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## The Source of Human Knowledge: Plato's Problem and Orwell's Problem

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*The principles of universal grammar are fixed as constituent elements of language faculty, they differ in properties of lexical items, though here too the options are narrowly constrained by general principles (Chomsky, 1996, p. 567).*

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### Abstract

Chomsky cannot help wondering at the fact that we, despite so vast evidence, have little knowledge about the obvious evidence. A good example, I think, is the child's way of first language acquisition. A great many researchers have studied various aspects of child language acquisition at different stages of the child's life and have brought to light many details of language development. However, it remains uncertain how the child can cope with this heavy task of language acquisition within the first two years of his life. Since its birth, the child begins acquiring the intonation, the sound, the phoneme, the word, the meaning, and the structure of the language, to which he is exposed so fast that it is beyond our imagination. Mind that the same child is unable to do the simplest addition or subtraction of numbers within the early years of life. Thus, the intriguing question for Chomsky is: How is it that the child can acquire the complex system of a language such as English, Turkish, Japanese, Chinese ... very fast despite so little and often deficient linguistic input?

**Keywords:** Human Knowledge, language, linguistics, language learning

### منبع دانش بشری: مسئله افلاطون و مشکل اورول

چامسکی نمی‌تواند از این واقعیت که ما، علیرغم شواهد بسیار گسترده، اطلاعات کمی در مورد شواهد آشکار داریم، شگفت زده نشود. به نظر من، یک مثال خوب، روش یادگیری زبان اول توسط کودک است. بسیاری از محققان جنبه‌های مختلف فراگیری زبان کودک را در مراحل مختلف زندگی کودک مورد مطالعه قرار داده‌اند و جزئیات زیادی از رشد زبان را آشکار کرده‌اند. با این حال، هنوز مشخص نیست که کودک چگونه می‌تواند با این وظیفه سنگین فراگیری زبان در دو سال اول زندگی خود کنار بیاید. کودک از بدو تولد شروع به فراگیری لحن، صدا، واج، کلمه، معنا و ساختار زبانی می‌کند که آنقدر سریع در معرض آن قرار می‌گیرد که فراتر از تصور ماست. توجه داشته باشید که همان کودک نمی‌تواند ساده‌ترین جمع یا تفریق اعداد را در سال‌های اولیه زندگی انجام دهد. بنابراین، سوال جالب برای چامسکی این است: چگونه است که کودک می‌تواند سیستم پیچیده زبانی مانند انگلیسی، ترکی، ژاپنی، چینی را ... با وجود ورود یهای زبانی کم و اغلب ناقص، خیلی سریع به دست آورد؟  
واژگان کلیدی: دانش انسانی، زبان، زبان‌شناسی، یادگیری زبان

Noam Chomsky (1986) in the preface to his valuable book: *Knowledge of Language. It's Nature, Origin, and Use* has pointed out two interesting questions, which arrest right away the attention of the reader.<sup>1</sup> He observes:

For many years I have been intrigued by two problems concerning human knowledge. The first is the problem of explaining how we can know so much, given that we have such limited evidence. The second is the problem of explaining how we can know so little, given that we have so much evidence. The first problem we call "Plato's problem," and the second, "Orwell's problem," is an analogue in the domain of social and political life of what might be called "Freud's problem" (Preface, xxv).

Chomsky's questions resonate with a similar quest by Bertrand Russell: "How comes it those human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they do know?"

