II.
Zur Theorie und Philosophie
des Über-setzens

Welche Philosophie der Übersetzung wird in Europa aus-
schlaggebend sein?
In einem Europa, das von nun an sowohl die krampfhafte na-
tionalistische Unruhe der Sprachunterschiede als auch die ge-
waltsame Gleichsetzung der Sprachen durch die Neutralität
eines übertragenden – und angeblich durchsichtigen, meta-
linguistischen, universalen – Mediums vermeiden sollte?
(Jacques Derrida, L'autre cap, 1991)

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Universal Grammar in Chomsky and the Problem of Translation

In this paper I will proceed from the assumption that translation is a transition of meaning from one language to another with minimal loss and/or distortion, i.e. what is called by Roman Jakobson ›interlingual translation‹.[1] The second assumption is that meaning is an explanans (the thing that explains what has to be explained) of human use of language. Meaning is what is being transmitted from speakers to hearers and what enables linguistic expressions to change the behaviour of others. The third assumption is the general definition of language as a neuro-audio technology for re-wiring the neural networks of others (following Mark Pagel[2]). The role of translation is to multiply this technology and expand its scope.

Using a simplification, it might be said that there are two basic points of view from which to approach translatability: universalist and monadist. Supporters of the universalist approach claim that the existence of linguistic universals ensures translatability. Those who endorse the monadist approach maintain that each linguistic community interprets reality in its own particular way and this jeopardizes translatability. In what follows I will make some references to the historical origin of Chomsky's theory (1), but the main emphasis will be on a brief outline of its internal history (2). Then I will reconstruct his conceptions of Universal Grammar (UG) in its different phases of development (3 and 4) and then comments on its consequences for translatability will be made (5).

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[1] Jakobson, On linguistic aspects of translation, http://culturalstudiesnow.blogspot.bg/2011/10/roman-jakobson-on-linguistic-aspects-of.html, §4

[2] Pagel, How language transformed humanity, https://www.ted.com/talks/mark_pagel_how_language_transformed_humanity/transcript 00:11, see annotated captions at https://dotsub.com/view/84c04c29-194b-4667-ab49-612c550dd601/view-Transcript/eng

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1. Historical Origin of the Theory

As we know, Chomsky launched his general ideas about the nature of human language and language acquisition in his critical review of Skinner's *Verbal Behaviour* (1957).[3] However, the most prominent work of Chomsky that explicitly tries to put his work in a broad historical context, is his *Cartesian Linguistics* (First edition New York, 1966).[4] »Because of its extensive discussion of linguistic creativity facts, *Cartesian Linguistics* focuses more than any of the rest of Chomsky's works on the creativity facts, and explores their implications for the science of mind and the explanation of behaviour – and it touches on their broader implications for politics and education, and even art – especially poetry«.[5] Here Chomsky refers to Descartes' teaching of innate ideas as a source of inspiration, because Descartes was the first to pay attention to ordinary linguistic creativity. The latter, according to Chomsky, cannot be explained in behaviouristic terms of stimulus, response, and reinforcement, and therefore calls for its explanation by some innate brain structure (the so called Language Acquisition Device, LAD) that accounts for the development of language in children in a way that their other organs develop – they just grow up. What is at stake here is the semantic enhancement, while the grammatical regularities remain identical as they are, first, innate, and second, universal for each and every human being on earth. As the famous Chomsky's slogan goes,[6] from a bird's point of view all languages are the same. Linguistic competence, as the opposite of linguistic creativity, is given to us *a priori* (and this idea has inspired Habermas' ›communicative *a priori*‹). This leads Chomsky to the distinction of deep and surface structure in particular languages. Thus particular languages are to be regarded as concrete instantiations of a universal mental ability that is identical in people.

