

Coding versus cognitive indication of valency reading of a NP/VP/NP sequence – a cross-language study

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Abstract

The study is concerned with the issue of the Agent/Patient relevant markers in selected languages. The sample of languages under analysis included both analytical and synthetic languages having SVO dominant word order (except for German and Hungarian). A cross-language enquiry was conducted via a questionnaire filled in by 8 bilingual respondents who were asked to indicate the grounds on which they were able to distinguish the Agent from the Patient in a NP/VP/NP sequence. The coding Agent/Patient markers included inflectional affixes, word order and prepositions, and these were contrasted with the implicit markers: the so-called cognitive feasibility test and context. I have hypothesized, inter alia, that beyond or above the explicit formal indicators there is a universal cognitive capacity of language users to admit a particular argument structure as admissible or more probable, or to reject it as odd, even in the absence of the diagnostic coding markers.

Keywords: valency, cognitive roles, coding markers, cognitive feasibility test, dominant word order, language typology

1. Theoretical framework

1.1 Valency

The syntactic notion of valency was introduced into linguistics to account for the verb-dependent ability of phrases to co-occur within a clause. Tesnière (1959) was the first who drew a parallel between the central position of the verb toward other clause elements and the sun as the centre of the solar system around which the circulating planets are arranged in dependent positions. Allerton (1982) took the term “valency” from chemistry/physics, where it is used to express the central position of the nucleus in an atom requiring a particular number of electrons and

protons to co-occur, and defined it linguistically as “the different potentials that individual verbs have for occurring in a variety of sentence structures” (Allerton 57).

Van Valin (92) distinguished between the semantic and syntactic layers of the arrangement of a verb's dependents. Semantically, he referred to direct participants of the verbal action as *arguments* of the verb, whereas locative/temporal references were referred to as its *adjuncts* (similarly to Tesnière's distinction between *actants* and *circonstants* /1959/, or Miller's *complements* and *adjuncts* /2002/, respectively). Syntactically, he drew a distinction between terms (subject, direct object and indirect object) and *non-terms* (the rest of the clause elements). In his concept the term “valency” of a verb “refers to the number of arguments that it takes” (Van Valin 92).

Quirk *et al.* (1985) referred to three main verb classes, namely *intransitive*, *copular* and *transitive*, and sub-divided the latter into *mono-*, *di-* and *complex* transitive sub-classes, depending on the syntactic interpretation of the post-verb clause elements (zero, in/direct object, adjunct), excluding the subject.

Cognitively, valency may be viewed as the projection of humans' perception of relations existing between various states or processes observed in the extra-linguistic environment into sets of arrangements of cognitive roles (e.g. Agent/Action/Patient) effected through surface syntagmas (e.g. Subject/Verb/Object), based on humans' ability to employ such patterns on a recurrent and analogical basis (e.g. inanimate cognitive patterns seem to be modelled according to animate cognitive patterns, e.g. *John damaged the car.* > *Lightning damaged the car.*). Valency is taken to result from the language user's ability to identify and effect a proper arrangement of cognitive roles linguistically through language-specific formal means rather than a verb's faculty. In the context of cognitive linguistics the study of valency is therefore not concerned with the strict categorization of verbs as in/transitive or copular, since any verb can be used in any cognitive pattern, whether in its denotative or connotative employment. It is rather focused on the language user's ability to identify the proper combinations of particular cognitive roles projected into their surface verbalizations.

Methodologically, I would expect that an onomasiological/cognitive grounding of a cross-language study of valency (i.e. one where the point of departure is a particular combination of cognitive roles, e.g. Agent/Intentional Action/Patient, rather than a particular syntactic surface arrangement, e.g. Subject/Verb/Object) is more plausible for two reasons: firstly, it seems to me that language universals are more likely to be identified in a cognitive rather than a formal domain, i.e. sets of cognitive patterns are more likely to be shared by culturally, geographically or genetically related languages in contrast to their formal versatility, and, secondly, starting from cognitive categories will allow us to avoid the potential cognitive polysemy of surface syntactic categories (sentence elements, such as Subject, Object, etc., can potentially implement numerous cognitive roles).

1.2 Cognitive roles (semantic/thematic/theta roles)

In Van Valin's system there are only three grammatical relations (subject, direct and indirect object), whereas there are numerous semantic roles (Van Valin 24). He distinguishes three layers of generalization in this context: semantic macroroles

(actor/undergoer), thematic relations (agent, experiencer, recipient, patient, etc.) and verb-specific semantic roles (giver, runner, killer, etc.); the more general categories represent groupings of the more specific ones (ibid. 31). In this study I have been concerned with two theta roles or arguments, namely the Agent and the Patient, which are considered as prototypical for the surface subject and object, respectively.

1.3 Coding properties and language typology

In different languages, language users employ various means to indicate a particular reading of the argument structure of a clause. These may be divided into explicit/formal and implicit. German, Frisian, Greek, Belorussian and Hungarian have no dominant word order. The former “coding properties” (Van Valin 34) include inflection (of nouns, pronouns, articles, adjectives, verbs), subject/verb agreement, prepositions and word order (+prosody). Implicit means consist in the speaker’s ability to read a particular arrangement of arguments as cognitively feasible. This will be referred to further on as *cognitive feasibility*, i.e. a *cognitive check* of a particular combination of an argument’s roles.

Language typologists have long been concerned with the study of the employment of coding properties in different languages, since “language typology deals with the classification of languages into groups, types, according to similar features they possess” (Körtvélyessy 13). Morpho-syntactic typological classification of languages disregards genetic and geographical affinities existing between languages and is concerned with distribution of morpho-syntactic properties across languages. Vladimír Skalička, the Prague School scholar, established five typological types of languages based on the prevailing type of the coding property a particular language employs to express the grammatical meaning (*isolating, agglutinating, inflectional, intro-flectional and polysynthetic*) (Skalička 478-479). In isolating languages the prominent indicator is word order and prepositions, whereas in inflectional, intro-flectional and agglutinating languages it is grammatical affixes that are expected to prevail. The difference between the last three of the types mentioned consists in the position of the affix (pre-, intro- or post-fixation) and extensive form syncretism with inflectional and intro-flectional languages, whereas agglutinating languages tend to order affixes one after another with no syncretism of case forms. Polysynthetic languages prefer composition of forms. Isolating languages are also termed *analytical*, whereas inflectional, agglutinating and intro-flectional languages may be jointly referred to as *synthetic* languages (Čermák 205).

Greenberg (1966), in his basic word order typology, distinguished between 6 types of languages having one of the following word orders: SVO, OVS, VSO, VOS, SOV, OSV as dominant. He also suggested that the identification of a dominant word order allowed for predictions of other language properties, and so implicational relations may be revealed between various features (which Greenberg specified in his set of language universals). According to Dryer (2011), the prevailing word order of European languages is SVO, only Gaelic languages have VSO word order, Basque and Sorbian have SOV word order, and German, Frisian, Greek, Belorussian and Hungarian have no dominant word order.

