ARTYKUŁY

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ON THE MEANING-MAKING FUNCTION OF METAPHORS: LANGUAGE AS A MACHINE AND AS A LIVING ORGANISM FROM THE PERSPECTIVE OF COGNITIVE LINGUISTICS

ABSTRACT

Since the 17th and 18th centuries, the metaphor of a machine – rooted in exact sciences – has been a dominant form of human perception of reality, including language. The paper argues that cognitive linguistics shows its methodological inadequacy. The paradigm propounds a functional model, based on the biological metaphor of a living organism, as a more adequate tool for the description of language than formal and propositional models, which draw on the metaphor of a machine.

KEYWORDS: communication, language, machine, metaphor, organism

STRESZCZENIE

Od 17 i 18 wieku, metafora maszyny, która ma swoje źródła w naukach ścisłych, stanowi podstawową formę ludzkiej percepcji rzeczywistości, w tym także języka. Artykuł stawia tezę, że językoznawstwo kognitywne wykazuje jej metodologiczną nieadekwatność. Paradygmat ten przyjmuje, że model funkcjonalny, oparty na biologicznej metaforze żywego organizmu, jest lepszym sposobem opisu złożoności języka niż modele formalno-logiczne, które opierają się na metaforze maszyny.

SŁOWA KLUCZOWE: język, komunikacja, maszyna, metafora, organizm

INTRODUCTION

With no "immaculate perception" of the world being possible (Mühlhäusler 1995: 281), metaphors function as ways of looking at various phenomena and motivate the responses of those concerned in them (Bowdle, Gentner 2005; Lakoff,

Johnson 1999: 46–51, 108). Not only are they common in conventional communi-cation, but they are also vital for the understanding of arts and architecture, emotions, politics, social institutions, etc. They also exert a pervasive and formative influence on "virtually all phases of scientific inquiry" (Langacker 1991: 507). This concerns, for example, ecology, economics, medicine, etc.

The present paper discusses the meaning-making function of metaphors and argues for a special role that they play in linguistic discourse. The next section deals with the heuristic aspects of metaphors in conventional communication and in specialist discourses of ideas and sciences. It also shows how the use of specific metaphors influences people's attitudes and actions. Further discussion presents the key assumptions of the metaphors of a machine and a living organism, and illustrates how they affected some of the above-mentioned areas of inquiry. The paper then goes on to present the insofar use of both of these metaphors in the descriptions of language and discusses the influence they exerted on research perspectives. The analysis that follows advances arguments in favour of the organicist view of lan-guage and the way it is used by the framework of cognitive linguistics. The last part of the paper contains some concluding remarks.

METAPHOR AS A HEURISTIC DEVICE AND BEYOND

Apart from serving as merely heuristic devices, metaphors also motivate "tacit but nonetheless pervasive attitudes" (Langacker 1991: 509). They are present in conventional communication, socio-cultural practice, and various scientific discours-es (Diekman *et al.* 2021: 4; Hetmański 2021; Mühlhäusler 1995). They can also frame a given discourse for a longer period of time.

In conventional communication, various approaches to problem-solving are possible. Whereas the metaphor of a chemical solution implies that problems never disappear, but only change their forms, the metaphor of a puzzle means that they disappear forever (Lakoff, Johnson 1980: 143–145). Such conceptualizations cause their users to undertake different actions and to expect different outcomes.

Before cure was found for tuberculosis, health-oriented discourse regarded the illness as a punishment for sins as a result of the influence of Christianity. In the 1970s cancer was attributed to repressed or inhibited personality. Both metaphors created the negative effect of victim-blaming (Sontag 1978). Apart from that, how-ever, the view of cancer as a psychosomatic mechanism may have increased personal awareness of health issues and shifted attention to the importance of correct man-agement of one's emotions.

In the public discourse of law and justice, crime can be metaphorically framed as a "beast" or as a "virus". The acceptance of the "beast" metaphor generally favours capturing and punishing the culprits; the "virus" metaphor favours diagnosis, treat-ment, and prevention (Diekman *et al.* 2021: 4).

