothesis consists of two theorems: (A) linguistic relativity: languages are different from one another in an unpredictable number of ways and (B) linguistic determinism: language shapes thought. In fact, to many linguists, there seems to be an intrinsic

relation between the two: the former forms the basis for the latter and acts as its pre-requisite; the anti-universalistic position of the former turns each language into a unique system of lexicon and grammar, which in turn makes the world susceptible to being sliced differently by different linguistic conceptualization, categorization and grammaticalization. In fact, in the eyes of many—e.g., Pinker (1994)—the relativist hypothesis is the weaker version of the deterministic one.

This hypothesis stands in opposition to both empiricist and rationalist doctrines. In principle, it states that 'the automatic, involuntary patterns of language are not the same for all men, but are specific of each language ... [hence] users of markedly different grammars are pointed by their grammars toward different types of observations and different evaluations of externally similar acts of observation (Carroll 1956:221). Therefore, not all individuals 'are led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar or can in some way be calibrated (ibid:214).

Sapir-Whorf hypothesis in its strong form—i.e., language determines thought—is apparently rejected or dismissed by many practitioners in linguistics. Even Sapir is said to have had doubts about such a hard-and-fast formulation. Nevertheless, what is offered in a weaker form—that is, language affects thought patterns—is still subscribed to and advocated by some linguists. One of the most renowned ones is Bloom (1981, 1984) and amongst the most recent works undertaken with the aim to corroborate its validity are Boroditsky (2001), and Boroditsky, et al (2003, 2004) to name only a few.

Historically, the position that language anchors thought has important precursors. In the history of language studies, one may be willing to accept that the first instance of the emergence of such a concept was put forward and elaborated upon by the Indian Bhartrihari (6th c. AD)—apparently in the form of 'thinking' is 'shabdana'—i.e., 'linguaging'. In Europe, the hypothesis of linguistic relativity turned into a serious topic of discussion in the late eighteenth and nineteenth centuries in Germany, particularly in the works of Johann Georg Hamann (1730-88), Johann Gottfried Herder (1744-1803), and Wilhelm von Humboldt (1767-1835). It is this background that Lyons (1981: 304) refers to as the Herder-Humboldt tradition.

Interestingly enough, Humboldt is known as a language scholar whose ideas in different periods of his life time have been divergent, emphasizing both particular and universal aspects of language. Developing different and at times opposing thoughts and interests is not a strange characteristic of a language scholar and philosopher. An illustrative example is Wittgenstein whose opposing views on language were developed in two different periods, the contents of which are not particularly relevant to our topic of discussion here. Humboldt in an essay—*Über das vergleichende Sprachstudium* ("On the comparative study of languages")—stipulates that language has controlling effects upon thought; his relativist conceptions were later assimilated into Western thought. Karl Kerenyi could be a good example when in the preface to his 1976 English translation of Dionysus writes

The interdependence of thought and speech makes it clear that languages are not so much a means of expressing truth that has already been established, but are a means of discovering truth that was previously unknown. Their diversity is a diversity not of sounds and signs but of ways of looking at the world.

Or Ernst Cassirer (1946:12) who argues that

[T]he distinctions which here are taken for granted, the analysis of reality in terms of things and processes, permanent and transitory aspects, objects and actions, do not precede language as a substratum of given fact, but that language itself is what initiates such articulations, and develops them in its own sphere.

Also, Wittgenstein, in his 1929 (1972) *Tractatus Logico-Philosophicus*, may also be found as a keen subscriber to such tradition. He asserts that "[t]he limits of my language mean the limits of my world", "[t]he subject does not belong to the world, but it is a limit of the world" and "[a]bout what one can not speak, one must remain silent." (Propositions 5.6, 5.632 and 7 respectively) These propositions unequivocally point to Wittgenstein's belief that the words we possess determine the things that we can know, with the effect that if we have an experience, we are confined not just in our communication of it, but also in our knowledge of it, by the words we possess.

Apart from philosophers, one may also find similar approaches among famous psychologists. Vygotsky (1934:125) is an eminent example when stating that "[t]hought is not merely expressed in words; it comes into existence through them." He adds that "the relationship between thought and word is a living process. Thought is born through words" (ibid:153). Yet what strikes me personally is the fact that, except for two language scholars, almost no-one else has paid tribute to Saussure in this regard. The exceptions are Lyons and Harris. Lyons (1981:222) remarks

The Saussurean view of the uniqueness of language systems and of the relation between structure and substances leads naturally, though by no means inevitably, to the thesis of linguistic relativity: the thesis that there are no universal properties of human languages (other than such very general semiotic properties as arbitrariness, productivity, duality and discreteness...); the thesis that every language is, as it were, a law unto itself. Any movement or attitude in linguistics which accepts this point of view may be referred to as conveniently, as relativism and contrasted with universalism. Relativism, in a stronger or weaker form, has been associated with most kinds of twentieth-century structuralism.

However, Lyons does not provide more details, nor does he offer adequate analysis of Saussure's relativism. Unlike Lyons, Harris (2001:208) analyzes Saussure's observations with scrutiny and establishes him as the main figure in linguistics before Sapir and Whorf who discusses linguistic relativity and determinism in a systematic way

The idea that uniformity of language determines uniformity of outlook in turn links up with a theory that had become a focus of debate in post-war American linguistics: The so-called 'Sapir-Whorf hypothesis'...Although various versions of this theory were on offer, and none was articulated with very great clarity or precision, they had in common the notion that we analyse 'reality' in accordance with the mental categories imposed upon it and us by our native language. Speakers of different language will thus see things differently. 'The worlds, in which different societies live, are distinct worlds, not merely the same world with different labels attached' (Sapir 1928: 162). Although neither Sapir nor Whorf explicitly presented this as a Saussurean idea, and may not have derived it consciously from Saussure, it is unlikely that as linguists they were unaware that it fitted perfectly with Saussure's conception of each *langue* as an synchronic system (as distinct, for instance, from rival behaviourist accounts of language, according to which one would expect the same stimuli from the same external environment give rise to correspondingly similar structures, i.e. 'the same world with different labels attached'). Nor is it likely that awareness of Saussurean theory played no role in influencing linguists' reception of the Sapir-Whorf hypothesis. There is a link between the two, however one looks at it; for exactly the kind of example that Saussure gives to show that different languages have different *valeurs* (the grammar of plurality in French and Sanskrit...) is used by Whorf to support his own version of linguistic relativity (the category of plural in Hopi compared with English, French and German...). To what extent Saussure would have approved the positions taken by Sapir or by Whorf is another question and one which cannot be pursued here.

I, in Harris's spirit, find it not only an inevitable academic requirement but a professional obligation to discuss Saussure's conceptions in some more details here.

1.2.2. Saussurean Determinism

Saussure's posthumous *Course de Linguistic Generale* (from now on *Cours*) published in French in 1916 has been read and interpreted differently by different people as demonstrated by Harris (2001) in his *Saussure and his Interpreters*. Some of the interpretations made, as Harris mentions, are to suit the interpreter's own purposes. What follows may be considered as my own interpretation of his ideas. Nonetheless, I will do my best to remain as much faithful as I can to what he apparently intended to offer in the ideas attributed to him by Bally and Sechehaye in their composition of *Cours*. Another point to mention is that although I have not discussed Chomskyan rationalist doctrine yet, I will have no other option but make reference to it in certain places. A detailed discussion of rationalist determinism and Chomskyan notions and assumptions will follow.

In my view, Saussure's ideas about linguistic relativity and determinism are a direct consequence of his formulation of 'langue' as an 'idio-synchronic autonomous system of arbitrary signs the values of which are defined differentially'. Therefore, I suggest that his relativism and determinism are, unlike those of Sapir and Whorf which were anthropologically motivated, *language-internal*. First, Saussure's 'langue' is an idio-synchronic system. "A language is a system of which all parts can and must be considered as synchronically interdependent." (*Cours*: 124). As such, it is not a conglomerate of historically related elements, but synchronic interdependencies which are not necessarily rationally motivated (*Cours*: 128). Therefore, its constituent elements may only be *internally* defined.

Second, the system is autonomous in the sense that it exists independently of external forces of logic and, unlike other social institutions, lacks accountability to reality

Other human institutions – customs, laws, etc. – are all based in varying degrees on natural connexions between things. They exhibit a necessary conformity between ends and means. Even the fashion which determines the way we dress is not entirely arbitrary. It cannot depart beyond a certain point from requirements dictated by human body. A language, on the contrary, is in no way limited in its choice of means. For there is nothing at all to prevent the association of any idea whatsoever with any sequence of sounds whatsoever (*Cours*: 110).

And last but not least, the linguistic system consists of arbitrary signs. In fact, the reason for the freedom of 'langue' from external forces of various sorts is the arbitrary nature of its constituent elements—i.e., signs. Now, there are at least four issues which in my view are of great significance. I shall present them below in ascending order of importance.

