

Metaphor from the Derivational Perspective

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Abstract The article focuses on the derivational perspective of metaphor studies. Derivation is regarded as a complex cognitive process, represented within speech activities. In this sense, derivation is viewed as a universal process of language units' production according to the rules of text-formation. The basic feature of the derivational approach to the mechanism of metaphor is determined by the inner syntax, especially by the principle of contamination of two sentences – introductive and basic, which fulfill different functions. In this paper we shall present a theoretical account of metaphorization as a universal derivational process controlled by means of such laws, as incorporation, contamination and compression. We take as basic the premise that metaphor is a more complicated process than it is described in traditional theories, since it is dependent on cognition and knowledge communication. In contrast to the traditional approaches, metaphor is regarded here as the result of combination of two pictures of the reality, referential and imaginative. We believe that derivatology generates a new knowledge about metaphor mechanism and metaphor modeling. Comparing to linear models of metaphor, the derivational model is considered to be a network model. The latest derivatological ideas about metaphor enrich the concept of metaphor taking into consideration that it has to be studied not in isolation, but within a broad frame of text, discourse, cognition and communication.

Keywords Derivation theory, metaphor, mechanism of metaphor, introductive sentence, basic sentence, metaphor models, tropes

1 Introduction

Metaphor as a research subject has entered the contemporary discussion from a variety of perspectives and has already mapped its own research field. In recent years, everything connected with metaphor is very much in vogue. Modern theory of metaphor is a rapidly developing branch of knowledge with a vast scope of views (cf. e. g. Mac Cormac 1985, Kövecses 2000, Cienki 2008, Andriessen/Gubbins 2009, Steen 2009, Alekseeva/Isaeva/Mishlanova 2013, Wood 2015, Alekseeva/Mishlanova 2016). At the modern stage of knowledge development our understanding of metaphor has greatly changed. Metaphor appears to be a more complex and salient object of study than it has been viewed before. Metaphor was initially considered as a transfer or exchange of two meanings – literal and transitive, but this statement evolved to include a more interactive approach (cf. e. g. Cooper 1986, Ricoeur 1986, Wood 2015). In recent years, linguists have come to several important suggestions about the active role of metaphor in the building of pictures of the world by individuals and about its contribution into the process of integration of human verbal and conceptual systems (cf. e. g. Charteris-Black 2004,

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Cienki 2005, Cameron 2007a, 2007b, Andriessen 2008, Song 2011, Sullivan 2013). As a result, metaphor has become a research object not only in linguistics, but also in such spheres as psychology, cognitive sciences, theory of artificial intelligence etc. It has progressed even further to the view that it is a process in which meaning is created simultaneously among people (cf. Kastberg 2010, 2011).

This fact causes a problem of discussing metaphor on various theoretical foundations. For many years metaphor has been researched primarily as a semantic phenomenon (cf. Morgan 1980, Ricoeur 1986). In this perspective, it was regarded as a simple shift of meaning, or interaction of literary and figurative meanings. This is a so-called external description of metaphor, since the structure of the text, where metaphor was used, and its functional reconstruction were not taken into consideration. In contrast to traditional semantic approaches to metaphor, we take as basic the premise that metaphor is a more complicated process than it is described in traditional theories, since the nature of metaphor is directly dependent on human thinking. The roots of this premise go into a vast theory of derivation.

In recent work on metaphors, the statement that metaphor is a cognitive process that allows one domain of experience, the target domain, to be reasoned about in terms of another, the source domain (Lakoff/Johnson 1980) has been adopted (cf. e. g. Kövecses 2000, Pragglejaz Group 2007, Steen et al. 2010). This idea has turned into a persistent theme which has undergone a substantial progress. Nevertheless, a more ambitious thesis concerning metaphor nature was advanced ten years before by Leonid N. Murzin (Murzin 1972a).

Our research touches this very important, yet less known to the majority of linguists, linguistic conception termed *derivatology* as a dynamic view of language. The fundamental problem, to which this approach gives rise, is centered on the question about production of various language units within speech activities. Derivatology has emerged as a response to structuralism and to the static approach to word building.

More than forty years ago the first publication, devoted to derivation as the main trend in the research of language dynamics and language units' production, appeared (Murzin 1972a). However, the derivational ideas about metaphor were evaluated only in recent years within the framework of cognitive linguistics.

In order to introduce the derivational view of metaphor, we would start with a brief history of the derivational school from which derivational theory of metaphor has emerged.

Derivational theory was elaborated in the 1970s. It holds that all language units are products of text-formation. The core of derivational theory amounts to syntax. The interaction of syntax and language units' production has been researched from many perspectives, but still much of this central area remains unexplored. Leonid Murzin's contribution to this issue presents his own view on syntactical relations as the foundation of language units' production.

Within this perspective, the meaning of the term *derivation* is central in the theory content. There are two possible views on derivation. From a narrow perspective, it refers to one of the ways of word-formation. The second view is quite different from the previous one. Derivation is to be taken in the broad sense, i. e. as the subject of derivatology, or a dynamic discipline, which deals not with already formed words, but with the process of newly born language units. A broad view of derivation is connected with man's speech activity. This process is regarded as a complex phenomenon, linked with the real world and its reflexion in human mind. By derivation in the latter sense Murzin meant natural communicative acts, resulting in production of speech units (texts, word-combinations, lexical derivatives, etc.) which form the secondary (meta-, derivative) level of language units, including metaphor.

In the 1970s Murzin initiated a long line of assumptions about the nature and mechanism of metaphor. In 1972, Murzin in the article “The formation of metaphors and metonymies as a result of derivation of sentences” put forward the suggestion that metaphors were founded on syntax (Murzin 1972b: 362–366). In so doing, he applied derivational theory to specific cases – metonymy and metaphor mechanisms. He seeks to show the way in which these tropes appear in speech. He demonstrated that these two mechanisms were founded on syntactical processes. According to Leonid Murzin, metaphor is the result of a complex syntactic process of language units’ production, the representation of which may be comprehended only with the help of universal laws of text-formation.

