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Semantic Structures of Aspect (A Cognitive Approach)

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*For our friend Roman Laskowski,
with a special thought for his emigration years*

Abstract

We use the notation of *semantic feature structures* as a formalised metalanguage for describing aspectual meanings in various languages regardless of the linguistic level (morphological, syntactical, lexical etc). We propose to describe the Aspect category as a pair of feature bundles : *Analysis* and *Control*. The Analysis of a situation (viewed as a whole or as one of its moments or stages) is considered as its *endocentric aspect*, and the Control of a situation (viewed as a set of operations such as iteration, flow and intensity modifications, composition) is defined as its *exocentric aspect* because it is imposed from outside. These aspectual features occur and combine diversely depending on the semantic type of the situation to which a verb is related (due to hyperonymy/hyponymy lattice).

On the other hand, during nearly all the 20th century, Slavonic theories of aspect were dominated by the distinction between Aspect and Aktionsart, and this distinction was extended to other languages. Our cognitive approach makes it possible to bring closer the two categories and to define the perfective aspect in Slavonic languages as a hypercategory including Aspect and Aktionsart leaving the traditional distinction for more detailed discussion.

Streszczenie

Stosujemy zapis *struktur cech semantycznych* jako sformalizowany kognitywny metajęzyk w celu opisanie znaczeń aspektowych w różnych językach niezależnie od poziomu wykładników aspektowych (morfologicznego, składniowego, leksykalnego itp.). Kategorię aspektu proponujemy opisać jako parę struktur cech semantycznych: *analiza* i *kontrola*. *Analiza* sytuacji (pojętej jako całość lub jako jeden z jej momentów lub etapów) traktowana jest jako endocentryczny składnik aspektu. *Kontrola* zaś (pojęta jako zbiór operacji takich jak powtarzanie, zmiana przebiegu lub intensywności, złożenie) jest definiowana jako egzocentryczny składnik aspektu – nałożony od zewnątrz. Cechy te występują i kombinują się różnorodnie zależnie od typu semantycznego, do którego można odnieść czasownik w danym kontekście (z uwagi na kratę wyznaczającą hyperonimie/hyponimie).

Z drugiej strony w ciągu prawie całego 20. stulecia, slawistyczne teorie aspektowe zdominowane były przez rozgraniczenie pomiędzy aspektem a rodzajami akcji. Później podział ten został rozszerzony na opis innych języków. Nasze kognitywne podejście pozwala na przybliżenie tych dwóch kategorii oraz na zdefiniowanie aspektu dokonanego w językach słowiańskich w terminach hiperkategorii odkładając tradycyjny podział na inną bardziej szczegółową dyskusję.

1. Method and concepts

Our aim is not to propose a new general abstract definition of Aspect regardless of the use of verbs in context. On the contrary, our method consists in collecting a large number of examples described by semantic feature structures, and then comparing all these structures in order to discover which configurations of features are characteristic of aspectual meanings in different contexts and in different languages. For this purpose, we use a finite list of aspectual parameters that are defined as formally as possible (Włodarczyk A&H 2003). Our attempt to formalise

as much as possible from a very large number of aspectual notions defined by other scholars throughout many years of research about different languages, not only Slavonic, but also English, French, Japanese etc.

Our approach is an attempt to unify in a single complex theory many different concepts that were previously scattered throughout various theories. In our opinion, what may be viewed as *universal* in aspect are the primitive notions (aspectual parameters), but their very structuring into complex configurations varies from language to language. There is a huge diversity of lexical and grammatical morphemes expressing aspectual meanings in different languages and the task of drawing up an inventory is almost infinite. We do not even have an exhaustive description of all these forms of expression for one language. However, we consider that it would be impossible to compare aspectual meanings in different languages without using a more powerful metalanguage than a simple enumeration of features. To describe aspectual meanings we use a pair of semantic feature bundles which we call respectively *Analysis* and *Control* parameters. In turn, these two types of parameters are related to four semantic types of situations. Obviously, the list of aspectual analysis and control parameters we put forward is likely to be slightly modified and enriched as research develops on different languages.

2. Semantic types of situations

Zeno Vendler's proposal for English verbs gave rise to a good many aspectual classifications of semantic situations expressed by verbs used in context in different languages. As regards Polish, Roman Laskowski's classification (1998) is one of the most refined.

The semantic types of situations proposed by André Włodarczyk (2003c) are formalised frames based on the mathematical theory of Petri nets. Nowadays, Petri nets are beginning to be used, all over the world¹, as a formalized theory of linguistic aspect. They were first introduced into linguistic (aspectual) studies by Antoni Mazurkiewicz and Violetta Koseska (1986, 1991, 1997) at the Institute of Slavistics of the Polish Academy of Sciences in Warsaw in the 1980s. In the present approach, we use the background of Petri nets theory not to describe relations between different situations but for the inner description of a given semantic situation (see Włodarczyk A. 2003c).