In order to elaborate on the puzzles raised by Chomsky, I may refer to one of his main articles of faith in linguistics, i. e. *innatism*. Chomsky maintains that our cognitive systems reflect our experiences in life. A careful specification of the properties of cognitive systems on the one hand, and of experience that led to their formations, on the other hand, show that there is a considerable gap, in fact, a chasm between these two — the cognitive systems and experience a human being has had. Chomsky in his attempt to solve this epistemological anomaly brings up the innate endowment that serves to bridge the gap between experience and knowledge (cognitive systems) attained. While accounting for child language acquisition, for example, Chomsky argues that child's limited contacts with the target language (his mother tongue in our example) within a short period of time, what he calls "paucity of stimulus" cannot be taken as determining his linguistic mastery. Chomsky's position on innatism is in line with mentalists' views. Lenneberg (1967), for instance, has posited the view that the child's brain is specifically adapted to the process of language acquisition<sup>2</sup>, but this innate propensity is lost as maturation sets in (Ellis, 1986: 44). Lenneberg (1967) argued that there is an 'age of resonance' during which language acquisition takes place; he provided both empirical and theoretical support for the concept of built-in capacity as part of every human being's biological endowment, what Chomsky calls 'Language Acquisition Device' (LAD), the discovery of whose features has been Chomsky's life time research interest. Let me enumerate below very briefly some hallmarks of Chomskian linguistics as they heavily bear on the topic of this paper regarding the source of knowledge from the viewpoint of this great scholar:

- a) Linguistic input, though inevitable for language acquisition, has only a triggering effect.
- b) Linguistic universals/core rules, shared by all natural languages, have primacy over the learner's strategies of interaction.
- c) Language is a human-specific faculty, existing independently in the human mind; it is separate from the general cognitive mechanisms responsible for intellectual development.
- d) Language acquisition device, though available in adulthood, atrophies with age.

<sup>1</sup> I suggest that the reader first see note (1) at the end of this paper before starting to read the paper proper. I think the script, as an advanced organizer, will help the reader have a clear understanding of the discussion through the examples provided to illustrate the point in case.

<sup>2</sup>. There is a conceptual difference between "acquisition" and "learning". Whereas the former is a top-down, deductive, holistic, field dependent approach to acquiring language, the latter is bottom-up, discrete-point, field independent. In acquisition the child picks up the language by attending to language uses, meanings, and functions, but he cannot learn language by attending to its rules of (cf. 'The implications of child language acquisition for second language learning' by Behrooz Azabdaftari, in this book: **A Collection of English Papers on Language and Interdisciplinary Studies**, forthcoming, University of Tabriz, 2015).

e) Core rules are universal, shared by all natural languages; periphery rules are socio-cultural aspects of language (Cook, 1985).

f) Core rules accord with general tendencies of language acquisition; they are unmarked, hence acquired much faster and more easily than marked features of language.

g) Language is viewed as internal property of human mind or a computational system in the human mind, i. e. internalized language (I-language) in contrast with externalized language (E-language), which is a social phenomenon.

h) In generative grammar a distinction is made between *principles* and *parameters*. Parameter is an abstract grammatical category that control several superficially unrelated surface syntactic properties; for example, the **head parameter** determines whether a language positions the HEAD of a phrase before (as in English) or after its complement. A further example of the parameter: In English the preposition precedes the noun, but follows the noun in the Japanese language.

Having mentioned these few points about Chomsky's generative grammar, we would like to retrace our steps and take up the main topic of this paper: The source of language knowledge, and consider it from Chomsky's perspective as it is represented in an article by Chomsky (1996), carrying the title *Language and problems of knowledge*. In so doing, we will try to put forth Chomsky's views in a straightforward and simple fashion mainly because the nature of discussion itself is complex.

Chomsky (1996), at the outset, cautions that the concepts of "language" and "knowledge" have tended to obscure understanding and to engender pointless controversy. Faced with the question "what is meant by "language", some people may out of hand come up with an intuitive commonplace concept that serves well enough for ordinary life, which departs sharply from every serious approach to the study language. The general practice in language study has been to define "language" as *E-language*, where "E" suggests "externalized" or "extensional", "External" in the sense that language is external to the mind/brain; "extensional" in the sense that it deals with a set of objects — core rules and periphery rules, as they are discussed in Chomskian linguistics. As a side comment, it is worth noting that Chomsky's approach to language is mentalistic, basically concerned with an innate device for language acquisition, and that he has devoted his entire linguistic research effort to discovering linguistic properties of man's brain. Chomsky is committed to the belief that mentalism is just a normal scientific practice, and an essential step towards integrating the study of the phenomena that induct us into the more fundamental natural sciences. Chomsky goes on arguing that it generally pointless to demand too much clarity in these matters. Chomsky's position on innate language acquisition, to me, is a tart rejoinder to those who venture to put all their exploratory eggs in the basket of experimentalism. In return, experimentalists argue back that Chomsky in his quest for the source of language knowledge applies his magic wand, relegating the secret of linguistic knowledge to a black box, containing, as it is claimed, the innate program of language acquisition. Interestingly enough, it is the fascination of the black box that has served an incentive for Chomsky's linguistic explorations. Language, a tool of thinking, affords the human being a lofty position in comparison with other living creature; therefore, any research effort invested in learning about this gift of 'mother nature' is worthwhile.