It should be stressed that nowhere in the world linguistics derivation theory has been taken as a starting point of metaphor formation. This theory provided a view of metaphor from the point of view of its mechanism. Summing up the above introductory remarks, we hold that the peculiarity of the derivatological view of metaphor is that it has to be studied not in isolation, but within a broad frame of text, discourse, cognition and communication.

2 The foundations of the derivation theory of metaphor

A further development of derivation took place in the work “Syntactical derivation”, published by Murzin in 1974. This research was done within the frames of language dynamics. Murzin started with the suggestion that besides the taxonomic relations there was another type of relations – derivational. Murzin pioneered the study of derivation in which various speech units, including metaphor, obtained syntactical interpretation.

There are two periods in the derivational perspective of metaphor at Perm school: 1) 1972–1999 – the discovery of metaphor mechanism, viewed as the analogy of text-formation, and 2) from 2003 until now – the formation of metaphor theory as the foundation of discourse. The researchers of the two periods develop a specific derivatological idea of metaphor starting with generativism to semantics, through text-formation, semiotics, discourse analysis and finally reaching cognition and knowledge communication. What is remarkable for the derivatologists, who come after Murzin’s theory, is the metaphor mechanism, developed from the category of analogy to the modern view of interiorization and exteriorization of professional knowledge from the discourse.

The derivation theory has been worked out at the time when transformational syntax was in progress. Considering this, it should be clear at this point, that there is a certain association of the derivational language model by Leonid Murzin with the postulates of transformational grammar of Noam Chomsky.

The common features of these two doctrines are the following:

- Combination of sentences is under consideration.
- Derivation is regarded as the main mechanism of this combination.

However, there are basic distinctions between these theories, which become vivid at Figure 1.

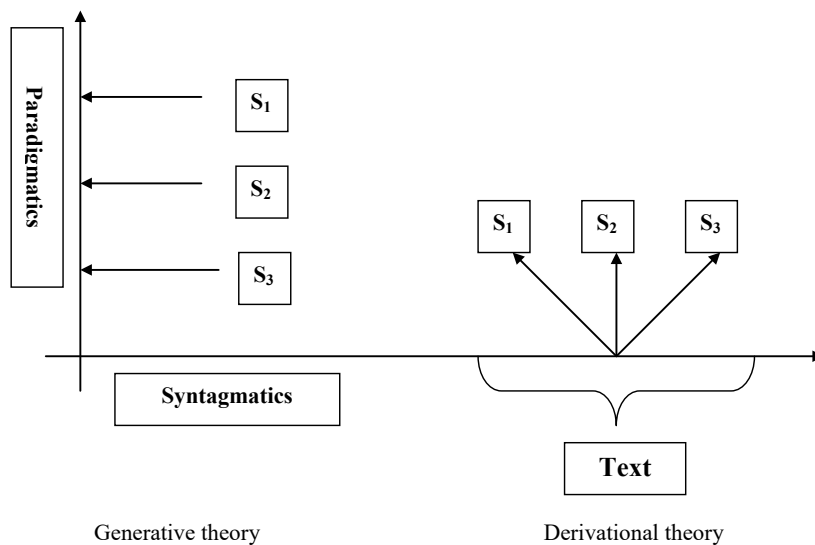


Figure 1: Distinctions between generative and derivational theories

Within this scheme, transformational (generative) grammar is referred to as paradigmatics. That means the following:

- the material under consideration is limited;
- the final aim is the derivation of sentences linked paradigmatically;
- the text is out of the model.

Unlike the previous, derivational theory refers to syntagmatics, since it deals with text-formation as the foundation of language units' production.

It is noticeable that Murzin started the building of derivation theory of metaphor within semantics and later came to syntax. To have a clear understanding of what derivation is, we will discuss the concept of an *extended seme (feature)*. By this term Murzin means such kind of semes which fulfill syntagmatic functions, i. e. providing sentence connectivity and integrity (Murzin 1974: 19).

An analogous category may be found in the works by French linguists Bernard Pottier (1963) and Algirdas J. Greimas (1996), who considered *classemes* as phrase elements. Greimas performed a contextual analysis of the word *aboie* in the phrase *chien aboie* with the aim to distinguish the seme nuclear – *a loud cry* (N_{s1}). He has shown that correlation of the nuclear seme with different class semes gives two different sememes (S_{m1} and S_{m2}).

- (1) a class of human contains the seme *human* (C_{s1})
l'homme crie
Diogène crie
- (2) a class of animals contains the seme *animal* (C_{s2})
chien aboie
chacal aboie

Thus, the sememes based on two different class semes are the following:

$$S_{m1} = N_{s1} + C_{s1} \quad S_{m2} = N_{s1} + C_{s2}$$

In this sense, a *classeme* may be viewed as a linking semantic element of a phrase. We should notice that extended semes, regarded by Murzin, have much in common with *classemes*, being realized within adjacent components of a sentence, i. e. *mn*. In the primary (literary) functions, the adjacent sentence components are semantically agreed. It means that an extended seme of one component is correlated with the other. Consider: *children* (m) *are sleeping* (n). Here the two components are agreed according to the principle of *animate*. If one of the components is used in the secondary (figurative) function, it loses its extended seme. Consider: *the house* (m) *is sleeping* (n). Here the agreement between the components has been lost, since the meaning of the word *house* is associated with non-living beings. However, the seme of *living* in the second element, being extended, gives this characteristic quality to the first element of the sentence *house*, and by this transfers it into the neighboring class of the sign system. We notice that the meaning of *living* has been attached to the element of an “alien” sign system. In this sense, the contradiction between the primary and secondary functions of elements of a sentence provides interclass integration, and extended semes are regarded as means of this integration.

