The Impact Of Noam Chomsky's Generative Linguistics On Modern Linguistic Science

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ABSTRACT

This paper examines the influence of Noam Chomsky's ideas and his generative linguistics on the development of world linguistics. The main provisions of Chomsky's theory are analysed, as well as their influence on various directions of linguistic research, such as grammar, phonology, semantics, psycholinguistics, cognitive linguistics, computational linguistics and others. The contribution of generative linguistics to the formation of the modern paradigm of knowledge about language is assessed.

Keywords: generative linguistics, Noam Chomsky, linguistics, syntax, phonology, semantics, psycholinguistics, cognitive linguistics, computational linguistics

Introduction. Noam Chomsky was an American linguist, cognitive scientist, philosopher and political activist who had a great influence on the development of twentieth-century linguistics. His ideas, formulated within the framework of generative linguistics, became the starting point for many linguistic theories and studies.

Main part. In the second half of the twentieth century, the emergence of generative linguistics marked the beginning of a new era in the science of language. Generativism in general is among the dominant approaches not only in it, but also in psycholinguistics, neurophysiology and cognitive science in general. As one of the branches of the formal direction in linguistics, it emerged on the basis of the ideas of the American linguist N.Chomsky, which were first expressed by him in his world-famous work "Syntactic structures" and repeatedly modified by the author himself. The creation of this book was a reaction to the behaviourist-oriented, empirical in its essence and taxonomic in its purpose methods of distributive analysis (at the phonological and morphological levels) and analysis by direct components (at the syntactic level), oriented to the study of already given, ready-made, static chains of linguistic elements and the identification of invariant units (phonemes, morphemes, syntactic constructions) and their classes. In the generative theory, the principles of dynamism, deductive constructivism and rationalism (in the spirit of G.Leibniz and R.Descartes) were put at the centre. The main unit of language was proclaimed to be not a phoneme or morpheme, but a sentence, considered from the point of view of the processes of its generation from elementary abstract units on the basis of strict rules of inference (formational) and rules of transformation (transformational).

N.Chomsky's theory undoubtedly represents an outstanding intellectual

achievement. At the first stage of its development, it had a great influence on formal grammars and computational linguistics, providing researchers with a parsimonious and more powerful apparatus for describing formal linguistic structures in comparison with the grammars of direct constituents. In theoretical terms, generative linguistics marked a radical break with behaviourism. N.Chomsky, speaking in these years about the intellectual roots of his ideas, distanced himself from descriptivism in linguistics and appealed to his distant predecessors - W.von Humboldt, the French grammarians of Port-Royal and especially R.Descartes. The transition from the structuralist paradigm to the new, generativist paradigm became known in linguistics as the "Chomskian revolution". Since the 1960s, this linguistic trend has been indiscriminately dominant in the USA and the most influential in Europe and Asia.

Since its emergence, generative linguistics has passed through several stages, which are usually associated with the publication of new books by N.Chomsky. It should be kept in mind that generativism develops not only personally by its founder, but also by numerous followers, and that within this science itself there are many discussions, irreconcilable positions and opinions about how it should be formed in the future. Initially, the so-called standard theory was created, within which the model of "syntactic structures" (after the name of N.Chomsky's first work) and the model of "aspects" (outlined in N.Chomsky's work "Aspects of the Theory of Syntax") are distinguished. The first of them realised the idea of language as a mechanism for generating an infinite set of sentences with the help of a finite set of grammatical means, for which N.Chomsky proposed the concepts of such structures: deep (hidden from direct perception and generated by a system of recursive rules, i.e. capable of being applied repeatedly), surface (directly perceived) and grammatical, as well as transformations describing the transition from deep to surface structures. "Aspects" represents an attempt to introduce into the formal model of the semantic component the so-called rules of semantic interpretation that attribute meaning to deep structures. "Aspects" adopted the Katz-Postal hypothesis of meaning preservation under transformation, introduced the opposition between linguistic competence (a system of processes of generating linguistic utterances) and language use, as well as an apparatus of syntactic features describing lexical combinability. Then comes the extended standard theory, or "lexicalism", which included a lexical component and numerous rules of semantic interpretation. Its main points were outlined in Remarks on Nominalisation. In a summarised form, N.Chomsky's book "Lectures on Government and Binding" presents the theory of government and binding, which was formed during the 1970s and 1980s. The main change in the transition to it was the abandonment of specific rules describing syntactic structures of particular languages and their replacement by some universal constraints. All transformations were replaced by one - displacement. Within the framework of the above ideas, private modules (X-stroke-theory; restriction; binding; control; case; theta-theory) were identified, each of which is responsible for its own part of the grammar, operates according to its own principles and has a number of customisable parameters that determine the concrete-language specificity. Since the concepts of principles and parameters survived in the subsequent development of generativism, it is sometimes said of the theory of principles and parameters as a special stage, covering the second and third stages of the science in question. Based on this theory, in the early 1990s, N.Chomsky formulates a research strategy outlined in the book "The Minimalist Programme" (1995). N.Chomsky stresses that this is a programme, not a new theory, as many people have decided. It involves the minimalisation of language representations and the description of their interaction with other cognitive systems, postulating two main subsystems in the human linguistic apparatus: the lexicon and the computational system, as well as two interfaces-phonetic and logical. Within the framework of the developed strategy, many theoretical notions of generative