In biology, the relations between species in the natural world have long been described in terms of the metaphor of war – biological invasions cause the "displacement of native species by non-natives" (Olson *et al.* 2019: 605). Such views still motivate the protection of some plants and animals at the expense of others.

In philosophy, the metaphor of mental vision underlies Descartes's logic of knowing. The French thinker conceived of the mind as a sort of inner mental stage on which ideas represented as objects were illuminated by the light of reason (Lakoff, Johnson 1999: 393–394). Kant used the metaphor of the Copernican revolution to refer to the change of approach which gave priority to studying mental processes over metaphysical speculation.

In politics, the metaphor of social contract shaped Hobbes's description of society. Without the contract, the relations between people have the form of a natural state represented as rivalry of ferocious animals in the formula *Homo homini lupus est* 'A man is a wolf to another man'. The contract metaphor was later taken up by Rousseau – it still underlies interpretations of political reality in parliamentary democracies.

In economics, Smith's proposition of an Invisible Hand of the free market unintentionally ensuring that all people will become wealthy on condition they purse their own interests personifies the market and attributes to it the properties of a rational human being. The idea is still used by supporters of liberal free-trade economies, which favour individual enterprise instead of various social capitalist solutions.

Some metaphors operate in more than one domain of inquiry. Thus, the concept of mental vision was also used in psychology, where it motivated much of Wundt's introspective method. The metaphor of the Copernican revolution was called upon to describe the shift of focus in psychiatry effected by Freud's psychoanalysis (Brunner 2001: 32), which emphasized the presence of unconscious sexual conflicts in human psyche.

The understanding of numerous other areas of knowledge is also based on metaphors. They serve, for example, to explain the concepts of causality and agency, learning and the acquisition of knowledge, time, etc. (Mühlhäusler 1995: 283).

METAPHORS OF A MACHINE AND A LIVING ORGANISM

The concepts of a machine and a living organism form one of the fundamental metaphorical oppositions in science and history of ideas. As heuristic devices, these metaphors appeared and reappeared in various periods, thus helping conceptualize many diverse domains of knowledge and the related attitudes.

MACHINE

The metaphor of a machine, which dates back to the ancient Greece, gained momentum in the pre-industrial society of early modernity (Glebkin 2013: 145–146) as a result of a more widespread use of mechanical instruments in daily life. In the 17th century Descartes represented nature in terms of clocks (Scott 1997: 445). Leibniz, possibly under the influence of Newtonian physics, followed suit on the turn of the 17th and 18th centuries (Favaretti Camposampiero 2017: 157). The inception of the metaphor by the materialist philosophy of that age motivated de La Mettrie's view of man as a machine (Mudyń 2008: 108–109). However, the metaphor really became dominant in the 19th century, largely as a result of the Industrial Revolution, the subsequent rise of efficiency-driven capitalist economy, as well as the growing impact of science on human life. Thus, for example, in 1848 public higher education in America was described as "the balance wheel of social machinery" (Mann 1848). Eight decades later, the Belgian philosopher Dupréel claimed that moral norms were "the smear of the social machine" (Mudyń 2008: 108). In the United States, the concepts of the Democratic and the Republican machines still refer to those members of either party who determine their policies.

The recent emergence of computer-based concepts is the result of the computer becoming the most common kind of machine we have access to these days (Haken *et al.* 1993). For example, software, input, and output have become common ways of describing the functioning of the mind; labour and money can be viewed as inputs into the economic machine. In both cases the metaphor stimulates the use of precise and quantifiable data or values, as well as the expectations of the like results.

LIVING ORGANISM

Rooted in the biological aspects of existence, the concept of a living organism was weakened as a result of the "shift in the focus of cultural metaphors away from the natural world or organic growth" (Diekman *et al.* 2021: 6) that began in the 17th and 18th centuries with the rise of science. It was revived by the Romantic movement as a response to various mechanical theories current in the 18th century philosophy, aesthetics, and literature (Abrams 1980: 156–183, 171–174, 204).

