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BETWEEN LANGUAGE AND CONSCIOUSNESS: LINGUISTIC QUALIA, AWARENESS, AND COGNITIVE MODELS

Abstract. The main goal of the paper is to present a putative role of consciousness in language capacity. The paper contrasts the two approaches characteristic for cognitive semiotics and cognitive science. Language is treated as a mental phenomenon and a cognitive faculty (in contrast to approaches that define language as a primarily social phenomenon). The analysis of language activity is based on the Chalmers' (1996) distinction between the two forms of consciousness: phenomenal (simply "consciousness") and psychological ("awareness"). The approach is seen as an alternative to phenomenological analyses typical for cognitive semiotics.

Further, a cognitive model of the language faculty is described. The model is implemented in SNePS/GLAIR architecture and based on GATN grammar and semantic networks as a representation formalism. The model – reflecting traditionally distinguished linguistic structures (Jackendoff 2002: 198) – consists of phonological, syntactic, and semantic modules.

I claim that the most important role in the phenomenon of language (and in explanations thereof) is played by psychological consciousness. Phenomenal consciousness accompanies various stages of language functioning (e.g. linguistic qualia), but is not indispensable in explanations of the language faculty.

Keywords: language faculty, consciousness, awareness, linguistic qualia, SNePS architecture, cognitive modeling.

1. Language and consciousness

The problem of the relation between consciousness and language as a cognitive process has recently gained significant interest and evoked numerous discussions. The reason may lie in the fact that – on the one hand – language has always been considered one of the most important mental (and cognitive) faculties; on the other hand, one can observe growing interest in consciousness within cognitive science.

The problem of the relationship is considered to be one of the key problems of cognitive semiotics and has been extensively presented in the paper

“The Dependence of Language on Consciousness” (Zlatev 2008). Let me start with this approach as a departing point.

Zlatev states that “consciousness is an essential precondition for language”. The statement follows from *The Semiotic Hierarchy* hypothesis (Zlatev 2009: 169–170) as well as from the notion of language as a primarily social phenomenon. Language, according to the approach, is the highest (fifth) level in organization of meaning and rests on four lower levels, namely: life, consciousness, culture, and sign levels. It means that language presupposes (among others) consciousness and – on the other hand – consciousness makes language possible. The hypothesis is based on a particular view on consciousness. According to Zlatev, despite the fact that consciousness is “not a unitary phenomenon”, it is basically phenomenology (Husserl 1999[1907], Merleau-Ponty 1962, Sonesson 2009, 2012) which is indispensable in explanations of language. Zlatev, like several other researchers representing the so-called Lund School in cognitive semiotics, assumes *the primacy of consciousness (and phenomenology) [...] in studying language*. (see also: Zlatev, Sonesson, Konderak 2016).

Although I concur with the first claim and I think it is crucial to include research on consciousness in explanations of language faculty, I am not convinced by arguments for the second claim, the one concerning the role of phenomenology. Consequently, in the paper I will explore a somewhat different approach to consciousness, namely Chalmers’ theory of consciousness (Chalmers 1996), leaving the relation between the approach and phenomenology for further research. In particular, I will show that most (if not all) aspects of language invoked by Zlatev can be explained in terms of psychological consciousness.

Solving the problem of the relation between language and consciousness also depends on the notion of language. I will treat language as a cognitive faculty, as a set of processes or mechanisms responsible for analysis of perceived natural language utterances, creation of relevant mental structures (syntactic, conceptual), and for the generation of natural language statements. In other words, language is treated as a mental phenomenon – as it is considered within “classical” cognitive science (Jackendoff 2002, chapter 2). Such an approach is accepted by Artificial Intelligence researchers as well (cf. Konderak 2005).

One of my goals is to show that – contrary to Zlatev’s claims – researchers of “first generation”, “cognitivist” cognitive science¹ appreciate the role of consciousness in language, although the very notion of consciousness differs from phenomenological tradition. I will argue also, that most

(if not all) phenomena called “conscious” involved (connected with) in language activity require the notion of “psychological consciousness” or awareness. In addition, although **explaining** that language faculty requires taking into account only awareness, language is also inseparably connected with *qualia*. In any case, there are deep and fundamental ties between consciousness and cognition. These relations between them seem to be not arbitrary and capricious, but systematic.