The first issue is that when singular/simple signs are combined syntagmatically, they may exhibit degrees of motivation (*Cours*: 181). This is exactly what we understand in the Peircian formulation of a 'diagrammatic sign.' Second, the value of each sign is determined within 'langue' and in a *differential* manner; that is, the value of a sign is what the other signs are not. Hence, although signs in different linguistic systems may bear similar signification—i.e. refer to a similar concept—their values are unique and peculiar to their own systems and different from one another. We have to bear in mind that Saussurean signs may be lexical or grammatical

The difference in value between *sheep* and *mouton* hinges on the fact that in English there is also another word *mutton* for the meat, whereas *mouton* in French covers both (*Cours*: 160).

The value of a French plural, for instance, does not match that of a Sanskrit plural, even though they often mean the same. This is because in Sanskrit, in addition to singular and plural, there is a third category of grammatical number...It would thus be inaccurate to attribute the same value to the Sanskrit plural as to the French plural, because Sanskrit cannot use the plural in all the cases where it has to be used in French (*Cours*: 161).

Another point is that to Saussure 'sentence' and 'creativity' are aspects of 'parole.' Within 'langue,' one only finds rules of combination and substitution of signs. In other words, in contrast to Chomsky's insistence on syntax and creativity as the core aspects of the speaker-hearer's internalized grammar, syntax and creativity are not matters of 'langue,' but those pertaining to parole. And finally and the most important of all is the nature and limits of Saussurean arbitrariness. Its nature is independent of an individual's power of will, collective authority and social conventions simultaneously

The signal, in relation to the idea it represents, may seem to be freely chosen. However, from the point of view of the linguistic community, the signal is imposed rather than freely chosen. Speakers are not consulted about its choice. Once the language has selected a signal, it can not be freely replaced by any other. There appears to be something rather contradictory about this. It is a kind of linguistic Hobson's choice. What can be chosen is already determined in advance. *No individual is able, even if he wished, to modify in any way a choice already established in a language. Nor can the linguistic community exercise its authority to change even a single word. The community, as much as the individual, is bound to its language* (*Cours*: 104) [Italic mine].

Since the linguistic sign is arbitrary, a language as so far defined would appear to be an adaptable system, which can be organized in any way one likes, and is based solely upon a principle of rationality...account must be taken of everything which might affect the operation of reason in practical relations between one individual and another. *But that is not the objection to regarding a language as a mere convention, which can be modified to suit the interest of those involved. There is something else. We must consider what is brought about by the passage of time, as well as what is brought about by forces of social integration. Without taking into account the contribution of time, our grasp of linguistic reality remains incomplete* (*Cours*: 112-13) [Italic mine].

Its limits are defined by 'rational mind'

Everything having to do with languages as systems need to be approached, we are convinced, with a view to examining the limitations of arbitrariness. It is an approach which linguists have neglected. But it offers the best possible basis for linguistic studies. For the entire linguistic system is founded upon the irrational principle that the sign is arbitrary. *Applied without restriction, the principle would lead to utter chaos. But the mind succeeds in introducing a principle of order and regularity into certain areas of the mass of signs.* This is the role of relative motivation. If languages had a mechanism which was entirely rational, that mechanism could be studied in its own right. But it provides only a partial correction to a system which is chaotic by nature. Hence we must adopt the point of view demanded by the nature of linguistic structure itself, and study this mechanism as a way of imposing a limitation upon what is arbitrary (*Cours*: 182-3) [Italic mine].

Therefore, although we do not really have a clue what Saussure means by 'mind,' the least we can be sure of is that (1) he is a mentalist and (2) acts of 'mind' are rational and impose logical restrictions. Whether or not such acts of mind are innate is open to interpretation. However, I am tempted to conclude that what we are offered here is that on the one hand, due to the arbitrariness of linguistic signs, languages are unique in their valuation systems and therefore effect different

conceptualizations; on the other hand, arbitrariness operates within certain boundaries: those set by 'rational mind.' Now, if we are inclined to assume that such 'mind' is genetically determined, then we may get close to what Chomsky as a rationalist offers. However, we have to take heed in not pushing this too far. To Saussure, a language in terms of 'langue' pulls together, or accesses, forces of human nature and external nurture to construct an independent system of signs

Just as it is impossible to take a pair of scissors and cut one side of paper without at the same time cutting the other, so it is impossible in a language to separate sound from thought, or thought from sound. *To separate the two for theoretical purposes takes us into either pure psychology or pure phonetics, not linguistics (Cours: 157) [Italic mine].*

Had Saussure been alive today, he may have accused Chomskyan rationalists of the former—i.e., the human-internal world of psychology and subsequently biology, and Bloomfieldian empiricists of the latter, the human-external material environment. Hence, we may conclude that in Saussure's eyes, 'langue' is an equilibrium which brings balance to the opposing human-internal and human-external forces of nature and nurture, influenced by both yet autonomous from either.

1.3. Functional Determinism

Functionalist approaches to language studies are relevant in the context of the present investigation both to our discussion of Saussurean ideas and to Sapir-Whorf Hypothesis. Also, what is known as functional linguistics shows a wide range of linguistic models and theories, the study of which fall beyond the scope of the aim of this article. Therefore, I will delimit the scope to an idealized account of functionalism.

Functional linguistics is generally said to have arisen from the works of the Prague Circle linguists in the 20th century, in particular those of Mathesius's and Jakobson's and later developed by others—e.g. Halliday, Givon, Van Valin, Hopper and Thompson—in various forms and guises. However, here I would like to suggest that functionalism in linguistics may be defined on two similar yet different levels: a narrow level of reading and a broad one. The narrow definition of functionalism is articulated by the postulating the axiom of inseparability of linguistic form from meaning. This notion was utterly emphasized by Saussure in his definition of a linguistic sign. Therefore, although to many, Saussure was a harbinger of functionalism, he was in fact its founder and his structuralism cannot be distinguished from his functionalism. On the other hand, functionalism in its broader sense comprises approaches in linguistics in which language is defined in terms of the functions it serves in a context. From this perspective, language is defined externally, in terms of its functions and in particular its socially determined interactional function. This view of language is manifest in such formulations of "language as a social semiotic" and that "the nature of language is closely related to...the functions it has to serve ... [which] are specific to a culture" (Halliday 1978: 141). And it is almost always the latter broad view that is taken as a functionalist approach. From this perspective, functionalism in linguistics stands against historicism of Neogrammarians, empiricism of post-Bloomfieldians, stable idio-synchronism of Saussureans, linguistic determinism of Sapir-Whorfians and rationalism of Chomskyans. To functionalists, the answer to 'what is a possible human language?' requires external explanations of the sort Givon (1979:2-4) names under the rubric of "natural explanatory parameters", namely, propositional content, discourse pragmatics, the processor, cognitive structure, world-view pragmatics, ontogenetic development, diachronic change and phylogenetic evolution. Therefore, in functionalism, there are language universals, but not of the biologically-determined type which Chomskyans have in mind. To functionalists, language is defined and motivated by communication and language structure has biologically evolved to adapt itself to language external function(s). As Hopper (1987: 142) suggests, "[linguistic] structure, or regularities,

comes out of discourse and is shaped by discourse as much as it shapes discourse in an ongoing process.”

Therefore, one can conclude that in functional determinism, language is determined by its communicative use and grammatical forms are not fixed in the form of biological templates to be merely externalized via exposure to experience to express thought. Even in the extreme interpretation of functionalism, linguistic forms *per se* do not exist; they are merely various realizations of universal communication-oriented functions. As a result, functionalism (1) is empiricist in that it simultaneously denies genetic pre-determination while stressing the formative role of external communicative purpose of language, (2) is anti-empiricist in that it offers functional universals (3) is Saussurean in that functions may not be separated from forms, and (4) is anti-Saussurean in that it denies Saussurean autonomy, synchrony and (to a large extent) arbitrariness of ‘langue.’

1.4. Rationalist Determinism

Rationalist determinism may be traced back as far as Plato's ‘Theory of Forms;’ however, it will be more appropriate to examine its precursors in history within the framework of approaches peculiar to language studies. With this limitation imposed, such determinism has two similar, yet distinct, roots: one is an idea dating back to Modistae and their formulation of speculative grammar; the other is the Port Royal grammarians and their logical *Grammaire Generale et Raisonne*. The Modistae, or simply Modists, were a school of grammarians of the 13th century. Their philosophy, as indicated by their name, was based on a tripartite theory of modes: modes of being (*modi essendi*), modes of understanding (*modi intelligendi*), and modes of signifying (*modi significandi*). To them, the various parts of speech were viewed as representing reality in terms of these modes. For example, the verb is conceived as signifying *through the mode of existence* independent of a specific substance, claiming that every verb may be reduced to the copula and an adjective. Their work predicted the concept of universal grammar, suggesting that universal grammatical rules may be extracted from all living languages. In their view, grammatical forms, the *modi significandi* of verbs, nouns, and adjectives, indicate deep ontological structure. Their inspirer was Roger Bacon whose observation that all languages are built upon a common grammar, a shared foundation of ontologically anchored linguistic structures; therefore, grammar is substantially the same in all languages, even though it may undergo in them accidental variations.