Leonard Bloomfield, the distinguished American linguist, has defined language as "the totality of utterances that can be made in a speech community," the latter being homogeneous. A qualification is needed here. Chomsky's conception of "homogeneity of speech community" has been challenged by a group of linguists, called interactionist. The speech community, they argue, far from being homogeneous, is heterogeneous. Further, whereas Chomsky claimed that

linguistic universals are innate, linguists investigating typological universals,<sup>3</sup> are prepared to consider a number of possible explanations: there may be common genetic origin for all world's languages (monogenesis), or certain language universals may derive from the communicative uses to which language is put. To say it differently, it is argued that linguistic universals are manifestations of the types of uses to which we put language; i. e. functional universals in communication give rise to linguistic universals.

Chomsky's universal grammar divorces language study from its primary function as communication. For many linguists this abstracting away from language use (as Chomsky's position on innatism) evokes a protest on the part of a group of linguists who regard child's development as an important factor for unfolding linguistic universals. We have to note that Chomsky made a distinction between acquisition and development. Acquisition, according to Chomsky, is not affected by the development; it is entirely dependent on child's language faculty. It is argued that development is the product of maturation, and that as the child's cognitive abilities develop so does his ability to perform his linguistic competence. It goes without further explanation that 'acquisition' and 'development' correspond to 'competence' and 'performance, respectively; the latter, being affected by environmental factors, remains beyond Chomsky's research interest. According to Chomskian school of thought, the whole of the universal grammar is available to the child from the start, yet the child's cognitive abilities control the emergence of linguistic universals. The counterargument is that linguistic universals themselves are subject to an innately specified developmental process. According to the first assumption, grammar universals will force their way out regardless of the development of cognitive abilities. The proponents of the second position are committed to the belief that the child's cognitive development will determine the route of language development. In the first position, the *nature* (innatism) has the upper over development; in the second position, it is the *nurture* that leads the gift of nature. In passing I may point out that these two concepts — *nature* and *nurture* — have complementary rather than supplementary relationship with each other, and that a group of researchers think that nurture (for example, education) has to toe the mark delineated by nature (the learner's disposition), on the contrary, some other researchers (for example, Marxists), hold that nature can be reshaped by nurture.

Back to the definitions of language, here we may refer to Aristotle's conception of language as a relation of *sound* and *meaning*. In the face of numerous definitions of language, Chomsky posits the view that a grammar is a formal system of some kind. Chomsky restricts the term of "grammar" to the theory of *the* language, i. e. "I-language," where "I" is to suggest "intensional" and "internalized". I-language is what the grammar purports to describe: a system in the mind/brain. This is different from E-language, which is affected by different psychological social variables during communication. Chomsky regards I-language as real entities in the brain. Chomsky is not interested in E-language, which according to Chomsky, poses philosophical problems. He uses the term "language" to refer to I-language, and the term "grammar" to refer to the theory of an I-language, and the term "universal grammar" to refer to linguist's theory only. The topic of universal grammar (UG) is the system of principles that specify what it is to be a human language. This system of principles, according to Chomsky (1996), is a component of the mind/brain prior to the acquisition of a particular language. This system of principles constitutes the initial state of language faculty, considered a subsystem of the mind/brain. It is the system that is a true species property. Chomsky's goal in language study is to discover the true theory of

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<sup>3</sup> Typological universals are identified by examining a representative sample of natural languages, taking care to ensure that the sample is free from the bias that might result from concentrating on a single language or family of languages (Ellis, 1986: 194)

UG, which maps verbal data onto language (I-language). It is interesting to note that the child's hypothesis testing is constrained by linguistic universals and that the rules of interlanguage<sup>4</sup> in natural language acquisition are subject to the constraints imposed by UG. An example will drive home the constraints imposed by UG. The child at the initial stage of language acquisition is heard to say "My ball is gooder than yours," but not "My baller is good than yours". The universal grammar constrains adding *er* suffix to the end of a noun. Or consider the following example, given by Ellis (1986: 192):

1) We gave the book to the girl.