As another source of inspiration, Chomsky points out to Leibniz: The psychology that develops in this way is a kind of Platonism without preexistence. Leibniz makes this explicit in many places. Thus he holds that »nothing can be taught to us of which we have not already

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[3] Cf. Skinner, *Verbal Behaviour*, pp. 432–452

[4] Chomsky, *Cartesian Linguistics, A Chapter in the History of Rationalist Thought*

[5] McGilvray, *Introduction to the third edition*, in: *Cartesian Linguistics, A Chapter in the History of Rationalist Thought,* p. 1

[6] Chomsky, *Language and Problems of Knowledge,* in: Martinich, *The Philosophy of Language*, Third edition, p. 559

in our minds the idea,« and he recalls Plato's ›experiment‹ with the slave boy in the *Meno* as proving that »the soul virtually knows those things [i.e., truths of geometry, in this case], and needs only to be reminded (animadverted) to recognize the truths. Consequently, it possesses at least the idea upon which these truths depend. We may even say that it already possesses those truths, if we consider them as the relations of the ideas« (§26)[7] (in §26 he refers to Leibniz's *Discourse on Metaphysics*). Chomsky admits that what is latent in the mind may require appropriate environmental stimulation in order to become active, and this corrects his initial statement that no external stimuli are needed to develop linguistic expansion. However, he insists that, as a brain structure, Language Acquisition Device (»LAD«) calls for a linguistic science regarded as a natural one. As we shall see in the last section, this idea does not remain the same in Chomsky's views.

We have to say here as a conclusion of the general philosophical background in Chomsky that he takes sides with classical rationalism, and this view has come today to be called ›nativism‹.

2. Internal History of Universal Grammar

It may be said that at the level of semantics Chomsky's general concepts of language and language acquisition undergo amendments and additions, remaining nevertheless recognizable since the late fifties and mid-sixties when they were started. There is another level of Chomsky's development, namely the syntactic one, which has changed noticeably during the decades. The distinctive periods are known by the names of Chomsky's corresponding books. The first model of the UG is given in his *Syntactic structures* where rules that generate basic structures were separated from rules of transformation. This period's theory became popular by the name of ›transformational generative grammar‹. It used as an illustration a sentence that can be regarded as the slogan of this period: *Colourless green ideas sleep furiously*. Its task was to emphasize that syntax is independent of semantics, so a sentence can be grammatically correct and meaningless at the same time.

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[7] Chomsky, *Cartesian Linguistics*, p. 100

The next period was marked by the *Aspects of the Theory of Syntax* and became known as the Standard Theory. Here Chomsky introduces the distinction between linguistic competence and linguistic performance as well as the one between deep and surface structure of the sentence. Two prominent sentences are associated with this stage: ›*John is eager to please*‹ and ›*John is easy to please*‹. The two sentences have the same surface structure but mean different things about John who is first subject and then object of the verb *please*.

In the seventies the Standard Theory developed into the so called Extended Standard Theory, positing slightly different grammatical rules; then, after a more radical change, the Government/Binding Model appeared (1981[8]); and from today's point of view it is regarded as the kernel of the universal grammar model. It claimed that, as said earlier, from a bird's point of view all languages are identical in that they are ruled by the same grammatical principles and parameters. The central work here is the book *Knowledge of Language* (1986[9]). This theory started to be referred to as ›Principles and Parameters Theory‹, because this title was regarded as closer to the essence of the theory.

The late eighties brought a further model – the so called Minimalist Programme (1995[10]) which can be considered the core of Chomsky's current position. In its turn, however, the MP has three stages, according to Cook and Newson (2007).[11] The first stage lasted till 1996. MP then was focused on the invariant principles for all languages, thus simplifying the language acquisition process. The second stage was devoted to syntax and some radical rethinking of it, consisting in the elimination of most of the Government/Binding apparatus and in the exploration of whether the computational system of language interfaces with phonology and cognition. The last stage, from the year 2000 onwards, is known as the Phases Model.[12]

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[8] Chomsky, *Lectures on Government and Binding*
[9] Chomsky, *Knowledge of Language: its Nature, Origins, and Use*
[10] Chomsky, *The Minimalist Program*
[11] Cook and Newson, *Chomsky's Universal Grammar: An Introduction*, p. 2
[12] Ibid., p. 4

3. Evolution of Universal Grammar

If we wish to take a broad view on Chomsky's investigations, we may say that he has been interested in our knowledge of a language and the origins of this knowledge. This means, for Chomsky, that linguistics is an inquiry into the human mind and human nature. As language is a ubiquitous human capacity, we must be interested not in the idiosyncrasies of a particular language but in all the common properties of any language.