2. Empirical part

2.1 Typological characteristics of languages tested

It was my aim to identify interdependencies between the dominant word order, prevailing coding properties and the ability to identify proper cognitive patterns by users of different languages. In the empirical part I therefore attempted to find how users of selected languages indicated and were able to identify the thematic roles of Agent and Patient in a NP-VP-NP surface sequence. I selected both analytical and synthetic languages with dominant SVO word order, except for German and Hungarian, which according to Dryer (2011) have no dominant word order. The list of languages included: English, French, Italian, Spanish, German, Slovak, Czech, Russian, Ukrainian, Polish, and Hungarian.

Table 1a. Typological characteristics of languages according to Skalička (2004) and Dryer (2011)

	Skalička	Dryer
English	Isolating	SVO
French	Isolating	SVO
Italian	Isolating	SVO
Spanish	Isolating	SVO
German	Mixed type	No dominant word order
Slovak	Inflectional	SVO
Czech	Inflectional	SVO
Russian	Inflectional	SVO
Ukrainian	Inflectional	SVO
Polish	Inflectional	SVO
Hungarian	Agglutinating	No dominant word order

2.2 Methodology

I conducted a cross-language enquiry via a questionnaire filled in by 8 bilingual respondents whose mother tongue was Slovak and whose second language competence was based on their academic linguistic study (I did the English, Slovak and Czech counterparts myself). The respondents were sent a questionnaire containing 10 Slovak sentences, all of which had a NP-VP-NP surface structure. They were asked to translate them into their target language, replace the position of two of the noun phrases in their target language without changing their morphological forms, and translate the stretch back into Slovak. Finally, they were instructed to indicate the Agent and the Patient in each of the sentences and the grounds on which they were able to distinguish them in each case. The prototypical coding property was supposed to be the word order in isolating languages, and inflection and S-V concord in synthetic languages. In the case where the Slovak source sentence was Agent/Patient ambiguous, the respondents were instructed to work with it from an Agent/Action/Patient perspective. The questionnaires were collected and evaluated in respect of the non/observance of the prototypical coding properties.

An example of analysis from the questionnaire

	Translation into target language	Switch of pre- and post-verb NPs	Translation of sentence 1b back to Slovak
1. Ján ľúbi Máriu.	1.a John loves Mary.	1.b Mary loves John.	1.c Mária ľúbi Jana.
A P	A P	A P	A P
I distinguish between the A and P arguments in the target language on the grounds of:			
Word order (specify) In English the pre-verb position is read as Agent, the post verb-position as Patient	Inflectional ending: (specify the case, the item inflected, concord, etc.):	Cognitive pattern (combination of valency features of the verb and its arguments):	

2.3 Goals and hypotheses

The tertium comparationis of my research was set in an onomasiological perspective: what formal means language users employ to identify and indicate a particular valency arrangement of argument structure. I also attempted to test Skalička's argument that each language incorporates coding properties of various language types and intended to find what triggers the intended theta reading of arguments in users of a language whose prototypical coding property is inactive in a particular case.

In Slovak, out of the total of 24 inflectional paradigms, i.e. four paradigms in masculine, feminine and neuter genders in the singular and plural, only 4 animate paradigms (two masculine and two feminine) make a formal (inflectional) distinction between NOM and ACC, both in SG and PL. Hence even in such a typical inflectional synthetic language as Slovak, in two thirds of nominal inflectional paradigms, no distinction is drawn between NOM and ACC; this means, syntactically, that when arguments are selected from those 16 paradigms, the Slovak language is supposed to face the same syntactic situation regarding the users' capacity to make the Agent/Patient contrast formally as English, Italian or other analytical languages. Nevertheless, the Slovak word order is not generally treated as grammaticalized (i.e. fixed, employed as a coding property). Supposing that other European inflectional languages have roughly similar rates of case syncretism, a question arises how it comes about that their language users are not confused by this obvious lack of formal indicators and are capable of safe readings of arguments' roles. My intuition was that the formal means employed by users of respective languages (both analytical as well as synthetic) are only ancillary to their cognitive capacity to combine and read combinations of theta features of arguments and evaluate them as cognitively in/admissible, i.e. cognitively feasible or not.

The research also aimed to examine the issue of dominance of SVO word order. 9 out of 11 languages under analysis were expected to be SVO dominant languages (with reference to Dryer (2011)). SVO dominance is thus present in languages regardless of whether they are isolating or synthetic. Since dominance as such does not *prima facie* imply the function of word order, I intended to identify implicational relations existing between a particular degree of grammaticalization of word order (i.e. its employment to indicate the subject/object contrast) and its function to indicate the functional sentence perspective (FSP), i.e. the arrangement of surface

elements reflecting a degree to which they contribute to information development of an utterance, known as communicative dynamism (Firbas 1992). On the other hand, SVO dominance across the European languages selected was expected to have some significance namely in prompting the Agent/Action/Patient reading of a SVO sequence, and thus could be relevant in the context of Standard Average European Studies. Hence, I posed the following hypotheses:

1. Prototypical coding properties of respective language types are never employed in isolation.
2. The higher the absence of formal case indicators (no prepositions, case syncretism), the higher the tendency to grammaticalize the word order.
3. Decreasing grammaticalization of word order results in increasing of its employment for FSP purposes.
4. The Agent/Action/Patient reading of a NP/VP/NP surface stretch is prevalent in the languages under analysis.
5. In both typological types of languages (synthetic as well as analytical), the prototypical formal indicators are subject to a cognitive feasibility check of a particular context-dependent combination of arguments.

2.4 List of sentences

The list of Slovak sentences that were analyzed by the respondents, along with their English glossing (according to Leipzig Glossing Rules) and translation:

- | | | |
|---|---|----------------------------------|
| 1. Ján ľúbi Máriu.
<i>Ján-Ø</i>
John-M.NOM.SG
'John loves Mary' | <i>ľúb-i- Ø</i>
love- thematic morph-PRS.3.SG | <i>Már-iu.</i>
Mary-F.ACC.SG |
| 2. Ján pomáha Márii.
<i>Ján-Ø</i>
John-M.NOM.SG
'John helps Mary' | <i>pomáh-a- Ø</i>
help-thematic morph-PRS.3.SG | <i>Már-ii.</i>
Mary-F.DAT.SG |
| 3. 3Ján maľuje obraz.
<i>Ján-Ø</i>
John-M.NOM.SG
'John paints picture' | <i>maľuj-e-Ø</i>
paint-thematic morph-PRS.3.SG | <i>obraz-Ø.</i>
Mary-M.ACC.SG |
| 4. Počítač pomáha Jánovi.
<i>počítač-Ø</i>
computer-M.NOM.SG
'computer helps John' | <i>pomáh-a-Ø</i>
help-thematic morph-PRS.3.SG | <i>Ján-ovi.</i>
John-M.DAT.SG |