Grammaire Generale et Raisonne, also known as *Port-Royal Grammar*, was written by Arnauld and Lancelot in 1660 under the heavy influence of Descartes' *Regulae*. In this grammar, it is argued that mental processes and grammar are virtually the same thing. Since mental processes are carried out by all human beings, there must be a universal grammar based on the logical structure of mind. This general grammar then enunciates certain principles that presumably govern all languages and are meant to define language in general, while individual languages are thought to be particular cases of the universal model. Therefore, the fundamental function of language is to serve as a representation of thought. This grammar was also important since it was the first comprehensive attempt to present a mentalist and rationalist approach to grammar, with a view to incorporate the universal properties of human language, by postulating levels of deep and surface structure in languages. In the 20th century, Port Royal ideas were re-incarnated in the form of Chomsky's Generative Grammar, complemented by those of Wilhelm Von Humboldt's, especially his claims on language as constituting ‘innere sprachform’—i.e., ‘inner form’—based on ‘the infinite use of finite means.’ Chomsky's *Cartesian Linguistics: A Chapter in the History of Rationalist Thought* (2002, 1966) explicitly identifies Chomsky's approach to language as based on Descartes' rationalist ideas, Port Royal's rational grammar and Humboldtian ‘inner form.’

Chomskyan determinism is in essence rationalistically based and consequently stands in opposition to not only empiricist but relativist and functionalist types of determinism. Within the Chomskyan framework, rationalist determinism can then be formalized as a priori/innate/genetic codes peculiar to language which are to express thought. In this view, one's knowledge of a language—in earlier Chomskyan terminology 'competence'— is virtually the 'steady state' which the universal and biologically-determined human language faculty—FL or linguistic 'state zero'—takes only triggered by experience—i.e., primary linguistic data to which a child is exposed to. In other words, human language is pre-determined biologically and therefore species-specific. Then, language 'learning' is a misnomer and must be replaced by language 'growth' or 'maturation.'

There are at least four specific issues relevant to our discussions so far. In the first place, like its pre-nineteenth century Intellectualist movement, Chomskyan generativism considers thought to pre-exist language. Hence, in this theorizing, thought is not influenced by language and is only expressed by it. Pinker (1994: 44-73) dedicates a chapter to discuss how absurd Whorfian relativism and determinism sound and provides counter-evidence and counter-arguments to establish that 'thinking' may take place without language. Similar arguments can also be found in the works of other language scholars—e.g., Steinberg (1982:101-164). However, I will show in 2.4.1.1 that not only are human recognition mechanisms posited in such scientifically vague notions of 'thinking' or 'thought' of two types—linguistic and non-linguistic or cognitive—but such a distinction is adopted and propounded by Chomskyans.

In the second place, Chomsky's approach to language comprises three distinct problems: Humboldt's Problem—what constitutes knowledge of language—Plato's Problem—how is such knowledge acquired—and Descartes' Problem—how is such knowledge put to use. For a detailed account and analysis, the reader may refer to Chomsky (1991a) and Zahedi (2006). Many of the concerns and analyses put forward by functionalists are considered as aspects of Descartes' Problem in Chomskyan thought and as such irrelevant to the study of the grammatical structure and knowledge of language.

Third, in his earlier writings of the 1950's not only does Chomsky refer to but he also pays homage to Saussure, especially when drawing a comparison between his own distinction of 'competence' vs. 'performance' and Saussure's 'langue' and 'parole.' However, in later developments, he casts a serious doubt on the relevance and usefulness of Saussurean analysis to linguistic discussions so much so that he overtly discards Saussure's conception of language as "impoverished and thoroughly inadequate" (Chomsky 1968:18). Nevertheless, I will argue in Section 2.4 that despite his scant references to Saussure—they were limited to arbitrariness of lexical items only—Chomsky's adoption and incorporation of such arbitrariness has far-reaching consequences mainly overlooked—perhaps not inadvertently—even by him.

And lastly, Chomsky's conception of 'autonomy' and 'internalism' has a genetic twist. His autonomy (of language and syntax) thesis is based on the assumption of the 'modularity' of mind, and his notion of I(nternalist)-language to simply mean the genetically pre-determined make-up of language, standing against all other approaches identified by him as being E(xternalist)-language outlooks. In such a black-and-white view, one has no other option but assume that Saussurean autonomy of 'langue' and his 'internalist' account of it either are fraught with mischief or are misplaced notions. This is what I shall term Chomsky's *Internalist Bias*.

1.5. Recapitulation

In Section 1, five different types of determinism were discussed. In linguistics, only one version of such determinism has been granted a 'proper' name: the Sapir-Whorf Hypothesis. As far as Saussure is concerned, only Harris looks into his ideas in this regard and establishes fairly strong grounds for recognizing him as the first linguist who in a systematic and quite well-articulated manner, at least in the western tradition as we know it, introduced a

relativist/deterministic approach. Lyons, of course, also has made reference to such Saussurean ideas, but in passing only. It was, however, indicated that unlike Sapir and Whorf whose language determinism is established on anthropological, hence language-external, foundations, Saussure espouses a language internalist approach, motivated by and consequent upon his version of the 'arbitrariness' of linguistic signs. Despite their differences in their external vs. internal drives, both share a language-to-thought direction as the deterministic construct. Three other approaches were also identified to have taken a deterministic account of language. Two of them, namely the empiricist and rationalist, were a direct outcome of their related philosophical heritage. The remaining one, namely functionalist determinism, rooted in the so-called Saussurean structuralism but apparently founded and first expounded by Prague Circle linguists, relies on the external communicative function of language to be the determining factor in shaping language structure. What brings these three under one category is their thought-to-language approach. From a different perspective, I demonstrated that the Saussurean and Chomskyan accounts of determinism in linguistics might be subsumed in the language-internalist category, although Chomsky may find Saussure's internalism a misplaced and misleading notion, while the other three, i.e., the empiricist, functional and Sapir-Whorfian approaches, bearing a language-externalist orientation. Yet in another grouping, Chomskyan and Functionalist accounts of determinism may be classified together as being universalist—with two opposing sets of universal explanations—while attributing to the rest the quality of being relativist, albeit for different reasons. Finally, Saussure and Chomsky were found to be advocates of the autonomy of language thesis; however, for the former, such autonomy was a consequence of the arbitrary nature of linguistic signs whereas in the eyes of the latter it was due to the modularity of the human mental systems/capacities.

2. Minimalist Program (MP)

In the previous section, when discussing Chomskyan views as constituting a rationalist version of determinism related to language, I limited myself to his assumptions and arguments prior to MP. In this part, I shall argue that MP enables us to find some coherence and degree of convergence amongst the apparently divergent rationalist, functionalist, Saussurean and Sapir-Whorfian approaches.

2.1. MP's Background

MP shares quite a good number of fundamental assumptions and postulates with its immediate predecessor, that is, the Government and Binding Theory (GB). They are both considered as having taken and guided by the same approach, the Principles and Parameters (P & P) Approach. However, to me, their differences are more than what has been claimed to be by Chomskyan generativists. It seems to offer a new direction not adopted and explored before. What follows is in line with Zahedi (2007). Up to the beginning of Minimalism, language and its grammatical structure was autonomous and independent of performance forces. However, MP's most fundamental hypothesis is that "[I]anguage is an optimal solution to legibility conditions" (Chomsky 2000a:96), which are imposed by the performance systems, external to language but internal to mind (Chomsky 1995: 221). In other words, in the earlier version of the P & P approach—i.e., GB—grammatical well-formedness, or in simpler yet out-of-fashion term grammaticality, was defined by various language-internal 'output conditions;' however, in the Minimalist Program, there are no output conditions except for those imposed externally, that is, by performance systems; hence, called 'bare output conditions' (Chomsky 2000a: 141). They are called 'output' conditions since they operate on interface levels; they are designated as 'bare' since they are no longer part of the computational system as postulated in GB such as filters and

ranked constraints. With this introduction, I shall now discuss various aspects and repercussions of such minimalist hypotheses.

2.2. Chomsky's Fable of the Evolutionary Origin of Language

The first issue to be discussed is the design specifications of the language faculty (FL). Chomsky (2000a: 94) asserts that

To clarify the problem of design specifications, let us invent an evolutionary fable, keeping it highly simplified. Imagine some primate with the human mental architecture and sensorimotor apparatus in place, but no language organ. It has our modes of perceptual organization, our propositional attitudes (beliefs, desires, hopes, fears, etc) insofar as these are not mentioned by language, perhaps a "language of thought" in Jerry Fodor's sense, but no way to express its thoughts by means of linguistic expressions, so that they remain largely inaccessible to it, and to others. Suppose some event reorganizes the brain in such a way as, in effect, to insert FL. To be usable, the new organ has to meet certain "legibility conditions." Other systems of the mind/brain have to be able to access expressions generated by states of FL ((I-)languages), to read them and use them as "instructions" for thought and action. *We can try to formulate clearly—and if possible answer—the question of how good a solution FL is to the legibility conditions, and these alone. That is essentially the topic of the Minimalist Program* [Italic mine].