The present classification of semantic situations differs from previous ones insofar as it takes into account only the "frames of situations", from which we exclude the participants and the semantic roles, in particular the impact of the latter ("controlling agents") on the aspect. Consequently, we consider only four features relevant in this classification: space (three dimensions), time, progression and granularity. States differ from dynamic situations, in that they are not modified by time passing. Events have no progression: their beginning moment ("start") coincides with their ending moment ("finish") and it is impossible to observe an intermediary stage ("run") between them. In other words, events are situations without development. Progression characterises processes which undergo changes with time. The intermediary stage of progression is often represented (Sémon 1986, Barentsen 1995) as a horizontal segment between two oblique segments (one ascending, representing the beginning stage and one descending, representing the ending stage). A granular process is made up of a repetition of many homogeneous grains (see « mul'tiplikativy » Xrakovskij 1997).

¹

SEMANTIC TYPES OF SITUATIONS				
Characteristic properties (dimensions)	Static Situations	Dynamic Situations (ACTIONS)		
	STATE	EVENT	Ordinary PROCESS	Refined PROCESS
Space (3D)	+	+	+	+
Time	-	+	+	+
Progression	-	-	+	+
Granularity	-	-	-	+

Table 1: Hierarchy of semantic situations

Using semantic feature bundles, we can represent the semantic types of situations as follows :

< SIT TYPE > = state | event | ordinary process | refined process

(N.B. The sign “|” stands for “or”)

It is important to stress that what we propose to classify are not verbs (even if it were possible to disambiguate totally all verbal lexemes). Instead, our classification concerns semantic situations expressed by verbs in combination with all contextual factors: verbal categories (tense, person, mood, voice etc), lexical meanings of verbs, temporal and spatial anchoring, participants of the situations with their properties (human or inanimate, concrete or abstract entities, etc), syntactical constituents containing semantic elements of aspect (adverbs, auxiliary or semi-auxiliary verbs) etc. In aspectological research, Vendler himself pointed out that semantic types of situations are not a property of verbal lexemes as dictionary entries but depend on the usage of the verb in a given context. For instance, the imperfective Polish verb *wstawać* (to get up) in most contexts is of the type *event*, but in an appropriate environment it may be viewed as a *process*.

(1) *Piotr wstawał codziennie o siódmej.*

Piotr used to get up every morning at 7 o' clock.

< TYPE > = event

< ANLS > = whole

< CNTL REPETITION > = ind_nb

(2) *Piotr wówczas wstawał z trudem i powoli, bo bardzo go nogi bolały.*

At that moment Piotr was getting up with great difficulty and very slowly because his legs hurt.

< TYPE > = ordinary process

< ANLS STAGE INNER > = run

< CNTL REPETITION > = no

As a matter of fact, a theory, which holds that the same verbal lexeme can be used to express different types of semantic situations, is simpler than theories which split verbal lexemes into different dictionary entries inasmuch as they refer to different types of situations.

3. Situation Analysis (moments and stages)

We consider as « endocentric » in aspect the internal analysis of a dynamic situation unfolding in different moments and stages as time goes by. In some usages, situations are not analysed but considered in their totality (« whole »). In other contexts, the situation is analysed in its different constitutive parts. We distinguish between moments (this is similar to the traditional concept of a « point ») and stages (this concept is comparable to the traditional view of the

ongoing situation as a « line »). All moments and stages that we take into account do not systematically correspond to a separate morpheme in languages. They are expressed by lexemes and/or syntactic constituents and not only by the verbal forms themselves but rather by the whole utterance. The position of moments and stages along a line representing a situation progressing in time allows us to compare different forms of expression in different languages.

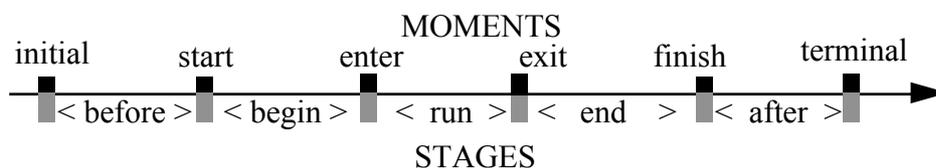


Fig. 1: Analysis of simple dynamic situations in moments and stages (constitutive parts)

Every situation is surrounded by two situations defined as its outer stages: one is immediately preceding, (*before*), the other immediately following (*after*). The situation itself may be roughly analysed in three inner stages: *begin*, *run* and *end*. Moments serve as boundaries of stages, and we called them (arbitrarily²) initial, start, enter, exit, finish and terminal.

The outer stage *after* is sometimes called the resulting situation: e.g. if the situation itself is « someone opened the window », the outer “after” stage is the situation « the window is opened ». The terminal moment is the moment that puts an end to the “after” stage, in this case, the moment when the window is closed back again. In most languages this terminal point is not expressed by a morpheme but rather by a subsequent utterance. If we keep the same example of opening a window, the outer stage *before* is the situation when the window is still closed. Then the window begins to open (*begin* stage), the situation enters the *run* stage, goes out of it and finishes opening (*end* stage) until it is completely opened (*finish* moment). We can find all these primitive notions (with more or less precise definitions) in the aspectological literature. But their linguistic expressions are very numerous and of different types (lexical, grammatical: inflectional, lexicogrammatical: derivational, syntactic).