Murzin suggests that extended semes obtain universal character and the principles of the sentence building are common to all languages. Due to the extended semes one of the members of the sentence is clarified and supplemented by the other member. In this sense, a sentence of any language represents an incorporated structure, since it is built by means of inclusion of one element into the other. Thus, *incorporation* may be regarded as a universal principle of sentence building.

The concept of extended semes has brought Murzin to the suggestion that metaphor is realized not within the word, but within a syntactical structure. He suggests that metaphor is the result of incorporation of sentences. Since syntactical processes, as parts of speech activity, are hidden from the direct observation, there must be a mechanism for its exteriorization. This last constitutes what Murzin calls *contamination* (interplay). Let us take up the following metaphorical utterance:

‘There were many people in the room. However, *his voice has floated to me*’

We believe that we understand metaphoric sense when we perceive new information, linked with a new quality about *the voice*. This new information reflects the whole picture of the situation, born in our mind as a result of crossing two different planes – real and imaginable. Crossing of two situations may be modeled by means of two sentences: 1) *the voice was heard* (S_{int}) and 2) *(X) has floated* (S_{bas}). The meaning of the introductory sentence (S_{int}) is aimed at a real fact. It helps to identify the subject of description (*voice*). The role of the basic sentence (S_{bas}) is to describe the very situation (*to be floating*), or to characterize it. Accordingly, the function of the introductory sentence is to form the subject of metaphor, and the function of the basic sentence – to form the predicate of metaphor. We see that within the analyzed metaphorical utterance *the voice* is characterized by a new quality. This quality is expressed in S_{int} implicitly. However, its meaning might be associated with that of the basic sentence and may occupy a vacant position within its structure. The result of this interplay will be the resulting sentence: $(X \leftrightarrow \text{voice}) \text{ has floated to me}$.

In this way, it is possible to discover a parallel between the extended semes as means of integration of two adjacent elements and the links of two sentences, producing metaphor.

3 Metaphor models

A variety of different perspectives of metaphor research causes a problem of discussing metaphor on various theoretical foundations. For many years metaphor had been researched primarily as a semantic phenomenon (cf. Morgan 1980, Ricoeur 1986). In contrast to traditional semantic approaches to metaphor (cf. Morgan 1980, Cooper 1986, Ricoeur 1986) derivation takes as basic the premise that metaphor is a more complicated process than it is described in traditional theories, since the nature of metaphor is directly dependent on human thinking.

Before turning to the derivation theory in a more detailed way, we would touch upon the question about the place of this theory on the historical vector of metaphor models (with respect to their origins and principles of formation). We shall consider only those models that contribute to the progress of metaphor evolution. The main principles of metaphor models, as we suggest, are the following: 1) the increasing of the complexity of metaphor structure, 2) correlation of linguistic and beyond-linguistic spheres.

Consider now the first type of metaphor models.

3.1 The Linear model of metaphor (Aristotle, Quintilian)

Aristotle claims that metaphor constitutes a displacement, or an extension of the meaning of words, its explanation is grounded in the theory of substitution (cf. Wood 2015). The most important thing about this type of models is that the compared objects, as metaphor referents, are commensurable, in other words, refer to the same class (abstract or concrete objects). Figure 2 shows that metaphor is viewed by the analogy suggesting that 2 is to 1 as 4 to 3.

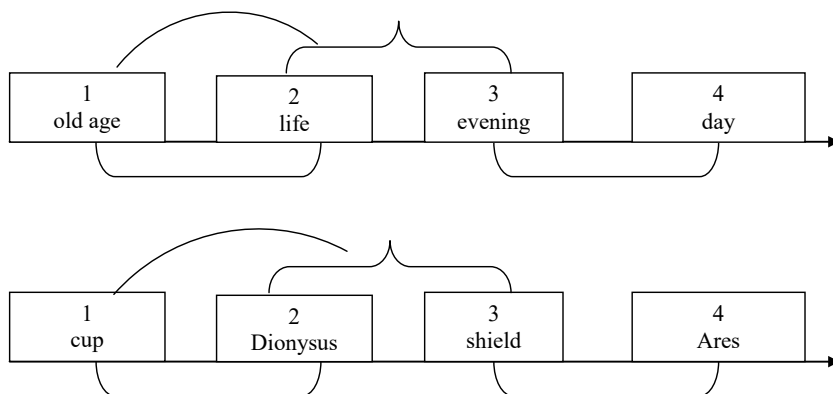


Figure 2: The Linear model of metaphor

Consider: *Old age* is to *life* as *evening* is to *day*. In this way, Aristotle calls the *evening* the *day's old age*. And *old age* will be comprehended as the *evening of life*. Consider: a *cup* to *Dionysus* is what a *shield* is for *Ares*. *The cup* is viewed by Aristotle with the help of the analogy with *Dionysus's shield*. And *the shield* – by means of the analogy with *Ares's cup* (cf. Aristotle 1932: 1457b 20–24).

The main principles of linear models are the following:

- linear unfolding;
- analogy of commensurate concepts (abstract or concrete);
- the terms of movement (from point A to point B);
- semantic criteria;
- word as metaphor carrier.