Taking the assumptions made to be on the right track, one understands a language to be a system generating, or perhaps more properly deriving, sentences in the form of two representations, one sound-bound known as the Phonetic Form (PF) and the other meaning-bound known as the Logical Form (LF) to be fed into the sensorimotor and thought systems respectively. In Chomsky's (2000a: 98) own terms, "we are taking L [i.e., a language] to be the recursive definition of a set of expressions $EXP = \langle PF, LF \rangle$." Here as attested above, thought construed as a Conceptual-Intensional system is a 'performance system'. However, let us look at Hauser, Chomsky and Fitch (2002: 1578)

The computational system [which is Chomsky's conception of narrow syntax] must (i) construct an infinite array of internal representations [i.e. PFs and LFs] from the finite resources of the conceptual-intensional system, and (ii) provide the means to externalize and interpret them at the sensory-motor end.

Comparing and contrasting the two sets of quotations above, one is left with a number of intriguing problems. First and foremost, one is to deal with the apparent conflicting nature of the thought, or technically speaking C-I, system; the question here will be whether C-I or thought is a performance system fed by the computational system or a non-performance system feeding the computational system. In the first sense, C-I is an external system which has to deal with an infinite array of discrete expression; in the latter, it is an internal system of finite resources. The former denies the mediational nature of the architecture of language; the latter, however, requires language to be a mediational system, which will then take Chomsky closer to how Generative Semanticists, and Cognitive Linguists as their present day successors, configured language.

Despite such obvious contradictory remarks detected in his writings and ideas, perhaps due to the rather volatile nature of MP itself as a 'research program' not a 'full-fledged theory,' Chomsky may be assumed to side more with and favor the former as found overtly dismissing the mediational nature of language in his fable account

Suppose there was an ancient primate with the whole human mental architecture in place, but no language faculty. The creature shared our modes of perceptual organization, our

beliefs and desires, our hopes and fears, *insofar as these are not formed and mediated by language* (Chomsky 1998: 16) [Italic mine].

Whichever one may wish to take as more plausible, I will demonstrate that the conception of either, in light of the language variation aspects intentionally ignored by Chomsky (see 2.4.) may lead us to a conciliatory, if not totally reconciliatory, interpretation of the relativist and universalist approaches.

The second problem can be the definition of language itself. There is quite a bit of confusion with regard to what language, especially in its I-language sense, is. Is it a computational system or an infinite set of expressions $EXP = \langle PF, LF \rangle$. The first definition is views language as a finite set of processes and means; the latter requires it to be an infinite set of products. If the latter is adopted, as Chomsky has more often than not stated, then one will find a conflict with his arguments in favor of assuming a sentence to be a property and the basic unit of one's 'competence'—the speaker-hearer's knowledge of his language. Also, language will be infinite by definition. I will not go into details here since an answer to this problem is not the aim of this article. I refer the interested reader to Zahedi (in preparation) and Saussure's view of a sentence as a property of parole.

The third issue concerns the instantaneous emergence of FL. Chomsky is equivocal in this regard. In one place—as also illustrated above—he calls upon us to “suppose [that] a mutation took place in the genetic instructions for the brain, which was then reorganized in accord with the laws of physics and chemistry to install a faculty of language” (Chomsky 1998: 17), suggesting an instantaneous emergence. In another, he explicitly states that “plainly, the faculty of language was not instantaneously inserted into a mind/brain with the rest of architecture fully intact” (Chomsky 1998:18). I personally believe that at this stage we may assume one or the other since such a matter cannot be tested, and may never render itself to be a testable one. Forth in place may come the question of “why is FL to satisfy conditions imposed by the external systems in a minimal way” As posited by Chomsky, FL is a biological system; nevertheless, biological systems are known not to be optimal at all. So can we assume that perhaps FL is not a biological system at all? Again, only time may help us. Still a further question, “what motivated this genetic mutation to result in the installation of FL in human mind/brain?” If we assume, the way all Chomskyans do, that primeval human beings were capable of thinking without language, one may argue that they must have been able to express their thought in other expressive modes, e.g., images and pictures or other formal means. Why were those systems insufficient? Any evolutionary change has been shown to have taken place to satisfy an external need or function. What was that need or function? Unless we adopt Chomsky's first version of thought as a performance system, we may not be able to get any close to a possible solution at all.

It would be interesting to refer to the findings of research conducted by Petitto (2005). To corroborate Chomsky's postulation of an innate linguistic computation system, Petitto (2005: 90) conducted a series of experiments on the language acquisition of profoundly deaf children exposed exclusively to sign languages, hearing bilingual children acquiring a signed and a spoken language concurrently, and those hearing children exposed to no spoken linguistic data. Results indicated that “despite modality differences, signed and spoken languages are acquired in virtually identical ways” (Petitto 2005: 95). Such findings clearly send us the message that there is deeper, more abstract, set of properties to language that we have already simplistically assumed. Chomsky is correct in asserting that “[t]here are minimalist questions, but no minimalist answers,” (2000a: 92) especially since “[w]e do not know enough about the external systems at the interface to draw firm conclusions about conditions they impose” (1995:222). In fact, Chomsky (1998:18-19) correctly concedes when confessing with no reservations that

The external systems are not very well understood, and in fact, progress in understanding them goes hand-in hand with progress in understanding the language system that interacts with them. So we face the daunting task of simultaneously setting the conditions of the problem and trying to satisfy them, with conditions changing as we learn more about how to satisfy them. But that is what one expects in trying to understand the nature of a complex system.

Strange as it may sound, this is part and parcel of Chomsky's Galileo-Newtonian style (cf. Zahedi (2007) or Chomsky 2002).

Now, last but not least, a question on the system(s) of thought. If thought is not contained in and by language, what is it contained in? In other words, what constitutes the system of thought? Reading Chomsky, one generally finds out that he is silent with regard to such questions. Using Chomsky's own terminology, we do not even know whether these questions are problems—i.e., questions for which we may find answers—or mysteries—that is, questions human beings are capable of asking but not answering. However the answers or no-answers to these questions may turn out to be, one thing is clear in MP: FL, and its possible substantiations as languages, is bound and determined by the so-called legibility conditions imposed by FL-external performance systems. The repercussion of such minimalistically functional approach is an urgent need to re-define the autonomy of FL, if not to abandon it altogether.

2.3. Legibility vs. Intelligibility

Recent minimalist works show quite a bit of confusion and mess in respect to legibility conditions. Different set of terms have been used: full interpretation, convergence/crash and legible/intelligible. Technically speaking, for a linguistic expression in Chomskyan computational sense, it must converge at both interfaces; that is, at Phonetic Form (PF)—which is the interface to sensorimotor or Articulatory/Perceptual (AP) performance systems—and Logical Form (LF)—which is the interface to conceptual-intensional (CI) performance systems. To converge, PF and LF have to consist of interpretable features only—the principle of Full Interpretation. Therefore, what is legible is convergent and a convergent derivation comprises of interpretable features only.

Now, can a legible/convergent derivation be interpretable by the performance systems? The answer is surprisingly affirmative. This type of interpretability of linguistic representations is captured by the notion of *intelligibility*. Quoting Chomsky (2000a: 141)

[W]e might assume further that there is no (nonarbitrary) bound on the number of legible expressions. Note that FL satisfying this minimal condition [i.e., legibility] might—and the real system in fact does—permit generation of expressions that are unusable...[so] interpretability is not to be confused with intelligibility. A convergent expression maybe complete gibberish, or unusable by performance systems for various reasons....And performance systems typically assign interpretation to nonconvergent expressions.

In other words, the computational system of languages, on the one hand, may generate illegible derivations which then can be rendered intelligible by performance systems and on the other hand may generate fully legible derivations not intelligible to performance systems. Using examples in Lasnik and Uriagereka (2005:105), the following linguistic expressions are illegible at LF but intelligible

[[John to play basketball] is fun.
[John seems [t is nice]]

However, how about a linguistic expression like *Colorless green ideas sleep furiously*? Is it legible but unintelligible, illegible but intelligible or legible but capable of intelligibility? So MP postulates that FL is designed to satisfy legibility conditions, but it may not. Also, there are no output conditions within FL and the only output conditions are those of bare output conditions external to FL and imposed by performance systems known as legibility conditions. However, performance systems are also equipped with intelligibility conditions which they do not impose on FL.

