Against arbitrariness: An alternative approach towards motivation of the sign

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The aim of the article is to propose an account of the motivated nature of the sign, with special attention devoted to motivation in language. The starting point for the discussion is a cursory critique of the classic Saussurean model of arbitrariness and motivation. The account proposed in this article is in the spirit of broadly understood cognitive linguistics and Peircean semiotics. The model of motivation is comprehensive and specific. It is comprehensive in the sense that it provides a general definition of the term "motivation," which attempts to cover all instances of its use discussed in modern semiotics. The model is specific in the sense that it proposes parameters of motivation, which allow for investigating different facets of the phenomenon. The article includes case studies which illustrate how the approach can used in actual analysis of semiotic data.

Keywords: linguistic motivation, cognitive linguistics, iconicity, visual semiotics

1. Introduction

The notion of arbitrariness of the linguistic sign as defined by Ferdinand de Saussure in the seminal *Course in General Linguistics* (1966 [1916]) became a cornerstone of modern linguistics and an important reference point in modern non-linguistic semiotics. While non-linguistic semiotics proved to be resistant to the idea that there is no natural connection between the signifier and the signified,[1] linguistics was much more open to the idea. Even though some prominent researchers openly attacked the principle of arbitrariness (see Jakobson (1965), who also provides a brief overview of key linguists criticizing the principle), it is still not uncommon for linguists to believe that "[i]n any language, the relation between meaning and sound is largely arbitrary. This is one of the fundamental observations of facts on which scientific linguistics is built" (Ringe, 1992, p.3).[2]

Perhaps the most systematic, comprehensive, and in-depth critique of arbitrariness was launched in cognitive linguistics, a new paradigm in the study of language, which emerged in the late 1970s and the early 1980s. Even though cognitive linguists are not straightforwardly anti-Saussurean, they clearly reject arbitrariness in favor of the view that language is inherently motivated on all levels of structural organization. The apparent conflict between the Saussurean and the cognitive paradigms is less fierce than it may seem at the first glance. First of all, in the system delineated in *Course of General Linguistics*, motivation had a much greater role to play than it is commonly believed. Second, there seem to be little agreements among cognitive linguists themselves about what motivation is and how it can be described or explained. For example, the book under the telling title *Motivation in Language* (Cuyckens et al., 2003) includes texts on metaphor, metonymy, grammaticalization, subjectification, conceptual blending, and syntactic constructions among other things. Obviously, one may concede that all of these phenomena somehow "count as" motivation, yet it is at least methodologically useful to

[1] This resistance can be (perhaps) explained by a greater variety of form-meaning relations outside language, where phenomena like iconicity are more apparent. Another important factor was the availability of other explanatory paradigms, mainly Peircean semiotics, which emphasized the non-arbitrary aspect of the expression-content link.

[2] Interestingly, Ringe does not only emphasizes the importance of arbitrariness as a principle structuring language, but also suggests that the principle warrants "scientificness" of linguistic research.

indicate their common denominator. Without a clear and robust understanding of motivation, vague and general claims stipulating that "language is motivated" seem to have little advantage over "language is arbitrary."

The aim of the present article is to sketch the methodological framework for defining and describing motivation in language and other semiotic systems. Since arbitrariness in its original formulation applied to linguistic signs, I will demonstrate that the Saussurean assumption about the nature of language is inherently flawed and limited in its explanatory power. Also, a new descriptive framework will be proposed, which overcomes the limitations of Saussure's arbitrariness and offers a more fine-grained description of the relationship between the signifier and the signified. Finally, the framework will be extended to the analysis of non-linguistic signs. The last point is meant to hint at the fundamental unity of the semiotic capacities of the human mind, at least in the context of motivation: the factors responsible for forging the relationship between the form and the meaning of linguistic signs are also responsible for motivating signs in other kinds of systems.

2. The problem

Saussure explains that "the choice of the signifier (…) is unmotivated, i.e. arbitrary in that it actually has no natural connection with the signified" (Saussure, 1966 [1916], p.69). In other words, the author identifies arbitrariness with the lack of motivation and the lack of natural connection between the expression and the content. Neither the terms "unmotivated," nor "natural connection" are obvious and unproblematic, even within the context of *Course*.

As far as motivation is concerned, a careless reader of the book may have the impression that Saussure banished the notion of motivation from language. However, Saussure states explicitly that "[there] is no language in which nothing is motivated, and our definition makes it impossible to conceive of a language in which everything is motivated. Between the two extremes – a minimum of organization and a minimum of arbitrariness – we find all possible varieties" (Saussure, 1966 [1916], p.133). Thus, motivation is a crucial component of Saussure's model of language, but it is a property of syntagmatic relations between signs, rather than a symbolic relation between the expression and the content. For example, in French, *dix-neuf* 'nineteen' could not be expressed by a combination of sounds *dix-huit* or *douze* ('eighteen' and 'twelve' respectively), even though the sounds lack the natural connection with NINETEEN just like *dix-neuf* does. There are two kinds of restriction at play. Firstly, the linguistic system of French requires the numeral to be expressed by combining *dix* and *neuf* in a particular way (this is known as syntagmatic motivation). Secondly, *dix-huit* and *douze* belong to the linguistic system of the French language and *dix-neuf* is partly specified in relation to other lexical elements of the system (this restriction is called paradigmatic motivation).

Of course, the motivated nature of syntagmatic structures is still recognized in modern linguistics. Langacker, among others, notes that "[an] obvious but seldom made observation is that any polymorphic linguistic sign (…) is nonarbitrary to the extent that it is analyzable. For example, given that *staple* means what is does, and that *-er* means what it does, it is anything but arbitrary that *stapler* is the form used in English for a stapling device" (Langacker, 1987, p.12). However, cognitive linguists wish to extend the definition of motivation to phenomena like iconicity found in onomatopoeias, which Saussure did not recognize as instances of non-arbitrary connection between the expression and the content. Obviously, Saussure was well aware of the existence of onomatopoeic words and the fact that they may be used to undermine his principle of arbitrariness. Nonetheless, he rejected these arguments by claiming that "authentic

onomatopoeias (…) are never organic elements of a linguistic system," and the fact that different languages may use different onomatopoeic sounds to denote the same concepts shows that phonological forms are "chosen somewhat arbitrarily" and that due to historical changes "they lose something of their original character in order to assume that of the linguistic sign in general, which is unmotivated" (all three quotations from Saussure, 1966 [1916], p.69).