However, language does what it does (namely, rewire the neuronal networks of other beings) by relating to things outside our minds and using physical media: symbols as sounds or inscriptions. This relation has been called ›meaning‹ and the question that must be answered is how is meaning connected to symbols, and next, how it becomes able to express thoughts? Chomsky's summary of these questions runs as follows: ›each language can be regarded as a particular relationship between sounds and meaning‹.[13] Thus a sentence like »The moon shone through the trees« consists of a chain of letters or sounds, on the one hand, and of meanings about the moon and its relationships to trees, on the other. Those symbols are the external face of language. »Moon« means nothing to a speaker of Bulgarian. Meanings are the internal face of language, its connection to cognition. Linguistics must explore the nature of the relationship between internal and external. In Chomsky's view, the mind connects meanings to sounds via a computational system working in two directions – from sounds to meanings and from meanings to sounds. The knowledge of a language does not only lie in the sounds and meanings, but in the computational system, embodying the syntax. The speaker's mind has to change the internal ingredients of language into real physical sounds through complex instructions to muscles; this is carried out by the sensorimotor system. The listener's mind, in its turn, must convert sounds into the representations common to the computational system. This is what happens in the interface between mind and sounds. Between mind and meanings, representations must first be converted into general concepts (conceptual-intentional system),[14] and second, the general concepts have to be changed into the representational forms used by the computational system. What is the

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[13] Chomsky, *Studies on Semantics in Generative Grammar*, p. 17
[14] Chomsky, *On Nature and language*

conceptual apparatus that Chomsky uses in order to explain the workings of the computational system?

First, the concept of grammar at work denotes our whole knowledge of language: how the sounds are pronounced, how the words are ordered, and what they mean – namely, phonetics, syntax, and semantics. The syntax, or the syntactic structure, has a central role in that it mediates the physical form and the abstract meaning. The theory of principles and parameters introduces the terms *phonetic form* and *logical form* (the latter capturing the representations of meaning). In *Knowledge of Language: Its Nature, Origin, and Use* Chomsky says: »Phonetic form and logical form constitute the interface between language and other cognitive systems, yielding direct representations of sound, on the one hand, and meanings on the other, as language and the other systems interact.«[15] Of central interest here is, however, the computational system; this is what makes children acquire language, not the sounds and meanings themselves. The logical form represents only the syntactic meaning, namely that part of meaning that is determined by grammatical structure.[16] So how does the computational system work?

The computational system has some important components. The first is the lexicon, i.e. all the words we know plus the knowledge about the relationships they can enter. For instance, we know a lot of additional information organised around the word »moon« – that it is a mass noun, is being pronounced in a certain way, is earth's satellite, can move, and so on.

The second component is the UG principles. Knowledge of language rests on a set of principles present in all languages and in all human beings. Moreover, these, at a certain level of abstraction, are the same for all languages. If there are any differences between languages, they are limited to some variables (parameters). This is a new feature of Chomsky's theory after the 1980s; before that he believed that language was only rules or structures and their variations were considered limitless. In the new view, knowledge of language comprises not knowledge of rules as such but knowledge of deeper principles from which the rules are to be derived. Thus the concept of a rule is brought to a minimum. It was a significant change to be taken into account; still some researchers who apply Chomsky's programme

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[15] Chomsky, *Knowledge of Language: Its Nature, Origin, and Use*, p. 68
[16] Chomsky, *Morphophonemics of Modern Hebrew*, p. 165

consider his grammar theory rule-based. »There has been a gradual shift of focus from the study of rule systems, which have increasingly been regarded as impoverished … to the study of systems of principles, which appear to occupy a much more central position in determining the character and variety of possible human languages«.[17] Rules are by-products of the trade between the principles, on the one hand, and the lexicon, on the other. UG is concerned with the complex interactions between principles and parameters and the impact of those interactions on other parts of the syntax. A language is not, then, a system of rules, but a set of specifications for parameters in an invariant system of principles of Universal Grammar.[18]

In sum:

1. The computational system links sounds (the physical face of language – sensorimotor system)
2. With meanings (the mental representations of meaning – conceptual-intentional system)
3. Via Phonetic form (how the abstract phonological representation is being pronounced)
4. And Logical form (how the abstract syntactic representation acquires its meaning)
5. Based on the lexicon (stores all properties of the words)
6. Based as well on principles (dictates which structures are to be used).

4. Further Development of Universal Grammar

On the basis of this view Chomsky outlines the tasks of linguistics as a discipline. He presents them in the form of questions. The first question is what constitutes the knowledge of language? Here the task is primarily descriptive, oriented towards laying out people's linguistic intuitions which allow them to recognize sentences like ›Is Sam the cat that is black‹ as sentences in English in contrast to ›Is Sam is the cat that black‹ which is ungrammatical. Next there are unobservable entities to be posited that explain this knowledge of language. The computational, sensorimotor and conceptual-intentional systems are such entities.

