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SIGNUM-THEORY IN AXIOMATIC FUNCTIONALISM (in margine *Ontological Questions in Linguistics* by Jan W. F. Mulder and Paul Rastall)

0. The following paper wants to introduce readers to the theory of sign as advanced by a linguistic approach called Axiomatic Functionalism. It rose up from a review of a recent book *Ontological Questions in Linguistics* by Jan W. F. Mulder and Paul Rastall (published by LINCOM Europa in 2005). However, since Axiomatic Functionalism is not much known in our lands, the original review gradually changed to introduction to this approach, in particular to one of its basic components: ontology or signum-theory.

1. The book *Ontological Questions in Linguistics* is a joint work by Jan W. F. Mulder and Paul Rastall, two linguists whose names are little known in our country, though at least the name of Jan Mulder is well established in the context of European linguistics. He is Emeritus Professor of Linguistics at University of St. Andrews, Scotland, UK. Paul Rastall, who studied under Mulder's guidance at University of St. Andrews, is Principal Lecturer in Linguistics at the University of Portsmouth, UK. Both work within the linguistic approach called Axiomatic Functionalism (henceforth AF). Naturally, there are other proponents of AF; to name the most important: late Sándor G. J. Hervey, Michael A. L. Lamb, James Dickins and Barry Heselwood (the last three operate with an extended version of AF, see Dickins 1998).

The originator of AF is, however, Jan W. F. Mulder. He has been developing AF since 1960s in close cooperation with Sándor G. J. Hervey (for beginnings of AF see Mulder 1998). It is a type of functional linguistics and therefore an approach that should be of interest to Czech linguists, though it is rather a branch that is more related to French functionalism of André Martinet than to functionalism of the Prague School. Martinet had a great impact on Mulder, so that AF is often regarded as a formalized branch of Martinetian functionalism (cf. Akamatsu 2001), but there are many considerable differences and disagreements between these two functional linguistic schools. On the other hand, they are closely related as to the basic tenets, the most important of which is the principle of functional

relevance. They also share the common background: both Martinet and Mulder were presidents of *Societé Internationale de Linguistique Fonctionelle* (SILF; Mulder is now Honorary President of SILF, which was Martinet, too, until the time of his death in 1999). This society is also connected to the renewed Prague Linguistic Circle, as can be witnessed from a joint colloquium held in Prague in 1991. In 2003 another colloquium of SILF took place in České Budějovice.

In spite of being treated here as a linguistic approach, AF is in fact better described as a paradigm in semiotics (cf. Hervey 1994). First of all, it is not a purely linguistic approach, but a semiotic one. It is not limited to treatment of natural languages only but is, at least in principle, designed to account for different semiotic systems. On the other hand, AF is mostly focused on core-linguistic theory and description and so will it be presented here except for one illustrating semiotic example. This brings us to the second point, which can be quoted from Hervey (1994: 1338): "the approach claims a unique position with respect to the philosophy of science, in particular to theory-building and the evaluation of theories and descriptions".

Another person to have had a great impact on AF was the philosopher Karl Popper. The approach adopts Popper's view on theories which, in order to be properly scientific, should be hypothetico-deductive. As such, AF explicitly rejects all forms of speculativism, operationalism and inductivism in linguistics. In AF the hypothetico-deductivism of Popper is enriched by a distinction between theories and descriptions. Such a distinction is not usually recognized in natural sciences, because there is usually one world to describe but in linguistics this is a necessary dichotomy, as there are hundreds of different worlds, i.e. languages, that can be described by one particular theory. Now, under the hypothetico-deductivism of AF, it is theories which should be deductive, but not hypothetical, while it is in descriptions where we launch hypotheses that (as Popper says) should be in principle refutable.

The core of the theory of AF is formed by six axioms (therefore *axiomatic* functionalism) which are basic—arbitrary but appropriate—propositions the whole theory rests on. They are given below (taken from Mulder 1989). As AF is a semiotic approach, the terminology in the axioms is generally semiotic, though in natural languages terms like *cenotactic*, *cenological*, *cenetic*, *plerological* could be replaced by *phonotactic*, *phonological*, *phonetic* and *grammatical*, respectively.