3.2 The Triangle model of metaphor (Searle 1980)

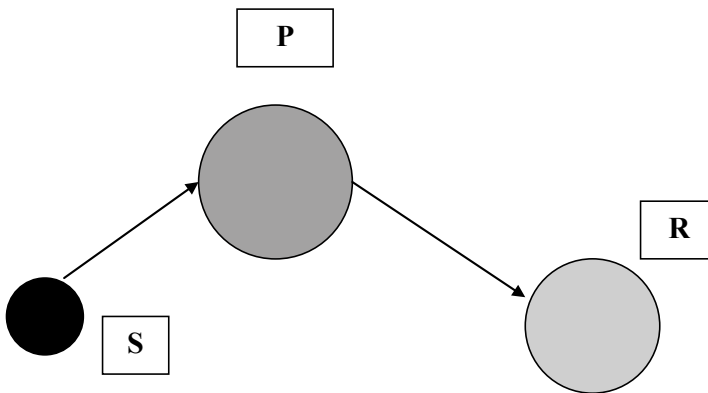


Figure 3: The Triangle model of metaphor

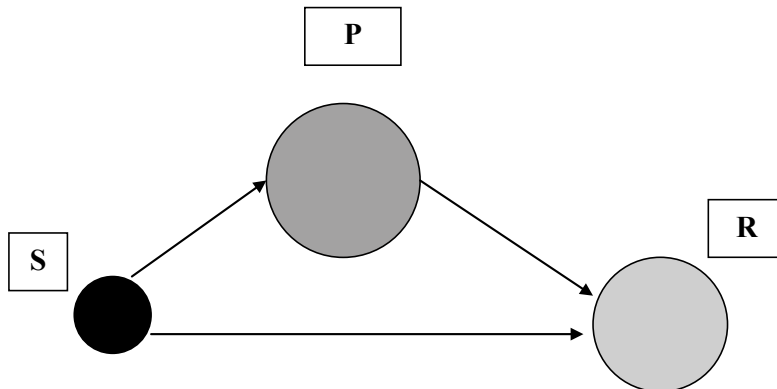


Figure 4: The Triangle model of dead metaphor

John R. Searle (1980) distinguishes between three elements of this model. The triangle model presents the general form of the metaphorical utterance: a speaker utters a sentence “*S is P*” (“Sally is a block of ice”) (Searle 1980: 113) and means metaphorically that *S is R* (“Sally is an extremely unemotional and unresponsive person”), where *S* stands for a subject, *P* – for a predicate and *R* – for the truth (real) conditions determined by that meaning. As we can see from this scheme, the main task of metaphor here is to try to get a characterization of the relations between the three sets: *S*, *P* and *R* and to demonstrate how it is possible to commu-

nicate that meaning from *speaker* to *hearer*. According to Searle, a theory of metaphor must explain how it is possible to utter “S is P” and both mean and communicate that “S is R” (Searle 1980: 122–123). The hearer requires something more than his knowledge of the language, his awareness of the conditions of the utterance, background assumptions that he shares with the speaker. A *speaker meaning* does not coincide with a *sentence or word meaning*.

The main principles of triangle models are the following:

- triangle structure;
- differentiation between *sentence meaning* and *speaker’s meaning*;
- similarity has to do with the production and understanding of metaphor, not with its meaning;
- interaction view of metaphor is inadequate;
- metaphors are of double nature: *restricted* (one thing not obligatory reminds us of something we will provide a basis for metaphor) and *systematic* (must be communicable).

3.3 The Grid model (Ricoeur 1986)

Paul Ricoeur is known as the founder of the tension theory of metaphor. This theory applies to the production of metaphor within the sentence taken as a whole.

Schematization is a kind of insight into the mixture of “like” and “unlike” proper to similarity. According to Ricoeur, this instantaneous grasping of the new congruence is “felt” as well as “seen”. By saying that it is felt, we may underscore the fact that we are included in the process as knowing subjects. If the process can be called predicative assimilation, it is true that we are assimilated, that is, made similar, to what is seen as similar. This self-assimilation is a part of the commitment proper to the “illocutionary” force of the metaphor as speech act. It would seem possible to suggest that ‘we feel like what we see something as’, since it is the relationship that holds sense and image together. This suggestion may be understood on the Aristotelian foundation of ‘seeing the similar’, which has provoked a famous Ricoeur’s ‘seeing as’ principle. Ricoeur defined it as “the intuitive relationship that hold sense and image together”, since the mass of images is beyond all voluntary control, and there is no rule how to be learned for ‘having images’ (Ricoeur 1986: 213).

The power of metaphor would be to break an old categorization, in order to establish new logical frontiers on the ruins of their forerunners (cf. Ricoeur 1986: 197). He believes that metaphor, as a figure of speech, presents in an *open* fashion, by means of a conflict between *identity* and *difference*, the process that, in a *covert* manner, generates semantic grids by fusion of differences into identity (cf. Ricoeur 1986: 198). Thus, the identity and the difference do not melt together, but confront each other.

Consider the scheme of the Grid model.

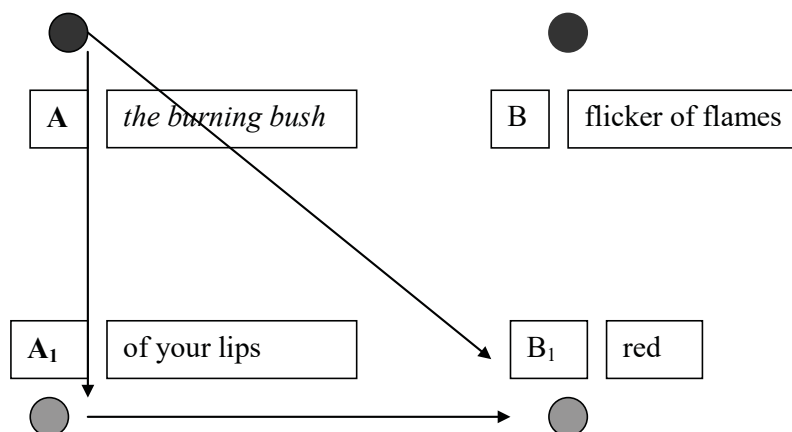


Figure 5: *The Grid model of metaphor*

According to Ricoeur, the metaphorizing term is always placed in position A. In this scheme the correlation $B \leftrightarrow B_1$ is regarded as the old categorization, relating to a known field of reference. The correlation $A \leftrightarrow A_1$ demonstrates establishing new logical frontiers, “relating to a referential field for which there is no direct characterization” (Ricoeur 1986: 299). The terms $A \leftrightarrow B_1$ (A is based on B_1) are called the nominal metaphor (Ricoeur 1986: 206). The Grid model corresponds to the meaning that assimilation between two pairs $B \leftrightarrow B_1$ and $A \leftrightarrow A_1$ is developed by means of unusual attribution. The main tenet of the grid type view of metaphor is that the predicative value that A_1 acquires from A is not that of identification, but that of subordination. The relation between A_1 and B_1 is represented by the identity.