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[17] Chomsky, *Language and the Study of Mind,* pp. 7–8
[18] Chomsky, *The Minimalist Program,* p. 388

The second question is about how such knowledge is acquired? In order to answer this question, the linguist must rely on the answer to the first question. Here again positing explanatory unobservables is in use: this is the so called LAD which is innate and present in every human being.

The third question concerns the usage of our knowledge of language. For instance, the sentence about Sam the black cat may be used for sorting out one cat of many in a photograph. Like the second question this one also presupposes an answer to the first question, namely what is knowledge of language?

In *Language and Problems of Knowledge* Chomsky formulates a fourth question: What are the physical mechanisms that serve as the material basis for this system of knowledge and for the use of this knowledge? Here the linguist must look for some physical correlates of linguistic competence and linguistic performance, i.e. for brain structures that underlie the computational, the sensorimotor and the conceptual-intentional systems. Furthermore, the principles and parameters of Universal Grammar must be stored somewhere in the brain. This question and the general instructions for answering it justify Chomsky's saying that linguistics is a natural science.

In his book of 2000 Chomsky starts to put up more difficult questions about the nature of language. He asks how much language is determined by restrictions coming from the other cognitive systems which interpret language. In *New Horizons*,[19] Chomsky asks: ›How good a solution is language to certain boundary conditions that are imposed by the architecture of mind?‹ This puts into doubt Fodor's idea of modularity of mind or at least challenges the informational encapsulation of the alleged modules.

How to assess these basic ideas in comparison to other approaches to linguistics? Chomsky distinguishes between externalised languages (E) which understand linguistic entities independently of the properties of the mind, and internalised languages (I) where the link with the mind is decisive. Investigators of the first kind of languages, like the American structuralist movement represented best by Bloomfield tend to collect samples of a language and then describe its properties. The grammar is a collection of descriptive statements concerning the E-language.[20] In contrast to this approach, I-linguists study the

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[19] Chomsky, *New Horizons in the Study of Language and Mind*, p. 17
[20] Ibid., p. 20

person's knowledge of language and its origin. Language is an internal property of the human mind. Grammar does not describe the sentences and their regularities, but the speaker's linguistic competence. It is interested in what people could do instead of what they have already done. We can say that this is very similar to Herder's approach to the relationship between language and thought, in that the question posed is actually a philosophical, namely a transcendental one.

This opposition between E-languages and I-languages, captured and explicated by Chomsky in his later work, is long dated and has its repercussions on other disciplines such as social anthropology or computational linguistics. The opposition corresponds to a certain extent to the significant distinction drawn in 1965 *(Aspects of Linguistic Structures)*, between linguistic competence and linguistic performance. Competence is »the speaker/hearer's knowledge of his language«, performance is »the actual use of language in concrete situations«.[21] It can be considered a necessary idealization or a flight from robust linguistic data. Chomsky's further developed definition is as follows: »By grammatical competence I mean the cognitive state that encompasses all those aspects of form and meaning and their relation, including underlying structures that enter into that relation, which are properly assigned to the specific subsystem of the human mind that relates representations of form and meaning«.[22]

Competence is a feature of the I-language in the mind and does not depend on concrete situation, or on its use. A person can know the rules of arithmetic independently of adding up some numbers. This knowledge – the linguistic competence – is the core of our knowledge of language. It is an abstraction that detaches itself from the peculiarities of individual speakers. As Chomsky puts it in his *Aspects of the Theory of Syntax*, »Linguistic theory is concerned primarily with an ideal speaker-listener in a completely homogenous speech community.«[23]

In response to some criticisms that the concept of competence ignores the use of language, Chomsky introduces the notion of pragmatic competence – knowledge of how language is related to the concrete situation of its use.[24] It is not to be taken as something over-

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[21] Chomsky, *Aspects of linguistic structures*, p. 4
[22] Chomsky, *Rules and representations*, Columbia University Press, p. 59
[23] Chomsky, *Aspects of the Theory of Syntax*, p. 3
[24] Chomsky, *Rules and Representations*, p. 225

lapping with or overthrowing competence; communication is not the only function of language – expression of thought is more important:[25] »Language is not properly regarded as a system of communication. It is a system for expressing thought.«[26] Practically the same is being said in *On Nature and Language*.[27] Throughout Chomsky's evolution competence remains a creative force – a speaker may construct an infinite number of sentences he has never experienced.