Axiom A: *All features in semiotic sets are functional*.

This axiom sets the scope of the theory: it deals with only those features that are relevant to the purport of semiotic systems, which is communication.

Axiom B: *Semiotic systems contain simple, and may contain complex ordered, and/or complex unordered signa and figurae*.

This axiom establishes two basic systems, phonology and grammar, for dealing, respectively, with figurae (semiotic entities which have only form) and signa (semiotic entities with both form and information-value). Also, it sets an important dichotomy: ordering vs. simultaneity, the latter being lack of order-

ing. Semiotic entities may be either ordered (e.g. phonemes, words) or unordered (e.g. distinctive features, monenes).

Axiom C: *Cenological entities may have para-cenotactic features and plerological entities may have para-syntactic features*.

Roughly speaking, this is an axiom of suprasegmental or prosodic or paratactic features. In AF this includes accent, juncture, tones (para-phonotactic features) and intonation (para-syntactic features).

Axiom D: *All semiotic systems contain sentences, constituted by a base and para-syntactic features*.

This axiom sets the sentential level as a level distinct from the syntactic one.

Axiom E: *There may be a many-to-one relation between cenetic form and figura (allophony), and between cenological form and signum (allomorphy), and vice versa (homophony and homonymy respectively)*.

This could be called an axiom of realization: it states that both figurae and signa may have formal variants (allophones and allomorphs respectively) and that there may be formal coincidence between variants of different figurae (i.e. homophony) or signa (homonymy).

Axiom F: *Signa may be realized an unlimited number of times (in actual communication), each resulting utterance denoting a denotatum which may belong to a potentially infinite denotation class*.

The axiom introduces semantics dealing with the denotational aspect of signa. Let it be noted that AF explicitly operates with denotation rather than connotation of signa, through the treatment of the latter was suggested by Hervey (Hervey 1971, see also Dickins 1998: 310ff.), who was also the one to put forth the theory of axiomatic semantics (see Hervey 1979) based on the Axiom F.

The axioms are interpreted by a network of accompanying definitions. These together form so-called Postulates for Axiomatic Functionalism (to be found in Mulder 1989: 435–57 and Mulder & Hervey 1980: 40–63).

It is no coincidence that I have described the axioms as basic propositions that are arbitrary but appropriate. The reader of Louis Hjelmslev's *Prolegomena to a Theory of Language* may find the phrase familiar. The basic meta-theoretical assumptions of glossematics are in many respects relevant to AF. Both the glossematicians and axiomatic functionalists hold that a linguistic theory should be arbitrary, which means it could be different if necessary, but it must be appropriate to its purpose. Another common feature is insistence on deductiveness: in the case of AF it is that everything in the theory should be derived from the axioms (and/or accompanying definitions) in a strictly deductive and logical way. The third common feature to mention is the denial of any existential postulate for the linguistic theory, a point discussed in detail in *Ontological Questions in Linguistics*.

2. The mentioned book deals with problems connected with the nature of linguistic objects. Mulder and Rastall argue for a reduced ontological commitment in linguistics. It is a view strongly opposed to many prevailing contemporary ones.

One of the ontological questions that is discussed in the book is the ontological status of speech events and their connection or correspondence to reality.

In the authors' view there should be a distinction between what we observe (in linguistics these are speech events), the tools by which we can account for the observations (a theory), and finally the actual accounting for (a description). The aim of a linguistic theory, by establishment of certain entities and their classes, is to provide adequate tools for allowing us to account for speech events, but the theory cannot make any claim about the outer existence of the entities it has established. It operates with constructs only!