The analysis parameters are of the form:

- < ANLS > = whole
- < ANLS MOMENT INNER > = start | enter | exit | finish
- < ANLS MOMENT OUTER > = initial | terminal
- < ANLS STAGE INNER > = begin | run | end
- < ANLS STAGE OUTER > = before | after

The possibility to express these moments or stages differs depending on the type of semantic situation. States do not progress in time, and therefore they cannot be analysed in different stages between their “start” point and “finish” point, they can only be viewed as an homogeneous inner stage between two external stages. On the other hand, events are reduced to a unique point between the two external stages. This unique point results from the coincidence (overlapping) of “start” and “finish” moments. This, of course, is only a problem of linguistic semantics and not of physical knowledge of the world, as no situation, as short as it might be, can be reduced to a point without duration.

² What is relevant in our theory is not the intuitive meaning of these words in English but the place they mark

The outer stages “before” and “after” are taken into account because every situation is related to an immediately preceding and an immediately following situation. We shall show below how languages can indicate these stages in relation with control parameters³.

3.1. The inner “run” Stage

The inner stage « run » can be expressed in many different ways in languages : sometimes by grammatical verbal morphemes (the imperfect tense in Romance languages, the progressive form of different tenses in English, etc), or lexically (adverbs), or halfway between lexical and grammatical devices (semi-auxiliary verbs).

(3a) *Ona pisze właśnie wypracowanie.*

(3c) *Elle est justement en train de rédiger son devoir.*

(3d) *She is precisely writing her paper.*

< TYPE > = ordinary process

< ANLS STAGE INNER > = run

< CNTL REPETITION > = no

In Slavonic languages, this parameter is mostly expressed by imperfective verbs in appropriate contexts as in ex 3a where the present tense of the imperfective verb is used with the adverb *właśnie*. However, as we shall see below, some perfective verbs can also indicate the inner stage *run* when this meaning is combined with a control parameter (*interrupt, resume*).

3.2. The outer “before” stage

Languages have the possibility to indicate explicitly the outer *before* stage. In some cases, utterances say nothing explicit about the following progression, i.e. the hearer cannot infer for sure whether the situation really went beyond the start moment and entered the inner begin stage to develop further.

(4a) *John was about to go out.*

(4b) *Jean était sur le point de / allait / sortir.*

(4c) *Jan właśnie wychodził.*

< TYPE > = ordinary process

< ANLS STAGE OUTER > = before

< CNTL REPETITION > = no

If we add to these utterances a clarification about what happened next, the interpretation of the situation of the verb viewed in its *before* stage must be completed by a control parameter indicating that the progression was interrupted at that stage.

(5a) *John was about to go out when the telephone rang.*

(5b) *Jean était sur le point de / allait / sortir quand le téléphone sonna.*

(5c) *Jan właśnie wychodził, kiedy zadzwonił telefon.*

< TYPE > = ordinary process

< ANLS STAGE OUTER > = before

< CNTL REPETITION > = no

< CNTL MODIFICATION FLOW > = interrupt

Other expressions (Eng. *nearly, almost*, Pol. *nieomal, o mało ... nie*) can express the interruption of a situation in its *before* stage. The outer *initial* point can probably be expressed by periphrastic expressions, most often it can just be presupposed. After having heard utterances like

³ In the framework of aspectual semantics devised for Polish verbs by Roman Laskowski (1998 p. 161-162), the *before* stage corresponds to the *presupposed* situation and the *after* stage to the *implicated* situation in the case of imperfective telic verbs., E.g., when we say “somebody is opening the window”, the before stage (presupposition) is “the window has been closed until now” and the after stage (implicature) is “the window will be opened”. In Polish, the final stage is *asserted* only by perfective telic verbs. The difference between “before” and “after” can thus be

6, we can infer that there was a moment when *John began to prepare to go out* (in Polish *Jan zabrał się do wychodzenia*).

3.3. The inner “start” point and the inner “begin” stage

English and French mostly turn to semi-auxiliary verbs in order to express different beginnings of situations (*to begin, to start*). Slavonic languages also display such beginning phase verbs (governing an imperfective infinitive or an imperfective verbal noun). The difference between the two types of governed constituents (*Engl. John began to paint / painting. Pol. Jan zaczął malować / malowanie*) is not only lexical but also aspectual and therefore must be described using different aspectual parameters. The beginning of states can be marked by verbs like *to become* (in Polish, *zrobić się, stać się*) and an adjective.

The specificity of Slavonic languages lies in their use of several prefixes which have been traditionally described as markers of *ingressive Aktionsart*: e.g. *zachorował* (began to be ill), *polubił* (began to like). Only a precise description of the numerous uses of such prefixed verbs in broad contexts can lead to the differentiation and formal explication of the numerous nuances they express. Many of these prefixes combine the expression of a beginning parameter with a control parameter (often indicating degrees of intensity).

Moreover, the beginning of the situation when expressed by a (semi-)auxiliary verb is different from the beginning of the situation when expressed by a prefix, and this difference still must be properly described by specific semantic features.

