Language System – Linguistics as an Empirical Science

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Abstract

This paper examines two general approaches to language system. First, the traditional approach is based on the langue-parole dichotomy and assumes that real communication is centered around the system (langue) which exists "behind" all speech acts and that only the system makes communication possible. However, there is no direct method how to observe the system. Second, the empirical approach rejects the langue-parole dichotomy because of the impossibility of direct observation of language system (in the sense of langue). According to this approach the system is only a testable theoretical construct.

Traditional approach to language system

Language is the system of signs – it has been one of the linguistic constants since the structuralist approach emerged. In this paper I do not want to bring review of bigger or smaller distinctions of the term *language system* used among linguists. Despite all the differences there is one invariable feature which has connected all dualistic linguistic approaches (in the sense of langue-parole or competence-performance dichotomy) and which has had crucial influence on concrete form of linguistic theories. However the language system is defined, all dualistic linguists would agree that real communication is based on the system which exists "behind" all speech acts and that only this system makes communication possible. At first sight this assumptions seem rational and accordant with "good sense" and our experience. In short, this system is one of the most important reasons why we understand one another.

However, if we explore the issue in question deeply we will see certain problems. Unless we take the assumption about language system as an axiom, a very important question emerges: where do we actually gather our knowledge about language system from? Absolute majority of the dichotomy oriented linguists answer that language system is not cognizable directly, but *only through the medium of communication*, hence the fact that our knowledge of language system can only be partial (cp. Komárek, 1999, p. 190). So, the language system precedes communication (it must be then somehow "given"), communication is fractional (and often deformed) realization of the system and we get to know the system only by virtue of this realizations. The situation can be shown using a simple diagram:

language system

(langue)

↓

its realization

(parole)

↓

theories

(models, grammars)

Disputability of this conception is illustrated by F. Čermák´s definition of language system: "[Systém] se chápe jako uzavřený, organizovaný, účelný, rovnovážný (s fungujícím principem homeostáze, tj. seberegulačního mechanismu), hierarchizovaný (s rovinami) a relativně uzavřený (zásadně však otevřený), avšak zároveň dynamicky stabilní, resp. proměnlivý (a vyvíjející se) celek, jehož součástí jsou jednak jazykové prvky a jednak pravidla (především kombinatorická) jejich užívání včetně funkcí. Jak ve svých prvcích (jednotkách) tak pravidlech je však systém i charakteristicky vágní, neostře definovaný (zvl. v periferních prvcích, třídách i pravidlech) s velkou potencionalitou dalšího úzu. Jeho fungování se opírá o prototypy (a tedy podobnost, analogii) v důsledku existence kovariantnosti formy a funkce jeho prvků. Možnost a stupeň exaktnosti poznání systému je závislý mj. na naší schopnosti rozpoznat hranice synchronie, resp. toho, co patří do synchronně vymezeného stavu jazyka…" (1993, p. 37)[1]. We can see that according to Čermák language system is "*closed… relatively closed… but principally opened… dynamically stable… changeable*". I see this definition inconsistent, to say at least. Besides, the view that the exactitude of learning the language system depends on us being able to recognize the limits of synchronicity gives rise to another problem that is difficult to solve and that is the problem of the exact definition of synchronicity. All this further complicates the issue.

[1]"The system is understood as closed, organized, balanced (with a functioning principle of homeostasis, i.e. a self-regulating mechanism), hierarchized (with levels), and relatively closed (but principally open). At the same time, the system is also dynamically stable, respectively changeable (and developing) whole which consists of language components and the rules (especially combinatorial ones) of their use including their functions. However, the system is vaguely defined in both its components (units) and its rules with a considerable potentiality for usage. That applies above all to the peripheral components, classes, and rules. The system is based on prototypes (i.e. similarity and analogy) which stems from the existence "co-variability" of the form and function of its components. The possibility and degree of the exactitude of learning the system depends, among other things, on our ability to recognize the limits of synchronism, or more precisely of what belongs to the synchronically delineated condition of language…"

System theory

System theory (ST) is science that is focused on the characteristics of the systems in general. Hence we can assume that the science branch can help us make clear the question of the *language* system.

ST defines the system as a set of items and how they relate to one another. The system as a whole has specific characteristics. Further, systems are envisaged as an abstraction that people create in knowledge processes. In principle systems are mathematic and logic constructions, used for reflecting system qualities of outward objects and phenomena (Štach, 1982, p. 11). It is important to emphasize that according to ST systems are only *theoretical constructs* created by scientists. They are *not* something that precedes the explored phenomena. It is necessary to point out that for dichotomic linguistics systems are a reality in its own right. So an important question now arises: why does ST not include conception of systems defined by dichotomic linguistics? I see one reasonable answer: ST works in the framework of empirical sciences.