Performance refers to the psychological processes that enable understanding or producing language. As knowing the rules of arithmetic differs from actually adding or subtracting, so competence differs from performance. Speakers use a number of psychological and neurological processes in the real event of speaking that are not part of the competence. For instance, memory places constraints on how long a sentence we can utter, but it has quite a different role in competence. Therefore an I-linguist cannot use sample sentences as evidence, especially because they reflect many processes that obscure the knowledge of language.

If we have to look for the main feature of Chomsky's theory, one very salient one is the existence of linguistic universals. Here ›universality‹ is not meant as ubiquitousness. It is possible that some languages possess a certain parameter (to be varied from language to language) and others do not. Nevertheless, if we can find it in some languages, then it is a universal. The same holds for principles – they can be undetectable in certain languages, but they are also not broken in those languages. This makes the principles universal. As a consequence, the popular idea that languages can enter a typology on the basis of common features must be abandoned. A universal principle can be ascribed to a single language provided it is the best explanation of some feature of the language faculty. As Cook and Newson remark, Newton's theory of gravity may have been triggered by an apple but it did not require examination of all the other apples in the world to prove it.[28]

So is there any evidence that can transform the universal grammar from a mere hypothesis to a well justified theory? The evidence is to a great extent counterfactual, as in cases where the sentence ›Is

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[25] Chomsky, *New Horizons in the Study of Language and Mind,* p. 76
[26] Ibid.
[27] Chomsky, *On Nature and Language,* p. 107
[28] Cf. Cook and Newson, op. cit., p. 24

John is the man who tall‹ are recognized as ungrammatical by a num-
ber of hearers. It does not matter whether the sentence has been ac-
tually uttered; the question is whether it could be said and how would
it be treated if it were said. Such evidence is incomplete and may be
biased, but these are deficits that can be remedied with time. Here is
the place to note that Universal Grammar leaves some aspects of lan-
guage untouched. An example may be all the irregularities in forming
past tense in English. These peculiarities are not explained by the UG
because they are simply facts of the English language. To justify their
status of unexplainable oddities UG makes the distinction between
core and periphery of language. Aspects that are unpredictable by
the UG belong to the periphery. The principles and parameters build
the core.

5. The Problem of Translation

The paradigmatic example of translatability is the possibility (or the
lack of it) of elaborating a concept in a language that is different from
that in which the concept was built. Notwithstanding that Chomsky's
UG does not provide a direct argument in favour of translatability, it
can serve as a basis for such an argument. It may be as follows:

1. Language expresses thought.
2. Thought is an outcome of brain processes.
3. Human brains are similar all over the world.
4. Therefore, thought is similar all over the world.
5. Therefore, every language can express any thought.
6. Therefore, concepts (thoughts) conceived in one language can be
   expressed in any other language. Translation is always possible.

As Walter Benjamin says in an essay prefacing his translation of Bau-
delaire, translation is the most important task of the linguist. »Lan-
guages are not strangers to one another, but are, a priori and apart
from all historical relationships, interrelated in what they want to
express.«[29] Kinship of languages allows for translation. »To turn the
symbolizing into the symbolized, to regain pure language fully

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[29] Benjamin, *Illuminations*, p. 73

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formed in the linguistic flux, is the tremendous and only capacity of translation.«[30]

A counter-perspective may run as follows: even if common structures underlie all human languages, their surface counterparts are so different in each of those languages that translation may become an impossible task. Even Chomsky himself warned scholars against the applicability of his theory in the field of translation: »The existence of deep-seated formal universals […] implies that all languages are cut to the same pattern, but does *not* imply that there is any point by point correspondence between particular languages. It does not, for example, imply that there must be some reasonable procedure for translating between languages.«[31] Many, however, overlooked Chomsky's warning words. From the 1960's onwards, supporters of the universal translatability notion used the theory formulated in *Aspects* to give their views scientific foundation. Some of the most prominent twentieth-century linguists (Jakobson, Bausch, Hauge, Nida and Ivir, amongst others) purport that, in principle, everything can be expressed in any language. They argue that the translatability of a text is guaranteed by the existence of universal syntactic and semantic categories.