One of the clearest descriptions of a living organism as represented by a plant was given by the English Romantic poet Coleridge: a plant sprouts from the seed; as it grows, it assimilates to itself diverse elements of the environment (air, light, earth, water); evolving from internal energy, it achieves organic unity of the parts and the whole, with the whole being more important than the parts (Abrams 1980: 171–175). Coleridge does not explicitly mention the "expectation of cyclicity" (Diekman *et al.* 2021: 13) typical of living organisms; however, it is at least to some extent presup-

posed by the concept of non-linear growth as the organism responds to the cycle-based environmental factors.

Organicist ideas still influence various aspects of cultural communication. For example, some politicians and sociologists represent the society as an organism and talk about the social tissue disrupted by various crises, or refer to the lowest social strata as the grassroots. Business and government organizations are conceptualized as plants that branch out to deal with new challenges. All these concepts can foster specific attitudes. For example, political decisions concerning the structure of the society may aim at establishing some natural equilibrium of the whole and the parts; business decisions may lead to creating multi-faceted organizations which neverthe-less strive to give priority to the wholes.

LANGUAGE AS A MACHINE AND AS A LIVING ORGANISM

Like other domains of inquiry, linguistics also relies on metaphors that "are constitutive not only of theory but also of reality" (Jakobs, Hüning 2022: 32). That is why language can be reified both as a machine and as a living organism.

LANGUAGE AS A MACHINE

The ancient Greeks regarded arithmetic as "the ideal form of reasoning" because it allowed one to see thoughts as "sequences of written symbols" and thinking as a step-by-step mechanical process (Lakoff, Johnson 1999: 246–247). The 18th centu-ry scientism took over such views and thus strengthened the idea that every concept could be precisely defined (Mudyń 2008: 108-109). The present-day view of the mind/language as mathematical calculation (Lakoff, Johnson 1999: 248–249) under-lies the concept of selectional restrictions, the componential analysis of meaning, and the theories of artificial languages called Markerese or Featurese. They all represent meaning in terms of "the internal relations among symbols" (Lakoff, Johnson 1999: 75) and thus agree with the generative representations of grammar as a machine/assembly line that "builds structures and then modifies them step by step, giving 'all and only the grammatical sentences of the language' as its 'output'" (Langacker 1991: 509). In this building-block metaphor, "the meaning of a complex expression is constructed just by stacking together the meanings of its parts in accordance with general combinatory rules" (*ibidem*: 508). In such a model, "a word's linguistic meaning is strictly limited and distinct from general knowledge" (*ibidem*: 508). It can only be described in terms of the minimal criteria (Kövecses 1991: 248–254).

The most influential version of the machine metaphor in linguistics is the view of the mind/language as a computer. Language consists of hardware, input, output, and

other machine-like elements and properties (Mühlhäusler 1995: 284). It is a module working according to formal algorithms (Langacker 1991: 509).

Critics of the machine-based models of language point out that they entail that people speak "in some language of predicate calculus with totally unambiguous lexical items filling the places of the real variables", which is "alien to the very nature of human language" (Seuren, Wekker 1986: 63). In other words, the machine-like background of formal logic falls short of capturing "the real complexities of natural language" (Seuren, Wekker 1986: 64).

LANGUAGE AS A LIVING ORGANISM

Though organicist representations of language also date back to the Antiquity (Jakobs, Hüning 2022: 32), they gained ground under the influence of the ideas of Herder and von Humboldt, the 19th century Romantic movement, and the development of the theory of evolution (Dirven *et al.* 2007a: 1234). This tradition emphasizes the unity of language, thought, and culture (Dirven *et al.* 2007b: 1203).