(6a) *Drzwi zaczynają skrzypieć.*

(6b) *The door is beginning to creak.*

< TYPE > = ordinary process

< ANLS STAGE INNER > = begin

< CNTL REPETITION > = no

(7a) *Nagle drzwi zaskrzypiały.*

(7b) *The door suddenly creaked.*

< TYPE > = event

< ANLS MOMENT INNER > = start

< CNTL REPETITION > = no

3.4. The inner *finish* point and the *end* stage

Similarly to *start* and *begin*, the inner *finish* point and *end* stage can be expressed in languages by different devices: semi-auxiliary verbs or (in Slavonic languages) prefixes, postverbal particles in English.

(8a) *Joanna skończyła (perf) pisanie listu / pisać list.*

(8b) *Jane finished writing her letter.*

< TYPE > = ordinary process

< ANLS MOMENT INNER > = finish

< CNTL REPETITION > = no

(9a) *Joanna kończyła pisanie listu.*

(9b) *Jane was just finishing her letter.*

< TYPE > = ordinary process

< ANLS STAGE INNER > = end

< CNTL REPETITION > = no

(10a) *Nastał czerwiec. Drzewa wiśniowe już dawno przekwitły.*

(10b) *It is June. The cherry trees have long stopped blossoming.*

< TYPE > = ordinary process

< CNTL REPETITION > = no

In Slavonic languages, prefixes indicating the *finish* point or the *end* stage often combine with control intensity parameters. Such derived perfective verbs were called *intensive resultative* modalities of actions. Hereafter is an example in Polish.

(11a) *Zaczytałem się powieścią i nie zdążyłem na pociąg.*

(11b) *I got so absorbed in the novel that I missed the train*

< TYPE > = ordinary process

< ANLS MOMENT INNER > = finish

< CNTL REPETITION > = no

< CNTL MODIFICATION INTENSITY STABLE > = strong

In some contexts, perfective derivatives of telic verbs which are traditionally considered as perfective partners of simple verbs indicate the *finish* point of the situation.

(12a) *Jane napisała list i wyszła na spacer.*

Jane wrote a letter and went out for a walk.

< TYPE > = ordinary process

< ANLS MOMENT INNER > = finish

< CNTL REPETITION > = no

But, in others contexts (see below § 4.5), such verbs point at the outer stage *after* and indicate a new state resulting from the process.

3.5. The outer stage “after”

Various morphological forms and periphrastic devices may draw attention to the outer stage *after*. Some expressions convey the meaning of a situation which has just come to an end and is considered in its *after* stage..

(13a) *Dopiero co Piotr skończył swój artykuł.*

(13b) *Peter has just finished his article.*

(13c) *Pierre vient de terminer son article.*

< TYPE > = ordinary process

< ANLS STAGE OUTER > = after

< CNTL REPETITION > = no

In French temporal expressions with auxiliary verb *avoir* may be used to indicate the *after* stage in past, present and future.

(14) *Pierre a terminé son travail et peut aller se promener.*

Pierre has finished his work and may go out for a walk.

(15) *Pierre aura terminé son travail avant que tu ne reviennes.*

Pierre will have finished his work before you come back.

(16) *Pierre avait terminé son travail bien avant ton retour.*

Pierre had finished his work before you came back.

< TYPE > = ordinary process

< ANLS STAGE OUTER > = after

< CNTL REPETITION > = no

4. Situation Control

Exocentric aspect (« control » parameters) consists in a set of parameters that are combined with the endocentric ones. The control may concern the repetition of the situation, the modification of the flow or intensity, the composition of two (or more) sequential or parallel situations in one complex situation. As we shall see, many of what we call control parameters were previously described in the framework of Aktionsart as *limitative*, *intensive*, *iterative*, *distributive*, *completive* etc. *modalities of action*. Our approach differs from the Aktionsart theory in two points: first, as we have already pointed out, we disagree with the distinction between

“real” perfective and Aktionsart; second, each type of verbal meaning that was previously designated by one single (often dichotomous) label is described in our approach by more than only one parameter (because aspect entails at least two terms of the pair: *analysis* of the situation and its *control*, and at least one or more than one control parameters may occur in one verb usage).

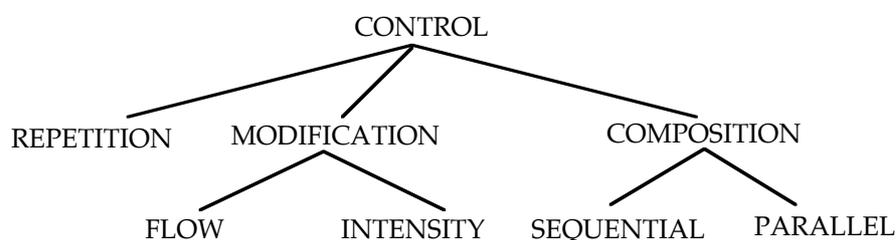


Fig.2 Aspectual Parameters of Situation Control

4.1. Repetition

Languages distinguish between iterated and non iterated situations.