For instance, a linguistic theory can set up the notion *phoneme*. In a description we can speak about a phoneme /t/ in Czech but this is only an explanatory construct by which we account for certain speech phenomena. We cannot claim that the entity /t/ *per se* exists and/or is real outside the description. We cannot even claim it is once and for all the phoneme of Czech, because once again the interpretation of the Czech phonological system is dependent on the governing theory. This may strike as strange to many linguists at the first sight. However, we should remember that we have established the entity /t/ only on the ground of a certain theory: it is the theory that creates the entity, NOT that it is discovered by the theory!

Incidentally, it is the basic point of my paper "Phoneme and Alternations: Different Views" (Bičan 2006) which tries to show that the same piece of data, sc. the sound [t] in Czech [let] can be phonemically interpreted in at least three different ways according to three different phonological theories: 1. as a phoneme /t/, 2. as a phoneme /t/ if it realizes the word *let* "flight" or as /d/ if it realizes the word *led* "ice", or 3. as an archiphoneme /T/ being distinct from both /t/ and /d/ in the theory. See Figure 1.

speech event	**approach 1**	**approach 2**	**approach 3**
[let]	/let/ (for both *let* "flight" and *led* "ice")	/let/ (for *let* "flight") /led/ (for *led* "ice")	/leT/ (for both *let* and *led*)

Fig. 1: Interpretations of [let]

We see that the same speech event can be phonologically represented in three different ways. There is therefore no a priori linguistic reality of the speech event [let] that is to be discovered by a linguist. Its interpretation is wholly dependent on the theory through which it is created. Something similar is true for a color picture: a person who is color-blind will perceive and describe it differently than the one without the defect of seeing. Let me also quote de Saussure (2006, going back to the beginning of 20th century):

> Let us remember in fact that *the object* in linguistics does not exist to start with, is not predetermined in its own right. Hence to speak of an object, *to name* an object, is nothing more than to invoke a particular point of view, A. (8)

What is more, even the sounds [l], [e] and [t] in Czech [let] are nothing but constructs. It is merely a way by which, in phonetics, we account for specific

speech phenomena by means of a phonetic theory. It is a common mistake to assume that sounds are the real things, real events, and phonemes are certain abstract and generalized models of the sounds. Even the sounds are abstract and generalized models, because actual pronunciations at any given time and space are directly inaccessible. They are immediately gone and can never be repeated; they exist only in passing. For example, it is generally assumed that the sound [e] in Czech [let] is the same as [e] in e.g. Czech [sen] but if we pronounce these two words (*let* "flight" and *sen* "dream") and compare their spectrograms (which are models, too!), we will see that they are not identical; however, there are certain characteristics common to them from which we can *generalize* the sound-type [e] that is in turn nothing but an abstraction.

3. Before moving to the discussion of signum-theory in AF, I will sketch the overall structure of the theory of AF and of another of its components: *systemology*.

The theory of AF—by which I mean the tool for description of languages—has three basic components or sub-theories: *systemology*, *semantics*, and *signum-theory*. Mulder (1989: 70) likens it to a stool with three legs where the seat of the stool can be seen as being the all-pervading point of view of the theory, the functional principle. The most important leg of the theory is nevertheless the signum-theory because it sets the ontological nature of linguistic objects.

Systemology then deals with internal deployment of linguistic objects, that is, the ways they are used in the system, covering mainly classical phonology and grammar. Semantics—which is an autonomous sub-theory of AF, not an extension of grammar—deals with external deployment of linguistic object, that is, with regard to the purpose of denoting things. Axiomatic semantics (for which see Hervey 1979) will not be discussed here, though.

Systemology is mostly set by Axiom B (see above) which introduces figurae and signa as semiotic entities, and ordering relations among them. This means that systemology deals with systems of both unordered and ordered semiotic entities with only form (figurae) and with systems of both unordered and ordered semiotic entities with form and information-value (signa or signs). The systems are as follows: for phonology: phonematics (distinctive features and phonemes as their unordered bundles) and phonotactics (phonemes and phonotagms as their ordered bundles); for grammar: morphology (monemes and words as their unordered bundles) and syntax (words and syntagms as their ordered bundles). In addition to these, AF recognizes two para-tactic levels: para-phonotactic level (covering features such as juncture, accent or tones) and para-syntactic level (covering intonation and including the sentential level, cf. Axiom D). Figure 2 (adapted from Mulder 1989: 113–7) presents the structure of systemology and possible types of analyses of complex entities to less complex and ultimately to simple entities.