2. Problems with the notion of consciousness

As many researchers – irrespective of theoretical convictions – stress, ‘*consciousness*’ is a polysemous term (Chalmers 1997, Jackendoff 2007, Zlatev 2007). The ambiguity of the term does not mean that we – as conscious creatures or cognitive systems – are not able to identify certain activities as conscious. On the contrary, I am convinced that we – as cognitive systems or conscious creatures – can identify clearly and unambiguously at least some aspects of our mental activity as conscious (*I am conscious when I can hear you, I understand your utterances, I answer your questions or requests, I analyse (parse) a statement in a foreign language, I report the analysis or I discover an error; I feel pain or I cannot stand the loud noise*). The problem arises when we try to answer the question what kind of phenomenon is responsible for the above mentioned mental activity. Such doubts have – I would say – pre-theoretical roots, they are grounded somehow in the language in which we talk about consciousness, in particular in our everyday language.

So one may read that something *appears in consciousness, something is in the field of consciousness, or in the margins of it*. The formulations suggest that we should understand consciousness as a kind of distinguished place. One can encounter formulations suggesting that consciousness is an homunculus-like phenomenon: *consciousness perceives and analyzes, consciousness sees*. Although such statements hinder discussions on consciousness, there is a more serious issue. As Patricia Churchland notices (1996: 402), a conceptualization of a problem (and consequent divisions within a problem space) is crucial, as it allows finding a satisfactory solution.² The observation applies to approaches to consciousness. Some conceptualizations may be fruitful or productive in two ways: they evoke discussion, controversies and polemics, or they lead to the development of a theory. Some other conceptualizations may lead to a dead end (be – as Churchland says – counterproductive).

In line with the above statement, I will take into account the distinction ('carving') between phenomenal and psychological consciousness suggested by Chalmers (1996); I will use it in analysis of the relation between language faculty and consciousness. The distinction, although criticized (see e.g. Shear 2007) – may turn out to be a valuable tool to analyse language in the context of its relation to consciousness. On the other hand, an analysis of the role of consciousness in language in terms of a cognitive model may shed light on the distinction between phenomenal and psychological consciousness.³

3. Chalmers' proposal

Consciousness as a mental phenomenon can be understood twofold: either as **phenomenal consciousness** (consciousness is the subjective quality of experience or *qualia*); or as **psychological consciousness** (awareness) which is a state (or process) wherein "we have access to some information and can use that information to control our behavior" (Chalmers 1996: 28). The approach, in accordance with Zlatev's suggestion, acknowledges the manifold character of consciousness.

Phenomenal consciousness is probably best characterized as "the subjective quality of experience", e.g. visual, auditory, tactile or olfactory experiences, pain, mental imagery, some thoughts (*if there is something it is like to be having such thoughts*), emotions, sense of self – to enumerate just a few. In other words, conscious states have their qualitative feel (Nagel 1974).

Consciousness (awareness) in the psychological sense is closely connected with cognitive functions. Most typical examples of awareness are: reportability of mental states (*I think in English, now*), belief formation and revision (*I was convinced that 'sjukhuset' meant in Swedish the shopping center then I realized that it meant hospital*), discrimination and categorization (*in Polish, the word 'pies' belongs to the masculine gender and the word 'kaczka' to the feminine gender*), as well as: decision making (*Shall I say 'Hello' or 'Good morning'?*), problem solving, planning etc. One is conscious psychologically when one is aware of the environment and its particular state (*I noticed that she said: "don't go!"*), when one is aware of his/her own bodily state (*I am cold*) or mental state (*I am too stressed to choose the right wording*). In addition, the agent is able to report these states, draw conclusions and use the knowledge in directing behavior. To apply the above characteristics explicitly to a linguistic activity: recognition of

a natural language statement ‘stop!’ (as distinguished from e.g. ‘proceed’) may result in: the awareness of an obligation to stop, stopping at an intersection (i.e. the word influences one’s behavior) or breaking the law (with awareness of the consequences of such behavior). All of these mental activities (distinguishing, reacting, reasoning about consequences) are examples of awareness. As Chalmers notices (1996: 28), in everyday settings we use the word “consciousness” in reference to such situations.⁴