2) We explained the answer to the girl.

These sentences have the same surface structure, but whereas (1) can be written as (3)

3) We gave the girl the book, (2) constrains the construction of (4)

4) We explained to the girl the answer.

In the light of the foregoing discussion, Chomsky (1996) posits the view: "I doubt very much that it makes any sense to speak of a person *learning* a language; rather, a language grows in the mind/brain". Metaphorically speaking, I may say that the seed of language is there in the mind needing the triggering effect of the sun and water (*input* in linguistic parlance) to blossom out. Obviously, the process of language development will take place in different ways, depending on external factors but the basic lines of development are internally developed.

Addressing the question of knowledge, Chomsky observes that the language a person has acquired underlies a vast range of knowledge, both "knowledge-how" and "knowledge-that." A person whose mind incorporates a particular I-language knows how to speak and understand a large variety of sentences, knows that certain sounds have certain meanings, and so on. Three aspects of language knowledge are: (1) the internalized system of knowledge, (2) knowing how to speak and understand, and (3) knowledge that sentences mean what they do (Chomsky, 1996: 563). For example, the English speaker is sensitive to the shades of meaning of the following sentences:

a) You are to sign this letter.

b) You must sign this letter.

c) You have to sign this letter.

d) You can sign this letter.

e) You might sign this letter,

f) You had better sign this letter.

Some philosophers influenced by Wittgenstein hold that "knowledge is ability" (Keny, 1984). Some even claim that "language is a complex of present dispositions to verbal behavior," (Quine, 1972). Chomsky rejects outright these concepts as unacceptable. He argues that knowledge of language should not be equated with the ability to speak, understand, etc. Ability can improve with no change in knowledge. Similarly, ability to use language can be impaired, and can even disappear without any loss of knowledge of language at all. Chomsky remarks that knowing-how cannot be explained in terms of ability. Rather, knowing-how involves a crucial cognitive element, some internal representation of a system of knowledge.<sup>5</sup>

<sup>4</sup> The term "interlanguage" is suggested by Selinker (1972). Other terminologies are used by different authors: "approximative system (Nemser, 1971); transitional competence (S. P. Corder, 1967); "the language of the language learner ( Carl James, 1981), idiosyncratic dialect (Krezeszowski,1971). Interlanguage is said to consist of five processes: L1 transfer, transfer of training, overgeneralization (Horizontal contrastive analysis), transfer of communication strategies, and strategies of learning (vertical contrastive analysis). Contrastive analysis is concerned with the horizontal axis in formal classroom situation. The vertical contrastive analysis is related to acquisition of L2 in natural settings.

Chomsky has elaborated on this in his "Knowledge of language," in K. Gunderson, (ed.), *Language, Mind, and Knowledge* (Minneapolis: University of Minneapolis Press, 1975).

Following Descartes, Chomsky (1996) observes that the creative aspect of language use is indeed free from identifiable stimulus control, that the normal use of language is unbounded in scope, appropriate to situations that evoke but not cause it. Far back in the past, Chomsky had rejected the claim that language is a system of habits. Regarding new sentences uttered by the speaker, behaviorists argue that new sentences are produced and understood by “analogy” with familiar sentence patterns. Here the behaviorist is caught red-handed because the very term “analogy” reeks of mentalism — an Achilles heel of behaviorism. Creative sentences, according to Chomsky, are due to the finite phrase structure rules that can produce an infinite number of sentences. An analogy to language faculty is the human number faculty, essentially common to human species, unteachable to other organisms. There is a similarity in quality between language faculty and number faculty in the sense that in both of faculties a finite set of features can produce an infinite number of linguistic structural and numerical combinations. These observations by Chomsky (1996) suggest that at some remote period of evolutionary history, the brain developed a certain capacity for digital computation, for employing recursive rules, thus acquiring the basis for *thought* and *language* in the human sense, with the arithmetical capacity perhaps “latent as a kind of abstraction from the language faculty, to be evoked when cultural conditions allowed” (p. 566).

