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FOUR WAYS OF ADDITION – THE MEANING OF THE *WITH*-PHRASE

The paper discusses the interpretation of the *with*-phrase and its cross-linguistic counterparts, in languages in which, within the domain of an eventuality, it expresses four different meanings: comitative, instrument, locatum and depictive. An analysis is proposed in which the narrow semantic interpretation of the *with*-phrase is that of a secondary predicate specifying an additive relation along a certain dimension (or set of dimensions) between the argument targeted by it and the referent of the complement of the preposition *with*. In some languages, there are slight differences in the marking of these interpretations, i.e. between secondary predicates bound by simple eventualities only, and those without such a restriction. Apart from this parameter, it is argued that the particular properties that distinguish these four types of interpretation are a matter of pragmatics. Such is the question whether set of dimensions along which the addition takes place includes the dimension of the participant role, as well as whether the two arguments of addition stand in a (nearly) symmetric, or in a strongly asymmetric relation along the dimension of addition. I showed how a number of patterns in the behaviour of *with*-phrases are accounted for, explained and even predicted by the proposed analysis.

Keywords: with-phrase, secondary predication, participant role, companion, instrument, locatum, depictive

1. Introduction

In a number of different languages of the world, including English, prepositional phrases headed by the (counterparts of the) preposition *with*

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take a relatively constant set of interpretations, including the meanings of a companion, an instrument, a locatum and the interpretation of a depictive secondary predicate. In critical texts, reasons for this clustering of interpretations have only been discussed in respect of the relation between instruments and companions. LAKOFF and JOHNSON (1980) briefly discuss a close connection between the notion of instrument and that of a companion, introducing a topic that has later attracted the attention of many theoretical and typological linguists. They introduce an instrument is companion metaphor, which they consider a cross-linguistic universal. To the best of my knowledge, no discussion of the relation between other meanings from the set introduced above has been offered in critical texts.

Even with respect to the relation between the instrument and the companion interpretation, later research, among others STOLZ et al. (2006), revealed that there is a large number of languages in which no such close connection can be attested between the two roles, at least not in the way they are linguistically expressed. HASPELMATH (2001: 1503) points that the syncretism between the comitative and the instrument is a common property of all the languages of his Standard European Area, and that in other areas – it characterizes only a minority of languages.

Still, according to STOLZ et al. (2006: 105), about a quarter of all languages in the world tends to have the comitative and the instrumental meaning expressed in the same way. Considering that most of the remaining languages still group with respect to other types of syncretism involving the instrument and the comitative (e.g. the syncretism of the instrument with the path, or with the source), languages with the syncretism between the instrument and the comitative present a relative majority. This opens the question why these meanings group in the way they are expressed in so many languages, i.e. what is the semantic component that they share is, which leads them to also share the means of expression.

Experimental research has discovered that at least in the way speakers evaluate expressions denoting instruments and companions, there is a high degree of vagueness and flexibility. SCHLESINGER (1989, 1995) presents the results of a poll in which speakers judged different sentences involving with-phrases for whether they involve the meaning of instrument and the meaning of companion. In the majority of cases, the judgments were mixed – the same subject would often attribute both meanings to one and the same expression, in one and the same interpretation. In other words, the Research indicates that there is a degree of blending of these two participant roles. This additionally strengthens the view that in such languages, there is a close connection between the ways these two meanings are conceptualized and formally represented.

In this paper, I discuss all the interpretations of the *with*-phase within the VP, including, next to comitatives and instruments, locata and depictives. A large number of languages has these four meanings expressed in a syncretic way. Consider the situation in English, illustrated for the meaning of instrument in (1a), for the meaning of accompaniment (companions generalized to inanimate and other referent) in (1b-c), for the meaning of locatum in (1d) and for the meaning of a depictive in (1e) (SCHLESINGER 1989, 1995, and STOLZ et al. 2006, among others, offer a more detailed overview of the facts, and data about particular languages).

(1)   a. Miroslava opened the bottle <u>with a lighter</u>.   instrument
      b. Radoslav painted the wall <u>with Marislav</u>.   comitative
      c. Stanislava fired Vladislav <u>with the other organizers of the strike</u>.
                    comitative
      d. Dragoslava filled the room <u>with flowers</u>.   locatum
      e. Dobroslava kissed Predislav <u>with her eyes closed</u>. depictive

That these four meanings are syncretically expressed in a relatively large number of languages cannot be a coincidence. Rather, a connection between these meanings is the reason why they are so often expressed in the same way. In this paper, I propose a unified semantic analysis for these four types of meanings of the *with*-phrase, presenting them as secondary predicates that specify an additive relation and target an argument of the verb, establishing a symmetric, or an asymmetric relation with it.[3] I further show how the analysis presented explains SCHLESINGER'S (1995) data.

There is a degree of terminological confusion in the field of this paper. In particular, the term *comitative* is used with two different meanings. One is to cover meanings in which there is an accompaniment relation between two referents (together, they form a company). This meaning usually can be strengthened by (a counterpart of) *together*, as in *together with John*, and it is the meaning that I use in this paper. The other meaning of the term found in the literature is broader, and either covers all four meanings in (1), or perhaps three of these meanings – with the exception of the meaning of instrument. This latter use is not accepted in the present paper. Finally, I will be using the term *depictive* with two different meanings. The first is to denote all non-resultative secondary predicates bound by a temporal interval, and I argue in this paper that all four interpretations in (1) formally fall in this class – they are all depictive secondary predicates. The second is to denote only one of these four meanings, i.e. the one that is in no way involved in the thematic relations

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[3] In languages where the meanings are expressed in different ways, I assume that some or all of them should receive a different analysis, and that the discussion in the present paper only partially applies.

between the eventuality and its participants, represented by the example in (1e). In the latter case, when disambiguation is needed, I use the term *bare depictives*.

Some of the constructions that are discussed in this paper, such as the locative alternation, or the reciprocal interpretation of the comitative, have been a subject to debate in the theory of grammar for decades. However, few studies employing a formal linguistic methodology have attempted to cover all the four readings of the *with*-phrase and its cross-linguistic counterparts (counting only the languages with the syncretism), and establish the relevant similarities and differences among them. At the same time, arguments have been presented in a typological, functionalist or cognitive perspective for analyses ranging from those subsuming all these four meanings under one and the same structural pattern (e.g. SCHLESINGER 1995), to those positing a strong boundary between at least some of their classes, especially between instruments and the rest (e.g. STOLZ et al. 2006). This paper is aimed at recognizing the relevant factors in this domain, and setting directions for a deeper and broader study, by outlining the main points as well as boundaries of a formal analysis of these meanings, both in the semantic and in the pragmatic realm.

It is important to note that there are other meanings typically associated with the *with*-phrase and its counterparts, in particular those arising in its use as an attribute, or as a complement, which are not a topic of discussion in the present paper. These meanings are, to my knowledge, trivially compatible with the analysis that I propose.

The paper is organized as follows. Section 2 introduces the relevant components of an event structure model that is assumed in the further discussion. The unified semantic analysis that I propose for the four meanings is presented in section 3, and sections 4 to 6 discuss the particular properties of each of the four meanings, in contrast with the others. Section 7 looks at which of these meanings can, and which cannot be paraphrased as structural arguments, offering some explanations. In section 8, the situation in one language with means for expressing the instrument and the locatum role different than those for expressing the other two meanings is presented and discussed. Sections 9 and 10 discuss two issues characteristic of the *with*-phrase: its reciprocal interpretation and the possibility to be paraphrased through coordination, as well as its stacking possibilities. Section 11 targets the labor division between syntax and semantics on the one hand, and pragmatics on the other, and discusses in this light some experimental findings about the ambiguity of the *with*-phrase presented in SCHLESINGER (1995). Section 12 concludes.

2. Event structure and secondary predicates

Although it eventually turns out to be less important for the analysis I propose, on the way to it, I make reference to some basic elements of event structure. I assume a scalar approach to event structure (see e.g. HAY et al. 1999), where a state specifies a static property (2a), a process specifies an unbounded change along some scale (2b), and a telic event involves a bounded change along a scale, such that its end point has the status of a (sub-) eventuality (2c), and is overtly specified either by the lexical semantics of the verb or by a PP, resultative secondary predicate, an entire eventuality (as in causatives) or perhaps in some other way.