Since definitions of basic terms in every scientific and scholarly paradigm are to some extent conventional and dependent on particular research goals, it is difficult to undermine Saussure's definition of arbitrariness "from within" Saussurean linguistics. If a linguist chooses to define "arbitrariness" in a way that covers iconicity in onomatopoeias, it is difficult to argue with the conventional nomenclature (unless there is some kind of logical or terminological inconsistency in the theoretical system, which does not seem to be the case here). However, Saussure's approach can be criticized from a meta-methodological perspective, i.e. by pointing out problems in the way the basic assumptions of the paradigm are formulated. As pointed out by Maruszka Meinard (2014), it can be argued that Saussure's notion of arbitrariness is unfalsifiable due to *ad hoc* solutions. In short, an *ad hoc* solution is a modification of a theory or of a research practice in such a way that the modifications defend a hypothesis against falsification without enhancing the epistemological content of the theory.[3] In principle, Saussurean arbitrariness is falsifiable, despite some terminological vagueness surrounding the terms "natural connection" and "motivation" in reference to syntagmatically simple signs. In fact, arbitrariness is falsified by the signs that display some sort of "natural" connection between the signifier and the signified. Onomatopoeias are very good candidates for such falsifiers. However, Saussure manages to defend the principle of arbitrariness by discretionarily "stretching" the definition of the principle in such a way that it covers onomatopoeias. Due to this terminological maneuver, onomatopoeias are simply defined as arbitrary within the theory. From the meta-methodological perspective, this solution is hard to accept, since it offers no new insight into the nature of language, arbitrariness, or onomatopoeias, which is characteristic of "suspicious" *ad hoc* solutions.

Needless to say, a similar *ad hoc* practice can be used to debunk other falsifiers of arbitrariness in language, including structural iconicity in morphology and syntax (discussed in some detail in Dirven and Verspoor, 2004, ch.1), sound symbolism, and the somewhat underestimated indexicality (manifesting itself in metonymies). This brings us to a problem graver than the meta-methodological neatness of the paradigm, and perhaps more relevant for practicing linguists and semioticians: the *ad hoc* character of Saussure's arbitrariness hides a rich area of research on how human beings associate phonological expressions with concepts. By reducing iconicity, indexicality, and sound symbolism to a form of arbitrariness, Saussure managed not to ask questions about the role of similarity and contiguity associations in the process of sign formation and usage. This lack of interest in the psychological and cognitive aspects of semiotic processes (studied more directly by Charles S. Peirce) seems particularly odd in the light of Saussure's insistence that "[t]he linguistic sign is a two-sided *psychological* entity" (Saussure, 1966 [1916], p.66; my emphasis).

Recent years has witnessed a renewed interest in sound symbolism as potential challenge to Saussure's arbitrariness (cf. e.g. the editorial introduction to the special issue of *Public Journal of Semiotics*, Zlatev (2013), as well as other articles from the issue: Johansson and Zlatev (2013) and Cuskley (2013)). While in the previous paragraph I do acknowledge sound symbolism as a potential falsifier of arbitrariness, some caution

[3] For a more detailed discussion, see e.g. Popper (2002 [1934], Sections 19 and 20) and Lakatos (1970).

should be exercises at this point. For example, recurring phonosemantic pairings found in phonestemes like *glam*, *glare*, *gleam*, *glimmer*, *glint*, *glisten*, are not as challenging for the principle of arbitrariness as it may appear. Even if one detects a statistically significant tendency for *gl-* to appear in words denoting light or shiny objects, this kind of regularities can be accounted for within Saussure's framework if one wishes to play the devil's advocate. To see how this argument against arbitrariness fails, it is necessary to make a careful distinction between the research procedures of demonstration and testing. Technically, demonstration consists in showing that a fact is *compatible* with a hypothesis. In such a sense, it can be indeed demonstrated that if the non-arbitrary nature of language is accepted as a hypothesis, the existence of phonestemes is compatible with the hypothesis. Testing, however, which is the logical basis of falsification, consists in revealing a fact *incompatible* with a hypothesis, due to which the falsity of the hypothesis is shown.[4] In other words, if phonestemes were to be accepted as falsifiers of arbitrariness, one would need to show that they are incompatible with the hypothesis of the arbitrariness of language rather than to show that they are compatible with the hypothesis of non-arbitrariness. Saussure's theory, however, can incorporate phonestemes into its model of language via associative relations (known more widely in present-day semiotics as "paradigmatic relation"), i.e. through various phonological and/or semantic associations between elements of the linguistic system. For Saussure, such relations hold between morphological stems (the French *enseignement* 'teaching,' and *enseigner* 'teacher'), shared affixes (*enseignement* 'teaching,' *armement* 'armament,' and *changement* 'changing'), semantic similarities (*enseignement* 'teaching,' *instruction* 'instruction,' *éducation* 'education') and even accidental phonological similarities (*enseignement* 'teaching' and *justement* 'precisely'; cf. Saussure, 1966 [1916], pp.125-126). Thus, a Sassurean linguist could propose that similarities in phonestemes can be treated as instances of paradigmatic relations. Even skillfully designed experiments (e.g. Ahlner and Zlatev, 2010) involving fictive words are not fully immune to this kind of critique, since a Saussurean linguist may argue that the sound-meaning correspondences found in non-existent words are motivated by the correspondences in the linguistic system of the respondents (even though such an explanation has a somewhat *ad hoc* feel to it). A stronger support for phonestemic sound symbolism comes from cross-linguistic studies demonstrating that similar results can be obtained for speakers of different languages, like in the study of Johansson and Zlatev (2013). It would be highly unlikely (even though the possibility cannot be conclusively ruled out) that several different arbitrary linguistic systems incidentally give rise to similar phonosemantic associations. Thus, it seems more reasonable to seek the explanation for sound symbolism in extra-systemic factors.