SYSTEMOLOGY					
phonology			**grammar**		
phonematics	*phonotactics*	*para-phonotactics*	*morphology*	*syntax*	*para-syntax or sentential level*
types of analyses:					
phonemes > distinctive features	phonotagms > phonemes	complex para-phonotagms > simple p.-ph. > bases + para-phonotactic features	words > monemes	syntagms > words	sentences > clauses > bases + para-syntactic features

Fig. 2: Systemology of AF

A few examples from Czech can be given for easier understanding. As regards grammar: On the sentential level (in para-syntax) the sentence *To je pitná voda* "this is drinking water" is analyzed to base TO JE PITNÁ VODA and accompanying intonation. In syntax the syntagm (roughly corresponding to what in other theories is known as phrase) PITNÁ VODA "drinking water" is analyzed to words PITNÁ "drinking" and VODA "water". In morphology the word VODNÍK "water spirit" is analyzed to an unordered bundle of monemes VOD "water" and NÍK "agentive suffix" (unordered because there is no functional difference in the order of the monemes).

We now move to phonology: In para-phonotactics the para-phonotagm /#'voda#/ is analyzed to the base /voda/ and para-phonotactic features accent (') and juncture (#). In phonotactics the phonotagm /voda/ is analyzed to phonemes /v/, /o/, /d/ and /a/. Finally, in phonematics a phoneme like /d/ is analyzed to an unordered bundle of distinctive features 'alveolar', 'occlusive' and 'voiced' (again, there is no functional ordering).

As a final word let me note that the above presentation of systemology is necessarily simplified but I hope to present a detailed exposition in a future paper.

4. It was suggested at the beginning of this paper that, despite being related to and inspired by, AF is in certain respects different to functionalism of André Martinet. Mulder discusses the differences in several works of his, but it is also in the recent book *Ontological Questions in Linguistics* where this issue is addressed. He tries here to set his position with the respect to Martinetian ("realist") functionalism and also to de Saussurean tradition. The point I want to discuss here is the theory of double articulation.

Mulder explicitly rejects the not uncommon interpretation of double articulation maintaining that language is articulated to entities (signs, monemes) that are unions of a semantic content (*signifié*) and a vocal form (*signifiant*) which is in turn articulated into a succession of entities with form only (figurae, phonemes). In Martinet's own words (1990, section 1.14):

> l'expérience humaine s'analyse […] en unités douées d'un contenu sémantique et d'une expression vocale, les monèmes; cette expression vocale s'articule à son tour en unités distinctive et successives, les phonèmes […]

In *Ontological Questions in Linguistics* Mulder argues that this is a category-switching and an ontological mistake, because on the one hand the *signifiant* is viewed as a part of sign and therefore implies the *signifié* (for a sign to be a sign it must have both *signifié* and *signifiant*!), on the other hand the *signifiant* is viewed as wholly independent of the *signifié* as it can be analyzed into a series of meaningless phonemes. Now, if it is the same *signifiant*, where did the content, i.e. its implied *signifié*, get lost?

In AF this controversy is evaded by postulating three ontologically different entities: *expression of a sign*, *allomorph of a sign* and *phonological form of the allomorph*. It is then the phonological form that can be divided to phonemes. Expression is the *signifiant* aspect of the sign and implies content, i.e. *signifié*; it is a class of its allomorphs (variants) each of which having a phonological form but the phonological form cannot be equated with the sign itself or its expression!

