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Kant's Notion of Schema and Its Basis in Linguistic Analysis

Abstract

The use of Kantian schemata as valuable theoretical elements (constructs) in the explication of our cognitive architecture has been for some time a recurring topic in the philosophy of mind. The relevancy of schemas and processes of schematization as organizing principles of language structures has been repeatedly pointed out in linguistic theory, especially within the framework of cognitive linguistics. In this paper we discuss how Kant's notion of the schematization of the mind, as discussed in his Critique of Pure Reason*, i.e. the central notion of the schema, provides us with relevant insights into a novel critical approach to schematization in linguistics. At the same time, we strive to show that linguistic analyses provide a corroboration and enrichment of Kant's theoretical philosophy by means of linguistic data, reinforcing Kant's position with linguistic arguments and thus making him relevant in contemporary linguistic discussions.*

Keywords

schema, Immanuel Kant, linguistics, theoretical philosophy

1. Introduction

Readers of linguistic papers may agree that the name of Immanuel Kant is more rarely seen in them than names of other philosophers such as Johann Gottfried Herder, Wilhelm von Humboldt or Ludwig Wittgenstein, i.e. philosophers who dealt explicitly with the relationship of language and thought, language and culture and the nature of meaning in language. However, contemporary linguistic thought shapes its research objectives as part of the cognitive science enterprise, itself being an interdisciplinary field comprising various scientific disciplines (linguistics, anthropology, psychology, philosophy, neuroscience and artificial intelligence). The study of the human mind and the nature of knowledge is central to this broad field of research. In this context, contemporary linguistics explores and describes knowledge of language in relation to other types of knowledge as an integral part of the structures of the human mind. Because of his critical project that puts the nature of human knowledge at the forefront, condensed famously in his three *Critiques*, Kant is considered an important historical stepping stone in shaping and developing contemporary cognitive science, and some authors like Brook (2004: 1) call him "the intellectual grandfather of contemporary cognitive science". With his insights into the (then current) debates between rationalism and empiricism, Kant provides a new perspective on the relation of conception/cognition to perception, *a priori* knowledge and *a posteriori* knowledge

by observing the mind as an active faculty which shapes and coordinates sensations and ideas and therefore transforms the multiplicity of sense data ("experience") into an ordered unity of thought (Gardner 1985: 57). Despite the great terminological differences which can be observed in Kant's critical programme as opposed to contemporary texts in cognitive science and linguistics, we must point out that one term they both share – the notion of the *schema* as a relevant organizational principle of the structures of the mind. It can be stated then that the discussion of schemata[1] is as relevant to Kant scholars as it is to contemporary (cognitive) linguists. Furthermore, the contributions that both sides can provide in this mutual dialogue are best presented in their common interest in the notion of the schema. While there is general agreement among Kant scholars that as much as we would like to take schemata (the schematism of pure understanding) for granted in Kant's critical project, we cannot avoid questions and controversies which accompany it since the important parts of the project are dependent on the notion of the (transcendental) schema itself. Therefore, the main goal of this paper is to present and question the broad notion of the schema in Kant's philosophy as well as linguistic theory, bearing in mind possible comparisons and mutual contributions that the two fields have to offer one another. First we will present the uses of the term schema in contemporary linguistics, especially cognitive linguistics which develops and exploits the notion of the schema in many ways, thus making it a central notion in linguistic theory as well. Then we will juxtapose Kant's notion of the schema which is most precisely described in the *Critique of Pure Reason* and is a precursor to the notion of the schema as developed in cognitive science and linguistics.[2] Kant defines a (transcendental) schema as a mediating representation which connects the conceptual and perceptual – it has to be pure and yet intellectual and sensible (see chapter 4). This mediating nature of the schema is certainly one that is highlighted in contemporary linguistic definitions of the schema as well. Within this overview of the two positions we will point out the differences and similarities in the descriptions of the schema, as well as the advantages that the introduction of the schema offers both in the interpretations of the categories of the mind and those of languages categories. Perhaps the main questions we find important to address in this paper are the following: How can we read Kant within the linguistic discussion on *a priori* and empirical language categories? What is the role schemata play in this process? How can Kant's notion of the schema help us clarify and emphasize the main properties of schemata and schematization found in contemporary linguistic theory? For these purposes we will present and discuss a number of linguistic examples, as well as some examples Kant offers in his writings. Finally, we will summarize our conclusions on the mutual reinforcement of both positions on the question of the schema: a linguistic reinforcement of Kant's theoretical philosophy and the actualization of Kant's thought in contemporary linguistic discussions.

2. Kant and linguistics

It is important at the onset of this chapter to point out that linguistic theory is a diverse and rich field of study in its own right. This means that there are many ways a linguist can approach Kant's writings and their interpretation, and it is therefore necessary to limit oneself to the main points presented in this paper.[3] When discussing Kant and his views on language it becomes immediately clear that few remarks can be found in his *Critiques* regarding examples of linguistic meaning and language in general. Meaning, however, plays an im-

portant part in Kant's conception of the notion of schema. Meaning in linguistics, especially within the theoretical framework of cognitive linguistics and similar cognitive-functional approaches, holds a central place as the starting point in linguistic analysis. This is not the case with some linguistic theories (e.g. generative grammar), where other linguistic levels of analysis, such as phonology or syntax, obtain primacy of analysis.[4] Therefore, our linguistic discussion will center on cognitive linguistic and similar cognitive-functional approaches in linguistic theory, especially because the role of schemas in the construal of meaning is a common point between Kant and cognitive linguistic analysis. Some major differences, however, revolve around the philosophical basis of each approach, and these can be briefly outlined through the following features of cognitive linguistics' mainstream approach:

i) The embodied mind hypothesis, which negates a strict body-mind dichotomy and in its place puts the bodily basis of meaning and "the experiential embodied nature of human rationality" (Johnson 1987: 100; also see Gibbs 2005). This point is perhaps the main reason many authors view Kant as being at the opposite end of the mind-body relationship discussion than cognitive linguists. Here, perhaps, it is reasonable to invoke the great time gap between Kant's writings and the emergence of contemporary cognitive science in the 20th century, especially due to the insights gained from new methods developed in that period. In retrospect one can surely state that Kant did contribute to both sides of the argument, not just one or the other, and therefore stands as a figure that first tried to reconcile some aspects of rationalist and empiricist views. Also, it is important to realize that there is no strict consensus among linguists as to the amount of effect this hypothesis has across various types of language structure, e.g. it is more readily observed in some semantic domains than others. In other words, whether all of language is based (directly) on embodiment is still a

1
Deciding between the plural form of *schemas* or *schemata* was not an easy task because both are used in extant relevant works cited in this paper. However, because the term *schemas* is more commonly used by cognitive linguistic authors cited in this paper than *schemata* (and many authors working in other fields of contemporary cognitive science) we will use *schemas* when we are discussing linguistic approaches and *schemata* when we are discussing Kant.

2
We chose to begin with contemporary linguistic theories because they apply the term *schema* to a broad range of data and phenomena and show how the discussion on the nature of schemas is still ongoing today.

3
It should be also kept in mind that due to the analytical reasons of clarity and gradualness of the notion of schema analysis, we give the most attention to Kant's analysis in his first *Critique*, taking this as the most plausible first step because Kant devoted much space there to the explanation of this notion. Thus, the reader could get the wrong impression that we sometimes speak about schemata as some parts of mind structure instead of a process/mechanism. On the contrary, we are convinced that proper understanding of schemata ought to be situated in mechanism/processing articulated terms. Thus, although we will more often speak about schematism of understanding we take this to be just an aspect of schematism of the power of judgment, which probably articulates better the dynamics of schematisation (taken exclusively as a process), mostly explicated in Kant's *Critique of the Power of Judgment*, but the detailed elaboration of this interrelatedness exceeds the space limits of this paper. For a short summary of schematism of the power of judgment see Caygill (2000: 360).