(2)   a.   Stanislav was sad.
     b.   Bratislava ran (around).
     c.   Branislav dissembled a nuclear bomb.

I assume further, borrowing from the model of eventualities in ARSENIJEVIĆ (2006), that maximally two temporal intervals are introduced by each eventuality, one being universal: the temporal interval of the entire eventuality, and the other restricted to telic eventualities – the temporal interval of the eventuality specifying the maximal value of the scale reached within the eventuality (a.k.a. the culmination, the result, or the termination point).

This gives a structure with two relevant segments of a telic eventuality, the one involving a change along the scale, and the one specifying the maximal value entailed to be reached. I refer to the former by the term *process subevent*, and to the latter as the *result subevent*. The process subevent has two important arguments: the one that initiates the change (I use the traditional term – the agent) and the one affected by it (most neutrally – the theme). The process subevent also has two important participants, the theme as the bearer of the result predicate and the referent supplying the value of this predicate (typically the goal or the recipient). Telic eventualities may be described without an agent (with an unspecified, or impersonal agent) and/or a goal (with an intensionally specified value of the result predicate), but not without a theme.

Finally, I take that all adnominal stage-level modifiers/secondary predicates involve a temporal variable, which can be bound by any temporal interval in the scope of which they appear, be it a temporal interval of the result subevent, or of the entire event (a further possibility is to be bound by the reference time, giving the attributive/appositive interpretation of stage-level adnominal modifiers).

(3)   a.   Vukoslav drove Gradislava drunk.
     a'. drunk as a resultative: Vukoslav gets <u>Gradislava</u> <u>drunk</u> (during the result subevent);

a". drunk as an object-oriented depictive: <u>Gradislava</u> is <u>drunk</u> while driven (during the event time);

a"'. drunk as a subject-oriented depictive: <u>Vukoslav</u> is <u>drunk</u> while driving (during the event time);

b. <u>Vukoslav</u>, as <u>drunk</u> as a lord, drove Zorana home.
drunk as a subject-oriented appositive: he is drunk during the reference time.

3. The proposal: secondary predicates specifying an additive relation

I propose to analyze the English *with*-phrase, as well as its cross-linguistic counterparts, as an expression lexicalizing a predicate with the meaning of additive conjunction. In the readings under discussion, this expression is used as a secondary predicate. Hence, it involves two important components, one is its specification of addition, and the other is a temporal variable, which links the secondary predicate to a particular (sub-)event. While the former is a universal property of the *with*-phrase, the latter may be absent when an individual level property is expressed, as in (4); however, without the temporal variable, no secondary predicate interpretation can be derived (which trivially follows from the definition of secondary predication in section 2), and hence also none of the four readings analyzed in this paper.

(4) the girl with big eyes

The interpretation of the *with*-phrase, under the analysis proposed, is an additive relation that is only entailed to hold within a certain interval: that of a state, a process (subevent), or a result subevent. Moreover, the use of a preposition and the secondary predicate nature of the expression, result in one of the two arguments being specified as the subject of addition (I refer to it as the *Subject of Addition*, SoA), and the other as the *Object of Addition* (OoA). The former is usually expressed as an argument of the verb, it is more prominent in the discourse, and more directly participates in the eventuality, while the latter appears as the complement of the preposition, it is less prominent in the discourse, and is not syntactically specified as a direct participant in the eventuality (i.e. it is never an agent or a theme, but see the discussion in sections 4-6 and 11). There are also other asymmetries between the SoA and OoA that may or may not take place, depending on the particular arguments and the context of the *with*-phrase, and these asymmetries are separately discussed in sections 4-6. SoA is one of the arguments of the verb, as only arguments of the verb can be

targeted by secondary predicates. This yields an additional semantic nuance: the secondary predicate specifying an addition relation holds of an argument as bearing a particular participant role in an eventuality, usually that of an agent, theme, experiencer or recipient. Semantic and pragmatic aspects of this relation are argued in sections 4-6, 9 and 11 to stand behind the differences between the four interpretations discussed.

The effect of the additive conjunction is that along a certain semantic dimension, the denotation of OoA is added to the denotation of SoA. The result is an extended denotation of SoA along the targeted dimension, such that it includes OoA. By a dimension, I consider any modifiable property of the SoA, with the restriction that it should accept for stage-level interpretations (this restriction does not hold of the attributive use of the *with*-phrase, as it is not bound by a temporal interval). Such typical dimensions are the physical extent of the SoA (in which case addition results either in forming a group or in forming one complex object) (5a, h, i), its parts and components (5b), its inalienable possession, specified only for the relevant temporal interval (5g, i), its perceivable properties like color, shape, size (to the extent the are stage-level) (5d), its abstract properties such as the character, intelligence, emotions (again as long as they are interpretable as stage-level) (5e, f), and finally also its participant role in the particular eventuality which temporally binds it, which I argue in sections 4-6 to be the case in (5a, e, h and i).

(5)   a.   He cooked the meat <u>with potatoes</u>.
      b.   He cooked the meat <u>with the skin</u>.
      c.   He stuffed the meat <u>with cheese</u>.
      d.   He cooked the meat <u>with his face totally red</u>.
      e.   He cooked the meat <u>with enthusiasm</u>.
      f.   He cooked the meat <u>with care</u>.
      g.   He cooked the meat <u>with his left hand</u>.
      h.   He cooked the meat <u>with John</u>.
      i.   He cooked the meet <u>with a pressure cooker</u>.

In this way, we can formally define two meanings of the *with*-phrase, one in which it specifies an individual level predicate, as in (6a), and another, for the stage-level predicates, as in (6b), where *add(y, x, t)* is interpreted as *x is added to y at the interval t*, t is a temporal variable (which receives further discussion in sections 210 through 213), and Δ is a contextually supplied set of dimensions characteristic of both arguments of addition, along which the addition takes place.

(6)   a. $[[\text{with x}]] = y\lambda\Delta.\text{add}(y, x)$
      b. $[[\text{with x}]] = \lambda t\lambda y\lambda\Delta.\text{add}_\Delta (y, x, t)$

The temporal variable is bound by the closest c-commanding temporal interval introduced into the structure. As specified in section 2, this could be the result subevent time, the event time, or the reference time, yielding, respectively, the resultative, depictive and the stage-level-attributive reading. As a result, SoA appears with its extended denotation only in the relevant temporal interval, and only with the participant role that it has in this interval.

In the next three sections (4, 5, 6), I present how the particular readings, the instrument, the comitative, the locatum and the depictive, derive from one and the same interpretive core of the *with*-phrase. I argue that they all can be subsumed under the role of OoA, and that the differences emerge in a conspiracy of the following issues:

a) the dimensions targeted by the addition, in particular if they include the participant role,

b) whether or not OoA is strongly asymmetric (inferior) with respect to the SoA along the dimension targeted by addition and

c) the participant role assigned to the SoA.

4. Comitatives and depictives

I depart from the proposed core denotation of the *with*-phrase within the VP: a phrase introducing a secondary predicate which crucially involves an additive relation between its complement (OoA) and its subject (SoA), along a certain dimension. There is one important property that comitatives and bare depictives share, and one that distinguishes them. The former relates only to telic eventualities, in which both comitatives and depictives are bound only by the process subevent (in atelic eventualities, the issue is trivial as they contribute only one temporal interval). The latter property is that while comitatives involve a (near) symmetry between the SoA and the OoA along the dimension of addition, in depictives – they are characterized by a strong asymmetry. Let me explain this on concrete examples.

Just like it is more generally the case with depictives, a *with*-phrase used as a secondary predicate in either of the two interpretations discussed, is often ambiguous, in allowing both an agent- and a theme-oriented interpretation (except in languages where case-agreement is involved). Consider the range of examples in (7), based on SCHLESINGER (1995: 14), all with inanimate OoAs (assuming that animacy may favor the comitative interpretation, and hence the orientation towards the agent).