I do not wish to create the impression that I am defending classic Saussureanism against the proponents of non-arbitrariness. I do believe that the models offered by Dirven and Verspoor (2004), Ahlner and Zlatev (2010), Cuskley (2013), Johansson and Zlatev (2013), and others (some of who will be mentioned in the following sections) offer a better explanation of empirical data than the model created by Saussure. The only reason for playing the devil's advocate is to draw attention to the strengths of Saussure's theory which are sometimes overlooked by the proponents of non-arbitrariness. The fact that it is possible to propose a hypothesis of non-arbitrariness compatible with empirical facts does not automatically preclude the possibility that the same facts can be compatible with Saussurean arbitrariness hypothesis. This asseveration becomes less paradoxical in

[4] Formal-logically, if *h* is a hypothesis and *f* is an observable fact, demonstration relies on the rule *modus ponendo ponens*: $[(h \rightarrow f) \wedge h] \rightarrow f$, while testing relies on the rule *modus tollendo tollens*: $[(h \rightarrow f) \wedge \sim f] \rightarrow \sim h$.

the light of the so-called Duhem-Quine hypothesis (cf. Quine 1971 [1951], Cat 2006), which entails that two mutually incompatible theories or sets of hypotheses account for empirical facts equally well.

3. The problem shift

Ideally, a new approach to the study of the signifier-signified link should preserve the strengths of Saussure's approach (recognition of cross-linguistic variety, attributed to arbitrariness, and the conventional nature of language) and avoid the *ad hoc* solutions to the problem of iconicity and other types of motivation.[5] Of course, this project should not be confused with an attempt to restore or reform the classic structuralist linguistics as a "modernized" paradigm. The aim is much more modest and consists in critical evaluation and deep formulation of a concept of structuralism that came to be accepted in linguistics even when the rest of the paradigm was rejected in the second half of the 20th century.

The most common proposal of such a problem shift revolves around Charles S. Peirce's typology of signs. While the typology is more elaborate and nuanced than so, for the purpose of this article one may accept a simplified distinction between *indexical signs* (where the form and the meaning are related through a physical or natural connection), *iconic signs* (where the form and the meaning are related through similarity), and *symbolic signs* (which are conventional; e.g. Peirce, 1998, pp.4-10). Solutions inspired by this classification are advocated by Taylor (2002, ch.3), Dirven and Verspoor (2004, ch.1), and Tabakowska (2006), among others. Usually, however, attempts to apply a Peircean classification to Saussurean sign are somewhat naive and oversimplified. They are naive in the sense that they ignore a number of serious theoretical problems arising when a set of terms from one paradigm is taken out of its original framework and applied to a notion from a different paradigm, incommensurable with the former. In other words, Peirce's tripartite sign is not the same theoretical concept as Saussurean bipolar sign, and therefore Peircean iconicity, indexicality, and conventionality cannot be used to describe the connection between Saussure's signified and signified. These notions apply to different *kinds* of entities and denote different *kinds* of relations within different theoretical frameworks. Thus, it is unacceptable to claim that a Saussurean sign can be iconic or indexical in the Peircean sense. Moreover, attempts of this sort are limited in scope, because they overlook some potentially relevant elements of Peirce's semiotics. For example, most cognitive linguists fail to recognize the importance of a special type of an iconic sign proposed by Peirce, i.e. metaphor (one notable exception is Hiraga (2005)), and the role of indexicality in language is usually reduced to pronouns and informative, but extralinguistic, properties of speech. For example, Taylor admits that

> [a] state of drunkenness may cause a person to lose control of the articulators; consequently, slurred and imprecise speech may be an index of the speaker's inebriated state. Raised pitch could be an index of agitation; hoarseness may be an index of a sore throat; a person's accent or dialect may be an index of geographical, social, or educational background. Even the fact that you happen to speak language X rather than language Y is indexical – it conveys that you happen to have been raised in a community that speaks language X, rather than in one that speaks language Y. (Taylor 2002: pp.48-49)

[5] Development of such a novel approach would constitute the problem shift mentioned in the title of the section. The term "problem shift" is derived from Lakatos (1970) and refers to a change in a theory that increases its epistemological content, for instance by generating new predictions or discovering new facts.

Yet despite the fact that "[a] hoarse voice may be indexical sign of a sore throat (…) it becomes a symbol (…) when it is used with the intention of deceiving a hearer" (Taylor, 2002, p.50). Here, the discussion becomes entangled in a number of confusing concepts: apparently, symbols are not only conventional, but also intentional, and a sign is no longer an index when it is used with an intention of expressing something. This suggestion is at odds not only with Peirce, who never defined indices as essentially unintentional, but also with Taylor's claim that phonological forms are indices of the concepts they stand for (2002, p.49). Are words used without the intention of expressing meanings?

These kinds of inconsistencies are symptomatic for many attempts at adopting Peirce's semiotics in the field of linguistics. Nonetheless, this is not to say that insights from Peirce's semiotics are irrelevant for reshaping our ideas about arbitrariness. Taylor's confusion about the criteria of indexicality and symbolicity disappears almost immediately if one bears in mind that Peirce did not design the distinction between indexical, iconic, and symbolic signs as a rigid, clear-cut classification. This is not always obvious since Peirce frequently wrote about "three kinds of sign" (e.g. Peirce, 1992, p.225), but after a closer inspection it appears that indexicality, iconicity, and symbolicity are properties which may be combined in varying proportions in one sign, rather than mutually exclusive categories. For example, Peirce argues that a portrait of a person "is not a pure icon, because I am greatly influenced by knowing that it is an *effect*, through the artist, caused by the original's appearance... Besides, I know that portraits have but the slightest resemblance to their originals, except in certain conventional respects, and after a conventional scale of values, etc." (Peirce, 1931-58, p.2.95; original emphasis). Moreover, Peirce admits the possibility of "a perfect sign," in which "[iconic, indexical and symbolic characters] are blended as equally as possible" (Peirce, 1932, p.172). Since one sign can combine the properties of indices, icons, and symbols, additional criteria (like intentionality mentioned by Taylor) are redundant for distinguishing an index from a symbol: a hoarse voice is indexical of the sore throat, because it is naturally connected to it (or at least this is how the hearer should interpret it), and it is not symbolic, because it is not sanctioned by any convention. In fact, the very act of making this distinction is misguided in the first place: there is no contradiction and inconsistency in proposing that an utterance produced with a hoarse voice is symbolic to the extent to which the words in the utterance are conventional and indexical to the extent to which a hoarse voice is an index of a throat infection.