4
However, see Williams (1993) for an overview of a tradition linking Cartesian linguistics, generative grammar and some of the aspects of Kant's critical project.

question ready for further investigation, and much of it is being investigated thanks to the long-term debate set by the early scholars.

ii) Perception as active and not passive (as thought of by Kant). This is a point broadly accepted in cognitive science, and some authors such as Lenk (2012: 71) explicitly state that Kant was wrong in believing that the material from the senses is received in its raw, unprocessed form ("the manifold"), only consequently to be processed by reason.[5] On this view both perception and cognition are active and flexible construct – creating mechanisms of the mind. From this it follows that concepts are intimately bound to and derive from *percepts* (Evans and Green 2006: 7). Both percepts and concepts are thus results of integration of various types of perceptual information (coming from our various senses) and/or other types of knowledge.

iii) The experiential basis of meaning and language structures as exemplified by e.g. *usage-based models of language* (see below).

iv) A relativist[6] and a (moderate) empiricist view of acquiring knowledge of language. This latter view does not, however, treat the mind as a *tabula rasa*, but points to the fact that language variation is a fact that cannot be ignored when discussing universal properties of language and thought.

v) A view of meaning in contemporary (cognitive) semantics is more layered than Kant's view, commonly thought of as equating meaning with reference only. Reference (or significance) is surely an important aspect of meaning in language, but the relationship between the linguistic sign and the referent is made complex by other aspects of meaning as well – most notably the complex relationship between a) language and thought, and b) language and the culturally enriched context in which signs are being used.

Not all of these points are in direct contrast with Kant's view of knowledge and cognition, as Kant is often perceived as standing in between the main modern philosophical viewpoints brought forth by rationalism and empiricism. As we mentioned at the beginning of this chapter, there are many ways to interpret Kant from a linguistic viewpoint.[7] It is however important to point to this ambiguity of Kant's writings from various linguistic viewpoints, and especially from those that may, at first sight, differ greatly from Kant's – as is the case with cognitive linguistics. It is precisely because of this reason that we focus on the notion of schema in this paper. Even the protagonists of the embodied mind hypothesis, such as Mark Johnson, point out that their "use of the term derives from its original use as it was first elaborated by Immanuel Kant" (Johnson 1987: 19). Thus before we turn to linguistic examples of the use of the term *schema* we want to point out that the illustration of our examples has the goal of putting forth four main points which relate the importance of schematism in Kant's theory as well as linguistic analysis:

a) Schematization is a ubiquitous process of the mind (which operates on many levels of language structure).

b) Via language categories, schematization can be observed as a cognitive mechanism in general.

c) Schemata have to be viewed both as a *process* and its results, and not as static entities, which in turn posits the notion of schemata as allowing both the *flexibility of application* and *stability of a system* (such as the language system) simultaneously.

d) A critical overview of the methodological challenges that the notion of the schema brings forth in linguistics and Kant's critical project is necessary.

The relationship of the conceptual and the perceptual, what is innate and what is learned is in the center of many discussions about the nature of language and its categories. One of the major contemporary approaches which utilizes schemas as a crucial part of its model of language acquisition and functioning are the so-called *usage-based models of language*, i.e. models which presume that the language use and language system are interconnected and inseparable aspects of linguistic and communicational competence (see e.g. Barlow and Kemmer 2000). Language use, in other words, is a necessary empirical and experiential prerequisite to the development of a language system and is in constant dynamic relation to it. Such an approach according to its proponents is in contrast with the traditional view of the structuralist *langue/parole* dichotomy (Saussure [1916] 1995) or the complementary generativist *competence/performance* dichotomy (Chomsky 1965, 2006). The competence/performance dichotomy has as a consequence the comprehension of language use (and language action) as a more or less passive realization of the language system which is to us – the speakers – given in advance – in the case of generative grammar as an innate universal grammar.[8] This traditional view of the relationship between language system and use is in essence unidirectional

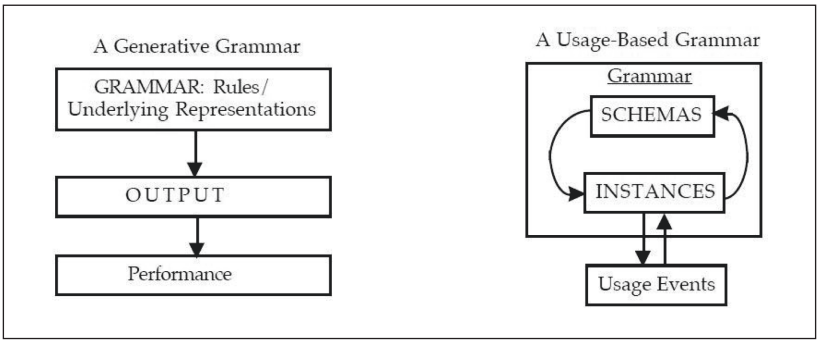

Figure 1. Differences in the models of language between generative grammar and usage-based grammars (Kemmer and Israel 1994: 168).

– the system provides the rules which are being realized in use.[9] The relation-

5
Although this view can easily be challenged by demonstrating that Kant had a much richer and more elaborated notion of schemata in mind, it is still the prevailing reading of Kant among philosophers of language and cognitive linguists.

6
See footnote 8.

7
See e.g. Williams (1993) for an account of the link between Kant and a universalist and generativist language theory.

8
In linguistics there is of course a long tradition which opposes the claims of universal grammar with the hypothesis of linguistic relativity and its stronger variant – linguistic determinism – stemming from Herder's views on the relationship between language and thought, as well as the more contemporary Sapir-Whorf hypothesis (see e.g. Gumperz and Levinson 1996). According to the linguistic relativity hypothesis, language structures influence and shape thought in many ways, and language categories and categories of the mind are intimately bound with culture and cultural differences that speakers of different languages experience. It is important to note that, because of this, the notion of schema in linguistics is often tied to cultural and culture-specific communication of knowledge, as well as to the differences that can be observed from culture to culture.

9
This holds more strongly for generativist than structuralist approaches, as Saussure clearly states that the seed of all change in the language system (langue) stems from an individual's speech (parole) and the two are in constant interaction.

ship is bidirectional in usage-based models of language, and such a difference is well-illustrated by Kemmer and Israel:
Figure 1. thus illustrates the manner in which the long-term discussion on the nature and origin of the categories of mind (specifically language categories) is realized in linguistics. It is important to note that the development of language categories in usage-based models can be viewed primarily as cases of empirical generalizations, a term established by Kant. Here we believe that the examples of particular cases of schemas, discussed below, can enrich our understanding of the schematization process that is relatively briefly described by Kant himself.

3. Notion of schema in linguistics

3.1. Structuralist notions of the schema

Perhaps the first notion of the schema similar to that presented in contemporary usage-based models of language is found in structuralist works on the nature of language structure and the efforts dedicated to separating the notion of 'language form' from 'language substance'. This dichotomy of form/substance is found in Saussure's *Cours de linguistique génerale* ([1916] 1995) in which a definition of the linguistic sign and the notion of language (langue) as being essentially a system of pure forms are being expounded. Without the formative power of language, the auditory part of the linguistic sign is simply a sequence of sounds, and the conceptual part is simply an amorphic mass of thought. Thus, the same substance can be moulded in various ways depending on the structural principles of various languages.[10] This formative power of language is also responsible in finding identities, or constant values (which constitute the language system), among the chains of innovative usage we perceive as speech. Building upon this notion of form versus substance is Hjelmslev's (1961) introduction of the term 'linguistic schema' as a linguistic hierarchy which is related to a non-linguistic hierarchy called linguistic usage, but only when the usage is ordered to a linguistic schema. Linguistic usage, in this sense, manifests a linguistic schema but schemas can be studied apart from linguistic usage in terms of the articulation of variants of linguistic schemas *within* the schemas themselves. This division harkens back to Saussure's claim that the only relevant substance (sound, thought) is that which is articulated through the formative power of language. Furthermore, Hjelmslev puts forth an important claim which in its core defines what is universal in languages, saying that:

> "The similarity between languages is their very structural principle; the difference between languages is carrying out that principle *in concreto.* Both the similarity and the difference between languages lie, then, in language and in languages themselves, in their internal structure; and no similarity or difference between languages rests on any factor outside language." (1961: 76)

This structural principle rests upon the notion of the schema.