Phenomenal consciousness is – in turn – a state in which a cognitive agent experiences subjectively the perceptual stimuli. In other words, there is *something it is like to be* a cognitive agent (in particular: there is something it is like to be a conscious creature) (Nagel 1974; Chalmers 2004: 619) When an agent is suffering pain, if she or he is enjoying the experienced sounds of someone’s speech, if a cognitive system is experiencing high-pitched sound or the loudness of an utterance *stop* or experiences the coldness of the day, it is a manifestation of phenomenal consciousness.⁵ The reader may have noticed some correlations between the examples of psychological and phenomenal consciousness presented above. It is not coincidental: it may be the case that the two types of consciousness are closely related.⁶

In addition to the above characteristics, there is no cognitive function such that we can say in advance that explanation of that function will automatically explain experience⁷.

4. Cognitive modeling of language

One of the basic methods used within cognitive science is cognitive modelling (cf. Anderson 2007). As I have argued elsewhere (Konderak 2015), it is possible and fruitful to model in such a way a process of semiosis and – in particular – language comprehension, interpretation, and production (Konderak 2007). To create a model of a cognitive ability⁸ one usually analyses the processes modeled into a number of stages or steps. In the present paper I follow this procedure, indicating steps in cognitive processing important from the point of view of language understanding and production.

To substantiate the above declaration, I would like to refer to an example of the cognitive model of the language faculty that I am implementing in the GLAIR/SNePS system (Shapiro, Bona 2010; Konderak 2005) consisting of phonological, syntactic, and semantic/conceptual modules as well as interfaces between them. SNePS (<http://www.cse.buffalo.edu/sneps>) has been designed as a knowledge representation and natural language using

system that represents knowledge in the form of semantic networks (Quillian 1968). Nowadays SNePS is a part of GLAIR, a multi-layered cognitive architecture for “embodied agents operating in real, virtual, or simulated environments containing other agents” (Shapiro, Bona 2010: 307). It has been used in a variety of tasks, including contextual vocabulary acquisition (Rapaport, Ehrlich 2000), natural language understanding for information fusion (Shapiro, Schlegel 2013), research on conceptualization and commonsense ontologies (Gruber 1992), metacognition (Shapiro et al. 2007), embodied, and natural-language usage.

Initially, the implementation which I use, allowed for integration of syntactic and semantic analysis. The core of the system is based on network-like structures; namely it uses a version of ATN grammar as a parser and a generator, and it uses propositional semantic networks as representation of knowledge of a natural-language using agent. Recently, the system has been extended to allow for phonological (or in general – perceptual) analyses.

The general schema of GLAIR/SNePS models may be presented as follows:

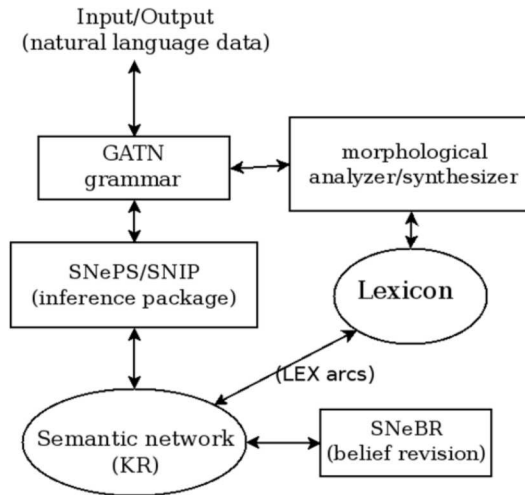


Figure 1. A schema of natural-language processing system implemented in SNePS/GLAIR cognitive architecture