(7)   a. He cooked the meat <u>with potatoes</u>.
          b. He cooked the meat <u>with pepper</u>.

    c.   He cooked the meat <u>with enthusiasm</u>.
    d.   He cooked the meat <u>with care</u>.
    e.   He cooked the meat <u>with intelligence</u>.
    f.   He cooked the meat <u>with John.</u>

Those in (7a) are theme-oriented comitatives. They can be paraphrased as cooking a plural object described as the meat to which potatoes are added. This interpretation is pragmatically the most prominent one due to the fact that potatoes, alone with meat, are natural objects of cooking. Note that (7a) uncontroversially entails *He cooked the potatoes*. This example does not entail its 'using-counterpart': it is not the case that the meat is cooked using potatoes.

The example (7b) is also theme-oriented, but involves a degree of asymmetry with respect to the participation in the event, and especially with respect to the dimension of physical extent, which is the one along which the addition takes place. This sentence does not entail that *he cooked pepper*. Although the paraphrases with *using pepper* is not too bad, there can clearly be a prototypical instrument added independently of this participant (e.g. *with a pressure-cooker*).

Based on these facts, I classify the former type of examples as comitative, and the latter as bare depictives. They are all theme-oriented, they are bound by the temporal interval of the entire eventuality (i.e. of the process subevent) and while comitatives have their OoAs at the same level with their SoAs in respect of the properties of the dimension targeted by addition, in depictives the former are strongly inferior, which makes them (bare) depictives (theme-oriented in the observed set of examples).

The examples in (7c-e) all involve agent-oriented *with*-phrases, and specify an abstract property of the agent. The enthusiasm, care and intelligence do not cook, and in the strict sense cannot be said to be used in these eventualities (especially because they are not under the agent's control).[4]

In (7f), a proper agent-oriented comitative is expressed. Characteristics of this role are that the OoA is approximately symmetric with the SoA along all the dimensions targeted by addition, and that the dimension of the participant role is among them. This sentence entails that John cooks, and the paraphrase involving *using John* is quite bad.

So far, we have the following model. Comitatives are bound by the entire event time, and their OoAs are at the same level as their SoAs along all the dimensions of addition, which include that of the participant role. Bare depictive *with*-phrases are, like comitatives, bound by the entire event time,

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[4] But note that while it is not salient to say *He used intelligence to cook the meet*, *He used intelligence (while) cooking the meet* is much better.

but they involve a strongly asymmetric relation between their OoAs and their SoAs along the dimensions targeted by addition, where these dimensions do not include that of the participant role. I formally represent it as in (8) (again, Δ stands for a contextually salient set of dimensions of the SoA, which is shared by the OoA, and is targeted by addition, and $\sim_\Delta$ and $>>_\Delta$ stand for *is approximately at the same level along the targeted set of dimensions*, and *is significantly larger along the targeted set of dimensions*, respectively).

(8)   Comitative(x, y, e) $\Leftrightarrow$
       $\exists$x, y, e. [$\exists\Delta\subseteq$Dim(x). role(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x$\sim_\Delta$y $\wedge$ role$\in\Delta$].
       Depictive(x, y, e) $\Leftrightarrow$
       $\exists$x, y, e. [$\exists\Delta\subseteq$Dim(x). role(x, e) $\wedge$ add(x, y, e) $\wedge$ x$>>_\Delta$y $\wedge$ role$\notin\Delta$].

Most of the cues for determining the orientation of the *with*-phrases in these examples come from the world knowledge. Strictly grammatically speaking, each of these examples allows for both an agent-oriented and a theme-oriented reading, and it is only a matter of constructing appropriate contexts, to make the alternative readings (including also instruments and locata) plausible. An interesting question is how much of the world knowledge is incorporated in the lexical semantics of the three relevant components, the verb with its modifiers, the agent and the theme. This question is discussed in section 11.

5. Instruments

I argued that the difference between comitatives and bare depictives is that the former involve an addition relation along the dimension of the participant role, and establish a more symmetric relation between the OoA and the SoA. For agents, this means that comitatives involve the active participation, the control, and/or the causing contribution, but also the more lexical semantic aspects of the manner of action; for the theme, these include its incrementality, the dimension that is affected (if any), and other properties, for instance the relations constituting thematic roles in an approach such as KRIFKA (1992). Depictives establish a strongly asymmetric additive relation with respect to the SoA. They are specified for a subset of semantic dimensions that are part of the representation of the SoA, and they do not share any of the aspects of its participation in the relevant eventuality.

I propose to analyze *with*-phrases with the instrument interpretation as a case between comitatives and bare depictives. Like comitatives, they involve addition along the participant role dimension, and like depictives, they involve

a strong asymmetry between the OoA and the SoA along the dimensions targeted by addition. Finally, they have one more property that sets them apart from the other two types of interpretation: they are always only agent-oriented, and always bound by the temporal interval of a process (which means by the temporal interval of the entire eventuality, both when the eventuality is telic, and when it is atelic with the process interpretation). Instruments closely relate to the component of action, while keeping an inferior position in a strongly asymmetric relation with the SoA. Taking the perspective of the participant role, instruments receive a partitive interpretation with respect to the agent. They share the agentive participation with the SoA, and hence by addition, they constitute the agent together with it.

Below is a formal specification of the three types of interpretation of the *with*-phrase that have been discussed so far (I leave out the process-restriction for instruments, as it is subsumed under the agent-orientation).

(9)   Comitative(x, y, e) $\Leftrightarrow$
       $\exists$x, y, e. [$\exists\Delta\subseteq$Dim(x). role(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x$\sim_\Delta$y $\wedge$ role$\in\Delta$].
       Depictive(x, y, e) $\Leftrightarrow$
       $\exists$x, y, e. [$\exists\Delta\subseteq$Dim(x). role(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x$>>_\Delta$y $\wedge$ role$\notin\Delta$].
       Instrument(x, y, e) $\Leftrightarrow$
       $\exists$x, y, e. [$\exists\Delta\subseteq$Dim(x). Act(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x$>>_\Delta$y $\wedge$ Act$\in\Delta$].

6. Locata

KOENIG et al. (2008), in one of the most thorough formal overviews of the instrument role in recent literature, argue that *with*-phrases introducing participants that are traditionally referred to as locata should be treated together with more typical instruments (they actually do not even distinguish the locatum reading, but simply treat examples involving it on a par with prototypical instrument examples). They propose the following general semantic pattern for the instrument-taking verbal expressions: „...an agent of some sort acts on the instrument and the result of this action directly or indirectly causes a change of state in a patient or theme", and formalize it as in (10) (pg. 176).

(10)   cause(s1, s2) $\wedge$ Pred(s1, A, I) $\wedge$ Pred(s2, I, P) $\wedge$ cause(s2, s3) $\wedge$ Pred(s3, P)
       A = agent, P = patient, I = instrument, s = subevent.

This means that for a sentence like that in (11a), their analysis would be as in (11b).

(11)   a.   Radoslava loaded the trunk <u>with sausages</u>.
       b.   cause(s1, s2) $\wedge$ load(s1, Radoslava, sausages) $\wedge$ In(s2, sausages,

the trunk) ^ cause(s2, s3) ^ Change_of_Configuration(s3, the trunk)

A corresponding paraphrase would be that *Radoslava acted on the sausages in a loading way, which caused the sausages to be in the trunk, and this caused the trunk to change configuration* (probably in the sense that, as a container, it now contains sausages. i.e. is non-empty).

As a crucial argument in favour of a unified treatment of all these examples, including those with prototypical locata, Koenig et al. present the *using*-test, an explicit instrumental paraphrase of the locatum, as in (12b).

(12) a. Radoslava loaded the trunk <u>with sausages</u>.
      b. Radoslava loaded the trunk <u>using sausages</u>.

I argue against this analysis, and in favour of one in which the locatum is indeed a different participant role, although with certain similarities with the instrument. More precisely, I argue that the locatum is different from the instrument in being a passive participant in the eventuality, and that its participation mainly relates to its 'coming together with' the theme.

My first argument is rather methodological: a theory that allows for more than one cause-relation within its decomposition of eventualities is less simple and less restrictive than those that do not. Instead of a general restriction of primitive predicates to one within a domain, they have to introduce additional restrictions to avoid over-generation. At the same time, Koenig et al. do not provide strong enough arguments that only an analysis with possibly two (or more) cause-relations per eventuality may account for the empirical facts.