Now the question is what distinguishes legibility from intelligibility conditions? What motivates FL to allow generation of illegible expressions? What motivates performance systems to have two different sets of conditions, a set to be imposed upon FL and a set to be used by them internally? Again we find no answers to such questions within MP. However, I would like to suggest that such possibilities may exist for the communicative functions a language is to serve and also as a property which makes diachronic language change possible. This is what I call *Chomsky's missing link* as manifested in his own terms

The language is embedded in performance systems that enable its expressions to be used for articulating, interpreting, referring, inquiring, reflecting, and other actions... While there is no clear sense to the idea that language is "designed for use" or "well adapted to its functions," we do expect to find connections between the properties of the language and the manner of its use (Chomsky 1995: 168).

2.4. FL and Language Variation in MP

The relationship between FL and I-languages as its particular and possible steady states is of two-fold interest to Chomsky: language structure (Humboldt's Problem) and language acquisition (Plato's Problem). Such an interest has been attended to in different guises, mainly: explanatory vs. descriptive adequacy and linguistic invariants and language variation. To start, let us begin with Chomsky (2000a: 100) again

UG [i.e. Universal Grammar as the theory of initial state or FL] makes available a set **F** of features (linguistic properties) and operations C_{HL} (the computational procedure for human language) that access **F** to generate expressions. The language L maps **F** to a particular set of expressions *Exp*. Operative complexity is reduced if L makes a one-time selection of a subset [F] of **F**, dispensing with further access to **F**. It is reduced further if L includes a one-time operation that assembles elements of [F] into a lexicon *Lex*... On these (fairly conventional) assumptions, acquiring a language involves at least selection of the features [F], construction of lexical items *Lex*, and refinement of C_{HL} in one of the possible ways—parameter-setting.

This is a too narrow a thesis. In fact, Chomsky (1995: 169-170) identifies other sources of variation; yet he chooses to ignore them as they are not relevant to the computational system

UG is concerned with the invariant principles of S_0 and the range of permissible variation. Variation must be determined by what is "visible" to the child acquiring language, that is, by the PLD [i.e., primary linguistic data]. *It is not surprising, then, to find a degree of variation in the PF component, and in aspects of the lexicon: Saussurean arbitrariness* (association of concepts with phonological matrices), properties of grammatical formatives (inflection, etc.), and readily detectable properties that hold of lexical items generally (e.g., the head parameter). Variation in the overt syntax or LF component would be more problematic, since evidence could only be quite indirect. *A narrow conjecture is that there is no such variation: beyond PF options and lexical arbitrariness (which I henceforth ignore), variation is limited to nonsubstantive parts of*

the lexicon and general properties of lexical items. If so, there is only one computational system and one lexicon, apart from this limited kind of variety [Italic mine].

I shall argue below the very variation sources Chomsky opts to ignore are in fact those aspects that were of greater importance to many of his predecessors and even contemporaries, in particular Saussure. I will first begin with lexicon and variation and then discuss parameter and variation.

2.4.1. A Creative Reading and A reading on Creativity: Lexicon and Linguistic Variation in MP

Chomskyans, assume that there is a universal set of lexical features and conceptual possibilities at the level of State Zero; hence, a property of FL. Now, when a language is to grow out of FL by the triggering effect of experience data, arbitrary associations are to be made for substantive lexical items between sound and meaning. Although the pool of possibilities are pre-determined, the choices made by the individual are limited to those already made by the speech community of the individual and available in the experience data. Therefore, at the level of a formed language—as a possible Steady State of FL also known as I(nternalized)-language, one will be limited to the choices made. This in turn will result in a degree of relativity especially in the encapsulation of conceptual structures by lexical items. This does not mean that what can be formulated in one I-language may not be formulated by another; it simply means that to formulate a concept in another I-language, one needs other mechanisms, such as using compound, a phrase, a sentence or an explanation to denote what is encapsulated in a single item in another language. Thus, it is plausible to say that at the level of I-language, different languages may slice, encapsulate and label different already existing lexical/conceptual features differently. They will therefore see the world differently only ‘linguistically’ and not ‘cognitively.’

Let me put it in different words. Cudworth (1688 [1995]), a seventeenth century Platonist, claimed that concepts are ‘occasioned’ and ‘invited’ by circumstances. For such circumstances to occasion concepts, the latter are required to be prefigured—his ‘prolepsis’—which is possible by an ‘innate cognoscitive power.’ The same idea is adopted by Chomskyans, that is, they believe that the set of concepts humans can appeal to is pre-determined biologically. Now, what I would like to add is that language—FL—while being ‘matured’ into a language, encapsulates these pre-determined concepts differently both in terms of the limits of the concepts and in the form of sound associations assigned to them; the associations Chomsky accepts as the Saussurean arbitrariness. However, since “[m]eaning-sound associations are arbitrary” and “there is no biological relationship between them” and are only a matter of social conventions, they are “of no interest to natural scientist” (McGilvray 2005:206). This property is what I would like to suggest as the ‘lexical creativity’ of language, which has been ignored by Chomskyans. As a result, language is a human capacity which allows him to develop various social organizations. In other words, culture in the form of various social organizations depends on language. Such argumentation seems plausible enough to let us find MP not necessarily at variance with Saussurean relativity and a special reading of Sapir-Whorf. Saussurean arbitrariness is then the key to lexical creativity.

Now, we have to pay heed to the notion of creativity. If we define creativity as a capacity to use a finite set of means to generate an infinite set of products, we will accept a degree of determinism. The determinism is found in the ‘finite set of means.’ To me, as far as the substantive lexical items are concerned, this finite set is biologically determined in terms of both the conceptual structure—as the meaning-related aspect of language—and the phonological distinctive features—as the sound-related aspect of language. The latter has been particularly shown in the Generative and related post-Generative phonology relying on the non-Generative universal set of distinctive features offered by Jakobson and developed later in works such as Chomsky and Halle’s (1968) *Sound Pattern of English*. As far as the former is concerned, to say

that concepts are predetermined biologically and independent of language does not go as far as to say that they are readily formed and formulated, assembled with the features constituting a lexical item in an individual's lexicon; it is simply to say that whatever we find in substantive lexical items in any language is derived from a pool of biologically available to human species, constituting a range of ingredients, not products. Therefore, what makes the infinity of products—i.e. lexical items—possible are the arbitrary nature of the associations established in different languages.

2.4.1.1. Linguistic Concepts vs. Non-linguistic Concepts

A distinction is essential to be made here between what we may term as 'linguistic' and 'non-linguistic concepts. There are at least two differences. Firstly, although the latter may be packed linguistically, that is in the form of words, they are not intrinsic parts of our language biology and in fact are better formulated by other symbolic systems such as mathematics. Secondly, they do not seem to be biologically anticipated. Illustrative examples of such non-linguistic concepts are scientific concepts and also what philosophers call 'qualia.' Such concepts require efforts on the part of human beings, yet (perhaps) guided by a 'science-forming' capacity

Scientific concepts ... unlike those that appear in our natural languages, are not virtually built into our biology. They are *not* easily acquired in the way the concepts of natural languages are, but instead require sophisticated understanding of a theory, and typically, a lot of preparation and work. They seem to be created, or invented, by people who construct sciences. Chomsky holds that people have some innate aid in constructing such theories: our "science forming capacity" (1975, 1988b) provides a kind of guidance. But the particle physicist's concept PION is *not* somehow anticipated in us at birth. If it were, the child would readily acquire it (McGilvray 2005: 208).

It is exactly such a distinction and the nature of linguistic concepts that Saussure implies by his 'arbitrary nature of linguistic signs.' Can't we then say that it is such arbitrariness that imposes a linguistic limit on lexicalization to result naturally in linguistic relativity and determinism which point to how differently each language deals with the world? To me, the answer is affirmative. What Saussure basically refers to as arbitrariness may be compared to what McGilvray (2005: 214)—a Chomskyan—identifies as 'fine-grained (FG) features or distinctions'

[H]uman interests, tasks, and intentions are somehow reflected in the fine-grained features that distinguish lexical items... The distinctions can be subtle. To go to a couple's house is not necessarily to go to their home (this distinction is not always "lexicalized" in other languages... So virtually any natural language lexical item (not scientific term) is a rich source of fine-grained distinctions that can be used by a person *because* they are a part of that person's *linguistic knowledge*.

2.4.1.2. Unlimited Perspective Creativity: SEM in MP

As we know, in MP, through a very limited number of syntactic operations—basically taken to be 'Select,' 'Merge' and 'Agree/Move'—lexical items as bearers of atomic and/or complex concepts are joined together to express 'human thought.' LFs, recently called SEMs, for "syntactically defined meanings," then constitute an interface to Conceptual-Intensional Performance System to guide language use. In more simple terms, SEMs are what Chomsky (2000b:150, 180) informally identifies as 'perspectives,' which are unlimited in range and may be used by performance systems of thought to serve various purposes. SEMs, construed as such, suggest to yet another creative capacity peculiar to language, that is, the human language property of 'discrete infinity'

Without this capacity, it might have been impossible to think thoughts of a certain restricted character, but with the capacity in place, the same conceptual apparatus would be freed for the construction of new thoughts and operations such as inference involving them, and it would be possible to express and interchange these thoughts (Chomsky 1988: 170).