Input data is received by SAL (Sensory-Actuator Layer) module containing controllers of sensors and is passed to PML modules (Perceptuo-Motor Layer). These two layers support the implementation of phonological analysers, but the analysers are not part of the architecture. The result of the phonological analysis is passed to the module responsible for grammatical analysis (i.e. GATN grammar). In the course of parsing, GATN uses

data from the lexicon and can use knowledge encoded in the form of a semantic network. Bidirectional arrows in the above schema represent two-way interaction. In particular, it means that full grammatical analysis may require data from a semantic module – in other words semantics may influence parsing.⁹ Finally, the result of grammatical analysis is encoded in the form of a propositional semantic network (Shapiro, Rapaport 1987). The semantic network is considered to be a conceptual structure of the agent.

Such an organization is in line with linguistic analyses, like the one presented by Jackendoff (2002: 198): *linguistic structure is viewed as a collection of independent but linked levels of structure: phonology, syntax, and semantics*.¹⁰

In cognitive science to explain a phenomenon such as language use, all we have to do is to explain various functional mechanisms – mechanisms that give rise to appropriate changes in linguistic and extralinguistic behavior and in an internal state in response to internal or environmental stimulation. The model sketched above provides such mechanisms.

It must be remembered that modeling as a method is always aspectual. In other words, a model may deliver an answer to the question what factors are necessary for a phenomenon to appear and to develop but omits many other aspects of the phenomenon.

On the one hand, cognitive models seem to be especially suitable tools to explain psychological consciousness; that is: whenever models are instantiated (in the right environment) awareness goes along with the instantiation. In other words, we can see from the model how certain functions are performed. On the other hand, cognitive models seem to be insufficient to explain ‘pure’ phenomenal consciousness (i.e. having no role or function).

In the following sections I will analyze stages of natural language processing in such a system and point out hypothesized places and roles for psychological consciousness (such as: judging grammaticality, choosing one of competing meanings, acquiring new meanings etc). I will also indicate a possible place for phenomenal consciousness in the process of natural language understanding.

5. Consciousness and phonology

With the above distinctions and precisations at hand, I can present the putative roles of consciousness in the linguistic activity of a cognitive agent starting with phonological analysis.

5.1. Linguistic functions and linguistic qualia

In a typical situation, we experience language utterances as sound. A language user is able to discriminate the sound into words, syllables, and even individual sounds of speech, making the information available to the next stages of processing. Most language users are also able to detect stress patterns. One can focus his or her attention on the sounds of language and he or she can sometimes recall the sound in the mind as well. One can also report the results of such analyses. All these activities are examples of psychological consciousness and – simultaneously – are examples of mechanisms coping with information and preparing it for the following stages of processing. The final outcome of the phonological level consists of an ordered list of words of a given language. The above characteristics are clearly functional and relevant mechanisms are implemented in numerous contemporary systems.

This is not the whole story at the phonological level, however. The stage is most closely connected with perceptual experience and in consequence, we may expect here qualitative feelings or qualia. When I visited Sweden for the first time, I got on a bus from the airport and I sat with a group of young Swedish people. The experience I had when I heard their talk is for me a paradigmatical example of ‘auditory qualia’ – pure experience of sounds as sounds (with pitch, tone, etc.) or as a kind of melody. What was lacking in the situation were past experiences with sounds of the language – I encountered the ‘melody’ of Swedish for the first time. I would say that there were qualia, but not yet linguistic qualia.

When I think about the experiential aspect of language, I recall Fielding Mellish’s words from Woody Allen’s movie *Bananas: I once stole a pornographic book that was printed in Braille. I used to rub the dirty parts*. The statement is understandable in a situation in which ability to distinguish letters/words in Braille is accompanied by a kind of experience – in that case a kind of sexual feeling. The usual formulation, when one discusses *qualia*, is “how it is to experience something” – what experiences of e.g. pitch or loudness of someone’s voice are like. In other words, one may ask a question: how is it to hear such-and-such utterance sounds and how are they experienced. Consequently, there is also phenomenal consciousness in language.