The second argument relates to the *using*-test above. The paraphrase in (12b) does not sound like it is fully matching the original. In fact, it is possible to add a real instrument to the original sentence, and it will then be a better candidate to be paraphrased in the using-test.

(13) a. A: How did Radoslava load the trunk with sausages?
      b. B: She loaded the trunk <u>with sausages</u> <u>with her large shovel</u>.
      c. Paraphrase of B: Radoslava loaded the trunk <u>using her large shovel</u>/
                              <u>using sau#ages</u>.

Perhaps Koenig et al. would then simply introduce one more subevent, in which Raka acts on the shovel, and this causes an action on the sausages, which finally causes the trunk to change its configuration. With such a move the simplicity and restrictedness of the theory suffer even more.

Let me now present three empirical arguments against Koenig et al.'s analysis above. Consider first anticausatives. The analysis in (11b) defines Koenig et al.'s instruments, therefore also locata, through their relation with the agent. This means that in eventualities which are conceptualized without

any agentive participation, there should be no locata possible (just like no narrow instruments are). This prediction is not born out, as shown in the anticausative example from Serbo-Croatian.

(14) a. Kofa   se   napunila   vodom za pola   sata.
          bucket Refl   filled   water.Inst   for halfhour
          'The bucket (got) filled with water in half an hour.'
      b. *Kofa se   napunila   kutlačom   za pola   sata.
          bucket Refl   filled   ladle.Inst   for halfhour
          corresponding to: '*The bucket (got) filled with a ladle in half an hour.'

Pairs of this type illustrate the main difference between instruments and locata, as explicitly stated in the analysis finally formulated at the end of this section.

To further strengthen this difference, and shed more light on it, consider the facts in (15). Only locata clearly modify the result subevent, and either in the original form, or with the preposition *of*, they can modify stative adjectives.

(15) a. Radoslava filled the trunk <u>with sausages</u>.
          →   The trunk was <u>full of sausages/with sausages</u>.
      b. Radoslava filled the trunk <u>with a showel</u>.
          -/→The trunk was <u>full of showels/with showels</u>.

Based on these facts, I analyze *with*-phrases expressing locata in telic eventualities as resultative predicates of the theme argument of the verb (i.e. of the undergoer) in a telic eventuality. The sentence in (15a) can be rephrased as *Radoslava acted in a loading way, and affected the trunk so that as a result it had an extended denotation which included sausages*. Using Koenig et al.'s notation, the core of this analysis can be formalized as in (16).

(16) Act(A, s1) ^ add(s2, P, L) ^ cause(s1, s2)
      A = agent, P = patient, L = locatum, s = subevent.

The paraphrase does not include a specification of the Event-Argument Homomorphism effects, i.e. of the entailment that the trunk is full with sausages (each relevant part of the trunk has sausages). This issue is orthogonal to the topic of the present paper, and hence is not discussed; most available accounts of the Event-Argument Homomorphism phenomena are compatible with the present account of the *with*-phrase.

Examples with the verbs of the *provide*-type are similarly covered.

(17) Stanislav provided/saddled/equipped the horse <u>with a special Japanese saddle</u>.

This is equivalent to *causing (by acting in a saddling manner) the horse*

to be added the particular saddle (along the dimension of equipment, i.e. inalienable possession).

In different examples, objects are added along different dimensions, for instance inside a container, as part of the equipment of an object, or as possessed (e.g. with *supply* or *award*). This variation comes with the variation in the (lexical) semantics of both the SoA and the OoA, with an additional contribution of the pragmatic factors (e.g. context, world knowledge).

In sections 4 and 5, I used three criteria for the identification of different readings: the (a)symmetry between the arguments along the dimension of addition, whether or not the participant role dimension is targeted by addition, and – in case it is – what the participant role involved is. These criteria are exactly what we need to extend the account to the locatum interpretation. Locata, according to the analysis above, come with an interpretation that does include a thematic role in the dimensions along which the addition takes place, targets the role of theme exclusively (i.e. is bound by the result subevent in telic eventualities), and establishes a strongly asymmetric relation between the two arguments of addition.

Sentences involving locata are known to be prone to argument alternations. Typical examples are given in (18).

(18) a. Miroslava loaded <u>the hay</u> <u>into the wagon</u>.
     b. Miroslava loaded <u>the wagon</u> <u>with hay</u>.

Both sentences describe a telic eventuality, but in one, the incremental theme is the locatum (*hay*), and in the other it is the location (*the wagon*). Many different analyses have been proposed for this phenomenon, such as LEVIN (1993), GOLDBERG (1995) or DOWTY (2000), to mention just a few.

One important point is that, independent of the analysis I am going to propose, it is clear that the two sentences do not involve reference to the same set of eventualities. For instance, all the eventualities included in the denotation of the VP in (18a), in which the amount of hay involved is smaller than needed to fill the entire wagon are left out of the denotation of the one in (18b). I argue that the difference is even bigger, and that in fact, while in (18a), only the hay is an undergoer of change, in (18b) there are two: the hay and the wagon. That the wagon undergoes a change in (18b) can be seen from the fact that it appears as an incremental theme. The eventuality is measured out by the part of the wagon that is filled with hay. However, the hay is also affected as it has to change location and map exhaustively to the volume of the wagon.

This fact is captured if we assume that the locatum and the location in the *with*-variant of the alternation stand in the same relation as the instrument and the agent in the present analysis of *with*-phrases. In other words, the locatum and the location share the role of the bearer of the result state, but in other

ways are in a strongly asymmetric relation (for instance, only the location is incrementally related with the eventuality, and the locatum often affects only a subset of dimensions represented in the location, especially in the *provide*-type of cases).

Just like the instrument does not take the syntactic position of the agent, and never controls the eventuality, so does only the location take the position of the incremental theme, and measures out the eventuality. Considering that locata may also appear in stative eventualities (but not in atelic processes), a better definition is that locata are restricted to be bound by a state (again, like instruments are restricted to be bound by a process).

(19) a. The box lied on the bed <u>with its cover next to the pillow</u>.
      b. Dragoslav was sitting <u>with his back leaning on the wall</u>.
          We arrive at the following set of definitions.

(20) Locatum(x, y, e_{stat}) $\Leftrightarrow$
      $\exists$x, y, e_{stat}.[$\exists \Delta \subseteq$Dim(x). Th(x, e_{stat}) $\wedge$ add$_\Delta$(x, y, e_{stat}) $\wedge$ x>>$_\Delta$y $\wedge$ Th$\in\Delta$].
      Comitative(x, y, e) $\Leftrightarrow$
      $\exists$x, y, e. [$\exists \Delta \subseteq$Dim(x). role(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x~$_\Delta$y $\wedge$ role$\in\Delta$].
      Depictive(x, y, e) $\Leftrightarrow$
      $\exists$x, y, e. [$\exists \Delta \subseteq$Dim(x). role(x, e) $\wedge$ add$_\Delta$(x, y, e) $\wedge$ x>>$_\Delta$y $\wedge$ role$\notin\Delta$].
      Instrument(x, y, e_{act}) $\Leftrightarrow$
      $\exists$x, y, e_{proc}. [$\exists \Delta \subseteq$Dim(x). Ag(x, e_{proc}) $\wedge$ add$_\Delta$(x, y, e_{proc}) $\wedge$ x>>$_\Delta$y $\wedge$ Ag$\in\Delta$].

The main parameters of the analysis established can be presented as in the table in (21), i.e. comitatives are defined as *with*-phrases introducing OoAs which are symmetric to the SoA and may target either the agent or the theme (because they are bound by the event time), depictives as those in which there is a strong asymmetry between the SoA and the OoA, also without restrictions with respect to the role and bound by the event time, and instruments and locata as those in which a particular participant role is a member of the set of dimensions of addition, i.e. which are restricted for the type of eventualities they can be bound by. They differ in that the former are agent-oriented and bound by processes, and the latter target the theme, and are bound by states only.