McGilvray (2005: 214-215) can be seen as expanding on what Chomsky puts forward in his 1988 Managua Lectures when stating

The richness and detail of specific lexical items is greatly enhanced and refined when several are put together to compose a phrase or sentence. In sentences, but not lexical items, themes [i.e. thematic roles]...are assigned, tenses specified, scope and specificity indicated, "agreements" fixed, etc. Ambiguities can arise: *They are flying planes*. Details and focus of many possible sorts become possible...Co-reference comes to be specified...Mood...is specified...More room is provided for imagination and speculation...[And] [a] potential for metaphor and other figures of speech arises: Tom the wolf...Phrases and sentential expressions provide at SEM *extremely* rich and detailed perspectives.

However, emanating from the above discussions are two important issues which require some serious qualifications. One is the so-called property of discrete infinity. Chomsky (1988: 70) considers 'discrete infinity' as a property of not human language capacity only but as a property of his capacity for arithmetic and mathematics. What he finds in both such capacities is recursiveness. Accepting Chomsky's argument, I cannot help but assume that 'discrete infinity' is not a 'property' but a consequence of 'the property of recursiveness of computational operations' found in both linguistic and mathematical systems.

The other qualification concerns Saussure's and Chomsky's views of the theoretical status of 'sentence' and linguistic 'creativity.' I find their views inaccurate and misleading. Saussure identifies both as aspects of 'parole' whereas Chomsky considers a sentence, a derived expression of the form EXP=<PF, LF>, to be a feature of competence/I-language and creativity as a property of recursiveness of the language computational system. Nevertheless, in view of the previous arguments, it seems that as for the sentence, it is neither an aspect of use nor a proper unit of I-language; it is a 'product' of the computational system derived or generated by computational operations when accessing lexical items and in the form of 'instructions' to be made available to the performance systems for externalization/use. With regard to creativity, it has been argued that it would be an oversimplification if it were restricted to one type, level, component or module.

2.4.1.3. A Note on Literary Creativity: Unusables made Usables

Here, following what went above, I suggest that in fact literary creativity is related to language but not part of it. Metaphors and various figures of speech are to me in fact those SEMs violating legibility conditions in one way or another and made intelligible by the C-I system, external to language but internal to mind. Chomsky's earlier distinction between language and literature was that the former is 'rule-governed' whereas the latter is 'rule-changing.' However, by abandoning 'rules' altogether in the P & P approach and the introduction of legibility conditions—and intelligibility—in MP, the essence of what constitutes literature could be formulated as illegible SEMs made intelligible by I-C system(s). Since illegible SEMs can be seen as occurring in the process of language acquisition—especially in the process of second language acquisition—I would like to suggest that such illegible-intelligible SEMs are part of the 'involuntary discovering' procedure of language acquisition and literary illegible-intelligible SEMs are part of the 'voluntary inventive' procedure of literary creativity. In this sense, a

sentence like *Colorless green ideas sleep furiously* may be characterized as a legible SEM but unintelligible unless it is to be made intelligible by the C-I performance system(s) for language(proper)-external reasons. Further investigation and analysis is required as one, following Chomskyan tradition and contrary to that of Jakobson's, may claim that literature, like the 'science forming capacity' of human beings constitutes a separate module.

2.4.2. Variation: can parameters be all FL encompasses?

In section 2.4.1, I discussed the relationship between lexicon and variation. In this part, I will look into the relationship between variation and parameters. My focus in this part will be on parameters and their relation to principles.

P & P since its formal formulation and introduction into generative enterprise has encountered quite a substantial number of twists and turns resulting in MP in 1992. Looking at the evolution of the P & P approach from 1981 until now, one can identify and locate a number of quite significant developments following efforts to specify what constitutes parametric variation in languages. I would like to divide them into two interdependent currents: grammar-led and acquisition-led streams. The former were directed by linguists; the latter by language-acquisition researchers of linguists interested in and conducting language-acquisition research.

Major developments in the grammar-led stream may be summarized as follows: parameters as grammatical properties—i.e. part of the computational system (Chomsky 1981); parameters reducible to lexical properties, starting with Borer (1984), leading to Wexler and Manzini 'Lexical Parameterization Hypothesis' (1987) and culminating in Chomsky's (1989) 'Functional Parameterization Hypothesis' to the effect that substantive elements are selected from an invariable universal vocabulary and therefore assigning the functional categories with the task of parameterization. MP, in its Chomskyan version, naturally adheres to such postulation—i.e. recognizing functional categories as the prime locus of parameterization—with the attempt to re-locate the burden of parametric choice from the computational syntax to lexicon. Such a desire was not foreseen but set as a target by Chomsky (1991b:51)

The language faculty is based on fixed principles with limited options of parametric variation as the system is "tuned" to a specific environment, yielding a finite number of core languages apart from lexicon, also sharply constrained; it may be that these principles yield only one core language, apart from properties of lexicon. Some days, I presume, we will reach the point of understanding that the notion of "core language" is eliminable, and we will not distinguish I-language from core language. That is that systems found in the world will not be regarded as languages in the strict sense, but as more complex systems, much less interesting for the study of human nature and human language, just as most of what we find around us in the world of ordinary experience is unhelpful for determining the real properties of the natural world.

Meanwhile, adopting and/or adapting such hypotheses, language acquisition-oriented linguists and researchers have primarily been concerned with parameter setting/re-setting hypotheses and maturational vs. internal ordering constraints on parameters.

Parameter theory as a research program outlined above points to a very significant direction: the computational system must be invariant. And this is what MP intends to do. In fact, MP has had two drives which have been eloquently summarized by Martin and Uriagereka's (2000: 2) as *methodological* and *ontological* minimalism. The former is what we have known for years as 'Occam's Razor.' The latter is, however, related to the design specification problem of FL and introduced by Chomsky, at least as of 1998, as the leading minimalist inquiry and the ultimate minimalist goal; it is expressed in the form of the Strong Minimalist Thesis, claiming

that language is an optimal solution to legibility conditions. Therefore, to keep the computational system invariant would be an ontological achievement in the above sense. In line with this aspiration—which looks quite similar to, if not identical with, that of Einstein’s dream of an ‘elegant universe,’ at least to me—I suggest that a new line of inquiry may be not only feasible but necessary: Can principles be reduced to parameters? I will discuss this issue below and refer to works by Chomsky (1994), Boskovic (2000) and Aronoff (2007).

Firstly, within the framework of P & P, all parameters are related to certain principles, whether overtly stated or covertly posited. To provide some examples, let us take a quick look at *pro-drop*, head (or direction) and what is happening to them. I abstract from details and technicalities here. *pro-drop* is related to the principle stating that all sentences must have a syntactic subject. This principle is commonly known as the Extended Projection Principle or EPP. Head parameter is related to the principle of phrasal endocentricity: all phrases must have a head of their own type or in more recent terminology a phrase is a projection of its own head. Now, following the claim that parameters reflect properties of functional categories, linguists have been trying to reduce them somehow, with the consequence of almost eliminating the relevant principles. EPP has been attributed to the property of T(ense) and directionality to the properties of the functional categories with which an item merges. So endocentricity is an epiphenomenon of the projectional properties. In fact, with regard to the architecture of phrases, Chomsky (1994) abandons X-bar Syntax altogether in favor of a ‘bare’ phrase structure.

Another piece of evidence for the possible eliminability of principles can be based on Boskovic’s analysis of *wh-word* sentences in French. Boskovic’s findings relevant to my argument here is that it is not necessary to insert lexical items or features before Spell-Out. Items may be added to PF and LF provided the ones added to PF lack semantic content and the ones added to LF be void of phonological matrix. The newly added, or inserted, items must be immediately checked for any of their (syntactic) –interpretable features. Why do they have to eliminate –interpretable features? Simply because a convergent derivation at LF or PF is the one that comprises only +interpretable features in accordance with the Principle of Full Interpretation (FI). However, the so-called principle is not required to be posited as a property of FL; in fact, it is a requirement imposed by performance systems, which we know as ‘legibility’ conditions. Therefore, Universal Grammar, as a theory of FL, makes available a handful of computational operations—e.g., Select, Merge, Agree—and a set of universal features incorporating parametric possibilities. All the so-called principles—whether positively stated or in the form of constraints—are aspects either of parameters or legibility conditions.