This leads us to the structure of signum-theory in AF. It is given in Figure 3 (taken from Mulder & Rastall 2005: 141). The theory is also called *ontology* and the name is not without motivation, because if, as already mentioned above, systemology (phonology and grammar) deals with the systematic structure of linguistic objects and semantics with the ways linguistic objects denote things in "real" world, the purpose of ontology or signum-theory is to set the very nature of these linguistic objects and/or notions and their relative status. Both systemology and semantics presuppose ontology and, as Mulder notes (1989: 74), every science implicitly or explicitly needs an ontology.

Let it be also noted that AF makes a distinction between the terms *signum* and *sign*, the latter being a type of signum. Signum (see Mulder 1989: 437) is defined as a semiotic entity with both form and information-value whereas sign is a signum with wholly conventional information-value. The other type of signum is a symbol whose information-value is not wholly conventionally fixed. However, for our purposes here the difference between signum and sign is immaterial and the terms may be regarded as synonymous.

level of *phonetic entities*	level of *phonological entities*	level of *grammatical entities* (level of *Sign*)
i (image)	*i*R*d* (phonon)	(*i*R*d*)R*d* (utterance)
f={*i*} (phonetic form)	*f*R*d* (allophone)	(*f*R*d*)R*d* (allomorphon)
	p={$f^{1..n}$R*d*} (phonological form)	*p*R*d* (allomorph)
		S={$p^{1..n}$R*d*} (sign)

Fig. 3: Ontology of AF

In the scheme the parentheses {} and the superscript i..n stand for "a class of"; R*d* stands for "having and in capacity of having" *d*, which is distinctive function (either in phonology or grammar). The most primitive notion here is that of image (symbolized *i*) from which other notions are derived by applying and re-applying the two mentioned relations, i.e. the relation "a class of" and the relation "having and in capacity of having a distinctive function".

IMAGE is defined as "a model for the unique form of a singular realization of a phonetic feature" (Mulder 1989: 455); it is simply a model for a single occurrence of a speech-sound. A class of impressionistically similar images is PHONETIC FORM (*f*). If we return to my earlier example with Czech [e], we can say that the phonetic form [e] as a sound-type is a class of impressionistically similar [e] sounds that can be recorded in different pronunciations.

Though included in the table, both image and phonetic form do not belong to signum-theory proper but to a phonetic science, that is, they are provided by a phonetic theory independent of a given linguistic theory. It is the distinctive function that, as it were, creates full-fledged linguistic entities. So if a certain phonetic form (i.e. sound-type) is endowed with a phonologically distinctive function in a given language, we speak of ALLOPHONE. A class of allophones (i.e. phonetic forms with the same distinctive function) is PHONOLOGICAL FORM. There are two points that should be noted here.

First, in AF the class of allophones is not a phoneme but a phonological form. Phoneme is an entity of systemology and does not belong to signum-theory. In other words, it is an entity of a different theory but this does not mean there need not be correspondences between entities of different theories (just as 'a colorless, odorless liquid with a specific gravity of 1' as an entity of physics corresponds to H_2O as an entity of chemistry; example taken from Hervey 1972: 361). Phoneme as an entity of systemology (defined there as an unordered bundle of distinctive features) corresponds to phonological form as an entity of signum-theory, where it is defined a class of allophones. Although we can still speak of allophones of a phoneme as a convenient shortening of 'allophones of the phonological form corresponding to a phoneme', we should not forget that the difference between phoneme and phonological form is important, because it does away with the logical controversy when the phoneme is, in certain treatments, defined both as a bundle of distinctive features and as a class of allophones. If the phoneme is a bundle (i.e. a set) of distinctive features, it cannot, at the same time, be a class (a set) of allophones each of which containing the same bundle (set) of distinctive features, since all are grouped under the same phoneme! A set of, say, four baskets each of which containing six apples is not the same as a class of six apples as members common to the four baskets!

The second point to mention in connection with phonological form and allophone is the fact that in AF the use of these notions is broader than in other approaches and is not limited to correspond to phonemes only. This is to say that images as well as the corresponding phonetic forms can be models for any speech event, not necessary only for what is in phonetics known as a singular sound.