This example is a good illustration of two issues that the problem shift proposed in this article addresses. Firstly, there is a need for a framework for describing signs motivated by various factors simultaneously. The framework should be capable of accounting for a situation when the content of an utterance is symbolic and the quality of voice is indexical without resorting to other factors (like intentional/unintentional) and *ad hoc* solutions like the ones in Saussure's treatment of onomatopoeias. Secondly, the distinction between "the linguistic" and "the extra-linguistic" in an utterance is to some extent arbitrary and impoverishes our understanding of the semiotic interaction. From the point of view of the interlocutors, there is no interesting and important difference between the part of the overall meaning expressed linguistically (the content of the utterance) and extra-linguistically (the quality of voice); both of the components form a unified semiotic experience. For this reason, a new framework for describing motivation should be capable of describing both linguistic and non-linguistic elements of a message in a systematic and consistent fashion.

4. The proposition

The core of the new framework consists of two statements:

(1) The (linguistic) sign is a pairing of a conceptual phonological form and a conceptual semantic structure linked with a symbolic association.
(2) The symbolic association can be structured by conceptualized contiguity, conceptualized similarity, and convention.

Statement (1) is fundamentally Saussurean, but this part of classic structural linguistics is widely accepted in modern cognitive linguistics (e.g. Langacker, 1987, p.11; Taylor, 2002, ch.3; Dirven and Verspoor, 2006, ch.1). The sign is bipolar and both of the poles are conceptual in nature. Roughly speaking, the meaning of the sign is identified with the conceptualization in the mind of the speaker and the phonological form is a mental representation of acoustic, graphic, or gestural artifact produced by the speaker/writer/signer to express the conceptualization.[6]

Statement (2) is inspired by Peirce rather than taken verbatim from his philosophical system. The statement acknowledges the intuitions behind Peirce's "classification" of signs: similarity is the basis for the iconic sign, contiguity corresponds to Peirce's natural connection in indices, and convention is the basis for symbols. The new framework, however, explicitly defines these relations as conceptual in nature, which is not the case in Peirce's semiotics. This is particularly true for indices, where "the relation of the sign to its object does not lie in the mental association, there must be a direct dual relation of the sign to its object independent of the mind using the sign" and "the sign signifies its object solely by virtue of being really connected with it" (Peirce, 1992, p.226). Peirce illustrated this point with examples that emphasize the non-conceptual character of the natural connection, including a low barometer as an index of rain, weathercock as an index the direction of the wind, the pole star as an index of north, smoke is an index of fire (Peirce, 1998, p.14).

The conceptual status of indexical relations is one of the most prominent departures from classic Peircean semiotics. On this view, the connection between the form and the meaning in an indexical sign is a "natural association" in the mind of the conceptualizer, rather than a natural connection "out there" in the world. Consequently, a low barometer is not an index of rain by the virtue of a physical interaction between the measuring tool and atmospheric conditions, but by the virtue of the conceptualizer associating the state of the barometer with rain. The association is natural for the conceptualizer not because it is informed by the state of affairs in the physical world, but because the association is intuitive and "makes sense" for the conceptualizer. There are numerous reasons for confining the original sense of Peirce's natural connection to the realm of the conceptual, yet a detailed discussion of this matter is beyond the scope of this article. Important arguments come from general philosophical insights into metaphysics and epistemology, especially Kant's distinction between *noumena* ("things in themselves," independent of perception and conception) and *phenomena* (things as they "present themselves" to the human conceptualizer), and the unavailability of the noumenal world for direct knowing and consequently for any semiotic processes (cf. Kant, 2008 [1781]). By claiming that physical connections can be used in semiosis, Peirce neglects the noumena-phenomena distinction and does not explain how noumenal connections can be used in semiosis, even

[6] This assumption is heavily influenced by Ronald Langacker's Cognitive Grammar paradigm and is by no means universally accepted in cognitive science. For example, the role of interaction with the environment in the process of semiosis is emphasized by Cognitive Semiotics (cf. e.g. Sonesson 2012)

though they are not directly accessible to human conception. Another reason for accepting the mental nature of contiguity is coherence with statement (1): if the sign is a pairing of two conceptual entities, only other conceptual phenomena can structure the *symbolic* relation between them.[7]

Conceptual contiguity and similarity relations are key elements of Conceptual Metaphor Theory (CMT) proposed by Lakoff and Johnson (e.g. Lakoff and Johnson, 1980; Lakoff, 1993). In CMT, similarity relations are conceptual mappings between cognitive domains (i.e. between structures of knowledge that organize information about entities and phenomena), which give rise to conceptual metaphors. For example, the metaphor TIME IS MONEY relies on subjectively construed (rather than objectively perceived) and culture-specific (rather than universal) resemblance between the concepts TIME and MONEY, as manifested in the sentences like *You're wasting my time* and *I spent a week writing this article*. Similarity is notoriously difficult to define, not only in linguistics, and the psychological and neurological mechanisms of similarity perception are still unknown. Katarzyna Sobczuk honestly admits in her overview of theories of similarity in psychology that "we do not have a satisfactory definition of the relation of similarity and we do not know what its criteria are" (Sobczuk, 2006, p.33; translation H.K.). For the purpose of this article, similarity will be defined tentatively, but I hope uncontroversially, as the relation of sharing conceptual properties or substructures. This definition is hardly revealing, but it provides a good starting point for operationalizing the notion in actual analyses. In the framework proposed in this article, the application of similarity mappings is extended beyond the scope of metaphor to all cases where shared conceptual content motivates symbolic relations between the form and the concept. For example, iconicity in onomatopoeias is defined as mappings between the phonological form and the semantic content (this approach is also advocated by Hiraga (2005); also see Section 5.2).[8]