< CNTL REPETITION > = yes | no

In Slavonic languages, much has been written about repetition and about its links to imperfective (and perfective) aspect. As we cannot here develop a long argumentation about this complex problem, let us refer to most detailed studies of this problem in Russian (see Sémon 1979, Belaia 1996). As a result of our research on Polish and Russian verbal aspect in context (Włodarczyk H. 1997), it is clear now that the perfective aspect is *not* suitable as a category for habitual contexts (in which situations are viewed as repeated an indefinite number of times)⁴. Consequently, the distinction between *repetition* and *habituality* is relevant and should be further investigated in different languages. But this distinction does not depend on any precise quantification; rather the habitual character of a situation seems to be a matter of subjective appreciation.

We note as follows the choice between a definite or indefinite number of repetitions :

< CNTL REPETITION > = def_nb | ind_nb

(17) *Za każdym razem kiedy czytałem tę książkę, ktoś mi przeszkadzał.*

Whenever I was reading this book, somebody would disturb me.

< TYPE > = ordinary process

< ANLS STAGE INNER > = run

< CNTL REPETITION > = ind_nb

(18a) *Przeczytałem tę książkę trzy razy.*

I read this book three times.

< TYPE > = ordinary process

< ANLS MOMENT INNER > = finish

< CNTL REPETITION > = def_nb

Obviously, when such an example as 18a (mentioning a definite number of repetitions) is integrated in a broader context which prevents from summing up the total amount of occurrences; it is possible to use an imperfective verb:

(18b) *Kiedym byłem dzieckiem, czytałem tę książkę trzy razy w roku.*

As a child I used to read this book three times every year.

< TYPE > = ordinary process

< ANLS > = whole

⁴ As an exception we must point at what we call a metaphoric use of perfective in habitual context (called in

< CNTL REPETITION > = indef_nb

To express repetition, most languages make use not only of grammatical devices but also of lexemes and syntactic constituents (temporal adjunct NP or temporal embedded clause, auxiliary *would*, as may be observed in the English translation of example 3). Such linguistic devices should be described as precisely as possible in order to provide translation methods from one language to another.

4.2. Flow modification

As concerns the modification of the flow of the situation, Slavonic languages have a large number of prefixes whereas other languages use lexical expressions such as (semi-)auxiliary verbs, temporal adverbs etc. But they are also used in Slavonic languages. We distinguish five different flow modifications as follows:

1. resumption of a situation already begun and interrupted: resume
2. continuation (beyond an expected term) of a situation already in progress : keep
3. interruption of a situation in progress in one of its stages: interrupt
4. unfolding of the whole situation from start to finish (regardless of its stages): trans
5. unfolding of a situation intermittently: off-and-on

The formula showing the choice between the flow modification parameters is as follows :

< CNTL MODIFICATION FLOW > = trans | resume | keep | interrupt | off-and-on

To give one example of a flow modification parameter, we propose to consider the usage of Polish verbs in which the prefix *po-* indicates a process that does not go on « naturally » until it reaches its « finish » moment but is interrupted somewhere in its inner « run » stage. Such verbs, traditionally called « limitative Aktionsart », were described as « congruence perfectives » in Sémon 1986, who shows that the perfective aspect does not always refer necessarily to the *finish* point of the semantic situation . Hereafter is an example in Polish :

(19) *Piotr porysował trochę i poszedł się bawić.*

Piotr kept drawing for a while and then went out to play.

< TYPE > = ordinary process

< ANLS STAGE INNER > = run

< CNTL REPETITION > = no

< CNTL MODIFICATION FLOW > = interrupt

Compare with what is traditionally called the perfective partner:

(20) *Piotr napisał pracę i poszedł się bawić.*

Piotr did his homework and then went to play.

< TYPE > = ordinary process

< ANLS MOMENT INNER > = finish

< CNTL REPETITION > = no

4.3. Intensity Modification

In many languages, the intensity modification is expressed by adverbs but in Slavonic languages prefixes can express this meaning. Intensity may be uniformly strong or weak (stable) or may be increasing or decreasing (variable).

< CNTL MODIFICATION INTENSITY STABLE > = strong | weak

< CNTL MODIFICATION INTENSITY VARIABLE > = increase | decrease

An intensity parameter often appears along with other aspectual parameters, and very often can combine with analysis parameters.

(21) *Witold rozwrzeszczał się przed samym domem.*

Witold burst out into tears as soon as he was in front of the house.

< ANLS MOMENT INNER > = start
< CNTL REPETITION > = no
< CNTL MODIFICATION INTENSITY VARIABLE > = increase

When intensity appears in perfective verbs with a resultative value it is characteristic of verbs which have been described as « special resultative » verbs⁵.

(22) *W tamtych czasach wszyscy wystali się w kolejkach.*

At that period everyone was exhausted by queuing up for hours.

< TYPE > = process
< ANLS MOMENT INNER > = finish
< CNTL REPETITION > = no
< CNTL MODIFICATION INTENSITY STABLE > = strong

An intensity parameter can also occur with a flow modification parameter (*off-and-on*)

(23) *Mamusia tam cicho sza popłakuje... (Żeromski)*

Mummy is crying silently.