The above description of our understanding of qualia is not sufficient. As Jackendoff notices (2007: 87–97), we should take into account additional features called “valuations” (affects, epistemic status). They can be characterized as features which *add a felt character to the entities in experience* (Jackendoff 2007: 87). The author suggests an initial list of such features,

namely: external (or not), self-initiated (or not), affective (or not) and finally meaningful or familiar (and their ‘negative’ counterparts). The latter two features are of particular interest in the context of the paper. The point is that regardless of the usual experiential characteristics of perceived sounds we can experience utterances as meaningful or we may have a feel of familiarity. To quote Jackendoff: *a meaningful utterance does indeed have a different experiential character than a meaningless one* (2007: 81). In other words: we experience sounds of language as meaningful (and familiar) **before** we understand utterances – before we process them at syntactical and semantical levels.

Referring to the example of ‘the Swedish bus’ from the beginning of the section, I would say that ‘auditory qualia’ become ‘linguistic qualia’ when the qualitative feel of sound is supplemented by the ‘meaningful’ valuation, which in turn is a result of past experiences.

5.2. A function of linguistic qualia

To suggest a putative explanation of a function of qualia I have to refer to the “somatic marker hypothesis” as presented by Antonio Damasio. Damasio (1994) suggests the existence of a neural mechanism called a “somatic marker” as an explanation of the process responsible for fast (in fact immediate) decision-making – the mechanism allowing for quick choices between available alternatives. A somatic marker works as an automatic alarm: warning about the possible negative consequences of the choice. The warning is based on previous experiences, encoding associations between objects or events and some states of a body.

The idea of a somatic marker motivated me to stipulate an analogical mechanism responsible for detection of (at least some) meaningful sounds. Consequently, my initial observation is that human beings – in their everyday functioning – decide quite quickly whether certain perceived sounds are (possibly) meaningful utterances. The decision results in triggering further linguistic processing of auditory perceptions. Without a mechanism allowing for fast choice we would drown in the multiplicity of potential utterances, trying to process each of them. I am convinced that – in some cases – efficient language use requires some “fast-track” decision mechanism. Such mechanism, called a “semiotic marker” would be enabled by consciousness and would mark some sounds as ‘meaningful’ in a linguistic sense. The “semiotic marker” – just like a “somatic marker” – would be acquired as a result of past experiences.

According to the suggestion presented above, it is phenomenal consciousness (and its valuation features in particular) which may be the basis

for detecting meaningful language sounds in an environment.

The above suggestion should be treated – for now – as a kind of speculation, requiring detailed empirical examination¹¹.

Summing up the section, it is necessary to note that linguistic qualia would be useless in the context of cognitive modeling unless they have a certain role or function. I dare to suggest such a role in natural language processing, namely triggering further linguistic analysis by marking heard utterances as possibly meaningful. As a result, phenomenal consciousness becomes psychological consciousness and, as such, should be taken into account in modeling the language faculty.

6. Syntax, semantics, and metalanguage

I claim that explaining language faculty requires taking into consideration psychological consciousness. In fact, most conscious aspects of language that Zlatev (2008) uses (see below), are instances of awareness, not (phenomenal) consciousness. According to the characteristic of awareness, so as to explain a phenomenon such as language learning, all we have to do is to explain various functional mechanisms giving rise to appropriate changes in behavior in response to environmental stimulation.

Although the distinction presented below (syntactic and semantic levels) has its roots in a linguistic approach to language, it is understood not in terms of formal linguistic theories, but rather in terms of cognitive mechanisms responsible for processing language utterances and for constructing relevant internal, mental structures – phonological, syntactic, and conceptual (cf. Jackendoff 2002: 199).

6.1. Syntactic level

In the context of this level, consciousness-related questions may be asked:

- Are the processes of: analysing utterances into syntactic categories, detecting syntactic structures, forming grammatical sentences, and comparing sentence structures (to detect ungrammaticality) conscious (and in what sense)?
- Are we conscious of the grammar itself?