Contiguity, in turn, is defined by Lakoff and Johnson in the context of conceptual metonymy as a mapping within one cognitive domain. The exact psychological mechanism of contiguity is as mysterious as that of similarity, but semantically, one element of a cognitive domain can be used to metonymically refer to another element of the same cognitive domain. One example is the part-whole relation in the sentence *She's just a pretty face*, where the concept FACE is used to mentally access the concept of the whole person. It is worth noting that Lakoff and Johnson (1980, ch.8), as well as Radden and Kövecses (1999) point out that metonymy performs not only a referential, but also a cognitive function, since the choice of referring concept depends on the conceptual salience of this element within a particular context. In other words, the concept FACE is selected for the metonymy in *She's just a pretty face*, because the face is the part of body which is most readily associated with beauty. In this sense, cognitive salience provides one of the criteria for "naturalness" of the contiguity: an association is natural for a conceptualizer, because the association between two concepts is salient within a particular situation.

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[7] From this point in the discussion I will restrict the term "symbol" to a pairing of a conceptual form of a sign and the semantic content expressed by this sign (without specifying that the pairing is conventional). This is compatible with Langacker's terminology (cf. e.g. Langacker, 1987; Langacker, 2008) and departs from Peirce's nomenclature. This terminological convention helps to avoid confusion and misunderstandings resulting from incompatible uses of the word *symbolic* in Peircean semiotics and cognitive linguistics.

[8] Within the field of linguistics, similarity mappings between phonological structures account for a number of morphological and morphosyntactic phenomena, including reanalysis and back-formation. Thus, the role of similarity in linguistic motivation is not limited to iconicity, but manifests itself in different forms on and across the formal and the semantic pole of the sign.

This framework for describing linguistic motivation emphasizes the need for a more comprehensive and in-depth analysis of similarity and contiguity mappings in each case study. For example, it does not suffice to state that a particular linguistic expression is partly conventional and partly iconic. Instead, the task is to reconstruct the entire matrix of motivating relations, i.e. to show which conceptual structures (phonological or semantic) are related to each other. Such an analysis is not limited to acknowledging the existence of similarity or contiguity at work in the expression analyzed; the analysis is to show the location and the scope of these relations in the symbolic link between the phonological and semantic structures. The method is illustrated by the following case studies of the words *woodpecker*, *cuckoo*, and the visual recycling sign.

5. Case studies

5.1. *woodpecker*

In order to demonstrate the importance of motivation in language, cognitive linguists tend to focus on iconicity, as manifested in imitative effects in onomatopoeias or structural iconicity in syntactic structures (e.g. Dirven and Verspoor, 2004, pp.8-12; Taylor, 2002, pp.46-48). The role of contiguity is usually overlooked or neglected. Limitations of this approach become apparent when the word *woodpecker* is taken into consideration. *Woodpecker* is an example of a non-arbitrary word motivated not iconically, but indexically. Here, the bird receives its name from the association of the animal with the concepts WOOD and TO PECK. In Peircean nomenclature, these relationships are indexical, as they rely on natural connection between the bird and the activity performed by the bird (pecking at wood). Jakobson (1965) noticed that contiguity, the relationship underlying Peirce's indices, is also the basis for metonymy, which is a terminological convention preferred by cognitive linguists. "Indexical" and "metonymic" are not perfectly equivalent, since the former may connote a physical real-world relation along the lines of Peirce's semiotics, while the latter may be more readily associated with the conceptual sphere emphasized by cognitive linguists. Bearing in mind that the assumption behind the proposed framework is that motivating relations are conceptual, the latter interpretation is preferred. What is crucial is that both terms refer to the same kind of relation, i.e. conceptualized contiguity (i.e. a salient mental association between two concepts).

Needless to say, the word *woodpecker* is also conventional in the English language. There is no conflict or inconsistency in claiming that a sign is at the same time indexical and conventional. As mentioned in the previous section, indexicality, iconicity, and conventionality should be treated as properties or elements of a larger matrix of motivating relations, which can coexist in one sign. For this reason, as already mentioned, they should not be treated as criteria for defining mutually exclusive categories. The goal of the analysis is not to proclaim that the word is "indexically motivated and conventional at the same time," but to reconstruct the overall configuration of motivating relations. The matrix for *woodpecker* is sketched in Figure 1.

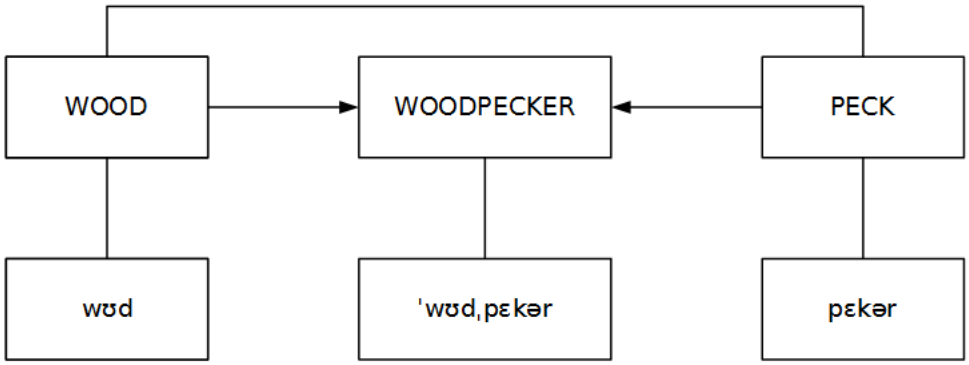

Figure 1. Motivating relations in *woodpecker*

The rectangles in the figure (and other figures used in the article) represent conceptual structures: uppercase letters are used for semantic structures and phonological structures are marked with International Phonetic Alphabet. The solid lines connecting semantic structures to respective phonological forms represent conventional associations and solid line arrows denote contiguity relations. The direction of arrows indicates the direction of metonymic mappings from the referring concept (called "the vehicle" by Lakoff and Johnson (cf. 1980)) to the referred concepts (called "the target"). The key advantage of this type of diagrams over simple statements of the sort "the word X is indexical and conventional at the same time" is that it shows which concepts are indexical relative to which concepts and which form-meaning associations are conventional. Figure 1 shows that in *woodpecker* convention holds between the three pairings of phonological and semantic structures in the words *wood*, *(to) peck*, and *woodpecker*. Contiguity relations, in turn, associate the concept WOODPECKER to the concepts: WOOD and TO PECK.