< TYPE > = refined process
< ANLS STAGE INNER > = run
< CNTL REPETITION > = no
< CNTL MODIFICATION FLOW > = off-and-on
< CNTL MODIFICATION INTENSITY STABLE > = weak

(24) *Ruch stanął. Zdenerwowany kierowca wykrzykiwał obelgi.*

The traffic stopped. The irritated driver was shouting (loud and strong) insults.

< TYPE > = refined process
< ANLS STAGE INNER > = run
< CNTL REPETITION > = no
< CNTL MODIFICATION FLOW > = off-and-on
< CNTL MODIFICATION INTENSITY STABLE > = strong

4.4. Composition

Aspect may also consist in presenting a situation as composed of two (or more) situations that may be positioned in a sequence or develop simultaneously. In so called *distributive* verbs (with the prefix *po-* often attached to secondary imperfective verbs, e.g. *powychodzić*) not only two but many situations are composed into one. In the formula describing composed situations we begin with the composition parameter and then define the type of each constituent situation.

(25) *Ach, więc przeczuwając, że śmierć się zbliża, pozamykaliście się na klucz przed nadchodzącą śmiercią? Więc jednak - czekaliście na to morderstwo? (W. Gombrowicz, "Bakakaj")*

So, feeling that death was approaching, every one of you closed up in his own room to keep out of reach? Indeed, were you awaiting this murder?

< CNTL COMPOSITION SEQUENTIAL > = SIT 1 => SIT n
or < CNTL COMPOSITION PARALLEL > = SIT 1 || SIT n
< SIT n TYPE > = ordinary process
< SIT n ANLS MOMENT INNER > = finish
< CNTL REPETITION > = no

Example 25 may be interpreted in two ways, and this is often the case with verbs traditionally called "distributive" Aktionsart in Slavonic languages: the composition of similar situations may be understood either as sequential or parallel. Sometimes, context gives arguments for one or the other interpretation. When the distinction is not relevant, it may be ambiguous. In the example from Gombrowicz's novel, it is not important whether family members closed up successively or simultaneously each in his own bedroom. Let us emphasize that such composed

situations are internally constituted of several comparable situations, but as a whole they are not repeated (the so-called distributive Aktionsart is perfective).

Example 26 can serve as an example of sequential composition : the process of *straszyć* (to frighten) is followed by the state of *być zniechęconym* (to be discouraged).

(26) *Kłótnie rodziców odstraszyły ją od małżeństwa.*

Her parents' quarrels discouraged her from getting married.

< CNTL COMPOSITION SEQUENTIAL > = (< SIT1 > => < SIT2 >)

< SIT1 TYPE > = ordinary process (« straszyć »)

< SIT1 ANLS MOMENT INNER > = finish

< SIT2 TYPE > = state (« być zniechęconym »)

< SIT2 ANLS > = whole

< CNTL REPETITION > = no

Such a composed situation can be repeated as a whole an indefinite number of times and marked by an imperfective verb:

(27) *Za każdym razem kłótnie rodziców odstraszały ją od małżeństwa.*

Each time, her parents' quarrels would discourage her from getting married.

4.5. Reinterpretation of the “resultative” meaning of the perfective aspect

Within the framework of this theory of aspect, we can interpret the “resultative” value of some perfective verbs as a parallel composition of an *after* stage with a new state.

(28) *Prezes firmy wybudował piękną willę, gdzie mieszka luksusowo.*

The president of the firm built a nice villa where he lives luxuriously

< CNTL COMPOSITION PARALLEL > = (< SIT1 > || < SIT2 >)

< SIT1 TYPE > = ordinary process (« wybudować »)

< SIT1 ANLS SAGE OUTER > = after

< SIT2 TYPE > = state (« być wybudowanym »)

< SIT2 ANLS > = whole

This formula interprets the past of the perfective verb form *wybudował* as a process which has reached the moment *finish* and is seen in its outer stage *after*. In addition, this outer stage is parallel to a new state, that of the villa which was built as a “result” of the process of building. But in another context, the same verb form *wybudował* could be interpreted as a process which has reached the moment *finish*, nothing being explicitly said about the *after* stage.

(29) *Prezes firmy **wybudował** piękną willę dla rodziny i odszedł na emeryturę.*

The president of the firm built a nice villa for his family and retired.

< SIT TYPE > = ordinary process

< SIT ANLS MOMENT INNER > = finish

5. Aspectual parameters as feature structures

As concerns the parameters which we grouped in the pair *analysis* and *control*, almost all of them have been mentioned as labels claiming to describe the meanings of aspects in various studies. The pair that we have proposed makes it possible to systematize the utilization of those parameters in semantic feature bundles. For example, when we describe the aspectual content of a situation in a textual context, it may happen that the situation viewed as a stage is modified by a control operator that introduces a moment into that stage (interrupt or resume). Thus, the traditional theory of aspect according to which the perfective indicates a moment (represented by a point) and the imperfective a stage (represented by a line segment) appears to be erroneous. Indeed, positing the pair of Analysis and Control makes it clear that the moments and stages are not specific to one or the other aspect.-

For each usage of a verb in a context we propose a specific feature structure. The same verb

structures. What we analyse and classify are not verbal lexemes but semantic situations with all their specific attributes in their context.