grammar are revised, other hypotheses are put forward, and therefore such a programme is a new essential stage in the development of generative linguistics.

In the course of time, Chomsky's ideas evolved, but their fundamental position, from which, according to the creator, all others are derived - the innate character of the ability to speak a language - remained unshakable. It was first expressed in the scientist's early work The Logical Structure of Linguistic Theory, where he introduced the notion of transformational grammar. The theory considers expressions (sequences of words) corresponding to abstract "surface structures", which in turn are related to even more abstract "deep structures". Transformational rules, together with structural rules and principles, describe both the appearance and interpretation of expressions. With a finite set of grammatical rules and concepts, people can create an unlimited number of sentences, including none previously unexpressed. The ability to structure our expressions in this way is an innate part of the human genetic programme. In this connection, N.Chomsky explains the fact of astonishingly fast acquisition of the native language by a child through the interaction of an innate component - common to all people - determining the basic parameters of human thinking, in particular, the structure of linguistic knowledge, and an external stimulus (a specific language spoken by others), as a result of which the child forms a full-fledged command of his native language. However, almost all theories explaining the process of language acquisition are still controversial, and the verification of N.Chomsky's ideas (as well as other hypotheses) is still in progress.

Chomsky, holding the idea of the existence of deep semantic structures - meanings in the consciousness of each person, which organise thought activity as a whole and are peculiar to the speaker of any language - argues that there is a universal grammar with the priority of syntax, which codifies these deep meanings. Thus, the scientist clearly formulated the hypothesis of a universal grammar (a set of rules common to all languages, possession of which constitutes an innate human ability) and applied a linguistic theory - generative grammar - within the framework of which it could be described. The hypothesis is still relevant today, and although it is not considered to be truly provable (in fact, it is not a fact that it is provable at all), many different theories are built either on half a century old developments of N.Chomsky or on their denial.

N.Chomsky's idea of a universal grammar was preceded by a set of studies on the relation between language and thinking. This problem in linguistics plays the role of a methodological framework important for different schools and directions. In generative grammar, this theme is at the heart of the theory. N.Chomsky devotes to it the book "Language and Thinking", the title of which echoes the works of such Russian psychologists as L.S.Vygotsky ("Thinking and Language"), A.R.Luria ("Language and Consciousness"), and the philologist A.A.Potebny ("Thought and Language"). N.Chomsky largely develops the ideas of R.Descartes, in particular, the creative character of language, the innateness of thought structures, including language, and others. In cognitive linguistics, the connection between language and thinking is no longer considered only as a methodological framework, but is explicated in the conceptual apparatus; the semantics of linguistic units is described in terms that characterise thinking.

N.Chomsky's work on generative grammar initiated a new syntactic stage in linguistics. Syntax became the centre of attention, and the sentence was declared the main unit of the linguistic system. Generative linguistics is based on the idea of a generative model of language, that is, a finite set of rules that can specify or generate all correct sentences of a language. Therefore, generativism does not describe language, as traditional science does, but presents the process of modelling it. It must be said that Chomsky's theory differs from classical linguistics above all in that it literally inverts the idea of how, from which side of the linguistic hierarchy, speech is generated. The usual ideas: sounds make up parts of words, words make up

parts of words, those make up word combinations, and the latter make up sentences. From the point of view of the direction under consideration, the generation of speech proceeds from syntax to phonology, starting from the most abstract syntactic structures.