In this connection it is useful to remember the demarcation criterion between empirical science statements and statements which we can title as "metaphysical" formulated by K. R. Popper: "…přijímám nějaký systém za empirický nebo vědecký, jen je-li takový, že může být testován zkušeností. (…) Jinými slovy: od vědeckého systému (…) budu vyžadovat, aby jeho logická forma byla taková, že může být vyčleněn pomocí empirických testů v negativním smyslu: *empirický vědecký systém musí dovolovat své vyvrácení zkušeností*" (1998, p. 19n)[2]. It looks like the crucial difference between langue-parole linguistics and ST approach to system lies in this point.

The relationship between ST and dichotomic linguistics is very well illustrated by an example presented by R. W. Ashby who shows how the "naive" idea of system differs from the one which is effective for research: "… we must be clear about how a "system" is to be defined. Say we see a pendulum, our first impulse is to point at the pendulum and say "the system is that thing there". This method, however, has a fundamental disadvantage: *every material object contains no less than an infinity of variables and therefore of possible systems*. (…) Any suggestion that we should study "all" the facts is unrealistic, and actually the attempt is never made. What is try is that we should pick out and study the facts that are relevant to some main interest that is already given (…) The **system** now means, not a[3] but a list of variables" (Ashby, 1957, p. 39-40). Ashby thus says that it is not reasonable to mark an object

[2] "…I regard a system as empiric or scientific only if it can be tested by experience. (...) In other words, I require that the logic of the scientific system make it possible for the system to be singled out by means of empirical tests in the negative sense: *empirical scientific system must allow for its own disproving through experience*."

as an "existing" system. From this point of view it makes less sense to speak about an "existing" system which is not directly observable, which is somewhere "behind" the perceptible phenomena and which is de facto basis for these phenomena. Clearly by all this I mean the language system as defined by langue-parole linguistics.

With respect to ST the structuralist conception of system is not feasible. But dichotomic oriented linguists could object that they use the notion of system in different sense than ST. Of course it is the right objection, however it does not solve the problem, only shifts it to another level. Thus arguing linguists should be able to explain in what sense they use the system and what kind of evidence allows them to mark the language system as a system in its own right.

Empiricism versus metaphysics

Let us suppose linguistics is situated out of ST and follow the definition of language system as it is presented in M. Komárek's paper *Komunikace versus systém?*: "Jazyková komunikace je jediná konkrétní, procesuální forma řečové skutečnosti, kdežto abstraktní, ideální jazykový systém, kód, je poznatelný jen skrze ni. Strukturu jazykového kódu jako ideální entity, která není bezprostředně přístupná našemu poznání, je možno pouze rekonstruovat jako funkční model z konkrétních komunikátů a systém (kvazisystém), ke kterému tím dospějeme, nelze ztotožňovat se skutečným abstraktním systémem jazykového kódu" (1999, p. 193)[4].

In my opinion Komárek's claim is ambiguous. On the one hand it is said language system *is cognizable* through the medium of communication, on the other hand Komárek claims it is possible to only design functional model that cannot be identified with existing abstract language system. Thus, the language system is simultaneously *cognizable* and *incognizable*. Above all it is not clear how one could compare a certain model with an existent system, if there is no direct method how to observe it. To sum it up, Komárek's approach brings more obscurities and problems than functional explanations. The approach is best illustrated by words of A. Carnie: "We simply believe that there is *some* grammar that can be talked about independently of usage, social context or performance" (2003, p. 375).

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[3]This is an accurate citation but there is probably a typo. The correct sentence should be „The **system** now means not a certain thing but a list of variables" (cp. Czech edition of the book: „*Systém* neoznačuje nějakou věc, ale soubor proměnných")

[4] "Language communication is the only concrete, processual form of speech reality whereas the abstract, ideal language system, code, is knowable only via it. It is possible to reconstruct the structure of the language code as an ideal entity, which is not immediately accessible to our perception, only as a functional model from concrete communiqués. The system (quasi-system), which we arrive at in this way, cannot be interchanged with the real abstract system of the language code."

In short, I am convinced that the traditional linguistic concept of system (in the sense of *langue*) is just a question of faith, intuition or idea etc., or in other words empirically non-tested hypothesis which we can call *metaphysic*. This approach must draw on a non-empirical source of cognition with high validity, e. g. Platonic reminiscence, Cartesian innate ideas, Hegelian identity of reason and reality, phenomenological intuition of eidos, etc.
Let us see the consequences of our inquiry: if we deny langue-parole dichotomy, we deny former conception of language

language system
(langue)
↓
its realization
(parole)
↓
theories
(models, grammars)

and replace it with a more skeptical conception which supports the empirical character of linguistics

language usage
(speech acts and texts)
↓
theories
(models, grammars)

Now we have to answer an important question: What does it mean for linguistic research?