5. Počítač rieši problém.
počítač-Ø *rieš-i-Ø* *problém-Ø*
 computer-M.NOM.SG solve-thematic morph- problem-M.ACC.SG
 ‘computer solves problem’ PRS.3.SG
6. Auto ťahá nákladniak.
auto-Ø *ťah-á-Ø* *nákladniak-Øcar-*
 N.NOM/ACC.SG tow-thematic morph- truck-M.ACC/NOM.SG
 ‘car tows truck’ PRS.3.SG
7. Auto ťahalo nákladniak.
auto-Ø *ťah-a-l-o* *nákladniak-Ø*
 car-N.NOM.SG tow-thematic morph- truck-M.ACC.SG
 ‘car towed truck’ PST-.3.SG.N
8. Vietor zničil dom.
vietor-Ø *znič-i-l-Ø* *dom-Ø*
 wind-M.NOM.SG destroy-thematic morph- house-M.ACC.SG
 ‘wind destroyed house’ PST-3.SG.M
9. Loď prevrátila plť.
loď-Ø *pre-vrát-i-l-a* *plť-Ø*
 ship-F.NOM.SG prefix-turn-thematic raft-F.ACC.SG
 ‘ship overturned raft’ morph-PST-3.SG.F
10. Loď zobudila stráž.
loď-Ø *zo-bud-i-l-a* *stráž- Ø*
 ship-F-NOM.SG prefix-wake-thematic guard-F.ACC.SG
 ‘ship woke up guard’ morph-PST-3.SG.F

2.5 Analysis of sentences

Table 1. Analysis of ‘John loves Mary’

Language	1a	1b	1c	Valency indicator
English SVO/SVO	<i>John loves Mary.</i> A P	<i>Mary loves John.</i> A P	‘Mary loves John’	WO
French SVO/SVO	<i>Jean aime Marie.</i> A P	<i>Marie aime Jean.</i> A P	‘Mary loves John’	WO
Italian SVO/SVO	<i>Giovanni ama Maria.</i> A P	<i>Maria ama Giovanni.</i> A P	‘Mary loves John’	WO
Spanish SVO/OVS	<i>Juan ama a María.</i> A P	<i>A María ama Juan.*</i> <i>A María la ama Juan.</i> P A	‘John loves Mary’	WO Preposition (a)+ Pronoun (la)
German SVO/OVS	<i>Hans liebt Maria.</i> A/P P/A	<i>Maria liebt Hans.</i> A/P P/A	‘John loves Mary’ or ‘Mary loves John’	Context
Slovak SVO/OVS	<i>Ján ľúbi Máriu.</i> A P	<i>Máriu ľúbi Jano.</i> P A	‘John loves Mary’	Inflection of NPs

Czech SVO/OVS	<i>Jan miluje Marii.</i> A P	<i>Marii miluje Jan.</i> P A	'John loves Mary'	Inflection of NPs
Russian SVO/OVS	<i>Ян любит Марию.</i> A P	<i>Марию любит Ян.</i> P A	'John loves Mary'	Inflection of NPs
Ukrainian SVO/OVS	<i>Ян любить Марію.</i> A P	<i>Марію любить Ян.</i> P A	'John loves Mary'	Inflection of NPs
Polish SVO/OVS	<i>Jan kocha Marię.</i> A P	<i>Marię kocha Jan.</i> P A	'John loves Mary'	Inflection of NPs
Hungarian SVO/OVS	<i>János szereti Marikát.</i> A P	<i>Marikát szereti János.</i> P A	'John loves Mary'	Inflection of NPs
OSV		<i>Marikát János szereti.</i> P A	'John loves Mary'	
SOV		<i>János Marikát szereti.</i> A P	'John loves Mary'	

Table 2 Analysis of 'John helps Mary'

Language	2a	2b	2c	Valency indicator
English SVO/SVO	<i>John helps Mary.</i> A P	<i>Mary helps John.</i> A P	'Mary helps John'	WO
French SVO/SVO	<i>Jean aide Marie.</i> A P	<i>Marie aide Jean.</i> A P	'Mary helps John'	WO
Italian SVO/SVO	<i>Giovanni aiuta Maria.</i> A P	<i>Maria aiuta Giovanni.</i> A P	'Mary helps John'	WO
Spanish SVO/OVS	<i>Juan ayuda a María.</i> A P	<i>A María ayuda Juan.*</i> <i>A María le ayuda Juan.</i> P A	'John helps Mary'	WO Preposition (a)+Pronoun (le)
German SVO/OVS	<i>Hans hilft Maria.</i> A/P P/A	<i>Maria hilft Hans.</i> A/P P/A	'John helps Mary' or 'Mary helps John'	Context
Slovak SVO/OVS	<i>Ján pomáha Márii.</i> A P	<i>Márii pomáha Ján.</i> P A	'John helps Mary'	Inflection of NPs
Czech SVO/OVS	<i>Jan pomáhá Marii.</i> A P	<i>Marii pomáhá Jan.</i> P A	'John helps Mary'	Inflection of NPs
Russian SVO/OVS	<i>Ян помогаем Марию.</i> A P	<i>Марию помогает Ян.</i> P A	'John helps Mary'	Inflection of NPs
Ukrainian SVO/OVS	<i>Ян допомагає Марії.</i> A P	<i>Марії допомагає Ян.</i> P A	'John helps Mary'	Inflection of NPs
Polish SVO/OVS	<i>Jan pomaga Marii.</i> A P	<i>Marii pomaga Jan.</i> P A	'John helps Mary'	Inflection of NPs
Hungarian SVO/OVS	<i>János segít Mariának.</i> A P	<i>Marikának segít János.</i> P A	'John helps Mary'	Inflection of NPs
OSV		<i>Marikának János segít.</i> P A	'John helps Mary'	
SOV		<i>János Marikának segít.</i> A P	'John helps Mary'	

The analysis of valency structures 1 and 2 has shown that when both nominal surface elements are animate and expressed by proper names, in the analytical languages English, Italian and French, speakers fully employ the word order to indicate the A/P contrast. The pre-verb position is reserved for the Agent and the post-verb position for the Patient. Hence, switching the elements in these surface slots results in a change of their argument reading. In Spanish, however, the preposition *a* is used to indicate both the accusative case in (1a) and the dative case in (2a), i.e. the Patient reading, with animate nouns, and pronoun *la* in (1b) and *le* in (2b) to indicate the Patient reading of a pre-verb nominal item in the case where the Agent is placed post-verbally. According to Trup (252), the preposition *a* is placed before direct

objects with animate nouns and always with indirect objects. Moreover, it is used with direct objects to avoid an Agent/Patient ambiguity, e.g. *Comieron los animales* = ‘animals were eating’, *Comieron a los animales* = ‘they were eating animals’ (ibid.). When the position of the Agent and the Patient are switched, Spanish users employ personal pronouns in a pleonastic manner: *A María las flores se las regaló Pepe.* = ‘to Mary flowers her gave Pepe’ (Díaz 94). It is used to rhematize the Agent.