(21) The parameters of the analysis

	Comitatives	Depictives	Instruments	Locata
participant role shared	+	-	+	+
asymmetry	-	+	+	+
role/event	ANY	ANY	agent/process	theme/state

Taking that the four meanings specified do not have to be expressed in exactly the same way, i.e. that slight differences may emerge in the way

they are expressed, the following possibilities of patterning between them are principally available:

(22) a. three meanings pattern in the way they are expressed, and only one of the meanings is expressed in a different way (it could be any of the four meanings).
      b. comitatives pattern with depictives only
      c. comitatives pattern with instruments only
      d. comitatives pattern with locata only
      e. depictives pattern with instruments only
      f. depictives pattern with locata only
      g. instruments pattern with locata only

Note that some of the possibilities described can hold simultaneously, i.e. (22b and g), (22c and f) and (22d and e).

The proposed analysis makes the prediction that in such languages, the following options should never be attested:

- (22c), because there is no feature that comitatives share with instruments such that it is not also shared by either depictives or locata;
- (22d) because no feature is shared by comitatives and locata that is not shared by either instruments or depictives;
- (22e) because there is no feature that these two meanings share, such that it does not hold of either comitatives or locata.
- (22f) because there is no feature that hese two meanings share, that does not hold either of comitatives or of instruments.

The remaining options are predicted to be possible, in particular:

- (22a) is predicted to be possible because each particular meaning is distinguished from the other three by its own set of features;
- (22b) is also predicted to be available because comitatives share with the depictives, and only with them, the feature of being free to predicate over either the agent or the theme, and they are bound by the entire event time;
- finally, (22g) is also predicted to be an available option because only instruments and depictives are both asymmetric with respect to their SoAs and share (part of) the participant role specification with them (moreover, only these two roles are bound by temporal intervals of subevents rather than the full event time, and only they target a specific thematic role).

In section 8, I present the data from a language that meets these predictions.

7. Paraphrases

There is a large amount of literature discussing the issue of instruments appearing as subjects, or external arguments, as in (23b), from SCHLESINGER (1989) to ALEXIADOU and SCHÄFER (2006).

(23)   a.   Bratislav broke the window with the stone.
     b.   The stone broke the window.

The present analysis of the *with*-phrase, especially its reference to thematic roles, predicts that comitatives, instruments and locata, in which OoAs share (parts of the) participant role specification with their SoAs, should in principle entail paraphrases where the OoA participant replaces the SoA. The only case in which this is predicted to be systematically impossible is that of bare depictives. At the first sight, this prediction seems to be born out, as illustrated in the examples in (24).

(24)   a.   He cooked the meat <u>with potatoes</u>.   comitative
     →   He cooked potatoes.
     b.   He cooked the meat <u>with John.</u>   comitative
     →   John cooked the meat.
     c.   He loaded the wagon <u>with hay</u>.   locatum
     →   He loaded hay (into the wagon).
     d.   He cooked the meat <u>with a pressure cooker</u>.   instrument
     →   The pressure cooker cooked the meat (in only ten minutes).
     e.   He read a book <u>with a yellow back</u>.   depictive
     -/→He read a yellow back.
     f.   He cooked the meat <u>with enthusiasm</u>.   depictive
     -/→Enthusiasm cooked.

However, a number of examples is presented in the literature in which the above generalization does not hold for instruments. For instance, the sentence in (25a) clearly does not entail that in (25b).

(25)   a.   Negoslava ate the shrimps with the fork.
     b.   #The fork ate the shrimps.

A similar effect is illustrated in the German examples in (26), borrowed from KAMP and ROSSDEUTSCHER (1993).

(26)   a.   Der Arzt heilte den Patienten mit dem Skalpell
        The doctor cured the patient with his scalpel
     b.   Der Arzt heilte den Patienten mit Kamille
        The doctor cured the patient with camomile

    c. #Das Skalpell heilte den Patienten
        #The scalpel cured the patient
    b. Die Kamille heilte den Patienten
        The camomile cured the patient

I rather stick to the example in (25), as several native speakers of German confirmed that example (26a) is actually not much better than that in (26c) (and a number of speakers of other languages had the same intuition about the respective counterparts).[5] The problem is that curing is not felicitously conceptualized as mediated by a scalpel, or at least not without a pragmatic coercion. Yet, as the example in (25) uncontroversially shows, a modification of the generalization is required: instruments can sometimes replace their SoAs, while still preserving the well-formedness and truth of the assertion, and sometimes this is not possible. As instruments and locata have received similar analyses, let us see whether locata show a similar behaviour in this respect.

Although it seems that all locata that allow for a *with*-phrase do undergo the locative alternation, not all of them can appear as direct objects if the location is not expressed (observed and discussed by GOLDBERG 1995). The contrast between (27a, c) and (27b, d) is parallel to that between (25a, b) and (24d).

(27) a. Dragoslav coated the chair with plastic/covered the floor with the blanket.
     b. Dragoslav packed the suitcase with his clothes.
     c. # Dragoslav coated the plastic/covered the blanket.
     d. Dragoslav packed his clothes.

This is exactly as predicted by the proposed analysis: instruments most closely pattern with locata, and both these classes are somewhere between comitatives and depictives, i.e. some pattern with comitatives and some with depictives. Moreover, the analysis provides an explanation for the observed generalization. Instruments and locata share aspects of the thematic roles with their SoAs, just like comitatives do. But they are also strongly asymmetric with respect to their respective SoAs, and in fact do not even always take all their participant role components (for instance, they do not take control, when agents are also controllers, and they do not take the incrementality, when the SoA is the incremental theme). When the verb necessarily specifies for a range

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[5] This points in the direction of a continuum from examples where the paraphrase is fine and fully entailed, through cases in which variation is attested, and where the enatilment is a matter of interpretation linked to the meaning of the verb, to tose in which no paraphrase is possible, i.e. its meaning is clearly not entailed.

of participant role components greater than just the active participation or just holding the result predicate, be it control, incrementality, or a manner of action, the entailment fails. Such is the case in (25) as well as in (27a-c), as there the fork does not share the manner of active participation and the plastic and the blanket do not share the component of the result predicate of being hidden.

Comitatives, which are symmetric and share the entire participant role specification, always make correct, fully entailed paraphrases. Depictives, which share none – never do. And for instruments and locata, it depends on the lexical semantics of the verb, or more precisely, the aggregate predicate of the eventuality. As it is far beyond the scope of this paper, I do not go into lexical semantic properties of the verbs, which should provide explanations for the observed variation.

This is why the possibility of an entailed paraphrase along the lines discussed cannot be taken as a reliable test for determining the type of interpretation. Moreover, these observations lead us to weaken even further the boundaries between the four readings under discussion. There are properties that some instruments and some locata share with comitatives, and the others with depictives. This issue receives additional discussion in section 11.

Another test, which also does not qualify as decisive in respect of the classification of *with*-phrases, is the *using*-test. At least since LAKOFF (1968), *with*-phrases have been linked with the *used* OoA *to ...* paraphrase.[6] It is usually assumed that only instruments always allow for this paraphrase, as the verb *used* explicitly links with the agent and its active participation.

(28) a. He cooked the meat <u>with potatoes</u>.   comitative
     -/→He used potatoes to cook meat.
   b. He cooked the meat <u>with John.</u>   comitative
     -/→He used John to cook the meat.
   c. He loaded the wagon <u>with hay</u>.   locatum
     (→)He used hay to load the wagon.
   d. He cooked the meat <u>with a pressure cooker</u>.   instrument
     → He used the pressure cooker to cook the meat.
   e. He read a book <u>with a yellow back</u>.   depictive
     -/→He used a yellow back to read the book.

Locata, as obvious from (28c), seem to vary in this respect. Locata appearing in atelic eventualities never allow this type of paraphrase, while those in telic eventualities usually do, to a greater or lesser extent.

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[6] Koenig et al (2009) note that there are sentences that involve the *use X to ...* construction, but do not have a corresponding *with*-phrase paraphrase, such as *Alice uses her house to conduct her official business.* vs. #*Alice conducts her official business with her house*.

(29) a. He filled the box with marbles.   telic
     → He used marbles to fill the box.
    b. He lied on the bed with his face on the pillow   atelic
     -/→He used his face (on the pillow) to lie on the bed.

This test is not a reliable source of information about the interpretations discussed, because the *used*-paraphrase again does not cover the same set of eventualities as the original phrasing involving a *with*-phrase. In many cases, for instance, the sentence with a *with*-phrase will include the meanings in which the eventuality is neither controlled by the agent, nor volitional, while the *used*-paraphrase does not.