These structuralist notions of the schema provide perhaps the clearest similarity between Kant's notion of the schema as the "crucial third" element that unifies heterogeneous phenomena of conception and perception into a whole and linguistic notions of the schema, although neither Saussure nor Hjelmslev refer to Kant. As with Kant's notion of the schema, structuralist "linguistic schemas" are unifying the heterogeneous phenomena of sound and thought through the formative power of language structure. Although this structure is not tangible or readily observed, its structuring principle is something available to linguistic analysis.

It should be stated that, as opposed to more contemporary linguistic approaches, in structuralism we find the importance of a "top-down" exploration of linguistic schemas (when it comes to separating what is the language system proper), while in usage-based models we find the importance of a "bottom-up" inference of schemas through the notions of abstraction and generalization from language use which we will discuss in the following sections.

3.2. Linguistics and cognitive science

The definition of a 'schema' which stems from the link between linguistics and other cognitive sciences (primarily psychology) defines the schema as a mental model by which we structure our experience and knowledge of the world; therefore, particular schemas guide us in our understanding of new experiences (Gureckis and Goldstone 2010). The beginning of such an understanding of schemas is usually attributed to F. Bartlett (1932). Bartlett was investigating the way in which memory and interpretation of (folk) stories vary depending on the cultural background of speakers, and demonstrated how the narrative elements are changed, reinterpreted and adapted in different cultural circles (e.g. Native American vs. Western culture). Beginning with recognizing their role in our understanding and interpretation, schemas came to be recognized as one of the main organizing principles of the mind. The term *schema* thus came to be used widely in psychology, linguistics, theories of artificial intelligence etc., and it is tightly bound to the notion of categorization.

Categorization in cognitive linguistics rests on two main principles – the principle of categorization via *prototype* and the principle of categorization via *schema.* The first principle states that some entity or phenomenon can be considered to be more central or more peripheral from a category prototype and that category membership is not discrete (Raffaelli 2009: 68).[11] For example, *eagle*, *hawk* or *robin* are categorized as more central, i.e. "better" members of the category of *birds*, while *penguin* or *ostrich* deviate from the prototype based on some characteristics (e.g. lack of flying ability). However, although there are more or less typical members of that category, all of them are still members and instances of birds. Therefore, *bird* is a schematic concept superordinate to these members, and each of them elaborates the *bird* schema by making certain features salient. In other words, *bird* as a superordinate concept need not contain *all* of the features present in all of the kinds of birds, but only unifies those features which are relevant for its understanding (e.g. laying eggs, beak, wings, etc.). Importantly, these unifying properties of the schema have a significant role in restricting the range of a particular category by clearly stating what is not a member. Therefore, while prototypes allow a

10
A well-known example is the difference between French *mouton* and English *mutton/sheep.* These lexemes have different values in those languages according to Saussure since French does not distinguish between the flesh of the animal and the living animal but in both cases uses the same lexeme *mouton.*

11
This principle is related to Wittgenstein's principle of *family resemblance* (1953) where he uses the much quoted example of various games (board games, card games, etc.) which have nothing in common to all of them yet still belong to the category of games. Since this is a topic explored in many cognitive linguistic works we shall not elaborate it in great detail in this paper, but see e.g. Lakoff (1987), Raffaelli (2009).

12
There is an abundance of literature on the subject, see e.g. Rosch and Mervis 1975, Lakoff 1987, Taylor 2003, Raffaelli 2009, etc.

category to spread to less typical members, schemas force a category to stop (this is why we do not consider *bats* or *lizards* as birds).[12]

3.3. The role of schema in linguistic analysis

According to cognitive linguistics, schema, i.e. the process of schematization, is considered to be present on all levels of language structure – from phonology, morphology, syntax to the lexicon. Schematization includes a choice of common features inherent in different experiences in order to reach a higher level of abstraction (Langacker 2008: 17). Such an "abstraction" which enables understanding and production of new utterances is called a schema. The process of schematization in cognitive linguistics is not considered to apply only to language structures.[13]

As in the previous example of the category *bird,* a schema enables a vertical i.e. hierarchical structuring of language categories, from more specific instances to more generic ones. However, schemas are considered to be key elements in structuring not only lexical categories (such as *bird*), but also grammatical ones. In order to exemplify the role of schemas in such a way, we will give a brief overview of the use of schemas in the linguistic analysis of a) lexical structures, b) grammatical structures and c) image schemas.

3.3.1. Lexicon

At the level of the lexicon, one of the basic examples of schematization is the abovementioned hierarchical structure of lexical units, i.e. taxonomies. Since taxonomies may consist of many levels, relations between *schemas* and *instances* are multiple and we can talk of "schematization chains", such as the hierarchy *entity* → *living thing* → *animal* → *bird* → *eagle* (...), in which every superordinate term is actually a schema to the subordinate ones. Another common example of the use of schemas in lexical analysis is their role in describing polysemous lexemes. For instance, the lexeme *head* can mean i) part of the body, e.g. *he shook his head*, ii) mind, e.g. *I wish you'd use your head*, iii) the person in charge of a group or an organization, e.g. *the heads of government*, iv) top or highest part of an object, e.g. *the head of the page*, etc. The connection between the different meanings of the lexeme *head* is analyzed through the existance of a common schema that unifies and generalizes the main features ('top part', 'main function', 'governing part', etc.) of the particular meanings. Meanings that are derived from the primary meaning of *head* (body part) are understood by speakers of English in other contexts thanks to the existence of common schema. Schema is in this respect considered to be a key element which unifies the semantic structure of a polysemous lexical unit, and – in turn – a polysemous lexical unit is every unit which is unified by a common schema (Raffaelli 2009: 71). In analyses of polysemy which point out the role of schemas it is important to note that the schema provides *stability* in the organization of polysemous meanings. It is also important to point out that in examples concerning taxonomies, schematic elements are also lexemes in their own right (e.g. *bird* as a schema and a lexical unit), while in cases of polysemy schemas are only conceptual, not lexicalized (i.e. we have no superordinate word that unifies the various meanings of *head*). However, in both cases the schemas are thought to manifest themselves through the "force" they exert on the organization of the lexicon.

3.3.2. Grammatical structures

From the abovementioned examples it is clear that the notion of schema is applied when discussing lexico-semantic structures. Since cognitive linguistics believes that knowledge of language is inseparable from knowledge of the world, this also means that an insight into the workings of language structures provides us with insight into the workings of the mind. Furthermore, a strong hypothesis of cognitive linguistics assigns a central role to meaning in the analysis of all language structures, so that the notion of schema is further expanded into the analysis of phonological and grammatical structures. A schema is thus defined in cognitive linguistic grammatical theories (notably Cognitive Grammar and Construction Grammar)[14] as any productive and generalized (language) pattern emerging from language use and used as the basis for the production of novel utterances. The connection of experience through language use and the role of schemas in building the language system thus leads to conceiving schemas as *emergent phenomena.* In other words, it is believed that schematization is a dynamic process that *mediates* between the language system and language use. Grammatical constructions can thus be, like lexical units, more or less schematic. Some examples include *[V Subj Obj – way Obl]* e.g. *they made their way through the vineyard, the wounded soldiers limped their way across the field* (Goldberg 1995), syntactic constructions such as *[Subject – Predicate]* (Fillmore et al. 2012) or morphological schemas, e.g. *[Nstem/ v [teljsuff/n']]* which allows for the derivation of nouns such as *čitatelj* 'reader', *spisatelj* 'writer', *učitelj* 'teacher' in Croatian (Raffaelli 2013). What is important to note from these examples is that schemas here act not only on semantic features, but also on language form itself, thus being symbolic structures in much the same way structuralists defined the notion of the linguistic sign (see 3.1.). Moreover, the notion of schema can be in this respect tightly related to the traditional notion of *grammatical rule,* in the sense that the schema, for instance, which allows for the creation of lexemes such as *čitatelj* 'reader'*, spisatelj* 'writer', etc. can be put in the form of a rule for deriving nouns with the meaning of agents via the suffix *-telj* (e.g. a writer is the agent which performs the act of writing).[15] However, it is interesting to point out that rules are not synonymous with schemas. In short, rules are usually regarded as purely analytical formal operations over some constituents, while schemas are regarded as holistic in nature. As stated by Gardner (1985: 58–59), according to Kant's interpretation, schemas are partially rule-based and partially image-based and, therefore, their description is interesting from a linguistic perspective. Furthermore, drawing on the structuralist notions of the schema as discussed in 3.1., we may notice there is a clear formative power of linguistic schemas that cannot be observed without their unifying properties grounded simultaneously upon the substances of sound and thought.