Our complete⁶ list of aspectual parameters and their hierarchical organization is as follows.

< TYPE > = state | event | ordinary process | refined process

< ANLS > = whole

< ANLS MOMENT INNER > = start | enter | exit | finish

< ANLS MOMENT OUTER > = initial | terminal

< ANLS STAGE INNER > = begin | run | end

< ANLS STAGE OUTER > = before | after

< CNTL REPETITION > = def_nb | ind_nb

< CNTL MODIFICATION FLOW > = trans | resume | keep | interrupt | off-and-on

< CNTL MODIFICATION INTENSITY STABLE > = strong | weak

< CNTL MODIFICATION INTENSITY VARIABLE > = increase | decrease

< CNTL COMPOSITION SEQUENTIAL > = (< SIT₁ > → < SIT_n >)

< CNTL COMPOSITION PARALLEL > = (< SIT₁ > || < SIT_n >)

Each aspect usage can therefore be described by a semantic feature bundle consisting of two parts: situation analysis and situation control. The situation type is considered as a condition for the usage of aspect.

Aspect = { Sit. Analysis , Sit. Control } condition : Sit. Type

6. The perfective aspect in Slavonic languages as a hypercategory

During almost all the 20th century, Slavonic theories of aspect were dominated by the distinction between Aspect and Aktionsart. This distinction was subsequently extended to other languages. Only in the last years was this distinction reappraised (cf. the harsh criticisms of Aktionsart by Stanisław Karolak 1997). Our cognitive approach makes it possible to bring closer the two categories of Aspect and Aktionsart and to define perfective aspect in Slavonic languages as a hypercategory. The concept of hypercategory allows us to describe each derived perfective verb as inheriting several aspectual features. Following this hypothesis, no verbal prefix can be viewed as semantically void because different configurations of features are always at hand. As a matter of fact, “the” perfective aspect of a simple imperfective verb may be expressed by more than one verb derived from this verb, and none of them can be considered as “synonymous” to the root verb.

In Slavonic languages, all prefixed verbs derived from a simple verb become perfective⁷. Among them, two classes can be distinguished⁸: verbs with a new lexical meaning (lexical derivatives) and verbs which keep the same lexical meaning (aspectual derivatives). Among the aspectual derivatives, slavists distinguish traditionally (since the beginning of the 20th century, cf. Agrell 1908) between a series of derived verbs called Aktionsart and *one* derived perfective verb considered as *the* perfective partner of the simple verb. Recently, this distinction has been revised by many researchers (including, Sémon 1986, Paduceva 1996, Karolak 1997, Xrakovskij 1997). Moreover, much work has been done to prove that not all so-called « aspectual pairs » are semantically similar, i.e. the opposition of perfective and imperfective may be based on different sets of semantic features. The first pioneer work in that direction was that of Cezar Piernikarski (1969) who showed that there exists several different types of « aspectual oppositions ».

⁶ « Complete » at the present state of our research. Actually, we intend to add some parameters (1) about the orientation of situation with regard to speaker and hearer, and (2) about participants and the semantic roles (agent, patient, instrument etc.) they play in the situation

⁷ Exceptions are extremely rare and due to the history of languages.

Using the database⁹ of the Polish Frequency Dictionary (SFPW) we studied the relative frequency of simple imperfective verbs and the different perfective verbs derived from them (WA&H 2001). As for the relative frequency of verbs called Aktionsart and verbs considered as perfective partners of a simple verb, it appears that the frequency of the so-called perfective partner is much higher than the frequency of verbs considered as Aktionsart. Below we give a small sample in the form of a comparative table of the frequency of simple imperfective verbs and their derived perfectives¹⁰.

Examples of relative frequency of simple imperfective verbs and different aspectual perfective derived from them (traditionally distinguished as Aktionsart and perfective partners):

<i>robić 265</i>	<i>zrobić 268, porobić 2</i>
<i>czekać 184</i>	<i>poczekać 39, zaczekać 11, przeczekać 1, odczekać 4, doczekać 3</i>
<i>słyszeć 181</i>	<i>usłyszeć 50, posłyszeć 5</i>
<i>pytać 85</i>	<i>zapytać 83, spytać 40, popytać 1, napytać 1, rozpytać 1</i>
<i>spać 72</i>	<i>pospać 1, przespać 2, przespać się 5</i>
<i>budzić 39</i>	<i>obudzić 15, zbudzić 7, przebudzić 1, rozbudzić 1, pobudzić 1,</i>
<i>pić 47</i>	<i>wypić 27, napić się 26, popić 5, spić się 1, rozpić się 1, upić się 3</i>
<i>jeść 45</i>	<i>zjeść 27, pojeść 1, dojeść 1, przejeść się 1</i>
<i>bawić się 26</i>	<i>pobawić się 2, zabawić się 4</i>

Derived prefixed perfective verbs constitute what we call an aspectual family with the root verb. As an example, let us quote the several prefixed perfective verbs derived from the Polish imperfective *spać* (to sleep). *wyspać się* (to be rested up), *dospać* (to sleep a little more), *pospać* (to sleep a while), *przespać* (1 – to oversleep, 2 – to sleep through), *odospać* (to catch up on lost sleep) *zaspać* (to go over a deadline while sleeping) *przespać się* (1 – to spend a while sleeping, 2 – to sleep with somebody). Depending on the context and the nuance they want to express, native speakers must choose a different perfective partner for *spać*.