(30) a. He filled the box with marbles, when the bag he was carrying them in broke.
    b. He used marbles to fill the box, # when the bag he was carrying them in broke.

As this test was not important for the analysis, and in the interest of space, I do not go into a deeper discussion.

8. The case of Serbo-Croatian

Not even all languages of HASPELMATH (2001)'s Standard European Area show a full syncretism between the instrument and the comitative interpretation. In most Slavic languages, including Serbo-Croatian (S-C), a language with a rich morphological case system, the instrumental case is involved in the expressions that typically realize each of these four meanings. These expressions differ, however, in whether or not in addition to the instrumental case, they also involve a preposition. Observe the examples in (31).

(31) a. Berislava   se   češlja (??sa) papagajkama.
     instrument
     B   Refl   combs with   wrench
     'Berislava combs her hair with a wrench.'
    b. Berislava   je   napunila   torbu (??sa) jabukama.
     locatum
     B   Aux   filled   bag   with   apples
     'Berislava filled the bag with apples.'
    c. Berislava   putuje #(sa)   babom.
     comitative
     B   travels with   grandmother
     'Berislava travels with her grandmother.'

   d. Berislava   peva   #(sa)   cvetom u   kosi.
      depictive
      B   sings   with   flower   in hair
      'Berislava cings with a flower in her hair.'

The instrument and the locatum readings are expressed without the use of a preposition, while the comitative and the depictive interpretations require the use of the preposition *sa* 'with'. Without the preposition, the sentences in (31c, d) are forced the interpretations in which Berislava's grandmother presents her means of transportation, and the flower somehow mediates her singing.

The grouping as presented is fully compatible with the analysis proposed, and suggests that the criterion relevant for the use of the preposition is the relation of the respective meaning with the types of eventuality, and the targeted participant roles.

Most of the examples analyzed in this paper involve telic eventualities, and hence in most cases, I used the term *process subevent* where in fact it should be *process subevent or an atelic event consisting of a process only*. Examples including stative atelic events were barely discussed at all. Atelic eventualities consisting of a process behave like process subevents with respect to the interpretation of the *with*-phrase: they allow for the comitative, depictive and the instrument interpretation, as predicted by the analysis. In (32), Marislava could have the cow as her company, as a vehicle, or, under an adequate context, having a cow could be just a depictive stage-level property. No interpretation in which the cow is located at Marislava, or ends up at some place related to her, can be constructed, as the eventuality is an atelic process.

(32)   Marislava travelled with a cow.

The states behave like the result subevent of a telic eventuality – unless, of course, they involve an individual level predicate, in which case they cannot combine with any secondary predicate, hence also not with any of the four meanings of the *with*-phrase under discussion.

(33) a.   The box lay on the bed <u>with its cover next to the pillow</u>.   locatum
     b.   The box lay on the bed <u>with mirrors on its walls</u>.   depictive
     c.   Stanislav sat in his office <u>with his colleagues</u>.   comitative
     d.   #Stanislav was tired <u>with his back next to the wall</u>.

According to the present analysis, the *with*-phrase can obtain only three meanings in a state: the locatum, the depictive and the comitative interpretation (the instrument interpretation is not available as no agent role and no process are involved).

As established in the tests in (24), (33a) should be considered to involve a locatum, as indeed it involves the locatum-location relation and it can be paraphrased into *the cover lay on the bed / next to the pillow*. The example in (33b) illustrates a depictive interpretation of the *with*-phrase, as a paraphrase of the type above is not available. In (33c), the *with*-phrase is interpreted as a comitative: the OoA participates on a pair with the SoA, and the paraphrase *his colleagues sat in his office* is entailed. By definition, the instrument reading is excluded.

A final interesting fact is that, as illustrated in (33d), with BACH'S (1986) static states (those that MAIENBORN 2007 refers to as Kimian states), no secondary predication of the kind discussed is possible. This is probably the case because Kimian states do not introduce any temporal interval on their own, but only possibly receive one from the higher categories, such as outer aspect or tense.

Let me now show that all these examples translate to S-C as predicted by the analysis, assuming that states behave like result subevents, which are also stative in the typical case.

(34) a. Kutija   je   ležala   na   krevetu   licem   prema   jastuku.
      locatum
      box Aux   lain   on   bed   face.Inst   towards pillow
      'The box lay on the bed with its front towards the pillow.'

    b. Kutija   je   ležala   na   krevetu, sa   licem   prema   jastuku.
      depictive
      box Aux   lain   on   bed   with   face. Inst towards pillow
      'The box lay on the bed with its front towards the pillow.'

    c. Kutija   je   ležala na   krevetu, *(sa)   ogledalima   na   zidovima.
      depictive
      box Aux   lain   on   bed   with   mirror.Inst   on   walls
      'The box lay on the bed with mirrors on its walls.'

    d. Radoslav   je   sedeo   u   kancelariji *(sa) svojim kolegama.
      comitative
      R   Aux sat   in   office   with   Refl.Poss colleagues
      'Radoslav sat in his office with his colleagues.'

    e. # Radoslav je   bio umoran   (sa) leđima   uz   zid.
      R   Aux been   tired   with back   next_to wall

Examples in (34a, b), confirm that the type of interpretation as in (33a) and in (34a) involves a locatum, as this interpretation is only possible without the preposition. Moreover, in the domain of states, this is the only interpretation which can come without a break before the S-C counterpart of the *with*-phrase (the break is optional). This can be explained by the fact that

this interpretation takes only one component of the participant role complex of the SoA, and in some sense subspecifies its participation. The other two interpretations come only as appositions, because they are fully parallel to the main stative predicate: they are stative as well, and they are bound by the same temporal interval (in processes, at least the component of change distinguishes the main predicate from different depictives). The interpretation of the sentence in (34b), intuitively speaking, somehow dissociates the matrix eventuality from the orientation of the box, presenting the latter as only a property of the box, and in no way a specification of its lying on the bed.

SCHLESINGER (1979) argues that there is a continual range of meanings between his extreme instruments and comitatives, and that even when languages have different ways of expressing these meanings, they still need to place the boundary between those expressed as extreme comitatives and those expressed as extreme comitatives somewhere within this continuum. The situation in S-C is in such a view just one possible case with respect to the placement of the boundary. However, according to STOLZ et al. (2006), a large number of world languages do not show any degree of syncretism between these two interpretations. This opens a question about Schlesinger's continuum: Is it cognitively universal, and present even in languages with no syncretism of the kind under discussion, or do these languages shape the cognitive space in some other way? I leave this question open for further research.

9. Coordination and *with*-reciprocals

The goal of this section is not to provide an analysis of coordination or of *with*-reciprocals. Instead, it briefly shows that the facts related to coordination and reciprocals support the present analysis.

A quite systematic empirical difference between comitatives on the one hand, and instruments, depictives and locata on the other, relates to the availability of paraphrases involving coordination, and of the reciprocal readings. Here, for reasons of space, I illustrate it for depictives only.

Only comitatives may receive the reciprocal interpretation, and only they allow for a paraphrase involving coordination. In (35a), the comitative with Ladislav allows for a reciprocal interpretation: both Ladislava and Ladislav quarrelled, and both were the patients in this quarrelling; with the depictive, such an interpretation is excluded. And as shown in the contrast in (35b, c), while the comitative allows for a coordination, this is not the case with the depictive.

(35)   a.   Ladislava quarrelled <u>with Ladislav</u>/<u>with</u> passion.
      b.   <u>Ladislava and Ladislav</u> quarrelled (<u>with passion</u>).
      c.   #<u>Ladislava and passion</u> quarrelled (<u>with Ladislav</u>).

This is entirely as predicted by the present analysis, in particular by the aspect of symmetry along the dimension of addition. Only symmetric participants can enter a reciprocal relation, and only symmetric participants may sensibly be coordinated. The other types of interpretations involve significant degrees of asymmetry, and do not allow for the reciprocal interpretation or the coordinative paraphrase.

10. Two *with*-phrases in one expression

An apparent problem for the analysis argued for in this paper comes from the fact that two *with*-phrases with two different types of interpretation can combine in one expression, especially when a reciprocal interpretation is available.