With both noun phrases being animate proper names, the word order in inflectional languages does not affect the argument reading of surface constituents since it is consistently indicated by the contrast of the nominative case, i.e. zero, versus the accusative case in (1a)/dative case in (2a) inflectional endings for the Agent and Patient reading, respectively.

The situation is interesting in German, where it is the context and prosody that plays a role in the Agent/Patient issue – since the position of the finite verb is fixed to the second surface slot, both the Agent and the Patient may precede or follow the verb, and no inflectional endings are used with proper names.

In agglutinating Hungarian, in the case where both the noun phrases are animate, the SVO word order is unmarked, and the primary indicator of an argument’s reading is inflection (-*t* for the ACC, and -*nak* for the DAT). There is no form syncretism in Hungarian. The word order is thus fully employable as rhematizer/thematizer for the purposes of functional sentence perspective. The left proximate position to the verb seems to have a rhematizing effect (OVS, SOV, OSV – the bolded elements are rhematized).

Table 3. Analysis of ‘John paints picture’

Language	3a	3b	3c	Valency indicator
English SVO/SVO	<i>John paints a picture.</i> A P	<i>A picture paints John.</i> A P	‘picture paints John’*	WO
French SVO/SVO	<i>Jean peint le tableau.</i> A P	<i>Le tableau peint Jean.</i> A P	‘picture paints John’*	WO
Italian SVO/OVS	<i>Giovanni dipinge la pittura.</i> A P	<i>La pittura dipinge Giovanni.</i> A P <i>La pittura la dipinge Giovanni.</i> P A	‘picture paints John’* John paints a picture’	WO WO+Pronoun (<i>la</i>)
Spanish SVO/OVS	<i>Juan pinta un cuadro.</i> A P	<i>Un cuadro pinta Juan.</i> A P <i>El cuadro lo pinta Juan.</i> P A	‘picture paints John’* ‘John paints picture’	WO WO+Pronoun (<i>lo</i>)
German SVO/OVS	<i>Hans malt das Bild.</i> A P	<i>Das Bild malt Hans.</i> P A	‘John paints picture’	Cognitive pattern
Slovak SVO/OVS	<i>Ján maľuje obraz.</i> A P	<i>Obraz maľuje Ján.</i> P A	‘John paints picture’	Inflection of proper name
Czech SVO/OVS	<i>Jan maluje obraz.</i> A P	<i>Obraz maluje Jan.</i> P A	‘John paints picture’	Inflection of proper name

Russian SVO/OVS	<i>Ян рисует картину.</i> A P	<i>Картину рисует Ян.</i> P A	'John paints picture'	Inflection of proper name
Ukrainian SVO/OVS	<i>Ян малює картину.</i> A P	<i>Картину малює Ян.</i> P A	'John paints picture'	Inflection of proper name
Polish SVO/OVS	<i>Jan maluje obraz.</i> A P	<i>Obraz maluje Jan.</i> P A	'John paints picture'	Inflection of proper name
Hungarian SOV/OVS OSV	<i>János képet fest.</i> A P <i>János fest képet *.</i>	<i>Képet fest János.</i> P A <i>Képet János fest. *</i> <i>A képet János festi.</i> P A	'John paints picture' 'John paints picture'	Inflection of NPs

Sentence 3 contains a combination of animate Agent and inanimate Patient. In analytical languages, the WO which has been employed in sentences 1 and 2 as a safe indicator of the A/P reading produces a cognitively, rather than syntactically, defective pattern when a specific valency combination of features of the verb and its arguments (doer-intentional causative activity- result) contradicts the S-V-O pattern. *A picture paints John*/ La pittura dipinge Giovanni**, etc., are odd since an inanimate argument cannot perform intentional causative activity issuing in a resultant human argument. When the Patient is to precede the Agent for functional sentence perspective considerations (also accompanied by the replacement of indefinite articles with definite ones), these languages employ additional means to indicate the proper argument reading (passive voice in English *The picture (P) is painted by John (A)*, postnominal pleonastic pronouns *la/lo* in Italian and Spanish.)

In German, although the NOM and ACC word forms of both the proper noun as well as the general neuter noun and its article are identical, sentence (3b) is admissible both syntactically as well as cognitively, since its proper argument reading is tested by the cognitive feasibility of the argument structure, and since the word order is not grammaticalized, OVS word order is employed with S-rhematizing effect.

In inflectional languages, when the forms of verb arguments involve a combination of animate and inanimate items whose NOM and ACC paradigms differ, the inflection serves as a safe valency indicator. In Russian and Ukrainian the female inanimate NOM and ACC differ (*картина – картину*), but in Slovak, Czech and Polish the masculine inanimate NOM and ACC have the same zero inflectional ending (e.g. Slovak *obraz-Ø/obraz-Ø*). So actually, in Slovak, Czech and Polish the result is that two zero-inflected arguments meet in pre-verb and post-verb slots similarly as in English or French. What supports the P-A reading of the (3b) surface structures in these languages is the NOM/ACC contrast pertaining to the animate item *Jan-Ø/Jan-a*. Moreover, speakers would interpret the respective arguments properly thanks to the combination of valency features of the verb and its arguments, in the same manner as speakers of analytical languages would do.

In Hungarian, the accusative inanimate patient combined with an animate Agent excludes the SVO word order and the respondent suggested SOV word

order as unmarked, OVS as Patient rhematizing and OSV as Agent rhematizing, which, however, requires an additional employment of the definite article *a* and an accompanying inflection of the verb *-i*. The valency reading of the argument is consistently inflection-dependent (*-t* ending for ACC).

Table 4. Analysis of ‘computer helps John’

Language	4a	4b	4c	Valency indicator
English SVO/SVO	<i>The comp. helps John.</i> A P	<i>John helps the comp.</i> A P	‘John helps comp’	WO
French SVO/SVO	<i>L’ordinateur aide Jean.</i> A P	<i>Jean aide l’ordinateur.</i> A P	‘John helps comp’	WO
Italian SVO/SVO	<i>Il computer aiuta Giovanni.</i> A P	<i>Giovanni aiuta computer.</i> A P	‘John helps comp’	WO
Spanish SVO/OVS	<i>El ordenador ayuda a Juan.</i> A P	<i>A Juan ayuda el ordenador.*</i>	*	WO
		<i>A Juan le ayuda el ordenador.</i> P A	‘computer helps John’	Preposition (a)+Pronoun (le)
German SVO/OVS	<i>Der Computer hilft Hans.</i> A P	<i>Hans hilft der Computer.</i> P A	‘computer helps John’	Inflection of definite article
Slovak SVO/OVS	<i>Počítač pomáha Jánovi.</i> A P	<i>Jánovi pomáha počítač.</i> P A	‘computer helps John’	Inflection of proper name
Czech SVO/OVS	<i>Počítač pomáhá Janovi.</i> A P	<i>Janovi pomáhá počítač.</i> P A	‘computer helps John’	Inflection of proper name
Russian SVO/OVS	<i>Компьютер помогает Яну.</i> A P	<i>Яну помогает компьютер.</i> P A	‘computer helps John’	Inflection of proper name
Ukrainian SVO/OVS	<i>Комп’ютер допомагає Яну.</i> A P	<i>Яну допомагає комп’ютер.</i> P A	‘computer helps John’	Inflection of proper name
Polish SVO/OVS	<i>Komputer pomaga Janowi.</i> A P	<i>Janowi pomaga komputer</i> P A	‘computer helps John’	Inflection of proper name
Hungarian SVO/OVS	<i>A számítógép segít Jánosnak.</i> A P	<i>Jánosnak segít a számítógép.</i> P A	‘computer helps John’	Inflection of NPs
		<i>Jánosnak a számítógép segít.</i> P A	‘computer helps John’	
		<i>A számítógép Jánosnak segít.</i> A P	‘computer helps John’	