Consequently, allophones and phonological forms are not bound to correspond to phonemes only but also to larger and more complex phonological entities. These are called PHONOTAGMS in AF (just as complex entities in grammar are called syntagms). We can have a phonotagm /sklenka/ in Czech corresponding to the phonological form which is a class of allophones [sklenka] and [sklɛŋka] (i.e. realized once with an alveolar nasal, once with a velar one).

The last phonological entity of signum-theory is so-called PHONON. It is a particular image with a phonologically distinctive function. According to Mulder (1989: 304), it is a logical rather than a practical concept and I will not discuss it here for that reason (though some examples are suggested in Figures 6 and 7 below). The same is true of the notion of ALLOMORPHON (allophonon with a distinctive function in grammar).

We can now turn to the level of grammatical entities, the most crucial of which, for this discussion, is the notion of ALLOMORPH. It is defined as a phonological form endowed with a grammatically distinctive function, and as such it falls within the domain of grammatical entities. A class of allomorphs (i.e. phonological forms with the same distinctive function) is EXPRESSION of a sign. The reader might have noticed that in the table the class of allomorphs is identified as sign itself, not as its expression. Properly speaking, SIGN is a conjunction of expression and content but since they both imply sign and one another, just as they are both implied by sign, there is in fact mutual equivalence and we can view sign from the angle of its expression (or from the angle of its content if the need be). That is to say, we can equate a sign with its expression because the expression necessarily implies the content of the sign and *vice versa*! We can then define sign as a class of allomorphs, though it is rather a class of expression-allomorphs.

Now to give an example: in Czech the sign-as-expression PES "dog" is a class of at least two allomorphs '/pes/' and '/ps/' (cf. *pes* "a dog", *psi* "dogs" with *kos* "a blackbird" and *kosi* "blackbirds"). The phonological forms of the allomorphs—not the allomorphs themselves!—correspond to bundles of phonemes /p/, /e/, /s/ (for *pes*) and /p/, /s/ (for *psi*), respectively.

We can now return to the controversial interpretation of the double articulation theory alluded to above which claims that expression of sign is articulated to phonemes. In AF the controversy is forestalled by introducing several ontologically different entities: 1. sign as a conjunction of expression and content, 2. expression of sign (or the sign viewed as its expression) which is a class of allomorphs and which at the same time implies content, 3. allomorph as a class of phonological forms with the same grammatically distinctive function, and 4. phonological form that can be said to be analyzed to phonemes. What is therefore "articulated", sc. analyzed to phonemes is a phonological form, not an allomorph. The allomorph is a grammatical entity and hence should be analyzed at the level of sign, not at the level of figura.

There is another entity of signum-theory that has not been mentioned yet: that of UTTERANCE. To put it crudely, utterance is a *parole* correlate of sign, which is a *langue* entity. It belongs to speech, because it is a model for the unique form of

a singular realization of sign. In more formal way: it is an image with a phonologically distinctive function and a grammatically distinctive function (i.e. (*i*R*d*)R*d*). In Czech [sen] (as a model for what was pronounced at a certain instance of time and space) is an utterance if it is recognized as being both phonologically distinctive (a realization of a phonological form corresponding to a phonotagm /sen/) and grammatically distinctive (a realization of the sign SEN "dream").

To illustrate better the structure of signum-theory and the difference between phonological form and allomorph, I will now give a semiotic example. It should be remembered that AF is a semiotic approach, though in this paper it is discussed from the point of linguistics.