On the other hand, the idea of untranslatability has a distinct political aspect: if the untranslatability of a text is accepted, then it is implied that eventually some languages are not suitable for expressing certain features of human experience. Based on the complexity of their linguistic means, it is conceivable to build a hierarchical classification of languages; that would entail as a consequence some hierarchical arrangement of the speakers of the different languages. That would give rise to an idea that some people are superior to others due to their ethnic or national characteristics, associated with their languages. Such an extreme thesis is absolutely unacceptable, because the differences in language do not automatically lead to hierarchical classifications. There is no correspondence between the concepts of difference and untranslatability. It is only just to note that the notion of untranslatability has been unpopular in the twentieth century. However, there is no popular view that perfect translation is unconditionally possible.[32]

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[30] Ibid., p. 80
[31] Gentzler, *Contemporary Translation Theories,* p. 50
[32] Cf. de Pedro, *The Translatability of Texts: A Historical Overview,* pp. 558–559

6. Consequences for Translatability

This kind of consensus led Chomsky to reconsider his main thesis that linguistics is a natural science. In his recent book he says: »Apart from improbable accident, such concepts [*human being* and *language speaking*] will not fall within explanatory theories of the naturalistic variety; not just now, but ever. This is not because of cultural or even intrinsically human limitations (though these surely exist), but because of their nature. We may have a good deal to say about people, so conceived; even low-level accounts that provide weak explanation. But such accounts cannot be integrated into the natural sciences alongside of explanatory models for hydrogen atoms, cells, or other entities that we posit in seeking a coherent and intelligible explanatory model of the naturalistic variety. There is no reason to suppose that there is a »natural kind ›human being‹«; at least if natural kinds are the kinds of nature, the categories discovered in naturalistic inquiry.«[33]

Without being pessimistic, we may conclude that translation is an on-going effort that cannot be regarded as an easy one, or as simply predetermined by some essential characteristics of language itself.

Bibliography:

Benjamin, Walter, *Illuminations*, London 1992.
Chomsky, Noam, *Aspects of Linguistic Structures*, Cambridge 1965.
Chomsky, Noam, *Studies on Semantics in Generative Grammar*, The Hague 1972.
Chomsky, Noam, *Morphophonemics of Modern Hebrew*, New York 1979.
Chomsky, Noam, *Rules and representations*, New York 1980.
Chomsky, Noam, *Lectures on Government and Binding*. Dordrecht 1981.
Chomsky, Noam, *Language and the Study of Mind*, Tokyo 1982.
Chomsky, Noam, *Knowledge of Language: Its* Nature, Origin, and Use, New York 1986.
Chomsky, Noam, »Language and Problems of Knowledge«. In: Martinich, Aloysius P., *The Philosophy of Language*, Third edition, Cambridge 1990, p. 558–576.
Chomsky, Noam, *The Minimalist Program*. Cambridge, MA 1995.
Chomsky, Noam, *New Horizons in the Study of Language and Mind*, Cambridge 2000.

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[33] Chomsky, *New Horizons in the Study of Language and Mind*, p. 20

Chomsky, Noam, *On Nature and Language,* Cambridge 2001.
Chomsky, Noam, *Cartesian Linguistics, A Chapter in the History of Rationalist Thought.* Third edition, Cambridge 2009.
Cook, Vivian J. and Newson, Mark. *Chomsky's Universal Grammar: An Introduction*, 3rd Edition, Oxford 2007.
de Pedro, Raquel (1999), »The Translatability of Texts: A Historical Overview« in: Meta: the Translator's Journal, Vol. 44, N 4, 1999, pp. 546–559
Gentzler, Edwin, *Contemporary Translation Theories*, London & New York 1993.
Jakobson, Roman, *On Linguistic Aspects of Translation* (1959), http://cultural-studiesnow.blogspot.bg/2011/10/roman-jakobson-on-linguistic-aspects-of.html, §4, 2. Accessed on Dec. 8, 2015.
McGilvray, James, »Introduction to the third edition«, In: *Cartesian Linguistics, A Chapter in the History of Rationalist Thought.* Third edition, Cambridge 2009.
Pagel, Mark, *How language transformed humanity*, https://www.ted.com/talks/mark_pagel_how_language_transformed_humanity/transcript 00:11, Accessed on Dec. 8, 2015.
Skinner, Benjamin Frederick, *Verbal Behaviour*. Acton, MA 1957.