This grid is built as a result of a split reference, or split structure. The imagination contributes to it, owing to its own split structure. On the one hand, imagination entails the suspension, of the direct reference of thought to the objects of our ordinary discourse. On the other hand, imagination provides models for reading reality in a new way. This split structure is the structure of imagination as fiction.

The main principles of the grid metaphor models are the following:

- metaphor is formed on the border between semantics and psychology;
- it is constructed by means of the split reference;
- a new predicative congruence is born;
- metaphor is viewed as a category mistake;
- ‘seeing as’ principle.

3.4 *The Net (derivational) model of metaphor (Murzin 1974)*

The main characteristics of the Net model is that, in contrast with the previous models, the derivational basis for metaphor is the text, not the word or the phrase, i. e., the process of metaphorization is actualized by means of the laws of text-formation. The net model tells us that two sentences are related by means of several operators. This model is intended to be a structured piece of derivational mechanisms representation. It models certain relations between sentences at two levels: surface level and deep level.

One more important thing is that metaphor is regarded as a semantically derived text unit. In this sense, metaphor model is represented as a complex (net) of sentences (in the scheme the symbol S stands for various kinds of sentences). The main principle of metaphor is suggesting new knowledge by means of the already known.

Metaphor formation takes place on two levels, surface and deep (Figure 6). It includes three steps: 1) the formation of a predicative structure (S_{pr}) and its further interiorization; 2) the interior process of contamination of two structures ($S_{int} + S_{bas}$); 3) exteriorization of the result of contamination (see Figure 6).

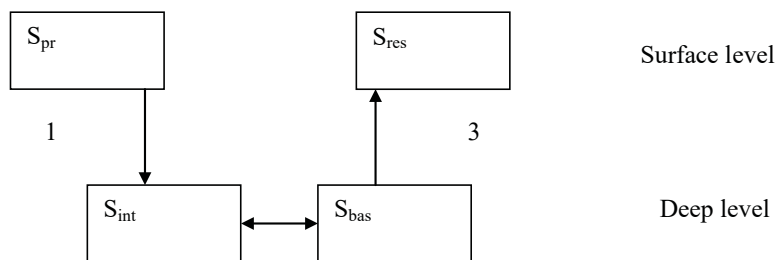


Figure 6: The Net model of metaphor

The view of metaphor as interaction and tension (exchange of ideas) belongs to Ivor A. Richards (1964). However, he does not view metaphor as a mechanism or as a textual phenomenon.

To have a clear view how metaphor is formed, consider the following:

Although the station area was cordoned off and officially closed to civilians, *passengers* for the local trains had managed, in some unaccountable way, to *filter through*. They had already crammed the coaches and they crowded in the doorways or strolled or stood in front of them. (B. Pasternak “Doctor Zhivago”, Vintage, London. 2002, 231)

The metaphorical phrase is *passengers filter through*. The meaning of the verb *to filter* is associated with a certain liquid flowing through porous substance removing impurities on it. Taking into consideration the semantics of the word *filter* and our experience of the situation the following sentence may be formed: *Passengers go through closed territories*. It is clear that this sentence represents the whole situation in a general way. It may be regarded as a starting point in understanding metaphor. For this reason, the sentence is called *the introductive sentence* (S_{int}). We see that the meaning of the introductive sentence is linked with the real fact, described metaphorically. The meaning of the sentence is correlated with its function, that is, with identification of the subject of description. Coming close to metaphor understanding, we think about possible images, provoking by metaphor. This process may be actualized in the sentence *X filters through*, which is called in our analysis *the basic sentence* (S_{bas}), since it fulfils the function of predication of metaphorical expression. Contamination of two sentences (introductive and basic), when the subject of description *passengers* occupies a vacant position in the basic sentence, produces a metaphoric expression:

- 1) *Passengers go through closed territories*
↓
- 2) *X filters through*
- 3) *Passengers filter through* (resulting sentence)

We have found out that in medical texts Net metaphor models are more complicated, since they are two-phased. In this kind of model the first phase deals with derivation of a simile. The second phase represents compression of a simile, resulting in the formation of a metaphor. The peculiarity of the second phase is that the resulting sentence of the first phase (S_{res1}) fulfils the function of a predicative sentence of the second phase (S_{pr2}), containing a simile.

Consider: “In the plain radiography, these erosions are recognizable AS more or less DENCE, irregular PATCHERS ... (The 1st phase) In the active phase of the colitis, ulcerous defects appear, which create a PATCHY APPEARANCE of the mucosa (The 2nd phase)” (Mishlanova 2002: 122–23). The corresponding model of this process may be represented in the following way (Figure 7).