Linguistic theories as an empiric testable model

Suppose language usage is one and only one material for creating grammatical models. Indeed, it must be clear what exactly lies behind this notion. I am convinced that language

usage consists of authentic speech acts and texts and not of various language constructs created by linguists. I emphasize this because it also means rejection of introspection (or intuition) in linguistics (e. g. refusal of so called negative evidence). The main drawbacks of introspection are well known in psychology: "With the decline of structuralism, introspective methods lost favor as a source of psychological data. Then, gone but not forgotten, introspection re-emerged in the 1960s with the rise of cognitive science, in which verbal protocols were a major source of data and a basis for much theorizing on problem solving. But despite their new popularity, introspective methods continued to exhibit the same weakness that had aroused critics in the structuralist period – the lack of effective means of obtaining interpersonal agreement among scientists on the interpretation of introspective data" (Pawlik – Rosenzweig, 2000, p. 21).

If the language usage is the only material for linguistic analysis, users of language will be treated as *"black boxes"*. This is not to say that humans do not have some innate dispositions to speech behavior. This is more to do with the human disposition towards speech behavior. With regard to the so-called dispositions we woud like to focus on certain characteristics of brain. However, the question is how helpful neuroscience findings (exploring neuronal correlates of utterances) could be for creating models of speech behavior, e.g. grammars. Grammar of natural language in not a quality of one communionist (one's neural system), but communicating human community. In a similar sense B. Macwhinney discusses the importance of neuronal network models for construction grammar: "Although models based on local maps and functional circuits are well-grounded in neuronal terms, they cannot express the ways in which language functions in real social context" (2001, p. 453).

That is how ST describes the way modeling works: "Proces modelování obvykle začínáme *vymezením* účelu modelování a zavedením (definováním) *systému* na objektu (předmětu modelování). (…) Při zavádění systému na objektu vycházíme z pozorování a konstruujeme určitý verbálně-grafický model daného objektu, volíme vlastnosti, které budou pojaty do modelu, definujeme veličiny, hledáme metody jejich měření nebo sběru dat a formulujeme hypotézy o předmětu modelování" (Štach, 1982 p. 98)[5]. The following diagram can express this process:

[5] "We usually begin the process of modeling by delineating the purpose of modeling and defining the *system* through the object of modeling…. While defining the system through the object, we draw upon observation and construct a certain verbal-graphic model of a given object. We choose the qualities which will be incorporated into the model, define quantities, look for the methods of their measuring and collection of data, and we also formulate hypotheses concerning the object of modeling."

real object

(for example language corpora)

↓

real system

(determination of constituent properties of real object we are interested in)

↓

graphic-verbal model of real system

(value definition, formulation of hypothesis)

↓

model

(formalization)

↓

testing procedure

(model is testing on corpora language material)

↓

model interpretation

(grammar)

Let us pay attention to the real object, e. g. communication. It is well known that language is very variable in the process of real communication or we can say with M. Komárek it is *ameobic* (1999, p. 191), where significant problems with modeling arise. The main problem is that we cannot establish a uniquely determinate system to communication. What we should do now? R. W. Ashby brings the answer: "Should the system not be determinate, (…) he can proceed in either of two ways. One way is to alter the set of inputs and outputs – to take more variables into account – and then to see if the new system is determinate. (…) A second way is to abandon the attempt to find strict determinacy and to look for statistical determinacy, i.e. determinacy in averages etc. The experimenter, with extensive records available, then studies them in long sections, to see whether, if the details are not predictable from step to step, the averages (or similar statistics) are predictable from section to section" (1957, p. 90 – 91).

The first method proposed by Ashby is probably inapplicable for linguists because of the complexity of real system defined through the object which is constantly variable (ameboic). Hence, one should use the second method – large sets of texts need to be explored and regularities searched. Some regularities may however only be probable and consequently

interpretations of this kind of regularities have to have stochastic character. So, grammatical categories must be viewed as (stronger or female) tendencies manifested in language usage. Moreover information about frequencies of grammar categories plays significant role in interpretations of these categories (Bybee – Hopper, 2001). Note that frequency has not been important for "classical" linguistics except center – periphery division.

Conclusion

I see two main approaches to study of natural language. First, the empirical approach which means rejection of langue-parole dichotomy and where the notion system (in accordance with system theory) will only represent our theoretical (testable) constructs. The second approach sustains the dichotomic view of language. However, if we adopted the second approach, we would say that linguistics is *metaphysics*, not empirical science.

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