The answer to the first question is in the positive: clearly there is awareness that the processes are psychologically conscious insofar as they use information (such as a list of words or grammatical categories). To justify the claim, I can refer to the GATN parser used in SNePS/GLAiR model (fig. 1).

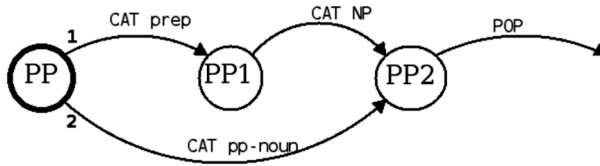


Figure 2. Part of GATN parser responsible for detecting prepositional phrases (Konderak 2005)

The presented part of a parser is responsible for detecting prepositional phrases. It works as follows: it takes the first element of the list delivered by phonological module (let's say '*beyond*'), and checks if it is a preposition. The action involves comparison of a 'heard' word with data from a mental lexicon. It requires the ability to categorize (word as belonging to grammatical category) as well as knowledge in the form of a lexicon. All these activities or abilities are instances of psychological consciousness. In the case of a positive result the parser takes the next element of the utterance (let's say '*doubt*') and analyses it in the same way. If the parser finishes with a success, the result is sent to the semantic module. If not, the parser reports an error and tries to fix it. We have here: decision making – how to proceed, making information available for the next stage(s) of processing, exchanging information with other modules, and integrating the information. All the functions can be qualified as instances of psychological consciousness.

Zlatev in his paper indicates the following syntax-related examples:

- *In Swedish you should say ett bord ('a-neuter-gender table') not en bord ('a-common-gender table')* (gender assignment)
- *John loves Mary. vs. *Loves John Mary* (word order)
- *John is taller than me/I.* (choice of a pronoun)

In all the above cases we can use a parser to assign gender, choose the right word order or choose the right pronoun. It seems that awareness is sufficient to explain these syntactical phenomena.

The answer to the second question is less obvious. Zlatev – using the above examples – accuses cognitive scientists and cognitive linguists of relegating grammatical analysis to 'the deep unconscious' – they treat the analysis as a set of mechanisms that work beyond consciousness. The statement may be justified in the context of Zlatev's approach to consciousness (based – as mentioned at the very beginning – on phenomenology, where 'unconscious' means that it cannot be studied by "first-person" methods) and language, but is not justified in the context of Chalmers' theory. These single mechanisms (comparison, categorization, making choices) are instances

of consciousness – to repeat – insofar as there is *access to some information and use of that information to control behavior*. However, the second question concerns grammar as an organization of these mechanisms (represented by the network structure) and it remains unanswered.

5.2. Semantics and conceptual structure

There are two consciousness-related problems at the semantical level, namely:

- Are we conscious of meanings?
- Are we conscious of meaning structures (cf. Jackendoff 2007: 81)?

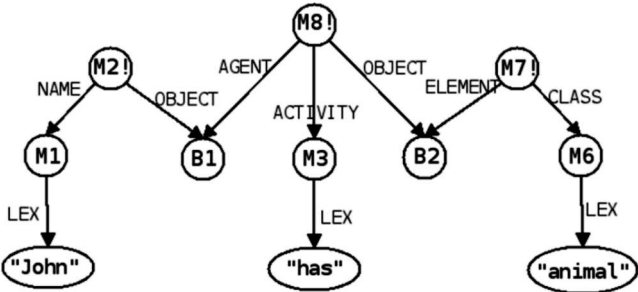


Figure 3. A semantic network encoding proposition “John has (an) animal”

Once again, the answer to the first question is in the positive. The system is able to retrieve from such a semantic network a piece of information that *John has an animal* (i.e. the belief is accessible). The system can also report the proposition. When the system, in an answer to the question *What has John got?*, picks up the node M6, it uses information in controlling the cognitive process. If it – in addition – produces the utterance ‘animal’ (connected by a LEX arc to the M6 node), it uses information in directing its behavior. The explanation of the process is clearly functional and we may suppose that these processes are instances of psychological consciousness.