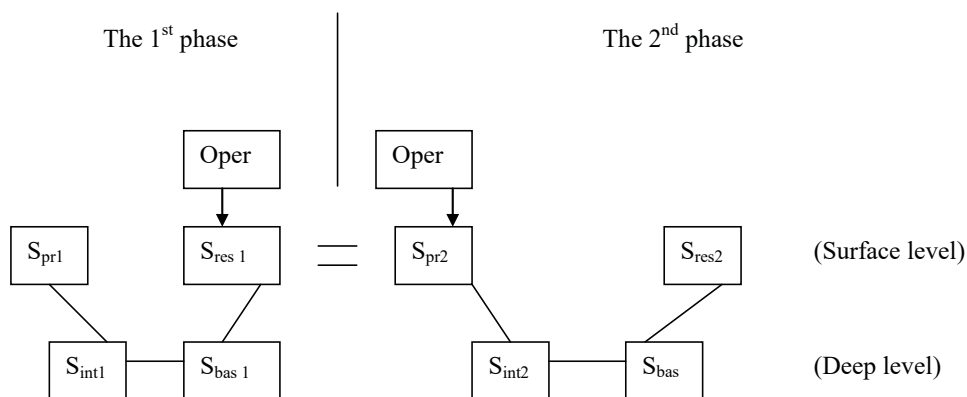


Figure 7: The Two-phased Net model of metaphor

Thus, the main principles of the net metaphor model are the following:

- this type of models is of a derivational nature;
- it presents metaphor as a complex two-level process;
- metaphor formation is correlated with text formation.

3.5 The Super Net model

(e. g. Alekseeva 1998, Mishlanova 2002, Alekseeva/Isaeva/Mishlanova 2014)

It is important to note that, the notion of metaphor within this model covers various spheres: metaphor mechanism, thinking process, a separate phase of a derivation process (cf. Figure 7) and the result of metaphorization that guarantee unification of various phenomena having different theoretical foundations. Thus, granted that it is quite appropriate to use the term *metaphor* to refer to a wide range of phenomena, and to accept that it constitutes a complete whole. Taking this into consideration, we argue that metaphor, sharing universal properties, is set off from its narrow definitions, i. e. as a rhetorical “decoration”, or a certain discourse level. For the present derivational research, the following definition of metaphor will suffice: metaphor is a chain of various manifestations of the functioning of the cognitive mechanism, regarded as a process of the language unit development at various levels of discourse, or various stages of mental-speech activities.

The main principles of the Super Net metaphor model are the following:

- metaphor is regarded as a complex and integrative 'beyond linguistic' entity;
- it is associated with the process of the language unit development within discourse;
- the notion of *discourse* allows to overcome the opposition of *conceptual* vs. *language* metaphor, since it refers to the whole continuum of sign activities;
- the integrative discourse definition as a verbally mediated activity in a special sphere makes it possible to view metaphor as a universal sign development process, covering the whole continuum of sign activities.

As for the discourse, it can be argued that within it the process of conceptual system building takes place, or the system of derived knowledge about the reality, which is necessary to solve problems during mental activities. In this sense, it is legitimate to suggest that the cognitive mechanism of discourse is realized as a process of getting a derived knowledge which is grounded in cognition about the world. It is by this mechanism that man can go beyond the boundaries of the sphere of signs, i. e. may complete the construction of the reality. It is an obvious fact that this quality of the human mind provides an enrichment of the system of knowledge and, as a result, a modification of the world including the development of sign systems. We draw attention to the role of the processes of conceptualization and categorization which realize the processing of new information with the help of an individual conceptual system and by means of the usage of inferential knowledge. And we have implied that the mechanism of discourse plays a great role in the processes of signs development regarded as external manifestation of the internal process of *inference*. We would point out that the usage of a sign as a functional support provides a quick and adequate inference of knowledge. And it is arguable that this sign obtains the already known, or assimilated, projection equal to a steady cognitive strategy of inner mental programming (cf. Mishlanova 2002).

Returning to metaphor models, we would say that diachronically viewed, metaphor dating centuries ago has greatly changed. As we have seen, the observed five metaphor models are distinguished as linear (3.1–3.3) and non-linear (3.4 and 3.5). Linear models are associated with the formula ' $R_1 \rightarrow$ metaphor operator $\rightarrow R_2$ ', where R is a metaphor referent. Metaphor operators in these models may be various – interaction (R_1 influences R_2), substitution (R_1 instead of R_2), simile (R_1 resembles R_2) and association (R_1 seeing as R_2). We qualify the first three models as linear, since they are associated with directions from one point to the other, and with the question 'What does R_2 depend on?' or 'Are there any limitations for R_2 ?'. In summing up the peculiarities of the above models, we may notice that the two metaphor referents are different and yet mutually interdependent. Contrary to linear models, non-linear models are linked primarily with the beyond-linguistic sphere, i. e. cannot be studied as descriptive linguistic objects.

Approaching metaphor from this perspective has far-reaching consequences. In our research we aim at demonstrating how the distinction between linear and non-linear metaphor models may be evaluated within a wider framework of the Metaphor Knowledge Development Paradigm. It is natural that each new paradigm gives a new scope of what metaphor is. From new perspectives metaphor is critically evaluated and enriched.

Comparable with the suggested differentiation between linear and non-linear metaphor models is the distinction between classical, modern and post-modern adequacy. This statement impels us to elaborate somewhat on the critical distinctions between these types of scientific paradigm. The classical paradigm observes the following principles: universalism, logic

and experience. Within the light of these principles, metaphor was viewed as the result of interaction of the two pictures of the world: rational and ideal. Metaphor was regarded to be a certain analogy of the reality, which could be the result of observation and experience (see the Linear model, 3.1). According to modernism, metaphor was characterized as an individual author's creation, constructed by means of impressionist principles. Embracing these principles, metaphor was studied as a semantic phenomenon, i. e. as a complex of constantly renewed forms of image representations (see the Triangle and the Grid model, 3.2 and 3.3). In stark contrast to the modernist perspective, the post-modernist position holds that metaphor is a product of cognition and communication. From this point of view, metaphor is basically studied as a matter of intertextuality, or interlinks of ideas. Since metaphor, from a post-modernist perspective, is somehow a pluralistic or a co-constructive creation, it is less orientated to a certain domain than a modernist metaphor. The reason why we have introduced the link between metaphor models and scientific paradigms is that we wish to make clear that it is not enough to study metaphor only with the level of semantic similarity. We present our views of the two perspectives and its relations to the derivational principles in Table 1.