Generative transformational linguistics' emphasis on the priority position in the linguistic system of the sentence, treated in a dynamic (procedural) aspect, became an important stimulus for the emergence and formation of syntactic semantics, which quickly took a leading place in linguistic semantics. The influence of N.Chomsky's ideas on the birth and rapid development of such a direction, the creation of the conceptual apparatus of a number of disciplines in linguistics, not oriented on structuralism or generativism, was decisive both in the USA and in European countries. In Aspects of the Theory of Syntax, N.Chomsky concludes that the meaningful side of sentences can and should be subjected to the same precise, formal analysis as their syntactic structure, and that semantics should be included as an obligatory part of the grammatical analysis of language (although still in a subordinate position in relation to the syntax of the sentence). The grammar of a language is regarded by the scholar as a system of rules that relates the meaning of each sentence it generates to its phonetic manifestation. Corresponding to this view of grammar, the categories of surface and depth structure and the relations between them now occupy a great place in it. The meaning of each sentence is now derived from the deep structure by means of rules of semantic interpretation, and the phonetic interpretation is derived from the surface structure by means of phonological rules. Thus generative theory has made a sharp turn towards semantics in recent years and, as new work shows, continues to move in this direction. The actual inclusion of the system of componential semantic analysis can also be regarded as evidence of this bias of the science.

Although the focus of generative linguistics is on grammatical theory, it has also had a defining influence on many schools in phonology, psycholinguistics, cognitive and computational linguistics. This theory has rapidly surpassed the once dominant post-Bloomfieldian approach in importance and has proposed a number of new research programmes in fields of study as diverse as philosophy, psychology, language teaching, anthropology, and computer science.

The generative theory laid the foundation for generative phonology and was first applied to phonological research in M.Halle's book "The Sound Model of the Russian Language", which to a large extent bore the imprint of the dichotomous theory of distinctive features. However, already here the author puts forward the most important principles of generative description: derivation of all observed allomorphs of each morpheme from standard morphological forms, rejection of the phonemic level of structural linguistics, etc. The author's theory of the phonological model of the Russian language is based on the phonemic level of structural linguistics.

The most significant contribution to the establishment of generative phonology was made by the fundamental joint work of N.Chomsky and M.Halle "The Sound Model of English" (SME). It contains a detailed description of the English phonological system on the basis of the proposed theory; it also contains the first formulation of the proposition that the grammar of a language (its phonological aspect) is a set of sounds/segments and the rules of their transformation. The notions of phoneme, allophone and syllable were excluded from the terminological arsenal. According to SME principles, a segment undergoes transformation in a particular environment; the latter can be either a segment with distinct properties or a sequence of a strict number of segments. In most cases, the order in which the rules are applied turns out to be a necessary condition for an adequate characterisation of phonological transformations. Some rules can be applied several times (cyclically) at different stages of morphological derivation. N.Chomsky's and M.Halle's positions on cyclicity in the process of derivation were further developed in the theory of lexical phonology. The publication of SME marked the completion

of the development of standard generative phonology. The book has become a kind of bible for generative phonologists: its ideas are the starting point for almost any scientific work in the field of generative phonology.

The theory of N.Chomsky stimulated a sharp, revolutionary turn in American and then in the world linguistics to the dynamic consideration of language taking into account the data of psychology (especially cognitive psychology). The scientist's ideas shaped psycholinguistics in three ways:

1) his criticism of the behaviourist interpretation of language and his views on the goals of linguistic theory played a crucial role in the development of cognitive science;

2) N.Chomsky's formulation of the question of language acquisition as a logical problem;

3) the transformational model underlying experimental psycholinguistics.

Since for the majority of American and English-speaking psycholinguists the most influential generative grammar in the USA in its various variants usually serves as a reference science of language, psycholinguistics in the American tradition is focused on attempts to check to what extent psychological hypotheses based on N.Chomsky's ideas correspond to observed speech behaviour. From these positions, some authors consider the child's speech, others the role of language in social interactions, and others the relationship between language and cognitive processes.

American psycholinguistics is centred on emergent grammar, which states that knowledge of all sentences is impossible, that language must be based on some limited system of rules - the grammar of language. It specifies an infinite number of "correct" sentences. The native speaker, both speaker and hearer, uses this generating grammar every time in order to use it to construct a "correct" utterance or to understand it. N.Chomsky distinguishes two terms: linguistic ability (something like potential knowledge of language) and linguistic activity (processes that occur when this ability is realised in speech activity). According to the scientist, linguistic ability is primary, it determines linguistic activity, not vice versa.