There is a strong affinity between Chomsky's generative grammar and connectionism, a theory in cognitive science that assumes the individual components of human cognition are highly interactive, and knowledge of events, concepts and language is presented diffusely in the cognitive system.<sup>6</sup> It is legitimate that, Chomsky observes, the faculty of the mind/ brain carries out digital computations following very general principles. To put it differently, we may say that the language faculty, part of the mind/brain, is a system of digital computations of a highly restricted character, with simple principles that interact to yield very intricate and complex result.

Diversity of natural languages is the results of properties of lexical items, though options are narrowly constrained by the same core universals. Long in the past, some renowned linguists, for example, Edward Sapir, Franz Boas, and Martin Joos, put forth the idea that languages can vary “without limit” and in “predictable way”. Chomsky finds these views unproductive; on the contrary, he makes a sharp conceptual change in the prevalent speculations, offering his generative grammar, which provides the mechanisms for the creative aspects of language use.

To Chomsky the key questions are: i) what is the system of knowledge attained by a person who speaks and understands language? ii) how is that knowledge acquired? And iii) how is that knowledge put to use in perception and production? Chomsky regards the second question, how language is acquired, *Plato's problem*, and language production as *Descartes problem*. Descartes problem refers to Cartesian dualism<sup>7</sup> which regards mind and language as different substances. Obviously, division between these two from each other flies in the face of language learning experience. Language affects the shaping of the mind, and the mind works changes in the structures of language. The three questions were posed as constituting the research program of

<sup>6</sup> The basic assumptions of connectionism are: 1) Information processing takes place through the interactions of a large number of simple units, organized into networks and operating in parallel. 2) Learning takes place through the strengthening and weakening of the interconnections in a particular network in response to examples encountered in the INPUT.

<sup>7</sup> Dualism (from the Latin word *due* meaning “two”) denotes the state of two parts:

In ethics, dualism refers to the benevolent and malevolent; in theology, it refers to the relation between God and creation; in philosophy, it refers to mind and matter/body and soul; in philosophy of science, it refers to the dichotomy between the subject (the observer) and the object (the observed); in Popperian philosophy, it refers to “hypothesis” and “refutation/experimentation”; in physics, it refers to media and mechanics. An example of using two different physical models to describe one phenomenon is wave-particle dualism; in Islam, and in Manichean doctrine, dualism is sought between the Satan and the angel, evil and benevolence, respectively.

generative grammar almost forty decades ago. Chomsky, having rejected habit system of language acquisition, holds that language is a system of rules and that their interrelations are specified by universal grammar. The rules include context-free rules, lexical rules, transformational rules, and phonological rules. Chomsky does not speak of “semantic rules” because he finds the term misleading. Semantics, as Chomsky argues, is restricted to the relation between language and the world, the notion which does not yield to formal treatment in terms of “rules”. Obviously, Chomsky's conception of language is a complex of rules of the permitted format, interconnected in a way permitted by the universal grammar. This conception of language, pioneered by Chomsky, and in contrast to the conception of language in terms of habit systems or abilities, is indeed a paradigmatic shift in language studies since the earliest times and has led to a vast research in the range of phenomena of linguistic and cognitive nature.

Chomsky (1996) contends that a language is acquired by determining the values of the parameters of the initial state on the basis of simple data, and then the system of knowledge is represented in the mind/brain and is ready to function. To say it differently, during the process of acquiring a language, the hearer identifies lexical properties in the input provided, and projects a syntactic structure as determined by principles of universal grammar.<sup>8</sup> Chomsky observes that the abandonment of rule systems in favor of a principle-and-parameters approach has been extremely productive because the latter position on language study has led to a big leap in empirical coverage. The principle-and-parameter approach has made it possible to explain why there are processes that are described by certain rules, but not others. “We are at the beginning of a radically new and highly productive phase in the study of language,” says Chomsky (1996: 527). The shift of perspective from rule systems to a principles-and-parameters approach is perhaps the second major conceptual change in the development of a generative grammar, the first being the change from a conception of language as a system of habits or abilities to a centralistic approach that regards language as a conceptual system of the mind/brain — a step towards integrating the study of language to the natural sciences.