In this regard, there are two issues that I should like to discuss. There will be more details in Zahedi (forthcoming). One is on the nature of morphology. Since 1970, and in particular Chomsky’s ‘Remarks on Nominalization,’ we have had different theories of morphology assuming ‘radically lexicalist, lexicalist and anti-lexicalist assumptions. Also, we have had decompositional and anti-decompositional approaches to word analysis. There has been quite a lot of fusion and confusion as a result. In his recent article, Aronoff discusses a sign language called Al-Sayyid Bedouin Sign Language (ABSL) which is “completely compositional down to its smallest pieces...with little if any structure below the level of the lexeme...which thus provides an unusual type of evidence for both compositionality and the lexicalist hypothesis” (Aronoff 2007: 805), most probably close to Chomsky’s perfect language design. It seems that if the hypothesis put forward here turns out to be correct, morphology is a language-particular phenomenon, and part of how a language is set to be. Interested readers may refer to Uriagereka (1998: 456-457). Therefore, how morphology is and where it is located—e.g., in lexicon, in syntax, in the phonological component or ‘distributed’ be it morpheme-based or lexeme-based—will be a by-product of how parameters come to be fixed in a language. This will lead me to the second issue, which is the possibility of valuation of parameters, that is, the so-called issue of parameter-setting.

Parameters so far have been assumed to be universals of binary-value, which need to be specified one way or another when exposed to linguistic data. However, is it possible for a parameter to remain under-specified, i.e. unvalued, or with both values set? I believe that the answer is affirmative, with the result of abandoning the ‘switch’ metaphor for a parameter. For instance, Modern Persian, also called Farsi, shows properties of both head-initial and head-final languages; it has both prepositions and postpositions. Also, French, for quite a considerable period of time exhibited properties of pro-drop and non-pro-drop languages. Even now, it shows a mix of both English type and Japanese type characteristics with respect to wh-phrases in multiple questions as discussed by Boskovic (2000). These ‘mixes’ will seem chaotic unless we assume that it is possible for parameters to be bi-valued. On the other hand, as Fukui (1986) implies, Japanese seems to lack complementizer, determiner and AGR systems altogether. Contrary to Radford (1995: 497) who suggests that “...then one type of functionality parameter will relate to the range of functional heads in a given language,” I offer the possibility of no-valuation for a parameter. Therefore, not only may we account for morphological differences between and within languages, but we can explain the ontogenetic and historical aspects of languages as well. So parameters play an essential role to explain cross-linguistic, morphological and historical variations. Also, adopting such a view, I dispense with Chomsky’s notion of ‘periphery,’ which consists of historical residues, apparent violations of certain principles and exceptions to parameters, etc, to be required as an isolated part of I-language to exist alongside ‘core grammar’ within an individual’s competence. Therefore, UG as a *Unified Theory of Parameters (UTP)* in pursuit of minimalist (i.e., optimal) elegance and efficiency, informally stated as ‘Less is More,’ or ‘to organize frugally to maximize resources,’ the so-called ‘invariant principles’ of S_0 is no more than a set of parameters as the expressions of the human genome, constituting the human linguistic genotype, to be valued in the growth or maturation process of its phenotypes, i.e., I-languages or the steady states.

2.4.2.1. Current Research: A Note in Passing

Relevant to my discussions above, there are three strands of research I have been involved in, actually supervising, in the past 14 months. First, in a comparative/contrastive study including Arabic, French, Spanish, English, we have been working on gender distinctions in Modern Persian, also known as Farsi. Our focus in our research has not been limited to lexical items only, but to various syntagmatic and paradigmatic possibilities. In other words, both the lexical composition and the distribution of lexical items have been considered (Please refer to Zahedi and Haydarynia (2008) for more details). In Farsi, there is no grammatical gender, as one may find in languages like Arabic, French (or German) with different distributions, though. However, in Farsi, in a number of interesting collocations, gender distinctions are found. The following examples will illustrate my point:

xoršid xānum	āqa dozd-e	javān-mard
sun lady	mister thief-Definite Marker	young-man
‘Ms. Sun’	‘Mr. thief’	‘fair and just’

Another line of research separately conducted is on kinship terms and linguistic gender differences in Farsi and their role in family disputes and dispute-resolution strategies.¹ Again gender distinctions were under scrutiny in terms of their lexical composition, collocations and combinations. I do not intend to go into details but will provide a couple of examples here.² In Farsi, there are different equivalents for ‘marry’ or ‘get married.’ One is gender neutral: ezdevāj kardan ‘marriage to do.’ However, there are others in which gender plays a role: for females, we have šohar kardan/raftan/dādan: ‘husband to do/go/give;’ for males, we have zan gereftan: ‘wife(or woman) to take.’

The above research projects cannot be easily claimed to fall within the scope of language use. The linguistic properties are obviously part of the linguistic system; the part Chomsky has chosen to ignore: variations in the lexicon and collocational properties. The results of the above studies show that culture is indexed in a language, in our case, Farsi. The third research project is on universals. What is being undertaken is to show that contrary to the standard P & P assumptions, there may be no invariant principles and all language universals are parameters of some kind. I have already provided two examples, one in section 2.4.2 regarding EPP and endocentricity of phrases; another in sections 2.4.1.3 and 2.4.2 with respect to FI. The results of the research are expected to be released in August 2008 in the form of a manuscript first, to be later published some time between late 2008 and early 2009. If on the right track, as I assume they are, the results will offer a new minimalist horizon suggesting (1) the elimination of principles on account of being redundant and non-minimalist (2) the elimination of linguistic/substantive economy measures in the sense of Epstein and Hornstein (1999: xi) and limiting measures of economy to methodological ones and those imposed by performance systems, that is legibility/intelligibility conditions only (3) a mechanism to account for diachronic change and the 'periphery' component of I-language: bi-/no-valuation possibilities for parameters.

Conclusion

In this article, first I looked into different determinist approaches in linguistics. My main aim was to demonstrate that all approaches to linguistic description and explanation offer determinism in linguistics, however different they may be, and that limiting determinist claims to Sapir-Whorf Hypothesis will put linguists at a disadvantage. For the empiricist type, I argued that unlike the standard empiricist claims, not only the source—i.e., linguistic data as experience—but also the 'path'—i.e., human biologically defined senses—impose a determinist role on what becomes internalized/learned linguistically. As for the relativist determinism, I showed that Saussure's account is of greater significance than the hypothesis put forward by Sapir and Whorf. I also demonstrated that Saussurean relativist determinism is not incompatible with Chomskyan rationalist universalism since on the one hand despite the latter's avowed acceptance of Saussurean arbitrariness as a source of linguistic variation, it has chosen not to explain it and has consequently restricted its focus simply to parametric variation, and on the other hand Saussure does not necessarily object to positing a genetic/innate construct for language as he believes that 'mind' imposes limits of some sort on linguistic arbitrariness.

With regard to the functionalist version of determinism in linguistics, I argued that they offer an ends-driven form of determinism; that is, linguistic functions, and in particular the communicative function, determine linguistic forms. Such an approach was shown firstly not to be at odds with language universals provided that they are defined or explained externally and secondly to dismiss 'autonomy of syntax' or 'modularity of form.' I also argued that in view of Chomsky's recent strong minimalist thesis—that is, claiming that language must be an optimal solution to legibility conditions imposed by performance systems upon language—'autonomy of syntax' or 'modularity of form' seems to lose power and reduce in effect, opening a new horizon in linguistic explanation: Minimalist Functionalism, which although still adopting an internalist approach to language, suggests that language is determined by performance systems external to it. Furthermore, I demonstrated that there are different types of creativity and that both Saussure's and Chomsky's accounts of creativity and sentence are inadequate and misleading, providing my own alternative suggestions. At the end, I argued that we may take the minimalist efforts one further step forward if we discard invariant principles and limit language universals to parameters only. I provided evidence that corroborate such an hypothesis, recognizing it as a new model or research program to be known as the Unified Theory of Parameters (UTP) to replace the P & P model.

Endnotes

¹ The research was part of a collaboration between the Department of Linguistics and Family Research Institute of Shahid Beheshti University and the results will be presented in the *Third National (and First International) Congress on Family Pathology*, held on 12-15 May 2008 in Shahid Beheshti University, Tehran.