Table 5. Analysis of ‘computer solves problem’

Language	5a	5b	5c	Valency indicator
English SVO/SV O	<i>The computer solves the problem.</i> A P	<i>The problem solves the computer.</i> A P	‘problem solves computer’ *	WO
French SVO/SV O	<i>L’ordinateur résout le problème.</i> A P	<i>Le problème résout l’ordinateur.</i> A P	‘problem solves computer’ *	WO
Italian SVO/SV O/ OVS	<i>Il computer definisce il problema.</i> A P	<i>Il problema definisce il computer.</i> A P	‘problem solves computer’ *	WO
		<i>Il problema lo definisce il computer.</i> P A	‘computer solves problem.’	

Spanish SVO/SV O OVS	<i>El ordenador está resolviendo el problema.</i> A P	<i>El problema está resolviéndose por el ordenador.</i> A P <i>El problema lo está resolviendo el ordenador.</i> P A	‘problem solves computer’ * ‘computer has solved problem.’	WO Pronoun (<i>lo</i>)
German SVO/OV S	<i>Der Computer löst ein Problem.</i> A P P A*	<i>Ein Problem löst der Computer.</i> P A A P*	‘computer solves problem.’ ‘problem solves computer’ *	Cognitive feasibility
Slovak SVO/OV S	<i>Počítač rieši problém.</i> A P P A	<i>Problém rieši počítač.</i> P A A P	‘computer solves problem.’ ‘problem solves computer’ *	Cognitive feasibility
Czech SVO/OV S	<i>Počítač řeší problém.</i> A P P A	<i>Problém řeší počítač.</i> P A A P	‘computer solves problem.’ ‘problem solves computer’ *	Cognitive feasibility
Russian SVO/OV S	<i>Компьютер решает проблему.</i> A P	<i>Проблему решает компьютер</i> P A	‘computer solves problem.’	Inflection of feminine NP
Ukrainian SVO/OV S	<i>Комп'ютер вирішує проблему.</i> A P	<i>Проблему вирішує комп'ютер.</i> P A	‘computer solves problem.’	Inflection of feminine NP
Polish SVO/OV S	<i>Komputer rozstrzyga problem.</i> A P P A	<i>Problem rozstrzyga komputer.</i> P A A P	‘computer solves problem.’ ‘problem solves computer’ *	Cognitive feasibility
Hungarian SVO/OV S OSV SOV	<i>A számítógép megoldja a problémát.</i> A P	<i>A problémát megoldja a számítógép</i> P A <i>A problémát a számítógép oldja meg.</i> P A <i>A számítógép a problémát oldja meg.</i>	‘computer solves problem.’ ‘computer solves problem.’	Inflection of NPs

Analytical languages do not admit cognitively improper combinations of two inanimate nominals in pre- and post-verb slots, although the surface patterns are grammatically unobjectionable. Instead, they prefer the passive for FSP purposes (English and French), or appropriate pronouns placed post-nominally, but before the verb, to indicate the Patient (Italian and Spanish).

Out of 5 Slavonic inflectional languages, in three of them (Slovak, Czech and Polish) inanimate masculine paradigms do not formally distinguish between NOM and ACC, which means that speakers identify the A/P contrast on purely cognitive grounds (sentences 5). The same applies to German in sentence 5. In German sentence 4, it is the NOM-ACC contrast of definite article that overtakes the function of a formal indicator.

In Hungarian, as agglutinating language, there is no form syncretism, so the forms of NOM are distinguished by inflection in both animate and inanimate noun from their DAT and ACC forms. Hence, the word order is “liberated” to serve as an FSP marker.

Table 6. Analysis of ‘car tows truck’

Language	6a	6b	6c	Valency indicator
English SVO/SVO	<i>The car tows the truck.</i> A P	<i>The truck tows the car.</i> A P	‘truck tows car’	WO
French SVO/SVO	<i>La voiture a tiré le camion.</i> A P	<i>Le camion a tiré la voiture.</i> A P	‘truck has towed car.’	WO
Italian SVO/SVO	<i>La macchina ha trainato l’ autocarro.</i> A P	<i>L’ autocarro ha trainato la macchina.</i> A P	‘truck has towed car.’	WO
Spanish SVO/SVO OVS	<i>El coche remolca el camion</i> A P	<i>El camión remolca el coche.</i> A P <i>El camión lo remolca el coche</i> P A	‘truck towed car.’ ‘car towed truck’	WO Pronoun <i>lo</i>
German SVO/OVS	<i>Das Auto zieht einen LKW.</i> A P	<i>Einen LKW zieht das Auto.</i> P A	‘car tows truck’	Inflected Articles
Slovak SVO/OVS	<i>Auto ťahá nákladniak.</i> A/P P/A	<i>Nákladniak ťahá auto.</i> A P P A	‘truck tows car.’ ‘the car tows the truck.’	Context/Cognitive feasibility
Czech SVO/OVS	<i>Auto tahá kamion.</i> A/P P/A	<i>Kamion tahá auto.</i> A P P A	‘truck tows car’ ‘car tows truck’	Context/Cognitive feasibility
Russian SVO/OVS	<i>Машина тянет грузовик.</i> A P	<i>Грузовик тянет машина.</i> P A	‘car tows truck’	Inflection of feminine NP
Ukrainian SVO/OVS	<i>Машина тягне вантажівку.</i> A P	<i>Вантажівку тягне машина.</i> P A	‘car tows truck’	Inflection of feminine NPs
Polish SVO/OVS	<i>Pojazd ciągnie ciężarówkę.</i> A P	<i>Ciężarówkę ciągnie pojazd.</i> P A	‘car tows truck’	Inflection of feminine NP
Hungarian SVO/OVS OSV SOV	<i>Az autó húzza a teherautót.</i> A P	<i>A teherautót húzza az autó.</i> P A <i>A teherautót az autó húzza.</i> P A <i>Az autó a teherautót húzza.</i> A P	‘car tows truck’ ‘car tows truck’ ‘car tows truck’	Inflection of NPs

Table 7. Analysis of ‘car towed truck’