3.3.3. Image schemas

Unlike previous examples, *image-schemas* can be considered as broader and "more basic" forms of schematization in cognitive linguistics. They have their theoretical basis in the embodied mind hypothesis (see above). A few basic

13
Taylor (2002: 127) gives examples of "non-linguistic" schemas, such as a schema of a sonnet or a classical symphony, or algebraic formulae such as $x^2=y$ for various numerical expressions, e.g. $2^2=4$, $3^2=9$, etc.

14
See e.g. Goldberg (1995), Langacker (2008).

15
In English the same could be said for the *-er* suffix used to form the nouns *reader*, *writer*, etc.

characteristics of image-schemas from Hampe (2005: 1–2) will serve to point out the specificities of image-schemas. They are: a) directly meaningful, preconceptual structures, which arise from, or are grounded in, human recurrent bodily movements through space, perceptual interactions, and ways of manipulating objects, b) highly schematic gestalts which capture the structural contours of sensory-motor experience, integrating information from multiple modalities, c) exist as continuous and analogue patterns beneath conscious awareness, prior to and independently of other concepts and d) as gestalts, image schemas are both internally structured, i.e. made up of very few related parts, and highly flexible. There is no complete or closed inventory of image-schemas in the literature (although for the list of most common ones see Hampe 2005: 3–4), some common ones being CONTAINER, UP–DOWN, SOURCE–PATH–GOAL. In cognitive linguistics image schemas are often illustrated through the analysis of metaphorical meanings, which point to the influence of an image schema in their formation. For example, meanings such as *he came out of a coma, spring is coming, he fell into a state of despair* and so forth are anaylzed as realizations of the SOURCE–PATH–GOAL schema, which allow for physical and mental states and temporal units to be conceptualized as spatial entities (with verbs of motion such as *come* and *fall*). Johnson (2005) points out that it is Kant who first explicitly and extensively dealt with the problem of connecting formal structures of the mind with material forms of experience. Furthermore, while according to Johnson (2005: 17) the dichotomies of form and matter, mental and physical or pure and empirical are the consequences of Kant's effort to keep the purely formal aspects of the mind and as such are in opposition to the embodied mind hypothesis, Johnson emphasizes Kant's recognition of imagination as the main *locus* of thought, judgement and meaning, which has become an important part of the theoretical heritage of cognitive linguistics. While all of the abovementioned examples of schemas and their theoretical and methodological applicability is open to criticism and further review in cognitive linguistics literature, within the boundaries of this paper we believe it is important to note that, similarly to Kant's critical project, the notion of the schema is used as the "main third element", which unifies, produces and systematizes various linguistic forms and meanings.

4. The concept of the schema in Kant – schema(tism) in the *Critique of Pure Reason*

Kant's critical project rests on the revolutionary redefining of the place of the cognising subject in the world that surrounds him/her. In his quest for transcendental conditions of cognition, Kant finds its basic and irreducible constituents to be understanding and sensibility, most famously formulated in the saying "thoughts without content are empty, intuitions without concepts are blind" (KrV A51/B75, 193–194).[16] The cognising faculty of a subject comprises concepts, or more precisely, the categories of understanding, while intuition[17] serves as faculty through which raw data is mediated from the outside world. The first constituent ensures systematicity and order and the constitution of "knowledge" and "cognition" itself, while the second offers the raw material for that same "knowledge", i.e. "cognition". Only together, in the interaction of an active subject and the sensory data received from the environment do we obtain that which we can call cognition. Almost the entire project of the *Critique of Pure Reason* is dedicated to proving the objectivity and necessity of the concepts of understanding (categories) as conditions of

cognition itself (so-called transcendental conditions of cognition). A discussion on the number of categories, the nature of perception and the foundations of this project – often called transcendental idealism – has been quite dynamic since the publication of Kant's first *Critique*. One aspect of this discussion is particularly interesting to us – the one pertaining to the notion of 'schema', i.e. Kant's view of the 'schematism of the mind'. The interest is twofold. On the one hand, it may seem that this notion is taken for granted, therefore deeming a lengthy discussion unnecessary. This would be of interest only in thorough exegesis of this concept within Kant's work. On the other hand, this notion is crucial in the critical project because it functions as a basis for the connection holding between *a priori* concepts of the mind and intuitions of sensibility. This in turn draws the attention of scholars to try to view the notion of the schema from a more contemporary point of view, like the one offered in (cognitive) linguistics. The analytical division of constituents of cognition into concepts and percepts puts a serious problem in front of Kant: how the two, heterogeneous in its nature, go together to build cognition. In order for this to be possible, they should be homogenous, a point Kant makes salient in the very beginning of the chapter "On the schematism of the pure concepts of the understanding":

"In all subsumptions of an object under a concept the representations of the former must be *homogeneous* with the latter, i.e. the concept must contain that which is represented in the object that is to be subsumed under it, for that is just what is meant by the expression 'an object is contained under a concept'. Thus the empirical concept of a *plate* has homogeneity with the pure geometrical concept of a **circle**, for the roundness that is thought in the former can be intuited in the latter." (KrV A137/B176, 271)

However, it appears that with concepts (categories) of understanding and empirical percepts homogeneity is not satisfied:

"Now pure concepts of the understanding, however, in comparison with empirical (indeed in general sensible) intuitions, are entirely unhomogeneous, and can never be encountered in any intuition. Now how is the *subsumption* of the latter under the former, thus the *application* of the category to appearances possible […]? This question, so natural and important, is really the cause which makes a transcendental doctrine of the power of judgment necessary, in order, namely, to show the possibility of applying *pure concepts of the understanding* to appearances in general." (KrV A137–138/B176–177, 271–272)

Therefore, the crucial question of the obtainment of the entire transcendental project is to explain the application of the categories of understanding to the phenomena that surround us and this heterogeneity is the very problem that the chapter on schematism is trying to resolve. The homogeneity in questions (which Kant demands)

16
Kant's writings are cited in the body of the text according to volume and page number in *Kants gesammelte Schriften*, edited by Königliche Preußische [now Deutsche] Akademie der Wissenschaften (Berlin, Georg Reimer [now Walter De Gruyter], 1902–). Standard abbreviations are used (e.g. KrV for *Critique of Pure Reason*). For the *Critique of Pure Reason*, the current practice is followed by citing A/B pagination, referring to the first edition as 'A' and the second edition as 'B'. All translations are taken from: Guyer, Paul; Wood, Allen W. (eds.), *The Cambridge Edition of the Works of Immanuel Kant*, Cambridge University Press, Cambridge 1992ff. For convenience the exact page of translation is also added, separated by a comma from standard pagination.