Table 1: Modernistic, Post-modernistic and Derivational principles of metaphor characteristics

Modernistic principles of metaphor characteristics	Post-modernistic principles of metaphor characteristics	Derivational principles of metaphor characteristics
individualism, the author himself creates an image	pluralism, co-construction	application of basic concepts as a result of co-thinking
linearity	non-linearity	non-linearity
semantic centrism	decentrism	complexity and integrity
interest in man's inner world	links with every day esthetics	interiorization exteriorization
searching for a new form of image representation	intertextuality mixing the ideas	searching for a new form of image representation
knowledge transfer	knowledge communication	knowledge transfer
impressionism	cognitivism	cognitivism

In terms of methodology, we have summarized metaphor models under the three main paradigms – classical, modernistic and post-modernistic. In our view, correlation of metaphor models and types of scientific paradigms may be presented in the following way (the sign [→] means “viewed within the frames of”): linear metaphor model (3.1) → classical paradigm; linear metaphor models (3.2 and 3.3) and non-linear (derivational) metaphor model (3.4) → modernistic paradigm; non-linear (super-net) metaphor model (3.5) → post-modernistic paradigm.

We see that within the above correlation metaphor models can be viewed on different ontological and theoretical preferences.

With a reference to Alvin Toffler, it is possible to characterize the society of the 21st century as a “third wave” taking into consideration computer technologies, internet and mass communication (Toffler 1980: 18). Being a kind of an antipode of modernism, a new society obtains new qualities, such as destruction, decentrism, cognitivism and co-construction. Toffler regards these society qualities as signs of a new civilization, free from unification and

stagnation (cf. Toffler 1980: 72). From the above quotation it is quite obvious that post-modernistic perspective opens new horizons for metaphor research.

As for derivation as a methodological perspective, we suggest that derivational principles of metaphor research lie quite on the border between modernism and post-modernism, thus obtaining common features, typical to both paradigms. According to the derivational perspective, the process of metaphor is unseen, unnoticeable, since it is referred to the mental sphere, and consequently should be studied by means of modeling. On the surface of language we see only the results of metaphorization. Following this, derivatologists study metaphor as a complex system of interconnections within the phenomenological space.

Our aim in modeling metaphor was to discuss how it may be understood conceptually and how it may be applied within a framework of cognitive research and modern scientific paradigm. For this reason we use a two-step approach. First, we observe several basic metaphor models (linear and non-linear). Secondly, we interpret these models based on a theoretical suggestion.

We come to the conclusion, that as a discursive phenomenon, metaphor is defined as a cognitive mechanism of representation of knowledge at all the levels of thinking (from naive to professional, and to scientific knowledge), based on mapping from a conceptual source domain to a conceptual target domain (cf. Lakoff/Johnson 1980: 97–105). Metaphor is actualized in discourse and represents stages of the development of a linguistic sign (cf. Alekseeva/Novodranova 2006, Mishlanova 2002). Metaphor implies a number of strategies of verbalization and popularization of scientific knowledge. The production of special knowledge relies on the background knowledge of an addressee and provides the mapping of this knowledge into the conceptual sphere of interpreting discourse, thereby contributing to categorization of a new knowledge.

4 Derivational view of metaphor

Within derivatology metaphor is regarded as a secondary function of word-forms of a sentence. Regularity of a sentence may be of two kinds: *formal* (grammatical) and *material* (semantic). If all the material word-forms realize their differential semantic features within a sentence, it is called a *regular* material sentence. Metaphor is formed by means of combining, or crossing, of two *regular* material sentences. Murzin called this process *derivation*. Crossing is realized by means of two mechanisms: *substitution* and *equation*. Consider the two regular sentences:

- (1) $S_0 = nm$
- (2) $S_1 = n_1m_1$

The result of crossing of these regular (coordinated) sentences will be a materially *irregular* sentence:

$S_0 = nm$	$n_1 \leftrightarrow n$ (\leftrightarrow is substitution)
$S_1 = n_1m_1$	$m_1 = m$ (= is equation)

Irregular (non-coordinated) sentence:
 $S_{res} = n_1m$

Members of regular sentences are semantically coordinated by a certain principle. In sentence S_0 *A man (n) looked (m) over the fence* the words *man* and *looked* are coordinated by the principle of “activity”. In sentence S_1 *Apples (n₁) are seen (m₁) over the fence* the words *apples* and *are seen* are coordinated by the opposite principle. During the process of words crossing the principle, being extended, is preserved and prescribed to the other semantic class.

Consider:

$S_0 = A\ man\ (n)\ looked\ (m)\ over\ the\ fence$ $Apples\ (n_1) \leftrightarrow man\ (n)$

$S_1 = Apples\ (n_1)\ are\ seen\ (m_1)$ $Are\ seen = look\ over$

$S_r = Apples\ (n_1)\ look\ (m)\ over\ the\ fence$

We see that the substituting word obtains a new principle (“inactivity”). Taking this into consideration, it is possible to assume that the resulting sentence is a metaphor carrier and the process of combining (crossing) sentences is the foundation of metaphor.