Suppose we doodle on a piece of paper. Every such a doodle is an image. We notice that some of the doodles resemble each other and we group them under one general type of doodle; this is a parallel of phonetic form. Now if we recognize that the doodle-type is important for drawing—and now we have moved from doodling to drawing, which parallels phonetics versus phonology—, we can assign it with distinctive function in the universe of drawing, because it is distinct from other distinctive doodle-types such as curve, circle or square. This is a parallel of allophone; we can call it *straight line*. Now, naturally, we will notice that the straight line can have different lengths but it is still a straight line. We can group all the variants (allophones) under one class of straight lines; this would correspond to phonological form. There are obviously other types of distinctive doodle-types in drawing and all these can be combined to more complex drawings. We can, for instance, have two straight lines of certain length crossed. But it is still a piece of drawing (a phonological form).

We will now move from the universe of drawing to the world where different drawings are assigned with information-values. In other words: where drawings are distinctive, because they carry certain information-values distinct from other information-values. We have move from drawing (phonology), where we dealt with mere figurae, to symbols and/or signs (grammar). To return to our example with two crossed straight lines: we can assign this drawing with a distinctive information-value "Christianity". The two crossed lines have become a symbol for Christianity as opposed to other symbols for other religions, and we call it a *Cross*. The Cross is now a parallel of allomorph. And once again we can notice there are different types of Cross, drawn differently from two crossed straight lines (cf. Fig. 4 below), all of which are nevertheless symbols for Christianity. We group these variants to a class of Crosses, and by doing so we have arrived at the level of sign as a class of allomorphs. Finally, the notion utterance corresponds to any instance of two crossed straight-line-like doodles that are recognized as symbols of Christianity.

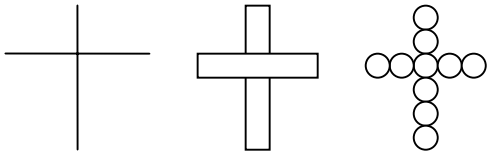


Fig. 4: Different types of Christian Cross

With this semiotic example we can approach the problem of double articulation from a different angle. We have Cross which is a symbol of Christianity. It is a sign and as a sign it has two aspects: the value "Christianity" (*signifié*) and the way it is expressed (*signifiant*). We agree that there are different types of Cross (its allomorphs), each of which being a symbol for Christianity. Every allomorph (variant) of Cross is an instance of the sign Cross. If we followed the common interpretation of double articulation, we should say that the expression of Cross (say, of the first Cross in Fig. 4) can be articulated into smaller entities which have only form (phonemes). In the case of the first Cross of the Fig. 4 it would be two straight lines. However, there is an obvious lapse in reasoning: Cross as a symbol for Christianity is not the same thing as two crossed lines, because it has, in addition, the value of "symbol of Christianity" that cannot be simply done away with. Obviously, two crossed lines is something fundamentally different from a Cross as a symbol of Christianity! To put it other way: we cannot claim that two crossed lines (or other similar objects) are always and ever symbols for Christianity. The same is true for signs and their phonological forms in linguistics: they are fundamentally—we should say ontologically—different entities.

5. Now, instead of giving a verbal summary of the present paper, I have chosen to give three tables (Figures 5–7) that offer an overview of signum-theory in Axiomatic Functionalism. The overview is accompanied by several linguistic examples and brief commentaries. The semiotic example with Cross is included, too.

entity	**example**	**notation**	**comment**
image (*i*)	$[a]_1$, $[a]_2$, $[a]_3$ … $[a]_n$ $[je]_1$, $[je]_2$, $[je]_3$ … $[je]_n$ 	*i*	models for instances of speech-events [a], [je], and for instances of doodles
phonetic form (*f*)	[a], [je] 	{*i*}	classes of impressionistically similar speech-events [a], [je], and of similar doodles (in bold), i.e. sound-types and doodle-types