One of the most influential 19th century applications of the organicist metaphor in linguistics was Schleicher's conception of *Stammbaum* 'stem tree' model, which gave rise to the genetic classification of languages developing from a common source and being grouped into families (Jakobs, Hüning 2022: 33–34). The idea still remains a viable explanation of language evolution.

Darmester's (1886) view of words as living organisms is a good illustration of the use of the same metaphor in language change. The French linguist claimed that words were born, lived for some time with one another, and then died. Language was thus represented as an entity that – like an organism – evolved by means of reproduction.

Linguistic relativism of the 1940s and the 1950s also relied on the organicist metaphor, for example with respect to language death. Whorf argued that the danger of a few major languages and cultures becoming dominant can cause numerous less influential languages to die (Dirven *et al.* 2007a: 1235).

The impact of such views motivated the introduction of various organicist concepts into the conventional linguistic terminology. For example, morphology distinguishes between roots and stems of words; generative linguistics – though strongly influenced by the machine metaphor – represents phrase structures as trees; creole languages follow a life cycle; sociolinguistics describes language death or language revival (Dirven *et al.* 2007a: 1234).

One of the most recent offshoots of the organicist metaphor is the concept of ecolinguistics. Biology assumes that various species build ecosystems that have their niches, that is, places in nature that perfectly fit them (Olson *et al.* 2019: 610–611). Haugen defines linguistic ecology as "the study of the interactions between any given language and its environment" (1972: 325). Languages are regarded as organ-

isms that occupy specific niches in the social and psychological environment, grow, and die. The broader Haugenian tradition emphasizes the ecology of multilingualism in various geographical regions, the relations between the major and the minor languages, language contact, language extinction, etc. (Dirven *et al.* 2007a: 1235; Penz, Fill 2022).

In a similar vein, Millikan (2005) argues that certain linguistic forms are retained because they benefit language users. The norms which are followed in the process closely resemble the biological norms of function and behaviour that make for the survival of living organisms.

COGNITIVE LINGUISTICS AND LANGUAGE AS A LIVING ORGANISM

With more terminological rigour than in Coleridge's description, the properties of a living organism can be expressed as follows:

a) internal force to grow and develop;
b) codetermination with local ecologies;
c) qualitative changes as a response to the environment;
d) the priority of the whole over the parts (Diekman *et al.* 2021: 3, 13).

Most of these elements make up the metaphor-based framework of the cognitive linguistic view of language, which marks a shift of perspective in relation to the machine-oriented generative views. Though the framework "is not in fact based in any strict or systematic way on the metaphor equating a language with a biological organism", this alternative metaphor is plausible and "not at all far-fetched"; however – as is the case with any metaphor – it is subject to limitations (Langacker 1991: 510).

INTERNAL FORCE TO GROW AND DEVELOP

An inherent property of a living being is "the quality of development in which the biological entity transforms from one phase to another" (Diekman *et al.* 2021: 13–14). Language undergoes a similar process of metamorphosis – it is present in living organisms not only as "a psychological entity residing in the minds of individual speakers" (Langacker 2008: 510–511), but also as an aspect of their identity and of the identity of various social groups to which they belong (Victorri 2007: 19). As individuals and groups grow and change, their tongues grow and change with them. If a group is merged with a different group, its tongue is merged with a different tongue. The evolution of creoles can be a good illustration of the process - though

lexified by some dominant language, they nevertheless retain the indigenous patterns in their morphological, syntactic, and semantic substrata.

Like a living organism, language is not a static entity, but "organized mental activity" (Langacker 2008: 511). It involves permanent innovation driven by the communicative goals of its users. In a way similar to biological growth, the process takes place even if it is not a result of deliberate decisions, either individual or collective (Victorri 2007: 18).