As we have noted, the peculiarity of derivational view of metaphor is that metaphor is studied not in isolation, but within a broad frame of text, discourse, cognition and knowledge communication. Within the text, metaphor is researched on the basis of text-formation process, controlling by means of the integrity of two mechanisms: *nomination* and *predication*. Nomination is associated with the already given meaning, which lies in the basement of a further process: *predication*. In this sense, a new metaphorical meaning is a natural result of *predication*. It follows that the process of predication may be regarded as prescribing a certain quality to an object, already nominated in the text. We suggest that nomination and predication are controlled by means of two mechanisms: *contamination*, providing text refolding, and *compression*, aiming at text folding. Murzin gave an extremely careful consideration by reconstructing the mechanism of metaphor on the basis of the operations that govern the process of metaphORIZATION (Murzin 1974).

From this perspective, metaphORIZATION is bound by the integrity of these two mechanisms. *Contamination* clears up the logic of a new metaphorical meaning formation by means of combining old and new information about the described object or person. It is realized with the help of transposition of the already known knowledge into a new vacant place. *Contamination* is the main process of derivation. It consists of several steps, or cycles. Each step is a concluded and an independent part of this process. That is why it may be regarded as a derivational cycle.

Compression provides metaphorical meaning and makes it relatively independent from the initial literal meaning.

The basic tenets for metaphor research within the derivation theory are the following:

- metaphor should be viewed on two levels: surface and deep (cf. Murzin 1984);
- mechanism of metaphor is analogous to that of the syntactical way of derivation of compound sentences (cf. Murzin 1974);
- metaphor model may be viewed as propositional, since the proposition is the main content of the utterance (cf. Alekseeva 1998, Mishlanova 2002);
- metaphor is derived as a result of contamination of two sentences: basic and introductory (cf. Murzin 1984);

- metaphor is predicative by its nature (cf. Murzin 1984, Mishlanova 2002);
- metaphorization is connected with human activity (cf. Murzin 1984, Alekseeva 1998, Mishlanova 1998).

Taking these tenets as points of departure, the following discussion aims at showing their role within a framework of metaphor mechanism.

5 Metaphor mechanism from the point of view of derivatology

Thus, the mechanisms that carry out metaphorization, are *contamination* and *compression*. The next idea is connected with semantics derivation. Murzin (1984) considered metaphor as a type of semantics derivation. In his view, the basis of metaphor is formed by means of contamination of two sentences. Consider: 1) *Clouds are moving in the sky* and 2) *Children are chasing each other*. The contamination of these two sentences is possible by means of the conjunction *as if*. In this case we get a compound sentence: *Clouds are moving in the sky, as if children were chasing each other*. A further modification of this sentence into the form of a simple sentence, Murzin assumes, is the mechanism of metaphor. It contains two stages. The first stage is connected with superposition of syntactically equal components: (*Clouds – Children*) as *if (are moving – are chasing) each other in the sky*. The second stage is connected with elimination of redundant elements. Out of two predicates the richest, from the semantic point of view, is left: *are chasing* takes the place of *are moving*, since the semantic structure of the first predicate includes the meaning of the second one. The choice of a subject is dependent on text semantics. As far as it is about *the clouds*, the noun *children* is eliminated. As a result, we have got the sentence: *Clouds are chasing each other in the sky* (cf. Alekseeva et al. 2014).

The results achieved by derivation theory of metaphor were encouraging: metaphor mechanism was revealed and described. It was found out that it was analogous to that of text-formation.

6 Conclusions

Derivatology is founded on a suggestion that derivation is tightly connected with the *production* of language units. It is one of the achievements of derivatology to have intensified the study of metaphor mechanism. Even within the frames of modern conceptions, we seem to be unable to suggest a relevant mechanism of metaphor. Studying metaphor within derivational perspective offers some solutions of metaphor problems which have not received explanations in the majority of other theories. From derivational perspective *metaphorization* may be regarded as the universal mechanism of decoding of a language sign into a secondary language sign in the process of text-formation. We suggest that *metaphorization* is a system forming factor, which fulfils the homeostatic language function. This function preserves language system in its functional status, in other words, it provides its text-forming activity.

The 20th century has seen a significant development of the theoretical framework for understanding what metaphor is and how it works and, consequently, how it could be modeled. In our research we study various metaphor models. The rhetoric theories of metaphor view the production of metaphor within the sentence (cf. Richards 1964, Searle 1980, Ricoeur 1986, Steen 2009). Derivation theory has reconstructed the act of metaphor on the basis of the text. The main suggestion is that text, which contains metaphor as its part, may be regarded as a process with fixed traces of metaphorization. The sources for metaphor modeling are these

fixed results of metaphORIZATION. We aim at proving that in the foundation of metaphORIZATION there are universal derivation processes, including incorporation, contamination, etc.

In our research we attempted to explore the nature of metaphor on the theoretical foundation of derivation theory, developed at Perm linguistic school. On the one hand, derivation theory provides a reliable proof of metaphor mechanisms. On the other hand, it enriches metaphor theory with a new alternative. It has been observed that metaphORIZATION is the analogous process to that of text formation. In particular, the mechanism of metaphORIZATION appears to be associated with contamination and compression.

We argue that metaphor requires substantial interdisciplinary cooperation and a much wider scope. We believe that viewing metaphor as a linear sequence is not sufficient to reveal its complex nature. Based on derivatology theory, we suggest that metaphor mechanism is more than correlation between domains. Due to the textual character of metaphor, it is possible to consider it as a cognitive model that provokes various types of knowledge – naïve, practical, professional and scientific.

We suggest that all the issues of metaphor can be solved within the frames of derivatology. The aim of traditional researches of metaphor was based on the desire that it would reveal the transference of meanings, or its mediation. However, derivatology provides quite a new knowledge in our understanding of metaphor. We observed the main metaphor mechanisms, responsible for ontological properties of metaphor such as cognition, communication and modeling. These properties can be explicated by the human intension of metaphor usage.

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