To return to Zlatev’s semantics-related examples requiring consciousness:

- *cat means a ‘small, furry animal that meows’* (knowledge about meaning)
- *‘the’ means ‘that the noun following it is “definite”, i.e. it refers to something that the addressee can identify’* (metalinguistic knowledge)
- *I first thought that it was a cat, but then it barked, and I realized it was a dog* (self-correcting)
- *Overworked, exhausted academics sleep heavily (vs. Colorless green ideas sleep furiously)* (integration of meanings).

All the above examples can be explained using standard mechanisms of the SNePS/GLAiR system, mechanisms operating on a conceptual structure (here in the form of a semantic network). In the first example (as well as in the second one) we need a mechanism interpreting a semantic network and retrieving information from the network; the function requires access to the system's own internal states. The third example requires access to mental states, the ability to report them as well as the ability to compare the two states. In addition, the system should be able to revise its own beliefs. SNePS architecture contains a module (SNeBR – SNePS Belief Revision) which is responsible for the task.

The answer to the second question should be in the negative. Although a language user can get knowledge of meanings as they function (thanks to the processes working on meaning structures) – can retrieve, revise, learn new meanings, etc. – the structure of meanings (conceptual structure) cannot be treated as conscious. If we define psychological consciousness as *a state in which we have access to some information*, we must say that conceptual structure **is** the information. A similar claim is formulated by Jackendoff (2007: 81): “people [...] have no intuitions at all about the form in which meaning is encoded”.

5.3. Metalinguistic awareness

The final remark concerns metacognitive level, in particular so-called metalinguistic awareness or metalinguistic ability (Mora 2001)¹². We – as language users – are not only able to recognize separate spoken (or written) words, recognize their functions in utterances, combine them in complex meaningful statements to convey our ideas. We are also able to discuss and analyse language at a metalevel, e.g.:

- discuss alternative wording and alternative syntactic structure;
- recognize words used erroneously,
- recognize and correct syntax errors;
- analyse the relevance of a word in a particular context (e.g. formal, informal).

The process of ‘self-correction’ which assumes a kind of ‘monitoring’ of the process of language-using is of particular importance here.¹³ I am convinced that any cognitive model of language faculty – to be considered “psychologically real” (Jackendoff 2002: 19) should implement such a meta-level as well.¹⁴ What is important in the context of the paper, is that metalinguistic abilities are instances of psychological consciousness, involving such cognitive phenomena as the ability to discriminate, categorize, integrate information, access one's own mental states and report them.

6. Conclusions. Language and consciousness revisited

I would like to recapitulate the main points of the paper. First, I agree with researchers highlighting the role of consciousness in language. The role of consciousness may be acknowledged at two interconnected levels, namely: the “psychological” one, where consciousness as a mental phenomenon (or process) is in fact involved in language use and comprehension, as well as a methodological level: consciousness is necessary to explain the language faculty.

I presented two visions of the relationship in the paper: the one dominating in cognitive semiotics and represented here by Zlatev’s paper, and the other one stemming from “traditional”, “cognitivist” cognitive science. The first approach is used as a background against which the second one, an alternative approach, is presented. Consequently, I do not reject the role of phenomenology in research on the relationship between language and consciousness; I take a more moderate stance: the distinction between phenomenal and psychological consciousness is a more useful tool for the analysis of the language faculty. I have an impression that Zlatev – stressing the phenomenal aspects of language and phenomenological methods applied to linguistic activity – neglects its functional aspect. This is surprising, as numerous explanations of language faculty are in fact functional – language is considered to be a tool necessary for cooperation in society, coordination of actions, interaction, intersubjectivity etc.

My second claim is that although **explaining** the language faculty requires taking into account awareness, language is also inseparably connected with *qualia*.