Chomsky's (1996) view regarding lexical items is based on conceptual structures of a specific and closely integrated type. Accordingly, he believes concepts of locational nature, including goal and source of action, object moved, place, surface, volume, etc. enter widely into lexical structure, often in quite abstract ways. The child approaches language with an intuitive understanding of concepts involving intending, causation, goal of action, event and so on., and places the words that are heard in a nexus that is permitted by the principles of universal grammar, which provide the framework for *thought* and *language*, and are common to human languages as conceptual systems that enter into various aspects of human life. With children, cognitive development precedes language development; the child first has at his disposal mental encyclopedia on which he maps his mental lexicon. Amid the theories of meaning, two of them, the referential and picture theories are relevant to our discussion here. These two theories do not separate knowledge of the language from the knowledge of the world. The child first has a *sense* of a word, its *intension*, which is the “concept”, associated with the word. Then he develops the *reference*, its *extension*, which can be a set of things the word applies to in any real or imaginary world — the objects, the states, event, or processes in the world.

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<sup>8</sup> In generative theory an abstract grammatical category controls syntactic property. For example, the head parameter determines whether a language positions the HEAD of a phrase before or after its COMPLEMENT. A head-first language (as English) is one in which heads normally precede their complements. A head-last language (as Japanese) is one in which heads normally follow their complements. A parameter which determines whether the subject in declarative sentences may be dropped is called “pro-dropped parameter”. The English, French and Arabic languages are called non-pro-drop languages; the Italian and Arabic languages are pro-drop languages (Richards and Schmidt, 2010).

By way of concluding the discussion, I may say that there are two sides to the problem of the source of language knowledge: *innatism* and *expericism*. The human being is born with innate language acquisition device, but for this device to operate there is need for linguistic input. To have them both is mandatory; the dispute centers on the degree of significance these two have in shaping up the language, and consequently, the mind/brain of human beings. We think the two positions can be roughly captured by two socio-philosophical terms: *nature* and *nurture*. If man is not provided with innate gift of language acquisition language will not emerge without external language input. Also, verbal interaction will be impossible with the existence the innate program of language acquisition. While the dispute regarding the significance of these is still raging between innatists, and interactionist, in the Marxist doctrine, the nurture has been invested with more power to prevail over nature, hence creation of a man. Vygotsky's sociocultural approach to the genesis of mind is indeed the exponent of the latter position.

Note 1. Chomsky cannot help wondering at the fact that we, despite so vast evidence, have little knowledge about the obvious evidence. A good example, I think, is the child's way of first language acquisition. A great many researchers have studied various aspects of child language acquisition at different stages of the child's life and have brought to light many details of language development. However, it remains uncertain how the child can cope with this heavy task of language acquisition within the first two years of his life. Since its birth, the child begins acquiring the intonation, the sound, the phoneme, the word, the meaning, and the structure of the language, to which he is exposed so fast that it is beyond our imagination. Mind that the same child is unable to do the simplest addition or subtraction of numbers within the early years of life. Thus, the intriguing question for Chomsky is: How is it that the child can acquire the complex system of a language such as English, Turkish, Japanese, Chinese ... very fast despite so little and often deficient linguistic input?

The second problem haunting Chomsky's mind may be illustrated by considering the fact that despite little evidence, we have plenty of knowledge behind what is going under the table, so to speak. Here a good example is *politics*. Politicians often camouflage their ill-intention behind seemingly justifiable acts. However, the majority of people are full aware of incentives evoking their misdemeanor. One more example related to the second problem is *religion*. We are surrounded by various manifestations of religious traditions, yet we do not know the least about the origin, cause, and the purpose of these traditions.

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