17
It should be noted that 'intuition' here is taken exclusively in Kant's technical sense, as a form of perceiving in general. It can be either pure or empirical. The former is connected with mathematical reasoning by intuiting the

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"… cuts across the barrier between the sensible and non-sensible. In order for a concept to get a grip on an object given in intuition, there must be something in the concept which is *capable* of being represented in intuition – concepts must be such that it is *possible* for intuitions to conform to them." (Gardner 1999: 108)

By taking phenomena, or empirical perception as self-evident, and categories of understanding as something proven in previous chapters through their metaphysical and transcendental deduction, Kant concludes:

"Now it is clear that there must be a third thing, which must stand in homogeneity with the category on the one hand and the appearance on the other, and makes possible the application of the former to the latter. This mediating representation must be pure (without anything empirical) and yet *intellectual* on the one hand and *sensible* on the other. Such a representation is the *transcendental schema*." (KrV A138/B177, 272)

Therefore, the schema is that "crucial third" which connects the conceptual and the perceptual. It is the link of special properties that bridges the aforementioned heterogeneity by allowing cognition in general. As such, it is a condition of cognition in general and therefore Kant defines it as transcendental. It remains to be seen, however, what is so special about schemata.

4.1. The special nature of schemata

The basis for a plausible discussion on schemata, and the function he gave them, Kant sees in the unique nature of pure intuition – it is at the same time *a priori* (therefore "pure") and applicable to the empirical (therefore intuition). Pure intuitions, that of time in particular,[18] possess in themselves the key to understanding the functioning of the schematism. In Kant's words:

"… a transcendental time-determination is homogeneous with the *category* (which constitutes its unity) insofar as it is *universal* and rests on a rule *a priori*. But it is on the other hand homogeneous with the *appearance* insofar as *time* is contained in every empirical representation of the manifold. Hence an application of the category to appearances becomes possible by means of the transcendental time-determination which, as the schema of the concept of the understanding, mediates the subsumption of the latter under the former." (KrV A138–139/B177–178, 272)

A few remarks should be made about pure intuiting. Pure intuitions, particularly in the chapter on schematism gain a key role in ensuring the transition from pure concepts of understanding to their application onto empirical objects. A pure intuition is for Kant a "pure form of sensibility itself" which we can reach when we

"… separate from the representation of a body that which the understanding thinks about it, such as substance, force, divisibility, etc., as well as that which belongs to sensation, such as impenetrability, hardness, color, etc." (KrV A20–21/B35, 156)

In other words, when all of the highest conceptual categories in which we can think an object are left out, and then we rid the object of all its empirical characteristics and properties, we still have to have the representation of extension and temporal sequence to be able to imagine[19] the *object as such*. That kind of intuition is pure, that is *a priori*, because it does not possess any perceptual content, but it is still an intuition since it pertains to the form of sensibility itself. For now, it will suffice to say that the object of reasoning cannot be an object of our representation if we do not imagine it as being determined in space and time. These time and space as pure intuitions are only the form of sensibility in general, time as a form of the inner sense and space as the form of the outer sense (perception).[20]

It is schematism that makes clear the fact that time (pure intuition of time) is at the forefront, since "[t]emporality is an aspect of the form of all appearances, so if the categories are applied to appearances through time they will be applicable to all appearances" (Guyer 1987: 167). Guyer excellently describes why this is so:

"The assumption on which the thesis that the schemata of the categories must be transcendental determinations of *time* most obviously turns is that since all appearances in outer sense are also appearances in inner sense, but not vice versa, determinations of time *but not of space* are universally valid of all appearances. Therefore, the schemata of the categories must be temporal but not spatial determinations." (Guyer 1987: 167)[21]

Based on what was said, Kant builds his own view of schemata, and describes them through their various characteristics:

1) *Schema: a formal and pure condition of the sensibility*. By summarizing the foundations of his critical project, Kant points out that it should be clear through the deduction of categories and the discussion thus far in the *Critique of Pure Reason* that the concepts of understanding (categories) are restricted purely to phenomena, i.e. "they cannot pertain to things in themselves" (KrV A139/B178, 272). However, it is also clear that the only way these objects (phenomena) are given to us is the "modification of our

mathematical schemata in pure intuition of space and time. The latter is connected with perception of empirical objects through sensibility. It is important to keep in mind Kant's clear distinction between form and content of cognition, i.e. between the conceptual and sensible. This is a simplified picture. For more about Kant's theory of intuition see Caygill: 264–266. We will return to the discussion about intuition later in the paper.

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Beside the pure intuition of time as a form of the inner sense, Kant distinguishes the pure intuition of space as a form of the outer sense. The first has the priority in the logical and cognitive sense (and transcendental) since it is the condition of cognition in general. We will discuss this point in some detail later. For now, it is enough to note that this priority lies in the fact that "the categories gain application through being equated with, or realised in, thoughts about time, or time as thought in certain ways" (Gardner 1999: 109), as Kant tries to demonstrate in his discussion of schemata.

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It would be more precise to say "to intuit", because this kind of imagining is pure in nature without the need of representation in the form of images or pictures. Although this is obvious from our discussion, it is worthy to stress this point once again.

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Pure intuition is surely the most revolutionary concept in Kant's theory of cognition and an innovation introduced by Kant in theoretical reasoning. This *a priori* element is the condition of thought in general. This insight that pure intuition is possible puts our anthropological limitations in cognition onto two basic determinants: time and space. Reasoning itself as a temporality (of consciousness) and reasoning about (outer) objects as reasoning about spatiality itself is the basic characteristic of our mind according to Kant. The whole first part of "Transcendental Doctrine of Elements" named "The Transcendental Aesthetic" is dedicated solely to investigating time and space and their transcendental interpretation – where they are as pure intuitions the basic conditions of thought.

21

We can ask ourselves what is the role of the pure intuition of space? According to Guyer, Kant realizes that we cannot observe time directly and that every instantiation of temporality really depends on a spatial relation: "Thus, though the *contents* of the transcendental schemata of the categories are supplied by the several transcendental determinations of time, the *use* of these schemata – and thus the categories themselves – requires *objects in space*. The spatiality of objects of appearance will be the ultimate condition for the objective validity of the categories, even if it does not figure in the actual schematization of them" (Guyer 1987: 168). This is the key to understanding Kant's need for schemata as mediators between concepts and empirical material. This moment will be more salient in his next chapter "System of all principles of pure understanding", in which Kant shows the way that schematism of categories offers concrete rules to our power of judgement. Due to the scope of this paper, we can just mention this in order to indicate the importance of the role of schemata in the architecture of Kant's theory of cognition.

sensibility" (KrV A139/B178, 272–273). Finally, Kant argues that pure intuitions, beside the function within the category of understanding, "must also contain *a priori* formal conditions of sensibility (namely of the inner sense) that contain the general condition under which alone the category can be applied to any object" (KrV A140/B179, 273). This of course refers to pure intuition as the basic transcendental condition of cognition in general. Kant concludes:

"We will call this formal and pure condition of the sensibility, to which the use of the concept of the understanding is restricted, the *schema* of this concept of the understanding, and we will call the procedure of the understanding with these schemata the *schematism* of the pure understanding." (KrV A140/B179, 273)

With this statement Kant offers the first definition of the term *schema*. A schema is simply restricted through that use by which phenomena as such can be structured with the categories of understanding, and it is this structuring that represents a procedure (i.e. a *process*) of the application which we call schematism, i.e. *schematization*.

2) *Schema: a product of imagination, but not an image*. Although a product of imagination (*Einbildungskraft*), a schema is not just a usual image:

"The schema is in itself always only a product of the imagination; but since the synthesis of the latter has as its aim no individual intuition but rather only the unity in the determination of sensibility, the schema is to be distinguished from an image (…)." (KrV A140/B179, 273)

Kant believes that the example of mathematics makes this clear: large numbers (e.g. 1000) we conceive by representing a specific method by which multiplicity can be thought of, and not as some specific image we can easily view (e.g. an image of 1000 straws lined up in our imagination). Kant points out that this *procedure* – i.e. the representation of this procedure – by which we try to obtain an image for a concept is a schema:

"Now this representation of a general procedure of the imagination for providing a concept with its image is what I call the schema for this concept (…)." (KrV A140/B179, 273)

A point of clarification on this matter is necessary. It seems logical to say that a schema is a product of imagination since imagination is traditionally taken as a mediating capacity between sensibility (perceiving) and intellect/reason (discursive thinking). There are two, however, kinds of imagination: empirical or recollective and productive or poetic. It is precisely the productive imagination that is crucial to Kant's project and especially the kind that is not arbitrary (which would be equal to mere phantasy) but governed by some rules.[22] This ordered power of productive imagination comes to light especially in the discussion of schemata, formerly introduced for the purpose of transcendental deduction of categories. It remains to be seen what the product of such imagination is when it comes to schemata, if not an image, which Kant answers immediately by clarifying the remaining characteristics of schemata.