It should be born in mind that such diagrams are bound to be simplified. In this case, Figure 1 suggests that the concepts WOOD and TO PECK are isolated from each other on the semantic plain. This is a misguided conclusion. It seems that the form *woodpecker* was not created simply from the associations between the bird and the wood on the one hand, and between the bird and the action of pecking on the other hand. On the contrary, it is more plausible that *woodpecker* was derived from the action of pecking at wood and it is this action that is associated with the bird. This aspect of the semantic structure is signaled by the solid line linking WOOD and TO PECK, yet the diagram may still suggest isolation of these concepts. It should born in mind that every graphic representation of this type is bound to be a reduction of conceptual complexities behind the sign in question.[9]

[9] Another inevitable simplification suggested by this kind of diagrams is discreteness of concepts, especially semantic structures. Concepts, however, do not come in well specified and clearly delineated "packages" (as perhaps suggested by rectangles), but they are to somewhat vague, defined against larger structure of knowledge (like cognitive domains mentioned in previous sections), and elaborated in context of actual usage events. This "encyclopedic" view on meaning is discussed in more detail by Taylor (2010, ch.5)

5.2. *cuckoo*

In onomatopoeic words like *cuckoo* the relation of similarity holds between the phonological form and the semantic content. In this case, however, it would be a gross oversimplification to claim that it is only similarity that links the form and the meaning. First of all, just like in the case of *woodpecker*, the role of convention should be acknowledged: the combination of sounds that is used to denote the bird not only because it resembles the sound produced by the bird, but also because it is the "agreed upon" way of referring to the bird in the community of the speakers of English. This observation is consistent with Saussure's view on the social nature of language.

An un-Saussurean element of the analysis is the insistence on the importance of iconicity. The Swiss linguist's argument against the naturalness of the signifier-signified link is the fact that different languages use different phonological forms in onomatopoeias. To take several examples, the word for the cuckoo is *kukułka* in Polish, *cuco* in Spanish, *kuku* in Basque, *Kuckuck* in German, *kakukkfélék* in Hungarian, *guguk* in Turkish, *kakok* in Tagalog, and *Họ Cu cu* in Vietnamese, and *kekeo* in Swahili. Technically, all of these words use different combinations of sounds, in spite of striking phonological similarities (reduplicated syllable consisting of a velar plosive *k* or *g* followed by a rounded back vowel *u* or *o*). However, the fact that different languages do not have exactly the same phonological form in corresponding onomatopoeias does not mean that the iconic effects in each of the signs are absent or negligible. There is a number of ways in which the phonological form of a word can resemble the cuckoo's calls. Since both the Polish *kukułka* and the Tagalog *kakok* are equivalent attempts to imitate the bird's sound, the argument is not a convincing argument against the significance of similarity in these words. On the contrary, it would be rather unusual if a number of historically unrelated languages used so strikingly similar phonological form purely accidentally. However, the possibility of iconic motivation should not be confused with the necessity of iconic motivation. There is not language-internal or language-external obligation for any language to use "natural connections" (to use Saussure's terminology) in the signifier-signified link, but any language is free to do so if the connection is somehow useful for semiotic purposes.

While the iconic component in *cuckoo* is quite apparent, the indexical component is much less conspicuous. It is a rarely observed that the word is not a purely iconic sign according to Peirce's definition (and probably according to any other definition of iconicity), because the phonological form of the word does not resemble the bird, but the sound produced by the bird. Therefore, an additional contiguity mapping is required to associate the sounds of the bird to the bird itself. The whole configuration of motivating relations is shown in Figure 2 (the broken line arrow represents a similarity mapping from the sound of the bird to the phonological form of the word).

Cuckoo demonstrates that the interaction between various motivating factors even in apparently simple cases can be quite complex. General classificatory statements like "*Cuckoo* is conventional and iconic at the same time" hardly do justice to this complexity. A comprehensive and in-depth description is possible only the entire network of motivating relations is reconstructed in some detail.

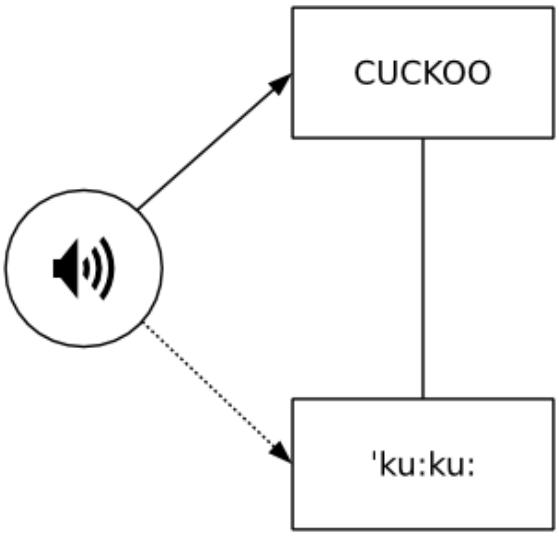

Figure 2. Motivating relations in *cuckoo*

5.3. The recycling sign

So far, the analyses focused on linguistic expressions, in order to show the inadequacy of Saussurean arbitrariness in the domain where it was supposed to be fundamental and the most robust. Nonetheless, motivation outside the domain of language is governed by very similar, if not identical mechanisms. More specifically, association between the expression and the content of non-linguistic signs is structured by contiguity, similarity, and convention, which interact with each other in complex networks of relations. This kind of interaction in the visual modality can be found in the recycling sign (Figure 3).