Language	7a	7b	7c	Valency indicator
English SVO/SVO	<i>The car towed the truck.</i> A P	<i>The truck towed the car.</i> A P	‘truck towed car.’	WO
French SVO/SVO	<i>La voiture tire le camion.</i> A P	<i>Le camion tire la voiture.</i> A P	‘truck towed car.’	WO
Italian SVO/SVO	<i>La macchina traina autocarro.</i> A P	<i>L’autocarro traina la macchina.</i> A P	‘truck towed car.’	WO
Spanish SVO/SVO /OVS	<i>El coche remolcó el camión.</i> A P	<i>El camión remolcó el coche.</i> A P <i>El camión lo remolcó el coche.</i> P A	‘truck towed car.’ ‘car towed truck’	WO Pronoun <i>lo</i>
German SVO/OVS	<i>Das Auto hat einen LKW gezogen.</i> A P	<i>Einen LKW hat das Auto gezogen.</i> P A	‘car towed truck’	Inflected Articles
Slovak SVO/OVS	<i>Auto ťahalo nákladniak.</i> A P	<i>Nákladniak ťahalo auto.</i> A P	‘car tows truck.’	Verb inflection + S-V concord
Czech SVO/OVS	<i>Auto tahalo kamion.</i> A P	<i>Kamion tahalo auto.</i> P A	‘car towed truck’	Verb inflection + S-V concord
Russian SVO/OVS	<i>Машина тянула грузовик.</i> A P	<i>Грузовик тянула машина.</i> P A	‘car towed truck’	Inflection of feminine NP + Verb inflection + SV concord
Ukrainian SVO/OVS	<i>Машина тягнула вантажівку.</i> A P	<i>Вантажівку тягнула машина.</i> P A	‘car towed truck’	Inflection of feminine NP + Verb inflection + S-V concord
Polish SVO/OVS	<i>Pojazd ciągnął ciężarówkę.</i> A P	<i>Ciężarówkę ciągnął pojazd.</i> P A	‘car towed truck’	Inflection of feminine NP + Verb inflection + S-V concord
Hungarian SVO/OSV OSV SOV	<i>Az autó húzta a teherautót.</i> A P	<i>A teherautót húzta az autó.</i> P A <i>A teherautót az autó húzta.</i> P A <i>Az autó a teherautót húzta.</i> A P	‘car tows truck’	Inflection of NPs

In the analytical languages sampled in sentences 6 and 7, the tense form of the verb is valency-irrelevant, and since both noun phrases are inanimate and capable of entering both the Agent and Patient argument slots, the fixed word order is fully employed as the prominent indicator of the argument structure, although, cognitively, the first choice Agent was the *truck*.

The Slovak and Czech sentences 6 are A/P ambiguous due to syncretism of NOM/ACC in both nouns. Moreover, the inflectional ending of the verb reflecting the subject-verb concord is zero for all the three genders (here masculine and neuter).

Hence, the Slovak sentence is *a-priori* context dependent, the same as the German sentences 1 and 2.

Since the Slovak sentence was referential for all of the respondents, it was quite interesting to find that the first choice for all of them was that which was more feasible cognitively – it is the truck that is more likely to be towing a car. Nevertheless, the respondents were instructed to keep to the formal order of the words, and thus to derive their analysis from the A/P reading of the Slovak sentence. If we compare the Slovak reference sentences 6 and 7, the former is A/P ambiguous, whereas the latter is disambiguated due to the neuter inflectional ending *-o* of the verb which indicates concord with the subject. This was also reflected in the fact that the respondents unanimously identified *auto* ('car') as the Agent in sentence 7. Since none of the other languages shows this verb-concord dependent valency interpretation, the tense form is irrelevant in them and the analysis is the same for the present and past tense versions contrasted in sentences 6 and 7.

If the Russian and Ukrainian versions are compared, in both languages the noun *машина* has distinct NOM/ACC forms. The other nominal *грузовик* has NOM/ACC syncretism in Russian, whereas the Ukrainian *вантажівка* has distinct NOM/ACC forms. This, however, does not affect the A-P reading, which is identical in both languages. Hence, what may be concluded from this is that one formal indicator (NOM/ACC) is sufficient to disambiguate the structure. The Polish sentence is built on the same principle. The same as in Russian, in German, too, one of the nouns displayed NOM/ACC homonymy (*das Auto*), the NOM/ACC formal contrast of the other noun, however, was valency-indicative, although it is not the noun itself that is inflected, but rather its indefinite article.

In Hungarian it is inflection of noun phrases which is valency-indicative in both sentences 6 and 7, the tense is not marked for gender, so its tense intro-flection is valency-irrelevant."

Table 8. Analysis of 'the wind destroyed the house'

Language	8a	8b	8c	Valency indicator
English SVO/SVO	<i>The wind destroyed the house.</i> A P	<i>The house destroyed the wind.</i> A P	'house destroyed wind'*	WO
French SVO/SVO	<i>Le vent a détruit la maison.</i> A P	<i>La maison a détruit le vent.</i> A P	'house destroyed wind'*	WO
Italian SVO/SVO	<i>Il vento ha distrutto la casa</i> A P	<i>La casa ha distrutto il vento.</i> A P	'house destroyed wind'*	WO11
Spanish SVO/SVO/ OVS	<i>El viento destruyó la casa.</i> A P	<i>La casa destruyó el viento.</i> A P	'house destroyed wind'*	WO
		<i>La casa la destruyó el viento.</i> P A	'wind destroyed house'	Pronoun (<i>la</i>)
German SVO/OVS	<i>Der Wind hat das Haus zerstört.</i> A P	<i>Das Haus hat der Wind zerstört.</i> P A	'wind destroyed house'	Inflection of definite article

Slovak SVO/OVS	<i>Vietor zničil dom.</i> A/P P/A	<i>Dom zničil vietor.</i> P A A P	'wind destroyed house' 'house destroyed wind'*	Cognitive feasibility
Czech SVO/OVS	<i>Vítr zničil dům.</i> A/P P/A	<i>Dům zničil vítr.</i> P A A P	'wind destroyed house' 'house destroyed wind'*	Cognitive feasibility
Russian SVO/OVS	<i>Ветер разрушил дом.</i> A/P P/A	<i>Дом разрушил ветер.</i> P A A P	'wind destroyed house' 'house destroyed wind'*	Cognitive feasibility
Ukrainian SVO/OVS	<i>Вітер зруйнував будинок.</i> A/P A/P	<i>Будинок зруйнував вітер.</i> P A A P	'wind destroyed house' 'house destroyed wind'*	Cognitive feasibility
Polish SVO/OVS	<i>Wiatr zniszczył dom.</i> A/P P/A	<i>Dom zniszczył wiatr .</i> P A A P	'wind destroyed house' 'house destroyed wind'*	Cognitive feasibility
Hungarian SVO/OSV OSV SOV	<i>A szél tönkretette a házat.</i> A P	<i>A házat tönkretette a szél.</i> P A <i>A házat a szél tette tönkre.</i> P A <i>A szél a házat tette tönkre.</i> A P	'wind destroyed house' 'wind destroyed house' 'wind destroyed house'	Inflection of NPs