3) *Schema: a pure synthesis in accord with a rule*. Kant explicitly states that it

"… is something that can never be brought to an image at all, but is rather only the pure synthesis, in accord with a rule of unity according to concepts in general, which the category expresses, and is a transcendental product of the imagination." (KrV A142/B181, 274)

This product is tightly bound to

"… the determination of the inner sense in general, in accordance with conditions of its form (time) in regard to all representations, insofar as these are to be connected together a priori in one concept (…)." (KrV A142/B181, 274)

Therefore, a schema in a way represents a structuring, or even better, the conditions by which an object can be structured within cognition. It is regular, in the sense that it does not go out of the boundaries imposed by pure intuition, but at the same time it opens itself up to the empirical diversity of phenomena which can be subsumed under it.

Kant gives two examples: a schema of the triangle and the concept of a dog. Although, at first, the second example seems to be more productive for comparisons between Kant's notion of schema and the linguistic one, it is actually the first one which corresponds significantly better to the relevant features of schemata according to Kant. Namely, in the *construction* of general mathematical concepts, a schema, or yet better, a process of *schematization* is involved, ordered by some rule of synthesis in imagination:

"… the schema of the triangle can never exist anywhere except in thought, and signifies a rule of the synthesis of the imagination with regard to pure shapes in space (…)." (KrV A141/B180, 273)

In other words, mathematical reasoning in the *construction* of concepts is a paradigm of the *schematization process*, because for the construction of a concept, e.g. 'triangle', the only thing we need are several rules sufficient for such construction in pure intuition of time and space – specifically 'three-sidedness', 'three-angleness' and other belonging features (e.g. always an equal sum of inner angles = 180°, etc.).[23]

Concerning the second example, Kant says:

"The concept of a dog signifies a rule in accordance with which my imagination can specify the shape of a four-footed animal in general, without being restricted to any single particular shape that experience offers me or any possible image that I can exhibit *in concreto*." (KrV A141/B180, 273)

With this example Kant emphasizes that all concepts, including empirical ones, have their schemata, which are necessary for formation (and understanding) of the mere concept as such. In other words, despite the much harder possibility of abstraction when the concept of 'dog' is in question, and despite the seductive call of recalling images of some previously seen dog, Kant insists that it is possible (and actually that it is prior to any further construction of a concept) to conceive 'dog' as a schema in pure intuition. Otherwise we would never get the concept of a 'dog', but just an image(s) of

22
For more on the mediating role and types of imagination see Caygill (2000: 246–249).

23
For a detailed analysis on the nature of mathematical construction in Kant's philosophy, see Shabel (2006).

24
In the light of both examples, several questions remain open: How should cognitive linguistics and cognitive science assess the Kantian *transcendental* account of the human mind's schemata? It seems that for Kant schemata are not empirical generalizations (as is the case in cognitive linguistics), but *pure* representations. If so, are those projects at all compatible if not completely incongruent? Due to the scope of this paper, we can just note that some schemata are best explained as empirical generalizations and others as transcendental forms of pure understanding or power of judgment. More specifically, the key could be the nature of the power of judgment, which (exactly through schematism) shows the "bivalent" nature of explaining the reality, depending from which way the reasoning is coming. Some concepts are better explained in "top-down" reasoning from the construction in pure intuition, but others are exclusively understandable through the language of a "bottom-up" empirical generalizations. Anyway, the idea is that schema (and cognition in general) is in transcendental project simply impossible (or at least irrelevant) without both necessary elements of cognition, before discussed.

some particular dog(s). For this admirable, but partially mysterious power of our mind Kant says:

"This schematism of our understanding with regard to appearances and their mere form is a hidden art in the depths of the human soul, whose true operations we can divine from nature and lay unveiled before our eyes only with difficulty." (KrV A141/B180–181, 273)[24]

4) *Schemata: particular examples of categories of understanding*. Kant states that everything will be much clearer if we turn to exemplifying schemata and he does so with the example of the categories of understanding (quantity, quality, relation and modality). It is interesting that in a way this relation to schemata offers Kant a reinforcement of the deduction and division of categories, but these points can be considered separately and, therefore, an explanation of schemata here only follows Kant's examples not questioning categories as such.[25]

The first class of categories – quantity – is unified by one schema:

"The pure *schema of magnitude* (*quantitatis*), however, as a concept of the understanding, is *number*, which is a representation that summarizes the successive addition of one (homogeneous) unit to another. Thus number is nothing other than the unity of the synthesis of the manifold of a homogeneous intuition in general (…)." (KrV A142–143/B182, 274)

The second class of categories – quality – does not possess such a specific definition and remains in part obscure and Kant tries to explain it by comparing it to the first category – schema of reality is thus a representation of

"… quantity of something insofar as it fills time, is just this continuous and, uniform generation of that quantity in time, as one descends in time from the sensation that has a certain degree to its disappearance or gradually ascends from negation to its magnitude (…)." (KrV A143/B183, 275)

We can try to explain this in the following way: the schema of quality is really a representation of some quantity existing in time, and the degree of existence (intensity) can be somewhere between reality and various degrees of limitation to negation.

The third class of categories – relation – is for Kant especially important in his entire philosophical oeuvre, and especially here in explanation of schemata, where this class gets a special place by exemplifying schemata for each of the categories within it:

"The schema of substance is the persistence of the real in time, i.e., representation of the real as a substratum of empirical time-determination in general, which therefore endures while everything else changes. (Time itself does not elapse, but the existence of that which is changeable elapses in it. To time, therefore, which is itself unchangeable and lasting, there corresponds in appearance that which is unchangeable in existence, i.e., substance, and in it alone can the succession and simultaneity of appearances be determined in regard to time.)

The schema of the cause and of the causality of a thing in general is the real upon which, whenever it is posited, something else always follows. It therefore consists in the succession of the manifold insofar as it is subject to a rule.

The schema of community (reciprocity), or of the reciprocal causality of substances with regard to their accidents, is the simultaneity of the determinations of the one with those of the other, in accordance with a general rule." (KrV A144/B183–184, 275)

Kant offers examples for the fourth class of categories – modality:

"The schema of possibility is the agreement of the synthesis of various representations with the conditions of time in general (…), thus the determination of the representation of a thing to some time. The schema of actuality is existence at a determinate time. The schema of necessity is the existence of an object at all times." (KrV A144–145/B184, 275)

5) *Shemata:* a priori *time-determinations in accordance with rules*. Kant points out that, through the description of schemata, it is evident that schema of every category represents a particular time-determination, stressing especially the aspect of *productivity*:

"… in the case of magnitude, the generation (synthesis) of time itself, in the successive apprehension of an object; in the case of the schema of quality, the synthesis of sensation (perception) with the representation of time, or the filling of time; in the case of the schema of relation, the relation of the perceptions among themselves to all time (i.e., in accordance with a rule of time-determination); finally, in the schema of modality and its categories, time itself, as the correlate of the determination of whether and how an object belongs to time." (KrV A145/B184, 275–276)

Whether we agree or not with the number of categories and the success of their description, it seems that the basis of schematization is the aforementioned pure intuition of time. "The schemata are therefore", according to Kant,

"… nothing but *a priori time-determinations* in accordance with rules, and these concern, according to the order of the categories, the *time-series*, the *content of time*, the *order of time*, and finally the *sum total of time* in regard to all possible objects." (KrV A145/B184–185, 276)

It is important to note that it is the reliance on the pure intuition of time which makes schemata plausible because the pure intuition of time unifies categories and sense impressions. It should be clarified that the schemata of categories of quantity refer to the temporal line of successively adding to the pure intuition of time (arithmetics) and space (geometry), which is the basis of the entire Kant's philosophy of mathematics (see Shabel 2006).