CODETERMINATION WITH LOCAL ECOLOGIES

As von Uexküll discusses, any living organism perceives and acts in response to various external stimuli (Lindblom, Ziemke 2007: 138). Those stimuli are integrated into the organism's environment as schemes that anticipate its further actions (Emmeche 2007: 393). The organism's environment and its "subjective world of perception and action" thus form "a coherent whole" (Lindblom, Ziemke 2007: 138) and condition each other (Harder 2007: 1252; Johnson 1987: 89). Richard Lewontin's formula "Just as there is no organism without an environment, there is no environment without an organism" (Oakley 2007: 216) neatly captures this form of interdependence. As Johnson adds, "the environment as a whole is as much a part of the identity of the organism as anything 'internal' to the organism" (1987: 207).

Basing on Merleau-Ponty's idea that "the flesh of the world" gives shape to the mind and that the mind interacts with the world that surrounds it (Lakoff, Johnson 1999: xi), the cognitive linguistic concept of embodiment describes language as grounded "not in 'mental representation', but in the activity, movement, and engagement of the organism with its environment" (Sinha 2007: 1285). First, language reflects various pre-conceptual image schemata that grow out directly of human engagement with the physical environment. Each schema is also capable of accommodating infinite aspects of experience – in other words, it replicates itself in them (Johnson 1987: 18, 29, 101–138). For example, in addition to the purely physical and orientational aspects, the centre-periphery schema can be metaphorically extended to conceptualize various forms of emotional, political, and social experience – the division into the political or social centre and margin is only one instance of its use. Second, the primary metaphors, which structure many of our basic concepts, emerge from conflations of physical domains in the early stages of language acquisition. For example, the understanding of knowledge in terms of vision is motivated by the use of the verb *see* to mean 'know' when both concepts occur together and are not yet differentiated (Lakoff, Johnson 1999: 48). Third, the embodiment of language is 'situated' – it goes beyond the strictly physical factors to incorporate social and cultural aspects of the environment (Zlatev 1997). These aspects include, for example, language contact or culture-specific conceptualisations of body parts in the lexicons and grammars of various languages, such as the use of *ginnaaw* 'back' to

indicate the temporal orientation of 'after' in Wolof (Kraska-Szlenk 2014: 21) or the use of *belly* to structure the deictic category of 'inside' in languages as diverse as Guarani, Hausa, Kurdish, or Zapotec (Hilpert 2007).

QUALITATIVE CHANGES AS A RESPONSE TO THE ENVIRONMENT

The early 20th century American Pragmatism of William James and John Dewey was a non-reductionist model of the mind, which drew on the empirical findings of the contemporary biology, psychology, and neuroscience (Johnson, Rohrer 2007: 21). The present-day biological science is similar in that it sees cognition as emerging "from the embodied processes of an organism that is constantly adapting to better utilize relatively stable patterns within a changing environment" (Johnson, Rohrer 2007: 21).

Language, itself a facet of cognition, qualitatively adapts to the influence of the physical and socio-cultural environment in which it is used. At the same time it relies on various stable patterns of such a change, for example the recurrent pre-conceptual image schemata, metaphor, and metonymy.

One obvious result of such adaptations is the usage-based character of language (Langacker 2008: 458–459), which is reflected, for example, in complex polysemy-based networks of meanings that incorporate new lexical extensions. Various metonymy-based radial extensions of the category *mother* are a response to the current social and scientific developments (Lakoff 1987: 74–76), as are the extended senses of the words *Monday* and *Friday* used to refer to the experience of lowered work efficiency on the first and the last days of the working week. In any instance of use, lexical items serve as points of access to encyclopaedic frames of meaning modulated by the discourse context. These frames are not static mental constructs – they accommodate new experiential patterns and motivations.

Various patterns of cognitive construal, such as focus and scope of attention, the figure-ground distinction, and the subjective-objective perspective, also help language users to adjust to the current communicative context and thus create qualitatively different interpretations of the reality which they describe. For example, in each of the sentences *The window is dirty* and *She came in through the bathroom window*, the word *window* serves to focus the user's attention on a different part of the entity.