Table 9. Analysis of 'the ship overturned the raft'

Language	9a	9b	9c	Valency indicator
English SVO/SVO	<i>The ship overturned the raft.</i> A P	<i>The raft overturned the ship.</i> A P	'raft overturned ship'	WO
French SVO/SVO	<i>Le bateau a renversé le radeau.</i> A P	<i>Le radeau a renversé le bateau.</i> A P	'raft overturned ship'	WO
Italian SVO/SVO	<i>La nave ha traversato la zattera..</i> A P	<i>La zattera ha traversato la nave</i> A P	'raft overturned ship'	WO
Spanish SVO/SVO	<i>El barco volcó la patera.</i> A P	<i>La patera volcó el barco.</i> A P	'raft overturned ship'	WO
German SVO/OVS	<i>Das Schiff stürzte den Floss um.</i> A P	<i>Den Floss stürzte das Schiff um.</i> P A	'ship overturned raft'	Inflection of definite articles

Slovak SVO/OVS	<i>Lod' prevrátila plt.</i> A/P P/A	<i>Plt' prevrátila lod.</i> P A A P	'ship overturned raft' 'raft overturned ship'	Context/Cognitive feasibility
Czech SVO/OVS	<i>Lod' převrátila vor.</i> A P	<i>Vor převrátila lod.</i> P A	'ship overturned raft'	Inflection of verb S-V concord
Russian SVO/OVS	<i>Пароход перевернул плот.</i> A/P P/A	<i>Плот перевернул пароход.</i> P A A P	'ship overturned raft' 'raft overturned ship'	Context/Cognitive feasibility
Ukrainian SVO/OVS	<i>Пароплав перевернув плім.</i> A/P A/P	<i>Плім перевернув пароплав.</i> P A A P	'ship overturned raft' 'raft overturned ship'	Context/Cognitive Feasibility
Polish SVO/OVS	<i>Statek przewrócił tratwę</i> A P	<i>Tratwę przewrócił statek</i> P A	'raft overturned ship.'	Inflection of feminine N
Hungarian SVO/OVS OSV SOV	<i>A hajó felfordította a tutajt.</i> A P	<i>A tutajt felfordította a hajó.</i> P A <i>A tutajt a hajó fordította fel.</i> P A <i>A hajó a tutajt fordította fel.</i> A P	'raft overturned ship.' 'raft overturned ship.' 'raft overturned ship.'	Inflection of NPs

Table 10. Analysis of 'ship woke up guard'

Language	1.a	1.b	1.c	Valency indicator
English SVO/SVO	<i>The ship woke up the guard.</i> A P	<i>The guard woke up the ship.</i> A P	'guard woke up ship'	WO
Italian SVO/SVO	<i>La nave ha svegliato la guardia</i> A P	<i>La guardia ha svegliato la nave.</i> A P	'guard woke up ship'	WO
French SVO/SVO	<i>Le bateau a réveillé la garde.</i> A P	<i>La garde a réveillé le bateau.</i> A P	'guard woke up ship'	WO
Spanish SVO/OVS	<i>El barco despertó a la guardia.</i> A P	<i>A la guardia despertó el barco.*</i> <i>A la guardia la despertó el barco.</i> P A	* 'ship woke up guard'	WO + la
German SVO/OVS	<i>Das Schiff hat die Wache geweckt.</i> A/P P/A	<i>Die Wache hat das Schiff geweckt.</i> A P P A	'guard woke up ship' 'ship woke up guard'	Context/Cognitive feasibility
Slovak SVO/OVS	<i>Lod' zobudila stráž.</i> A/P P/A	<i>Stráž zobudila lod.</i> A P P A	'guard woke up ship' 'ship woke up guard'	Context/Cognitive feasibility

Czech SVO/OVS	<i>Lod' vzbudila stráž.</i> A/P P/A	<i>Stráž vzbudila lod'.</i> A P P A	'guard woke up ship' 'ship woke up guard'	Context/Cognitive feasibility
Russian SVO/OVS	<i>Пароход разбудил стражу.</i> A P	<i>Стражу разбудил пароход.</i> P A	'ship woke up guard'	Inflection of noun/verb, S-V concord
Ukrainian SVO/OVS	<i>Паролав розбудив варту.</i> .A P	<i>Варту розбудив паролав..</i> P A	'ship woke up guard'	Inflection of noun/verb, S-V concord
Polish SVO/OVS	<i>Statek obudził straż.</i> A P	<i>Straż obudził statek.</i> P A	'ship woke up guard'	Inflection of verb, S-V concord
Hungarian SVO/OVS	<i>A hajó felkeltette az őrséget.</i> A P	<i>Az őrséget felkeltette a hajó.</i> P A	'guard woke up ship'	Inflection of noun phrases
OSV		<i>Az őrséget a hajó keltette</i> P A <i>fel.</i>	'guard woke up ship'	
SOV		<i>A hajó az őrséget keltette</i> A P <i>fel</i>	'guard woke up ship'	

In the sampled analytical languages with inanimate noun phrases, the word order is employed consistently, and only the cognitive check of an argument's combination in a particular context may determine whether a stretch that is grammatical on the surface is or is not cognitively admissible.

In Slovak and Czech, sentences (8), (9) and (10) show NOM – ACC form syncretism, in particular genders (also the neuter and feminine in German (10)). The verb inflection indicating the S-V concord can likewise not be employed if both noun phrases are of the same gender. In such cases, users of inflectional languages whose word order is not fixed cannot rely on any formal indicators in written discourse (in speech they may be aided by the prosody), and the only means they have is the S-V-O >Agent/Action/Patient projection supported by the cognitive check of the combination of arguments' roles in a particular context. A similar situation is in German, in sentence (10) with the form syncretism of definite articles in feminine and neuter NOM/ACC, and Russian and Ukrainian in sentences (8) and (9).

2.6 Summary of results

The following table summarizes the distribution of the Agent/Patient contrast indicators employed in the languages under analysis. In the cases where several indicators were employed at a time, I counted the typologically diagnostic one.

Table 11. Distribution of Agent/Patient indicators

Language	Inflection			Prepositions	Word order	Cognitive pattern	Context
	Nominal	Verbal	Articles				
English					100%		
French					100%		
Italian					100%		
Spanish				40%	60%		
German			50%			20%	30%
Slovak	40%	10%				20%	30%
Czech	40%	20%				20%	20%
Russian	80%					10%	10%
Ukrainian	80%					10%	10%
Polish	80%					20%	
Hungarian	100%						

Table 11 shows that in four out of eleven languages, users responded that the Agent/Patient contrast was indicated rather consistently, i.e. by word order in analytical languages (English, French and Italian), and by inflection in agglutinating Hungarian. As was pointed above, in Hungarian there is no form syncretism so case affixes are employed consistently as an argument's markers and the word order is fully liberated for the purposes of functional sentence perspective (with the immediate pre-verb position having a rhematizing effect).