6) *Shemata: the real and only conditions of the significance of categories.* Kant furthermore states that the schematism of understanding consists of "the unity of all the manifold of intuition in inner sense, and thus indirectly to the unity of apperception, as the function that corresponds to inner sense (to a receptivity)" (KrV A145/B185, 276). Kant emphasizes through the whole text of first *Critique* the need for taking the transcendental unity of apperception as the condition of the unity of cognition in general. But although there are disputes to the interpretation of this concept it can be said that the unity of cognizing subject's consciousness is the underlying condition of the functioning of the cognitive apparatus with all of its building blocks (reflexivity of reason and receptivity, the latter being the pure formal condition for empirical sensibility). At this point, schemata appear as the crucial moment which leads us to the threshold of apperception. This is for Kant the final frontier of epistemological analysis.[26] Thus, Kant concludes that

"… the schemata of the concepts of pure understanding are the true and sole conditions for providing them with a relation to objects, thus with *significance*, and hence the categories are in the end of none but a possible empirical use, since they merely serve to subject appearances

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As Kant's deduction of categories, and especially their number, can be the subject of criticism (see e.g. Guyer 1992: especially 133–136) we can ask whether this obstructs the plausibility of schematism as such. However, it seems that these two things are unrelated, because schematism is merely "that third element" for any category of reason, independently of the number and types of categories.

26
The concept "transcendental apperception" is for Kant assigned for the unity of consciousness as the condition of the possibility for a subject to be aware of different representations as his/her own, i.e. as a subject of such awareness (cognition) itself. For instructive discussion on unity of apperception see Allison (1983).

to general rules of synthesis through grounds of an *a priori* necessary unity (on account of the necessary unification of all consciousness in an original apperception), and thereby to make them fit for a thoroughgoing connection in one experience." (KrV A146/B185, 276)

Schemata are really the distinctive carriers of "real" meaning, that is, they bring real (experiential) reference to categories of understanding, since they are mediators toward empirical facts without which the *a priori* concepts would be empty in content, and thus without "meaning" (significance or reference) or "meaningless".[27]

7) *Schema: sensible concept of an object, in agreement with the category*. However, not only is there a strong link by which schemata determine categories in their applicability, they also restrict them:

"… the schemata of sensibility first realize the categories, yet they likewise also restrict them, i.e., limit them to conditions that lie outside the understanding (namely, in sensibility). Hence the schema is really only the phenomenon, or the sensible concept of an object, in agreement with the category." (KrV A146/B185–186, 276)

What Kant means is that without schemata the categories of understanding have a limited role in our cognition. They are, without schemata, "only functions of the understanding for concepts, but do not represent any object. This significance comes to them from sensibility, which realizes the understanding at the same time as it restricts it" (KrV A147/B187, 277). In other words, schemata determine the conditions of application (realization) of pure concepts of understanding to empirical content that is before us, and in turn this sensibility offers the categories and understanding itself their realization in the act of cognition.

5. Common (and distinct) challenges of schemas in Kant's critical project and linguistic analysis

By examining the uses of the term *schema* in structuralism, contemporary cognitive linguistic theory and cognitive science in general as well as in Kant's *Critique of Pure Reason*, it can be concluded that our efforts to understand Kant's usage of the term were not in vain and that there exists a clear historical connection between Kant's text and contemporary linguistic analyses. However, perhaps this connection needs to be read along the lines of both structuralist and cognitive linguistic approaches. It must be brought to mind that, although cognitive linguistics is in many ways the contemporary successor to the older tradition of structuralism, there exist some differences in its view of language, as stated above. And although Kant is often considered as the grandfather of cognitive science, it is not always clear what was his stance when it comes to language, especially because he principally did not use language to exemplify his notion of the schema (rare example is the schema of a 'dog'). What we mean by taking into account both structuralist and cognitive linguistic traditions is that these two linguistic traditions of thought bring forth different aspects of Kant's notion of the schema in view, and thus allow for a joint examination of the relationship between linguistic analysis and Kant's critical programme. The formative and unifying power of language, embedded so deeply into the very definition of language structure and linguistics in structuralism, is similar to the formative and unifying power of schemata in general in Kant's critical programme – the synthesis in accordance with a rule and the product of imagination but which is not an image itself. On the other hand, structuralism was a "pre-cognitive" approach to language, in the

sense that it often treated its subject-matter as a system in and of itself. What this means is that language was not treated as "a window into the structures of the mind" in the same sense as it is treated in cognitive linguistic approaches. Abstracting the linguistic system away from usage and other cognitive faculties meant that the formal properties of the schema were in some ways (as is the case with Hjelmslev) more readily observed, and the formal nature of the schema presented in Kant is more present there as opposed to the cognitive perspective. The cognitive perspective brings forth another approach to schemas: as cognitive processes deeply rooted in cognition and categorization in general. This ties more closely to Kant's view of schema operating upon cognition in general, language included. For this reason, we presented analyses of particular linguistic examples in order to familiarize readers with the various uses of the term schema in contemporary cognitive linguistic theory. The shift of focus between the two linguistic traditions, that of structuralism and that of cognitive linguistics, especially when viewing examples of linguistic schemas as empirical generalizations, leaves many methodological questions open for linguistic analysis, as we will show below. Introducing a Kantian perspective on this relationship may, or at least we hope so, help to examine the relationship between these two linguistic traditions anew, especially through the notion of the schema. The contemporary linguistic analyses are not without questions themselves, but they do show important examples which can be related directly to Kant's dichotomous readings of schemata. This, furthermore combined with examples of schemas as cases of empirical generalizations, offers novel datasets to be viewed from Kantian perspectives. In other words, the two previous chapters on schemas in linguistics and Kant's critical project illustrate that we can arrive at the notion of schema from two opposite directions. One is starting from language-specific examples of schematization in order to achieve general conclusions about the process of schematization as a universal property of the mind, and the other is starting from a general view of categories and their specific application to empirical material. The two ways, in turn, provide their own set of open questions and challenges to the notion of schema and schematism of the mind.

In previous sections on schemas in contemporary linguistics it is clearly shown that the two main characteristics of schemas are *abstraction* and *generalization.* However, although these two things are considered as basic in the formation of schemas, they also leave many questions unanswered as to their application in linguistic analysis, most notably: a) What is the exact nature of abstraction and generalization[28] and are there some universal properties in their formation of language categories?; b) Are there universal types of schematization of language structure and how do we "fine-tune" their identification methodologically?; c) What is the relation of linguistic and "non-linguistic" schemas?; d) The question of overgeneralization (or constraining

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Kant reminds readers once again of the importance of *a priori* and empirical: "… hence the categories are in the end of none but a possible empirical use, since they merely serve to subject appearances to general rules of synthesis through grounds of an *a priori* necessary unity (on account of the necessary unification of all consciousness in an original apperception), and thereby to make them fit for a thoroughgoing connection in one experience." (KrV A146/B185, 276) Categories are useful only if they can be applied to experience, and this application comes directly from schematism.

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Within linguistics, this problem is related to the elusive problem of establishing a unique or uniform meaning for some linguistic units within a system. For more on this the reader is referred to the discussion in Žic Fuchs (2009).

productivity) of language schemas is also present; e) Furthermore, because of the frequent use of the term schema in linguistic analyses over the last few decades, a practical question arises: are schemas losing their analytical potential and are they becoming a kind of a "placeholder" term, a common place in linguistic analysis?

Numerous questions are opened for the interpreters of Kant's text from the first *Critique*: a) First and foremost, did Kant simply create two problems from one by multiplying unnecessarily another theoretical construct which resulted in two heterogeneities to explain: how does a schema go with perception and how with pure concepts of understanding?; b) Has the notion of the schema contributed to explaining the human cognitive apparatus or only mystified it further?; c) Finally, is Kant's notion of the schema helpful exclusively in articulating and describing the highest form of abstraction and generalization and is thus applicable only in the domain of mathematics?