² For further details please refer to Zahedi and Shams (2008)

References

- Aronoff, Mark. 2007. "In the Beginning was the Word." *Language* 83(4): 803-830.
- Bloom, A. H. 1981. *The Linguistic Shaping of Thought: A Study in the Impact of Language on Thinking in China and the West*. Hillsdale, NJ: Erlbaum.
- Bloom, A. H. 1984. "Caution—The Words You Use May Affect What You Say: A Response to Au." *Cognition* 17: 275-287.
- Borer, Hagit. 1984. *Parametric Syntax*. Dordrecht: Foris.
- Boroditsky, Lera, Lauren A. Schmidt and Web Phillips. 2003. Sex, Syntax and Semantics. Pp. 61-67 in *Language in Mind: Advances in the Study of Language and Thought*, edited by D. Gentner and S. Goldin-Meadow. Cambridge, MA: The MIT Press.
- Boroditsky, Lera, Web Phillips and Lauren A. Schmidt. 2004. *Can Quirks of Grammar Affect the Way You Think? Grammatical Gender Categories and the Mental Representation of Objects*. Manuscript. Stanford, CA: Stanford University.
- Boroditsky, Lera. 2001. "Does Language Shape Thought?: Mandarin and English Speakers' Conceptions of Time." *Cognitive Psychology* 43: 1-22.
- Boskovic, Zeljko. 2000. "Sometimes in [Spec, CP], Sometimes in Situ." Pp. 53-87 in *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, edited by R. Martin, D. Michaels and J. Uriagereka. Cambridge, MA: MIT Press.
- Carroll, John B. 1956. *Language, Thought and Reality: Selected Writings of Benjamin Lee Whorf*. Cambridge, MA: MIT Press.
- Cassirer, Ernst. 1946. *Language and Myth*. Translated by Susanne K. Langer. New York: Harper and Brothers.
- Chomsky, Noam. 1959. "A Review of B. F Skinner's 'Verbal Behavior.'" *Language* 35: 26-58.
- Chomsky, Noam. 1966 [2002]. *Cartesian Linguistics: A Chapter in the History of Rationalist Thought*. New York: Harper and Row.
- Chomsky, Noam. 1968. *Language and Mind*. New York: Harcourt, Brace and World.
- Chomsky, Noam. 1980. *Rules and Representations*. Oxford: Blackwell.
- Chomsky, Noam. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, Noam. 1988. *Language and Problems of Knowledge: The Managua Lectures*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1989. "Some Notes on Economy of Derivation and Representation." Pp. 43-74 in I. Laka and A. Mahajan (eds.) *Functional Heads and Clause Structure Working Papers in Linguistics*, 10), edited by I. Laka and A. Mahajan. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1991a. "Linguistics and Adjacent Fields: A Personal View." Pp. 3-25 in *The Chomskyan Turn*, edited by A. Kasher. Oxford: Blackwell.
- Chomsky, Noam. 1991b. "Linguistics and Cognitive Science." Pp. 26-53 in *The Chomskyan Turn*, edited by A. Kasher. Oxford: Blackwell.
- Chomsky, Noam. 1994. "Bare Phrase Structure." In *MIT Occasional Papers in Linguistics* 5. Cambridge, MA: MITWPL.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- Chomsky, Noam. 1998. *Linguagem e mente: pensamentos atuais sobre antigos problemas*

-
- [Language and Mind: Current Thoughts on Ancient Problems.] *Lectures presented at the University of Brazil*. Brasilia: Universidade de Brasilia.
- Chomsky, Noam. 2000a. "The Minimalist Inquiries." Pp. 89-155 in *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, edited by R. Martin, D. Michaels and J. Uriagereka. Cambridge, MA: MIT Press.
- Chomsky, Noam. 2000b. *New Horizons in the Study of Language and Mind*. Neil Smith. Cambridge: Cambridge University Press.
- Chomsky, Noam. 2002. *On Nature and Language*. Cambridge: Cambridge University Press.
- Chomsky, Noam, and Morris Halle. 1968. *Sound Pattern of English*. New York: Harper and Row.
- Croft, William. 1990. *Typology and Universals*. Cambridge: Cambridge University Press.
- Cudworth, Ralph. 1995 [1688]. *A Treatise Concerning Eternal and Immutable Morality*. Edited by C. M. Hutton. Cambridge: Cambridge University Press.
- Epstein, Samuel David and Norbert Hornstein. 1999. "Introduction." Pp. ix-xviii in *Working Minimalism*, edited by S.D. Epstein and N. Hornstein. Cambridge, MA: MIT Press.
- Fukui, Naoki. 1986. *A Theory of Category Projection and its Applications*. Ph.D Dissertation: MIT.
- Givón, Talmy. 1979. *On Understanding Grammar*. London: Academic Press.
- Halliday, Michael A. K. 1978. *Language as Social Semiotic*. London: Edward Arnold.
- Harris, Roy. 1988. *Language, Saussure and Wittgenstein*. London: Routledge.
- Harris, Roy. 2001. *Saussure and his Interpreters*. Edinburgh: Edinburgh University Press.
- Hauser, Marc D., Noam Chomsky, and W. Tecumseh Fitch. 2002. "The faculty of Language: What is it, Who has it, and How did it Evolve?" *Science* 298: 1569-1579.
- Hopper, Paul. 1987. "Emergent Grammar." Pp. 139-157 in Jon Aske, Natasha Beery, Laura Michaelis and Hana Filip (eds.) *Proceedings of the Thirteenth Annual Meeting of the Berkeley Linguistics Society*, edited by J. Aske, N. Beery, L. Michaelis and H. Filip. Berkeley: University of California at Berkeley.
- Hornstein, Norbert. 2005. "Empiricism and Rationalism as Research Strategies." Pp. 145-163 in *The Cambridge Companion to Chomsky*, edited by J. McGilvray. Cambridge: Cambridge University Press.
- Lasnik, Howard and Juan Uriagereka with Cedric Boeckx. 2005. *A Course in Minimalist Syntax: Foundations and Prospects*. Cambridge, MA: Blackwell Publishing.
- Locke, John. 1964 [1690]. *An Essay Concerning Human Understanding*. Edited by A.D. Woozley. Cleveland: Meridian Books.
- Lyons, John. 1981. *Language and Linguistics: An Introduction*. Cambridge: Cambridge University Press.
- Martin, Roger and Juan Uriagereka. 2000. "Some Possible Foundations of the Minimalist Program." Pp. 1-29 in *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, edited by R. Martin, D. Michaels and J. Uriagereka. Cambridge, MA: MIT Press.
- McGilvray, James. 2005. "Meaning and Creativity." Pp. 204-222 in *The Cambridge Companion to Chomsky*, edited by J. McGilvray. Cambridge: Cambridge University Press.
- Meisel, Jürgen M. 1995. "Parameters in Acquisition." Pp. 10-35 in *The Handbook of Child Language*, edited by P. Fletcher and B. MacWhinney. Cambridge, MA: Blackwell Publishing.
- Petitto, Laura-Ann. 2005. "How the Brain Begets Language." Pp. 84-101 in *The Cambridge Companion to Chomsky*, edited by J. McGilvray. Cambridge: Cambridge University Press.
- Pinker, Steven. 1994. *The Language Instinct*. NY: William Morrow and Company.
- Polome, Edgar G. 1990. "Language and Behaviour: Anthropological Linguistics." Pp. 458-484 in *An Encyclopaedia of Language*, edited by N. E. Collinge. London: Routledge.

- Putnam, Hilary. 1967. The Innateness Hypothesis and Explanatory Models in Linguistics. *Synthese*, 17: 12-22.
- Radford, Andrew. 1995. "Phrase Structure and Functional Categories." Pp. 483-507 in *The Handbook of Child Language*, edited by P. Fletcher and B. MacWhinney. Cambridge, MA: Blackwell Publishing.
- Sapir, Edward. 1928. The Status of Linguistics as a Science. In D. G. Mandelbaum (ed.) *Selected Writings of Edward Sapir in Language, Culture and Personality*. Berkeley, CA: University of California Press. 160-166.
- Saussure, Ferdinand de. 1983 [1916]. *A Course in General Linguistics [Cours de linguistique generale]*. Roy Harris (tr.). London: Duckworth.
- Seuren, Pieter A.M. 2004. *Chomsky's Minimalism*. Oxford: Oxford University Press.
- Steinberg, Danny D. 1982. *Psycholinguistics: Language, Mind and World*. NY: Longman.
- Uriagereka, Juan. 1998. *Rhyme and Reason: An Introduction to Minimalist Syntax*. Cambridge, MA: MIT Press.
- Vygotsky, Lev S. 1934 [1962]. *Thought and Language*. Cambridge, MA: MIT Press.
- Wexler, K and M. R. Manzini. 1987. "Parameters and Learnability in Binding Theory." Pp. 41-67 in *Parameter Setting*, edited by T. Roeper and E. Williams. Dordrecht: Reidel.
- Wittgenstein, Ludwig Josef Johann. 1972 [1929]. *Tractatus Logico-Philosophicus*. PhD Thesis. Edited and translated by D. F. Pears and B. G. McGuinness. London: Routledge and Kegan Paul.
- Zahedi, Keivan. 2006. "Chomskyan Linguistics." *Journal of Human Sciences* 50: 191-214.
- Zahedi, Keivan. 2007. "Grammaticality in the Minimalist Program: A New Horizon towards Minimalist Functionalism." *Journal of Human Sciences* 55: 1-11.
- Zahedi, Keivan. (In Press). "Un-Principled UG? Qualms on the Necessity of Principles." *Human Sciences*
- Zahedi, Keivan and Mahtab Haydarynia. 2008. "A Comparative Study of Arabic, Spanish, French, English and Persian Speakers' Conception of Linguistic Gender." Unpublished Manuscript. Tehran: Shahid Beheshti University.
- Zahedi, Keivan and Mohammad Ali Shams. "Kinship Terms in English and Persian." Lecture Presented on May, 12, 2008 at the *Third National (and First International) Congress on Family Pathology*. Tehran: Shahid Beheshti University.