N.Chomsky's generative grammar with its notion of deep structure contributed in many respects to the emergence of cognitive linguistics, when the ban on introducing theoretical (model) constructs "far from the surface", inaccessible to direct observation, was lifted. In such endeavours the idea of explaining linguistic facts comes to the fore: generative theory proposes as such some discoverable underlying regularities of human linguistic ability (and this is the main difference between generativism and other programmes of explanatory analysis of language), while other such programmes assume that linguistic facts can be explained, at least in part, by facts of a non-linguistic nature, not necessarily observable. Cognitive linguistics bears in many respects the imprint of the ideas of transformational-generative grammar, in particular the idea of language as a generative device, the mental representation of the grammar of the individual speaker, and the modelling of these mental processes. Cognitive science develops N.Chomsky's position that it should be devoted to the study of human language ability (competence), one of the most remarkable, cognitive (cognitive) abilities. They are formed and expressed through language, the generation and perception of speech.

N.Chomsky's book on mental representations of linguistic data was a pioneering work and a model of reflection in the field of representation of knowledge and the language system itself in human mentality. Dedicated to the question of language ability and clarification of the notion of speaker competence as knowledge of language and knowledge about language, it linked this notion to the interiorised system of mental representations as an innate (recorded in the human bioprogramme) source of information about language. The cognitive ability of speech creates the necessary prerequisites for speaking as a "performance" of language. Relying on N.Chomsky's position on mental representations, cognitive scientists put forward the idea of the existence of certain

forms of representation of ways of receiving, processing and storing information not only in scientific descriptions, but also in the human brain, i.e. in the form of certain structures of consciousness. N.Chomsky has repeatedly noted that scientists have been focused for too long on the external manifestations of language, its exterior forms; now we have to deal with its properties inside the brain - the interiorised structures of language.

As is well known, researchers have different attitudes to this concept of N.Chomsky. However, the idea that any knowledge exists in the form of mental representations and that language is formed for their objectification (of course, not only related to representations of linguistic information proper), which further predetermines the ways of language formation, is gaining more and more supporters. In other words, the view that before language (in ontogenesis) a human being "pre-exists" some conceptual system; language as a system of signs is formed on the basis of and in interaction with this pre-existing and further developing system is gradually gaining ground.

The birth of generative grammar is associated with the post-war desire for modelling, the computer revolution, the construction of the genetic code model, machine translation and mathematical linguistics. N.Chomsky is a master of logical and mathematical apparatus. Many of his provisions are very significant for applied linguistics and the emergence of mathematical linguistics, namely the theory of formal models of language, on the basis of the ideas of the scientist. One of the most important sections of mathematical linguistics is the theory of formal grammars, which emerged mainly due to the works of N.Chomsky and studies the ways of describing regularities that characterise not a single text, but the whole set of correct texts of a particular language. The regularities are also described by constructing "formal grammars" - an abstract "mechanism" that allows, by means of a uniform procedure, to obtain "correct" texts of a given language together with descriptions of their structure. The most widely used type of formal grammar is the so-called generative, or Chomsky grammar.

Conclusion. The generative theory has been the subject of heated debates for half a century; during this time it has been radically changed several times, including by the efforts of the founder himself. The adjustments made in recent years by N.Chomsky are not limited only to the semanticisation of the transformational model; they simultaneously concern the revision of the whole system of the writing rule, the reduction of the number of transformational operations, changes in the recursive procedure and in the organisation of the lexicon, etc. But all of the above relate more to the technical aspects of the model than to its essence. It should be thought that the generative theory will undergo some changes in further attempts to take into account all constructive criticisms - in this should be seen the expression of its vitality. Nevertheless, even in its present form it occupies a great place in modern linguistics, practically realising some of its general tendencies and, in particular, the desire to construct an adequate and sufficiently explanatory linguistic theory. The fears of linguists that the generativist paradigm is gone and is being replaced by a new one - cognitive linguistics, integrating artificial intelligence, linguistics, psychology and neuroscience - are in vain. Many linguists believe that the late twentieth century saw the emergence of a multitude of complementary linguistic theories trying to work out, together with established theories, a modern interpretation of natural language, since any one theory, however comprehensive, cannot provide an all-encompassing description of it. Without looking far into the twenty-first century, we can agree with the opinion of E.Kubryakova's opinion that "despite the actual observed processes of integration, convergence of positions of different schools, each of them continues its own way of development, demonstrating different subject areas of research and essentially being a separate paradigm of scientific knowledge. In this case, the status of modern linguistics should be characterised as polyparadigmatic".

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