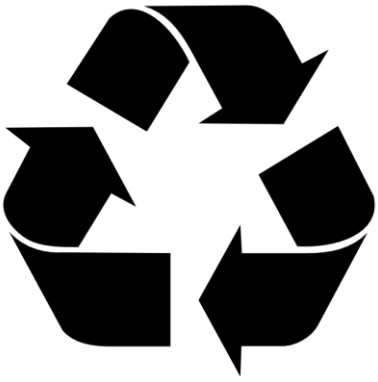

Figure 3. The recycling symbol

Just like in the case of the two previous case studies, the recycling sign is conventional, but conventionality does not exhaust its motivation. The sign consists of

arrows, which are classic instances of indexical signs motivated by contiguity, "pointing to" a particular direction. Nevertheless, the layout of the arrows is not motivated by indexicality. Essentially, the sign represents the process in which material can be recovered, regenerated, and reused for a number of times, and the circular layout of the arrows captures the fact that recycled materials "are returned" to the state of usability. While the actual process develops through time, in the sign the development is represented in terms of space; in other words, a temporal cycle is represented by a spatial cycle. This mapping from the domain of time to the domain of space is an instance of a metaphor.

As already mentioned in Section 4, in Conceptual Metaphor Theory metaphors are based on subjectively construed similarity relations across cognitive domains. The metaphors rendering time in terms of space are common in Western culture (e.g. Lakoff, 1993, Radden, 2003). Intimate relationship between metaphor and similarity can also be found in Peirce's semiotics: metaphors are considered to be a type of iconic signs. In Peirce's classification there are *imagic icons*, where the form resembles meaning in directly discernible qualities, and *diagrammatic icons*, where the form resembles the meaning in internal structure and relations between elements. Metaphors are somewhat vaguely defined as "those [iconic signs] which represent the representative character of a representamen [i.e. the expression – H.K.] by representing a parallelism in something else" (Peirce, 1998, p.274). Peirce does not explicate or illustrate what this "parallelism in something else" may be, which effectively makes metaphor an umbrella term for abstract similarity not covered by the two other types. For our purposes, it is crucial that in the Lakovian and the Peircean approaches the relationship holding between the elements of a metaphor is abstract similarity between concepts, entities, or phenomena. It is now possible to reconstruct the network of motivating relations in the recycling sign (Figure 4).

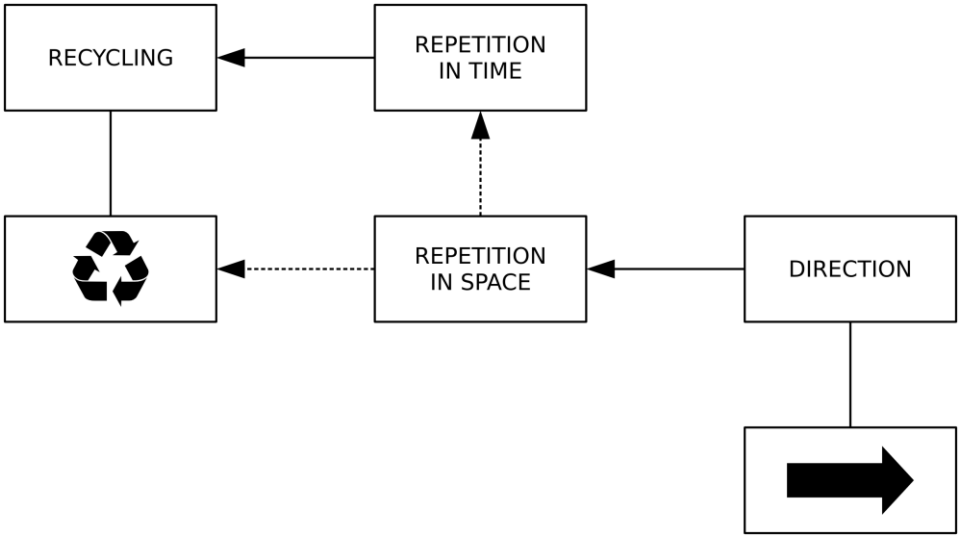

Figure 4. Motivating relations in the recycling sign

Conventional associations can be found between the expression and the content of the whole recycling symbol, as well as the arrow and the direction it indicates. Regardless of any other motivating factors inherent in these signs, they are conventional ways of denoting the respective concept in the community of users. Since conventionality does not obviate other motivating factors, the arrows are indexical (as signaled in Figure 4 by the additional solid arrow connecting the two poles of the sign). The spatial directionality implied by the arrow is hardly relevant for a temporal process unless the process is rendered metaphorically in spatial terms. This task is performed by the conceptual metaphor REPETITION IN TIME IS REPETITION IN SPACE, which is a special case of the more general metaphor TIME IS SPACE. This element of the matrix is represented by the pair of rectangles linked by the broken line arrow (standing for the relation of similarity in the metaphor). Since repeated use pertains to the concept RECYCLING and directionality pertains to spatial repetition, the concepts RECYCLING and DIRECTION are associated via contiguity links to the metaphor REPETITION IN TIME IS REPETITION IN SPACE. This metonymy is a special case of a more general mapping PART FOR WHOLE. Finally, the concept of REPETITION IN SPACE is represented in a specific visual pattern of three arrows, i.e. the actual recycling sign.

Just like in the previous case studies, this fairly complex analysis reveals the semiotic aspects of the sign that are inaccessible when the descriptive and explanatory tool is a simple classification. Needless to say, Saussurean arbitrariness is even more inadequate an assumption for analyzing this kind of signs,[10] since it is blind to relations like contiguity and similarity almost by definition.

6. Arbitrary, motivated, or natural?

So far, Saussure's notion of arbitrariness of the linguistic sign has been critically evaluated; the critique focused of its *ad hoc* character and the lack of descriptive accuracy. Moreover, a new framework for analyzing motivation has been proposed. The framework is designed to overcome the limitations of Saussure's arbitrariness, but at the same time it seeks to respects a valuable insight: the fact that linguistic signs vary across languages. In this section closer attention is given to terminology and definitions of notions widely used in relation to motivation. Scientific and scholarly terminology is arbitrary in the sense that there is more than one adequate "label" that can be attached to a theoretical concept, and it is motivated to the extent to which the choice of the label emphasizes the aspects of the theory which are of special importance or interest to researchers.[11] It is, however, methodologically useful to qualify and disambiguate terminology, at least within one paradigm, to avoid confusion and misunderstandings.