Figure 5: Level of phonetic entities

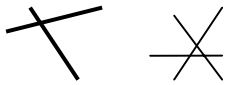
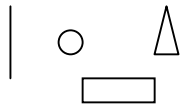
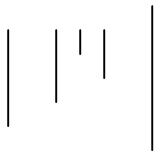
entity	example	notation	comment
phonon	$[a]_1Rd^1$, $[a]_2Rd^1$, $[a]_nRd^1$ as distinct from $[e]_1Rd^2$, $[e]_2Rd^2$ 	*i*R*d*	images that are found distinctive in phonology, and doodles distinctive in drawings
allophone	$[a]Rd^1$ as distinct from $[e]Rd^2$ 	*f*R*d*	a sound as a realization of a phoneme as distinct from realizations of different phonemes, and a drawing (straight line) as different from other drawings
phonological form (*p*)	{$[a]Rd^1$, $[ɑ]Rd^1$, $[ã]Rd^1$} 	{$f^{i..n}$R*d*}	possible allophones of a phoneme /a/ in Czech (front, back, and slightly nasalized), and variants of a drawing style "straight line"

Fig. 6: Level of phonological entities

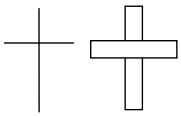
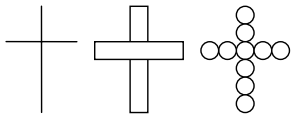
entity	example	notation	comment
utterance	$([je]_1Rd)Rd$ 	(*i*R*d*)R*d*	a singular realization of the sign BÝT "to be" in Czech, and a singular occurrence of a doodled Cross as a symbol of Christianity
allomorphon	[je]R*d* 	(*f*R*d*)R*d*	a generalized class of singular realizations of the sign BÝT, and of singular occurrences of doodled Crosses
allomorph	/je/R*d* or /jsem/R*d* or 	*p*R*d*	allomorph '/je/' and allomorph '/jsem/' of the sign BÝT, and two types of Cross as symbols for Christianity
sign (S) (*sign-as-expression*)	{/je/R*d*, /jsem/R*d*, /jsi/R*d*, /jsou/R*d*} 	{$p^{i..n}$R*d*}	sign BÝT "to be" (with allomorphs *je* "is", *jsem* "am", *jsi* "(you) are"), and Cross as a symbol of Christianity (with different variants)

Fig. 7: Level of grammatical entities

The tables are hoped to sufficiently illustrate and summarize the structure of the signum-theory of AF. In certain points the presentation had to be simplified

due to the lack of notations and space (I could not discuss here the notions of allophony and allomorphy, both elegantly presented in AF, because it operates with set-theoretical relations). The signum-theory is discussed in the book *Ontological Question in Linguistics* by Mulder and Rastall, which was the original inspiration for this paper. An excellent but rather unavailable exposition of signum-theory is found in Shimizu and Lamb's "Axiomatic functionalism: Mulder's theory of the linguistic sign" (1985, see references). Another clear and useful summary can be found in Dickins 1998: 46–53. Of course, the most recommended presentation of signum-theory is the one by its originator, Jan W. F. Mulder, which is to be found in several of his works, notably in *Foundations of Axiomatic Linguistics* (Mulder 1989). The present paper has been my own interpretation of the theory and I am solely responsible for any inconsistencies and errors.

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TEORIE ZNAKU V AXIOMATICKÉM FUKCIONALISMU

Článek si klade za cíl seznámit čtenáře – při příležitosti vydání knihy *Ontological Questions in Linguistics* Jana W. F. Muldera a Paula Rastalla – s lingvistickým přístupem známým pod názvem *axiomatický funkcionalismus*, a speciálně pak s jedním jeho komponentem, teorií znaku. Jedná se o typ funkčního lingvistického přístupu silně ovlivněného funkcionalismem André Martineta. Mezi těmito přístupy je však mnoho rozdílů. Jedním z nich je nesouhlas s interpretací Martinetovy dvojí artikulace, která říká, že jazyk je artikulován do entit (znaků/monémů) mající jak obsahovou, tak výrazovou složku, a ta je následně artikulována do jednotek majících jen formu (tedy do figur/fonémů). Mulder toto pokládá za míchání ontologicky rozličných entit a navrhuje činit rozdíl mezi znakem (gramatickou entitou) a fonologickou formou znaku (fonologickou entitou).

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