(36)   a.   Ladislava quarrelled <u>with Ladislav</u> <u>with great passion</u>.
      b.   Ladislava painted <u>with Ladislav</u> <u>with a (very big) brush.</u>

It is traditionally assumed to be a syntactic and/or semantic universal that, without coordination, two modifiers of the same type and with the same preposition can appear at the same level only if one subspecifies the other, as illustrated in (37).

(37)   Boleslav went to England, (to London)/(*to France).

If both *with*-phrases in (36, either a or b) are secondary predicates, both bound by the same temporal interval, this sentence should be bad.

It appears, however, that this generalization holds only if the two modifiers really target the same property, i.e. the same dimension of the targeted constituent. When a different dimension is targeted – the combination is fine. Take the depictive reading for both *in*-phrases in (38), and observe that they felicitously combine, because one of them targets the physical location of the theme in the relevant temporal interval, and the other its mental state.

(38)   Predislav saw Vladislava <u>in her room</u> <u>in great pain</u>.

It would be strange to argue that the preposition *in* in its two instantiations in (38) has different semantics – they both denote an inclusion relation between two objects, in real or abstract space. And it is certainly not the case that one *in*-phase subspecifies the other: pain is not a particular part of Vladislava's room.

This is exactly what the present analysis says of the relation between comitative and depictive (or other) type of the *with*-phrase. Not only some cases involve a nearly symmetric relation between the two arguments of addition (resulting in a commutative reading) and some an asymmetric one (instrument, locatum and depictive readings), but this contrast results in them targeting different dimensions. Most importantly, this is the case with respect to the dimension of active participation in the eventuality. This is what makes it possible for two *with*-phrases with different interpretation to appear in the same clause.

11. The boundaries of semantics

SCHLESINGER (1995) explores, from the cognitive linguistics point of view, the semantics of (mostly the agent-oriented) *with*-phrases and reports about an experiment that showed that there is a significant degree of blending between the instrument and the comitative interpretations. In other words, the situation is not discrete as traditionally described, i.e. that a *with*-phrase either specifies accompaniment or it specifies an instrument, but actually in most cases they contribute both components.

Consider the facts in (39), on which Schlesinger builds his theory. The examples were judged by a number of informants, for the extent to which they involve an accompaniment relation, and the extent to which they involve an instrument relation, with respect to the complement of the preposition *with*. The grade 1.00 was given to mark „Yes, definitely", and the grade 8.00 for „No, definitely".

(39) Example	Accompaniment	Instrument
a. The pantomimist gave a show <u>with the clown</u>.	1.33	7.18
b. The blind man crossed the street <u>with his dog</u>.	1.37	3.96
c. The engineer built the machine <u>with an assistant</u>.	2.11	5.75
d. The acrobat performed an act <u>with an elephant</u>.	2.75	4.69
e. The general captured the hill <u>with a squad of paratroopers</u>	3.27	3.91
f. The officer caught the smuggler <u>with a police dog</u>.	5.46	2.10
g. The prisoner won the appeal <u>with a highly paid lawyer</u>.	5.67	2.78
h. The Nobel Prize winner found the solution <u>with a computer</u>.	7.62	1.17
i. The sportsman hunted deer <u>with a rifle</u>.	7.63	1.10
j. The hoodlum broke the window <u>with a stone</u>.	7.81	1.08

from Schlesinger (1995:7)

The experiment is indeed based on a descriptive semantic judgment, which is rather informal, and deals with the everyday meanings of the words *accompaniment* and *instrument* (rather than their grammatical nature, if there

is one), as well as with different inferences, metaphors and associations. Thus, it may simply be the case that further inferences from the narrow grammatical meaning of the examples actually factored the subjects' responses. In that case, we do not have to worry about these results, as they do not tell us about our topic of interest: the narrow grammatical differences between different interpretations of the *with*-phrase.

But, let us consider the option that even judgments of this kind do reflect our conceptualization of the deeper grammatical notions, and that hence these findings really speak about the narrow semantics of the *with*-phrase. A natural explanation that saves a formal difference between the two meanings would be that different subjects preferred different interpretations, but that the sentences are still ambiguous among a discrete set of interpretations. However, this does not explain the conflation of the two meanings, which is suggested by the fact that the sums of the grades in some examples reach as low as 5.33 (instead of 9.00 or more, expected if each subject chose at most one meaning, but there was significant variation). Moreover, Schlesinger reports that in order to eliminate the scenario of two ambiguous structures, in a new round of the experiment, they asked the subjects to always first pick one prototypical situation described by the expression, and then give their judgments – and the numbers did not change significantly.

These facts bring us to an important question that I have been putting aside in the previous sections: how much of the analysis is part of grammar, and narrow semantics as its component, and how much is rather pragmatic, related to world knowledge or conversational aspects of the expressions involved. Let us reconsider here the way the analysis is formalized.

(40) $Locatum(x, y, e_{stat}) \Leftrightarrow$
$\exists x, y, e_{stat}.[\exists \Delta \subseteq Dim(x). Th(x, e_{stat}) \wedge \mathbf{add_{\Delta}(x, y, e_{stat})} \wedge x >>_{\Delta} y \wedge Th \in].$
$Comitative(x, y, e) \Leftrightarrow$
$\exists x, y, e. [\exists \Delta \subseteq Dim(x). role(x, e) \wedge \mathbf{add_{\Delta}(x, y, e)} \wedge x \sim_{\Delta} y \wedge role \in \Delta].$
$Depictive(x, y, e) \Leftrightarrow$
$\exists x, y, e. [\exists \subseteq Dim(x). role(x, e) \wedge \mathbf{add_{\Delta}(x, y, e)} \wedge x >>_{\Delta} y \wedge role \notin \Delta].$
$Instrument(x, y, e_{act}) \Leftrightarrow$
$\exists x, y, e_{proc}. [\exists \Delta \subseteq Dim(x). Ag(x, e_{proc}) \wedge \mathbf{add_{\Delta}(x, y, e_{proc})} \wedge x >>_{\Delta} y \wedge Ag \in \Delta].$

	Comitatives	Depictives	Instruments	Locata
shared participant role features	+	-	+	+
asymmetry	-	+	+	+
role/event	ANY	ANY	agent/process	theme/state

The dimension of addition is defined as contextually given, hence closely connected to the pragmatic domain. Moreover, in the table, the component

of symmetry vs. asymmetry between the SoA and the OoA relies on rather pragmatic aspects of the interpretation: it directly depends on the world knowledge about the participants involved and the lexical meaning of the verb. But how about the other two: the role-sharing and the role-orientation (i.e. the event type restriction)? These are aspects of the meaning that typically appear as syntactically relevant and part of the narrow semantics of linguistic expressions.

It is at the very least not straightforwardly methodologically desirable to treat the issue of role-sharing involved in the semantic specification of the *with*-phrase as proposed in this paper as part of the narrow grammar. Not only are syntactic asymmetries attested which vary depending on whether the interpretation of the *with*-phrase involves role-sharing, but including shared roles in the syntactic representation is against the traditional wisdom that each role is assigned only once, and in one syntactic position (from the Theta Criterion, through UTAH, to Burzio's generalization and further, see BAKER 1997 for an overview). My point is not that shared thematic roles cannot be technically implemented – in fact they could, but this would require very complex structures, with certain core restrictions loosened. Without a significant theoretical gain (e.g. attesting data that show overt morphological marking of role-sharing between participants), there is no justification for such an increase in complexity.

The restriction of event types binding the *with*-phrase, however, may be something that is part of syntax. In any approach that involves syntactic representation of event-structure, the structure comes with straightforward ways of representing this type of restrictions. When bound by a subevent, the *with*-phrase must be generated in the low structural domain (RAMCHAND 2002's result or process phrase, ARSENIJEVIĆ 2006's concatenated simple eventualities), while binding by the entire event time or by the reference time is generated at some higher level.

Grammatical sensitivity to this type of variation is illustrated in the situation in S-C discussed in section 8, where instruments and locata are expressed by nouns in the instrumental case without a preposition, and comitatives and depictives by a PP involving the preposition *sa* 'with' and a noun in the instrumental case. The asymmetry in the presence vs. absence of the preposition is probably related to the syntactic asymmetries in the base-generation site of the S-C counterpart of the *with*-phrase. As this issue suffices for a whole paper, I do not attempt to provide an analysis in this one.