In view of this quantitative data we put forward the hypothesis that the perfective aspect should be regarded as a hypercategory. According to this hypothesis, each verbal prefix inherits a specific bundle of aspectual features. No verbal prefix can be viewed as semantically void, on the contrary different configurations of features are possible for each prefix. As a matter of fact, since the perfective aspect may be expressed by more than one verb derived from a single verbal root, none of them can be considered as a synonym of the root verb. Prefixed verbs that are traditionally described as Aktionsart verbs should be described as different specialisations of one perfective hypercategory¹¹. Thus, the perfective aspect is an abstraction that subsumes numerous different specific versions.

Our treatment of aspectual prefixed verbs can be regarded as one more contribution to the long-lasting discussion about “aspectual pairs” in Slavonic languages. We fully agree with the opinion of slavists who consider (although mostly on the ground of other arguments) that pairs

⁹ The electronic file of SFPW was made available to us by Prof. dr Janusz BIENI (University of Warsaw) to whom we express hereby our thanks.

¹⁰ Only such derived perfective verbs are quoted which appear at least once in the Frequency dictionary. For instance, current verbs as *wyspać się* and *zaspać* which belong to the lexicon of Polish native speakers do not appear at all.

¹¹ The term «allogram» proposed by Czochralski (1975 p.43) captures partly what we mean by

are constituted only by an imperfective suffixed verb that is derived from a perfective verb, e.g. *przepisywać imp.* from *przepisać perf.* (both can be translated as “to copy”), *zamawiać imp.* from *zamówić perf.* (both can be translated as “to order”), etc.

The concept of hypercategory is based on the multiple inheritance or heterarchy: As shown above, the aspectual meaning of a verb used in a given context can be described as a bundle of several attributes. Thanks to inheritance, we do not have to build disjoint classes of aspectual meanings (as was the case with classes of Aktionsart verbs). In fact, aspectual meanings are linked irregularly to different superior nodes. Moreover, one and the same verbal lexeme may have different links depending on the context in which it is used. This is often the case of *po-* prefixed verbs that can have several meanings (cf. Włodarczyk A&H 2001, II).

This approach allows us to take into account the lexical diversity in Slavonic aspectual semantics and sheds light on the controversies about which features are grammatical and which are lexical. We conclude that in the aspectual derivation in Slavonic languages there is no clear border between the lexical and the grammatical. Moreover, there is no need to consider this situation as incomplete grammaticalisation. On the contrary, this endows Slavonic languages with a very systematic way of expressing a broad range of aspectual nuances. In order to cope both with the lexical diversity of aspectual morphemes (prefixes) and the grammatical (dichotomous and obligatory) character of aspect in Slavonic languages, we have proposed to define the perfective aspect as a hypercategory.

7. Conclusion

At the present stage of our research, the list of rules (which represent combinations of semantic aspectual parameters) describing the different usages of verbs is not exhaustive. If we want to obtain a relatively complete list of such rules, i.e. a proper tool for contrasting languages and putting together very different means of expression, we must mark up very large corpuses of sentences using semantic features (the ones we put forward in this paper and perhaps some others that would prove necessary to clarify some meanings). In addition, we have to mark up the metainformative validation of the utterances in which each semantic situation occurs¹².

Thus, it becomes possible to use knowledge discovery techniques in databases for many different languages. Indeed, it seems possible to apply computational approximation-based methods of KDD (Knowledge Discovery techniques in Databases), to a marked-up text database in order to determine the relevance and relative importance of the parameters found and their informative and metainformative functions. Only such detailed work on large databases will allow us to offer formal, verified (i.e. experimentally tested) and comparable cross-language definitions of aspect. Such descriptions of aspect in different languages with semantic feature structures verified in large corpuses could serve as a basis for teaching foreign languages and for the development of software for computer assisted translation.

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¹² The opposition between of *given* and *new* (meta-)information allowed us to propose two graded scales of values: (anaphoric > potential > habitual > general > generic) for *given* and (cataphoric > actual > occasional > particular > specific) for *new* (Włodarczyk André 1979). These scales were used to explain how different (nominal or verbal) categories contribute to the global meta-informative validation of utterances (Włodarczyk A. & H. 1998). In (Włodarczyk H. 1998) we showed how some global metainformative validation expressed by articles in French may be expressed by verbal aspect in Polish. In (Włodarczyk H. 1997), the meta-informative scales above were applied to

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