From among the analytical languages under examination, in English, French and Italian, the pre-verb position is fixed for the Agent and the post-verb position for the Patient. When a cognitive check results in an odd argument combination (sentence 3b for these languages 'picture paints John'), the surface structure is found to be ungrammatical. For FSP purposes the passive voice and clefting may be employed.

In Spanish the Patient role is indicated by the preposition *a* in the case of direct animate objects and indirect objects in general. So word order is consistently employed in Spanish as the Agent/Patient indicator only if there is no need for the *a* preposition (sentence 3, 5, 6, 7, 8, 9), i.e. when an inanimate noun phrase is in the post-verb position as a direct object. In such a case, the cognitive feasibility check of arguments serves to exclude cognitively odd combinations. Both Spanish and Italian tend to follow the Agent/Action/Patient placement of arguments. When, for rhematizing purposes, users need to rhematize the Agent, they place it post-verbally, but have to insert a non-emphatic pronoun (pleonastic use) after an in/direct object, i.e. Juan ama **a María**. **A María** ama Juan. **A María** la ama **Juan**. (bolded noun phrases are supposed to be rhemes). Compared to English and French, the word order is less fixed in Spanish (Italian seems to be somewhere in the middle of the cline, since it does not employ the preposition *a*), and it therefore may be employed for FSP purposes. This liberation, on the other hand, when inanimate noun phrases occur in the pre- and post-verb slots (other than direct objects), results in a situation similar to Slovak and Czech. Since there is no formal indicator (the preposition *a* is

not obligatory with direct object inanimate items and the word order is less fixed), the Agent/Patient ambiguity arises and may be settled only by context and cognitive feasibility check.

Hence, in the analytical languages under analysis, English and French seem to be closer to each other in contrast to Italian and Spanish. The word order is employed most consistently in English and French, and least in Spanish where the preposition *a* is used to distinguish between the Agent and the Patient with direct object animate noun phrases and indirect object noun phrases in general. In Spanish and Italian the word order may be employed for rhematizing purposes if non-emphatic pronouns are inserted, which may be taken as an indicator of its less grammaticalized nature compared to English and French.

In German, the primary Agent/Patient indicator were inflected articles (and also, one may suppose, inflected adjectives and pronouns). In the absence of any formal indicators, i.e. where both noun phrases were proper nouns (sentences 1, 2), or where inanimate nouns whose articles' paradigms show form syncretism (sentence 10), and if the cognitive feasibility check allowed both options, only context served to resolve the Agent/Patient issue. Cognitive feasibility checking was relevant in sentence 3 with a combination of a proper noun and form syncretism of a neuter inanimate noun phrase. In general, German seems to rank among inflectional languages, with the inflection focus on the head noun dependents, whereas word order is employed to rhematize.

The situation is very interesting in the group of inflectional languages where nominal inflection is the dominant indicator, supported by verb inflection and subject/verb concord. As Table 11 shows, this indicator is used in 60% to 80% in these languages. In the remaining 20% to 40% of cases users had to do the cognitive feasibility check, and if both options were feasible, context became the only indicator. Cognitive feasibility checking was the primary indicator in the case where the noun phrases happened to show case form syncretism (which, for example in Slovak, is in 70% of inanimate NOM/ACC paradigms, as was suggested above). As was proved throughout the analysis, however, the absence of formal indicators or the high rate of form syncretism of inflectional languages was not an obstacle for their users in making or identifying the Agent/Patient contrast, since the cognitive analysis or feasibility check of the combination of arguments' roles would safely exclude ungrammatical options.

What may further be observed is the fact that in the inflectional languages, as in the isolating languages, there is a trend to read a NP/VP/NP surface stretch as Agent/Action/Patient as unmarked. However, with the presence of formal indicators other than word order, the latter is liberated for FSP purposes.

3. Conclusion

In my research I intended to test the following hypotheses:

3.1 Hypothesis 1 Prototypical coding properties of respective language types are never employed in isolation.

The first hypothesis may be considered as plausible in relation to inflectional languages, agglutinating Hungarian, and German, where the Agent/Patient contrast was indicated by case marking on both nouns or articles, and to a lesser extent by the verb paradigm. Actually, the intended argument reading was effectively accomplished formally if at least one of the nouns had discrete forms of NOM and ACC. In this respect the subject/verb concord (third person singular) could be considered as less relevant since it was effectively employed to indicate the Agent/Patient contrast only when the verb was marked for gender in the past tense where two of the nouns phrases were of different genders. In analytical languages the word order was either the only indicator, supported by the pleonastic use of pronouns in Spanish and Italian, or was combined with the preposition *a* in Spanish.

3.2 Hypothesis 2 The higher the absence of formal case indicators (no prepositions, case syncretism), the higher the tendency to grammaticalize the word order.

The Agent/Patient ambiguities did not occur in cases where the diagnostic coding properties were employed consistently (affixes in Hungarian without form syncretism, word order in English and French). The Agent/Patient ambiguities started to occur in the absence of formal case indicators (form syncretism in inflectional languages or the absence of the preposition *a* in Spanish). Such ambiguities were settled by cognitive feasibility checks and context rather than grammaticalization of word order. What seemed to be fixed-like, however, was a tendency of linear Agent/Action/Patient reading of a NP/VP/NP surface stretch across these languages. This hypothesis may therefore be considered as disproved.

3.3 Hypothesis 3 Decreasing grammaticalization of word order results in increasing of its employment for FSP purposes.

When word order was not employed as the Agent/Patient indicator, it was found as an FSP indicator across all the languages under examination, except for English and French. This hypothesis may therefore be considered as proved.

3.4 Hypothesis 4 The Agent/Action/Patient reading of a NP/VP/NP surface stretch is prevailing in the languages under analysis.

In the inflectional as well analytical languages, including agglutinating Hungarian, there is a tendency to read a NP/VP/NP pattern as Agent/Action/Patient, both when the formal indicators are or are not present. This proved to be an unmarked theme/rheme sequence in both groups, i.e. SVO dominant languages as well as German and Hungarian. The hypothesis may be taken as proved.

3.5 Hypothesis 5 In both typological types of languages (synthetic as well as analytical), the prototypical formal indicators are subject to a cognitive feasibility check of a particular context-dependent combination of arguments.

Finally, the fifth hypothesis may be considered as proved, since cognitive feasibility checking was present universally. When the diagnostic coding property of a language was employed, the respondents employed it to exclude cognitively odd combinations of arguments. In the absence of formal indicators it was used as the primary indicator of the Agent/Patient contrast.

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Abbreviations

- A...agent (argument)
P...patient (argument)
NP/VP/NP...noun phrase/verb phrase/noun phrase
NOM...nominative case
ACC... accusative case
DAT...dative case
PRS...present tense
PST...past tense
SG...singular number

PL... plural number

M/F/N... masculine/feminine/neuter

WO... word order

FSP... functional sentence perspective

*... surface stretch sounds odd either grammatically or cognitively

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