THE PRIORITY OF THE WHOLE OVER THE PARTS

The biological priority of the whole over the parts means that a living organism involves numerous processes synchronized in a non-linear way. Any such organism is necessarily a part of some larger ecosystem with which it is also fully synchronized (Diekman *et al.* 2021: 18) at various levels of its functioning.

Cognitive linguistics emphasizes the presence of similar multi-layered synchronization in language. At the most basic level, the symbolic function of language integrates the semantic and phonological poles – either can be used to evoke the other (Langacker 2008: 15). Above the phonological-semantic interface, much of human communication also incorporates gestural and visual patterns. On the most general level, cognitivists reject the Cartesian mind-body dualism and regard language as "a facet of human cognition" (Langacker 1991: 511) because it incorporates various layers of cognitive processing, such as concept formation, categorization, embodiment, pattern replication, motivation, etc., as well as forms a whole with the physical and cultural environment of its users. In other words, language is "embedded in a network of relations spun between mind, body, and culture" (Nerlich, Clarke 2007: 599).

SUMMARY

The basic correspondences that result from the cognitive linguistic representation of language in terms of the metaphor of a living organism can be summarized as follows:

Living organism	vs.	*Language*
internal force to grow and develop	→	organism-mind-language growth; permanent innovation
codetermination with local ecologies	→	the users' bio-physical and cultural environment motivates language structure and use
qualitative changes in response to the environmentnet	→	usage-based character of language; networks of meanings; formation of new concepts to meet new communicative needs
the priority of the whole over the parts	→	language as integrated with human cognition and the body, mind, environment, and culture

The view of language as a living organism reifies it, but – unlike the generative approaches - it does not ascribe to it any modular, formal, or machine-like properties.

CONCLUSIONS

Kuhn argues that "metaphor plays an essential role in establishing links between scientific language and the world" (1993: 539). Any theory change in science is usually effected by means of a change in metaphors relevant to the phenomena that

are dealt with at any given point in time (*ibidem*: 539). The metaphors of a machine and a living organism at various times effected such changes in various branches of science. For example, in medicine the shift from the former to the latter motivated much of Selye's pioneering work on stress (Johnson 1987: 127–137). A similar change of perspective contributed to the rise of the interaction-oriented view of time in social psychology (McGrath, Kelly 1986).

The emergence of the cognitive linguistic paradigm was possible thanks to the re-adoption of the metaphor of a living organism, which entails a holistic view of language. The formal-generative detachment of language from its functional – bio-physical and cultural – context of use was in this case the anomaly that Kuhn (1970) postulates as a factor motivating a change of paradigm in any area of inquiry. Its presence was first noticed in the philosophical discourse of the first half of the 20th century. Mumford, the critic of the machine, wrote:

> […] the very qualities of language that offend the logical positivists – its vagueness, its indeterminateness, its ambiguity, its emotional colouring, its reference to unseen objects or unverifiable events, in short its 'subjectivity' – only indicate that from the beginning it was an instrument for embracing the living body of human experience, not just the bleached articulated skeleton of definable ideas.
>
> (Mumford 1934: 73)

These 'subjective', usage-based, and indeterminate properties of language – in spite of Mumford's (1934: 73) use of the metaphor of "instrument" – liken it to a living organism rather than to a mechanical device determined by some objective and fixed parameters.

Shortly before the publication of Lakoff and Johnson's *Metaphors We Live by* in 1980 – a manifesto of the contemporary cognitive linguistics, which seriously questioned the formal and objectivist view of language – Lawler (1979: 5) argued that a generative perspective implies the independence of language from its users and hence from its communicative context. It physicalizes function, which, like meaning, can vary in unpredictable, context-dependent ways (Lawler 1979: 6). That is why within the new paradigm language is not treated as an assembly of symbols manipulated according to exact rules in a linear, machine-like fashion – instead it is a part of the users' cultural identity that allows them to adjust their concepts and worldviews to the current experience. In short, cognitive linguistics fully confirms Mühlhäusler's (1995: 284) view that regarding *natural* languages as artificial objects is a paradoxical practice.

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