To briefly summarize, the component of addition, and at least in some languages, also the event type restriction, are components of the analysis that are marked in grammar. They are expressed by the preposition *with*, or in some languages the respective preposition and/or the inherent case. The rest

is better analyzed as part of pragmatics. The module of pragmatics inspects the properties of the OoA and of the SoA along the dimension of addition, in particular those of (a)symmetry and of participant role, and chooses one of the four interpretations as defined above. Within grammar, these aspects make no difference.

Now one might go back to the facts related to the different grammatical behaviour of particular types of readings, such as the syntactic asymmetries in (41), or the semantic ones in (42), and say that expelling (most of) the asymmetries out of grammar leads to not being able to account for these facts.

(41) a. Milislav je   napunio kofu <u>vodom/kutlačom</u>   za   pola sata.
          M   Aux filled   bucket   water.Inst/ladle.Inst in   half hour
          'Milislav filled the bucket with water/with a ladle in half an hour.'
      b. Kofa   se   napunila <u>vodom</u>   za   pola sata.
          bucket   Refl filled   water.Inst for   half hour
          'The bucket (got) filled with water in half an hour.'
      c. *Kofa   se   napunila <u>kutlačom</u> za   pola sata.
          bucket   Refl filled   ladle.Inst for   half hour
          corresponding to: '*The bucket (got) filled with a ladle in half an hour.'

(42) a. He cooked the meat <u>with potatoes</u>.   comitative
      → He cooked potatoes
      b. He cooked the meat <u>with John.</u>   comitative
          John cooked the meat.
      c. He loaded the wagon <u>with hay</u>.   locatum
      → He loaded hay (into the wagon).
      d. He cooked the meat <u>with a pressure cooker</u>.   instrument
      → The pressure cooker cooked the meat (well).
      e. He read a book <u>with a yellow back</u>.   depictive
      -/→He read a yellow back.

As for the entailments in (42), they can be accounted for if assumed to be post-pragmatic. It is only once we have chosen the comitative interpretation for the potatoes in (42a) that they are entailed to be cooked too, and then this is exactly as the analysis predicts. Pragmatics plays a crucial role in this process. If it were for pure grammar-delimited semantics, the entailment would not hold. The same goes for the other examples.

But the syntactic asymmetries cannot be post-pragmatic. Why is then the sentence with an instrument in an anticausative environment, as in (41c), ungrammatical? Let us give a closer look to the interpretations that syntax makes available, and how they can be pragmatically enriched.

For the sentence in (41a), syntax allows for two different interpretations, one in which the *with*-phrase is a subject-oriented depictive ([*Milislav with the water/ladle*]), and in the other an object-oriented one ([*the bucket with the water/ladle*]). Both only impose the addition relation between the OoA

and the SoA, and in S-C both mark that a simple eventuality (i.e. a process or a state, as individual eventualities or as subevents of a telic event, but not an entire telic event) has to be the binder. Pragmatics then verifies the asymmetry between them: Milislav is animate, human, capable of controlling the action and being a volitional participant, and the bucket is a container, relatively large, usually filled with liquids; water is inanimate, non-volitional, mass, liquid, and ladle is a container, relatively small, filled with liquids, and often used as a tool. Neither water can be an instrument (it is mass), nor can the ladle be a locatum (it is a single quantized object, the shape of which does not complement that of the bucket). But the other way around is possible, and indeed, pragmatics assigns the instrument interpretation to the ladle and the locatum interpretation to the water.

The syntax of the sentence in (41b) provides only one argument to be targeted by the *with*-phrase, but two potential binding subevents, the process and the result. For reasons exposed in relation to example (41a), water can only be interpreted as the locatum, from which it follows that the binding subevent also cannot be the one of result, and so we reach the interpretation as specified.

Finally, the sentence in (41c) again provides only one possible orientation for the *with*-phrase, and two subevents that may potentially bind it. That the only argument available is the theme leads again towards a locatum interpretation. However, the OoA is a single quantized object, which cannot appear as a locatum, and the sentence is judged ill-formed.

In languages that do not have a different marking of instruments and locata on the one hand and comitatives and depictives on the other, the latter two readings (i.e. comitatives and depictives) are also made available by grammar. Take the sentence in (43). A comitative reading would be that there is a ladle attached to the bucket, and Milislav filled both parts of this complex object. This reading is pragmatically disfavored due to the asymmetry in size between the bucket and the ladle, and due to the fact that buckets do not normally come paired with ladles, but grammatically – it is fine. A depictive reading is also available: the bucket had a ladle assigned in one way or another during the eventuality of Milislav filling it. In this case having a ladle assigned is a property of the bucket, and the ladle does not get filled. The locatum interpretation is out for reasons already explained. From all these interpretations, depending on the context, pragmatics determines the most salient one.

(43)   Milislav filled the bucket with water/with a ladle in half an tour.

Taking the version involving *with water*, again all four readings are made available by the syntax, but the instrument reading is immediately eliminated due to the mass nature of the OoA. The comitative interpretation is also out, as

water, unlike the bucket, is not a container and cannot be filled (i.e. cannot be fully symmetric in the relevant respect). Finally, the depictive interpretation is available: during the event of filling it completely, the bucket had (some) water (either containing the water, or the water might have been in drops, on the outside of its walls in it, or there is some other dimension along which the addition takes place). This is an interpretation that hardly finds a salient context, hence the locatum interpretation is the only natural one (the relevant dimension is that of a spatial location, where water can be symmetric with the bucket).

This might also be an explanation for Schlesinger's facts illustrated in (39) – all these examples are underspecified, and derive a meaning that is shared by all four interpretations under discussion. Only when sent to pragmatics, the choice is made between the four possible readings, and as this relies on gradable notions such as asymmetry in size, shape etc. – a certain gradability also emerges in the way subjects descriptively judge these sentences. Note that a similar gradability has been predicted by the discussion of the facts in (24)-(27), in the way instruments and locata split with respect to the availability of paraphrases in which they replace their SoAs.

12. Conclusion

The paper discussed the interpretation of the *with*-phrase and its cross-linguistic counterparts, in languages in which, within the domain of an eventuality, it expresses four different meanings: comitative, instrument, locatum and depictive. I proposed an analysis in which the narrow semantic interpretation of the *with*-phrase is that of a secondary predicate specifying an additive relation along a certain dimension (or set of dimensions) between the argument targeted by it and the referent of the complement of the preposition *with*. In some languages, there are slight differences in the marking of these interpretations, i.e. between secondary predicates bound by simple eventualities only, and those without such a restriction. I argued that the other differences are a matter of pragmatics, and that they relate to whether the dimension of the participant role is targeted by the addition, as well as to whether the two arguments of addition stand in a (nearly) symmetric, or in a strongly asymmetric relation along the dimension of addition. I showed how a number of patterns in the behaviour of *with*-phrases are accounted for and even predicted by such an analysis.

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ЧЕТИРИ НАЧИНА АДИЦИЈЕ – ЗНАЧЕЊЕ *СА*-ФРАЗЕ

Резиме

Рад дискутује интерпретацију конструкције *са*+инструментал, односно његови корелати у другим језицима у којима остварује иста четири значења: комитатив (друштво), инструмент (средство), локатум (смештени објекат) и депиктив (актуелни квалификатив). Предложена је анализа формалним семантичким методом, која ову конструкцију представља као секундарну предикацију која спецификује адитивни однос по одговарајућој димензији (или скупу димензија) између субјекта секундарне предикације и референта допуне предлога *са*. У неким језицима постоје благе разлике у обележавању ових значења између секундарних предикација везаних временским интервалом просте догађајности и оних без оваквог ограничења. Занемарујући овај параметар, показује се да су особине карактеристичне за свако од ова четири значења ствар прагматике. Ово важи и за могућност да димензија адиције укључује тематску улогу, те за (приближно) симетрични однос између два аргумента адиције. Показано је како су бројни обрасци понашања конструкције *са*+инфинитив предвиђени и објашњени предложеном анализом.

Кључне речи: са-фраза, секундарна предикација, инструмент, локатум, депиктив