Kant's example of the "dog" (important because it is related to language and not mathematics) shows some problematic points when it comes to pure understanding. Perhaps the main question is how can we even articulate the dog schema without some empirical content? According to Kant, this should be possible, but the question is whether this articulation starts with the empirical or with pure understanding. The example of the dog schema is very similar to the linguistic example of the bird category and its members. In line with the linguistic analysis of that category, which states that there is a necessary dynamic interplay between various instances and their features and the way the bird schema is elaborated, it could be stated that the schematized concept of a dog is similarly formed by the dynamic interplay of its instances (types of dogs) and features (four legs, barking, fur, etc.). The notion of a dynamic interplay is important because the instances of both the bird and dog categories are not presented to us experientially, coherently or at once, and this is important because it shows how flexible and yet stable they can be. This is shown from a linguistic perspective in the way speakers use them and adjust them when necessary.

Kant discusses schemata in two different ways, as some commentators have already pointed out (see Walsh 1968: 77): as something which can be referred to (a static reading of schemata) and something that is a process (dynamic reading of schemata). While we are in the domain of general concepts, such as the highest nodes of a lexical hierarchy, a static reading is possible, however as we go down to the specific instances (lower nodes in a hierarchy), it becomes clear that schemata have to be viewed dynamically. Kant's text alone indicates this as a necessary shift. His interpretation by the end of the chapter on schematism is getting close to a purely dynamic reading of schemata, which is understandable and clear if we bear in mind that subsequent chapters of the *Critique* need to show that it is possible to make judgements through the schematism of pure concepts of understanding, or through schematization by means of the power of judgement. While some will view this dichotomy as a problem for Kant's theory and an indicator of inconsistencies, it seems that the opposite is true: Kant ensures in this way a necessary continuum of our higher cognitive abilities which necessarily overlap in a certain domain, or rely on each other. More precisely and in other words, while a static reason can produce categories, only dynamism of the power of judgement can bring them to their application onto empirical concepts. Cognitive activity is the one thing that ensures interactivity between pure concepts and empirical material. According to this reading, the first important result of Kant's analysis is pointing to cognitive dynamism, i.e. pointing out that when we talk of

schemata we are actually talking about a *process*, i.e. the rules of a special dimension of judgement – schematization.

Accepting schemata in their dynamic reading brings us to the other important conclusion. Schematization as a process points to a feedback between cognitive powers (abilities) themselves, but also between cognitive abilities and empirical material. This reinforces Kant's project, but also offers a more plausible account of understanding the nature of cognition in which pure concepts without their implementation are simply theoretical metaphysical constructs, and empirical material without systematicity is purely a sum of chaotic sensory data. Schemata, or schematization as an act of judgement is bringing these two moments in harmonic functionality that is called cognition.

Insights offered by contemporary linguistics show that Kant was right when he connected schemata not with images per se, but with the "rules for producing images" (Bennett 1966: 41). Similarly, the discussion on the relation of rules and schemata (see above) points to the actuality of Kant's thought in contemporary linguistic discussions.

6. Conclusion

Reading Kant through the viewpoint of contemporary linguistics offers an expansion of the notion of schemas and schematism of the mind, deepening the insights into a crucial mechanism which is the basis for Kant's critical project. While Kant's philosophy of mathematics has often been a subject of dispute and critiques and is at best perceived as a narrow area where schemas can be applied, modern linguistics shows that the entire formation of language structures as such rests on similar principles. In other words, the formation and application of any language structure, such as those present in language, is a process of schematization. Such an account of schematization demonstrates the value of Kant's theoretical insights and their continuity within contemporary science.

Furthermore, the theoretical precision with which Kant presents his analytical apparatus calls for an expansion of the discussion of schemas today. The notion of the schema is not without its problems in contemporary discussion and perhaps it is Kant himself, in his analytical precision, who can be actualized to aid us in a more precise discussion of schemas and their analytical applications.

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Daniela Katunar, Igor Eterović

Kantov pojam sheme i njegovo uporište u lingvističkoj analizi

Sažetak

Upotreba Kantovih shema kao vrijednih teorijskih elemenata (konstrukata) u objašnjenju našeg kognitivnoga ustroja već je duže vrijeme aktualna tema u filozofiji uma. Relevantnost sheme i shematizacije kao principa organizacije jezičnih struktura u posljednjih je 30-ak godina istaknuta i u lingvističkoj teoriji, posebice kognitivnoj lingvistici. U ovom se radu nastoji pokazati kako upravo Kantov koncept shematizma uma, izložen u Kritici čistog uma*, odnosno središnji pojam sheme, pruža relevantne uvide za mogućnost drugačijega kritičkog sagledavanja sheme u lingvističkoj diskusiji. Istovremeno se pokazuje kako lingvistička diskusija nudi potkrjepu i sadržajno obogaćenje Kantove teorijske filozofije pružajući konkretne primjere jezične artikulacije onoga što bi sheme trebale biti i kakva je to njihova narav, osnažujući na taj način Kantovu poziciju lingvističkim argumentima i čineći ga aktualnim za suvremenu lingvistiku.*

Ključne riječi

shema, Immanuel Kant, lingvistika, teorijska filozofija

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Kants Begriff des Schemas und dessen Grundlage in der linguistischen Analyse

Zusammenfassung

Die Verwendung von Kants Schemata als wertvollen theoretischen Elementen (Konstrukten) bei der Erläuterung unseres kognitiven Aufbaus ist seit längerer Zeit das aktuelle Thema in der Philosophie des Geistes. Die Relevanz des Schemas und der Schematisierung als Prinzip der Organisation von Sprachstrukturen wurde in den letzten 30 Jahren auch in der linguistischen Theorie, insbesondere in der kognitiven Linguistik, hervorgehoben. In dieser Arbeit versucht man zu zeigen, dass eben Kants Konzept des Vernunft-Schematismus, dargelegt in der Kritik der reinen Vernunft*, bzw. der Zentralbegriff des Schemas, relevante Einsichten in die Möglichkeit*

einer andersartigen kritischen Sichtweise des Schemas innerhalb der linguistischen Diskussion verschafft. Gleichzeitig wird gezeigt, dass die linguistische Diskussion eine Bekräftigung sowie inhaltliche Bereicherung der theoretischen Philosophie Kants bietet, idem sie konkrete Beispiele für die sprachliche Artikulation dessen, was Schemata sein sollen und wie deren Natur ist, liefert, und auf diese Art Kants Position durch linguistische Argumente stärkt und ihn für die zeitgenössische Linguistik aktuell macht.

Schlüsselwörter

Schema, Immanuel Kant, Linguistik, theoretische Philosophie

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Le concept kantien de schème et son point d'appui dans l'analyse linguistique

Résumé

L'utilisation des schèmes kantiens, en tant qu'éléments (constructions) théoriques de grande importance dans l'explication de notre constitution cognitive, est un thème actuel en philosophie de l'esprit depuis déjà un certain temps. La pertinence du schème et de la schématisation comme principes d'organisation des structures langagières a également été relevée, durant les trente dernières années, au sein de la théorie linguistique, particulièrement au sein de la linguistique cognitive. Ce travail s'applique précisément à montrer comment le concept kantien de schématisme de la raison est exposé dans la Critique de la raison pure*, et en particulier, comment le concept central de schème offre des conceptions pertinentes qui nous permettent de porter un regard critique autre sur le schème au sein de la discussion linguistique. En même temps, il est montré comment la discussion linguistique corrobore et enrichit le contenu de la philosophie théorique kantienne en offrant des exemples d'articulations langagières de ce que les schèmes devraient être et de leur nature, renforçant de cette manière la position de Kant à travers des arguments linguistiques, et le rendant ainsi actuel pour la linguistique contemporaine.*

Mots-clés

schème, Emmanuel Kant, linguistique, philosophie théorique