Some readers may object that the above suggestions are valid for the internalist and mentalistic conception of language. Language – in accordance with Chomsky, Pinker, or Jackendoff – is understood as a mental phenomenon. This is at odds with e.g. Itkonen’s (1978, 2008) claims concerning the primarily social nature of language. The latter approach assumes that language may appear and develop only in a social context, so society is a necessary precondition for language; the former starts with an individual cognitive agent, who is equipped by nature with certain cognitive faculties, which in turn underlie the language faculty. Such language-related cognitive abilities get activated in certain circumstances, namely when an agent encounters other cognitive creatures and a kind of cooperation is necessary.¹⁵

I must admit, however, that the notion of *normativity* in language and the distinction between acceptability and correctness (in the sense of normative intuitions, see Zlatev 2008) poses a problem for the conceptualist

stance and may require additional effort on the side of mentalist theory of language.

Finally, returning to the relationship between language and consciousness, I am afraid that researchers accepting the social nature of language and stressing the role of external (social) norms, should use a different notion of consciousness, a notion that exceeds traditionally defined mentality. I am convinced that it is not a trivial task and that researchers have not managed to redefine consciousness in such a way so far.

NOTES

¹ I explicitly use the terms “traditional”, “cognitivist” in reference to cognitive science as many researchers in cognitive semiotics reject (or at least ignore) “Cartesian” (see Rowlands 2010) or “cognitivist” (see Varela 1996) cognitive science in favour of non-Cartesian cognitive science based on a “4e notion of mind”, i.e. an embodied, embedded, enacted, and extended mind (Rowlands 2010).

² The observation is confirmed by research on problem solving within AI or cognitive psychology. The reader can see it in the case of a very basic 8-puzzle problem. The simple trick: the assumption that one is moving empty ‘tile’ instead of tiles with numbers allows for quick and efficient solution.

³ As one of the reviewers of the paper noticed, the Chalmersian distinction between consciousness and awareness is not clear. One of the tasks of the paper was to clarify the difference in the context of language faculty.

⁴ From the functional point of view it is the only aspect of consciousness that is explainable. As Putnam notices (1981) even if there is something more, it cannot be explained in a functionalist framework.

⁵ The reference to Nagel is somehow misleading: subjectivity – according to his approach – consists of two aspects: phenomenal content (*qualia*) and particular, individual point of view (perspective).

⁶ Chalmers claims that *it is a fact about our world* (Chalmers 1997: 17–18) that psychological processes of awareness are accompanied by experiences.

⁷ The problem has been stated also by Jackendoff (as *mind-mind problem*: why is performance of some functions accompanied by experience?)

⁸ I use the term “model” in the sense suggested by Minsky (1965): *To an observer B, an object A* is a model of an object A to the extent that B can use A* to answer some questions about A.*

⁹ Although I am using the term ‘module’ in the description, it shouldn’t be interpreted in a Fodorian (1983, 2001) sense. In particular, it is important to notice, that these modules are not encapsulated. See also: Konderak 2007.

¹⁰ It is not surprising that the structure of implementation of parallel grammar suggested by Jackendoff (2002: 199) reminds of the structure of the above model.

¹¹ The results of the so-called P300 experiment (Chapman and Bragdon 1964) may be interesting in the context. It may be the case that our brain is ready for linguistic analysis of a heard sound before we realize that it is meaningful sound of some language.

¹² Mora (2001: 1) defines metalinguistic awareness as *an awareness or bringing into explicit consciousness of linguistic form and structure in order to consider how they relate to and produce the underlying the meaning of utterances.*

¹³ The presence of such a process is evident if we treat metalinguistic awareness as an instantiation of metacognition, defined as *any cognitive process that controls or monitors any aspect of cognition* (Moses and Baird 1999).

¹⁴ The SNePS/GLAiR architecture I am working with has features enabling metacognition. In particular, as propositions are represented as terms, they can become arguments of propositions, so the system is able to model e.g. beliefs about beliefs. Cf. Shapiro et. al. 2007.

¹⁵ Such an approach is supported by contemporary research on multiagent robotic systems (see e.g. Swarup, Gasser 2007 for an overview of results) where robotic agents with basic cognitive abilities are supposed to perform some actions requiring cooperation.

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