The sign as viewed through the lens of the new framework is arbitrary in the sense that different languages and non-linguistic codes can use different forms to denote corresponding concepts. There is no "obligation" to use an onomatopoeic word for the

[10] To be fair, it should be reminded that Saussure never attempted to extend arbitrariness outside the domain of language. Nonetheless, some aspects of the recycling sign could be successfully captured by Saussurean arbitrariness, like the fact that, potentially, the concept RECYCLING could be expressed through a number of different visual signs and the clockwise alignment of arrows has no natural justification (I owe this observation to a reviewer from *Public Journal of Semiotics*). Just like the phonological forms for CUCKOO may vary across languages, recycling (and any other concept, for that matter) can be denoted by sign other than the three circularly arranged arrows in Figure 3. Of course, this potential variety does not entail that the actual recycling sign is motivated by convention alone.

[11] Not surprisingly, expert terminology is similar in this respect to "regular" linguistic sign: even though there is significant freedom in choosing a phonological form for a concept, the choice is guided by cognitive and semantic factors.

concept CUCKOO, even though many languages tend to do so, and it is not necessary to express the concept RECYCLING by means of three circularly arranged arrows. In principle, the nomenclature can focus on this aspect of motivation and retain the traditional term "arbitrariness." However, my terminological choice is to propose that the linguistic sign is "motivated." There are two reasons for this decision. First of all, the choice emphasizes the fact that this freedom in selecting signifiers is frequently restricted by cognitive factors: people tend to utilize conceptualized similarities and contiguities when they try to find suitable expressions for concepts. While the structure of the matrices of motivating relations may differ significantly across languages and codes, the matrices cannot be reduced to networks of purely conventional associations between concepts.

Secondly, despite Saussure's conviction that "the signifier (…) has no natural connection with the signified" (1966 [1916], p.69), the linguistic sign is natural in an important sense. Taylor notices that

> English speakers have learned that the conventional association of the concept [TREE] with the sound pattern [tri:]. For English speakers, this is a *natural* association. Although I can tell myself that the relation is purely conventional, it will feel wrong for me to apply the phonological form [tri:] to anything other than trees, or to call trees by another phonological form. (2002: p.49; original emphasis).

Saussure and Taylor are not in conflict, even though at first glimpse it may seem to be the case. Saussure did not define the notion of natural connection, which he probably considered self-explanatory. Bearing in mind his insistence on the social character of language, the Swiss linguist used the word *natural* with the sense "existing in nature, not caused, made or controlled by people," as defined by *Longman Dictionary of Contemporary English* (LDOCE, 2006, p.1094). In other words, the Saussurean sign is arbitrary/unnatural/unmotivated, because it is not "derived" from nature, it is a convention produced by human culture. Taylor seems to use *natural* with a different meaning, closer to "normal and as you would expect"[12] (LDOCE, 2006, p.1094). It seems that Saussure's and Taylor's do not disagree about the naturalness of the linguistic sign; they merely talk past each other.

In the approach proposed in this article, the sign is natural, because it "feels right" for a user of a particular language or code, even if the only reason for this feeling in familiarity with conventions of the language/code. In this approach, Saussurean arbitrariness – the situation when the relation between the form and the meaning is structured by convention alone – is a special case of naturalness (i.e. motivation by convention alone). This conclusion may seem paradoxical at first, but there is no terminological and theoretical conflict or inconsistency between the terms in the framework proposed in this article. Yet signs are also "arbitrary" (if one insists on this term), because speakers of different languages have substantial freedom in selecting the phonological form for a particular concept: even if a word is motivated by similarity and contiguity, speakers of different languages may have different ideas about which concepts are similar or contiguous to each other. The key difference between this kind of arbitrariness and the Saussurean version is that the former does not seek to downplay the role of the factors of motivation other than convention.

[12] This sense is also evoked by Langacker in *Foundations of Cognitive Grammar*: "the term natural (…) easily comes to mean simply 'in accordance with my own ideas'" (1987, p.13).

7. Concluding remarks

Let us conclude by briefly addressing two out of many intriguing questions related the new approach to motivation. Firstly: is the new framework capable of predicting the motivation behind new expressions or merely describing the motivation behind the actual ones? The short answer is: the framework is descriptive, rather than predictive. The reason for this lies in the nondeterministic nature of semantic changes. The processes of creation, extension, elaboration, or shift of meaning do not display regularities, uniformity, and consistency that can be captured by reliable covering laws or sweeping generalization. Semantic changes are governed by complex and largely random factors, including social and cultural changes, as well as individual creativity and imagination. It is not possible, even in principle, to build a theory or a model that would predict with a significant degree of certainty which similarity and contiguity relations will prove useful for semiotic purposes in a particular context. Predictive ambitions of this sort are unrealistic, but a *post factum* description is possible with the right kind of tools.[13]

Secondly: do sign users have conscious access to all of the relations in the matrix of motivation?[14] If the users do not have this kind of access, is it still legitimate to claim that the relations motivate the association between the form and the meaning of a sign in any psychologically real fashion? It is unlikely that users can consciously access all motivating relations behind a sign. The matrices in Figures 1, 2, and 4, as well as any other matrices of this kind, try to capture diachronic rather than synchronic aspect of a sign. The aim of analyses within this framework is to reconstruct the use of motivating relations throughout the historical development of an expression, rather than conscious knowledge of sign users in a given moment in time. In fact, it is usually the case that users are not aware of the diachronic motivation behind the sign they use, since normal semiotic processing is instantaneous, highly automatized, and rarely accompanied by conscious reflections about the nature of signifier-signified link.

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[13] For case studies demonstrating the dependence of diachronic semantic change on socio-cultural and historical factors, see Biscetti (2008) and Kowalewski and Weremczuk (2010).

[14] The question was suggested by prof. William Sullivan in a private conversation.

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