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UNDERSTANDING LANGUAGE SPECIFICITY: CAUSES AND CONSEQUENCES

Departing from a crosslinguistic analysis of the 'on'-'in' range of prepositional spatial usages (Bowerman & Choi, 2001), in this paper we will:

a) try to pinpoint, i.e. describe and explain the central aspects of crosslinguistic variation in prepositional usage; and
b) propose the elements and principles identified as being at the core of crosslinguistic prepositional variation and also the main cause underlying crosslinguistic variation in general, i.e. as being among the key elements bringing about language specificity.

This study revolves around two issues: 1) that of universal cognitive elements (part of the realm of language universality), understood as semantic atoms that can appear in words (semantic «molecules») in different combinatorial patterns, and 2) the linguistic functions operating on the set of these universal elements. These linguistic functions are however seen as operating on a language specific principle, thus bringing about crosslinguistic variation.

In the final part of the paper, the issues raised in it are related to Slobin's(1996) view of «thinking for speaking» as a possible solution to the controversial problem of linguistic relativity.

Introducing the problem – prepositional systems crosslinguistically

In his paper on "Categories and Cognitive Models" Lakoff (1982, p. 72) argues that "the strongest evidence against traditional views of categorization and for a prototypical approach comes from the prepositions which specify relations, both spatial and abstract." The most compelling evidence Lakoff offers in support for his claims are Brugman's (1981) findings from her work on the preposition "over".

While fully agreeing with Lakoff's assertion, I would like to focus this study on what, in my opinion, is to this day the most convincing finding in support of a prototypical approach to (spatial) categories, i.e. that by Bowerman and Pederson (1992),

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further specified in Bowerman and Choi (2001, pp. 484-487). In these studies the authors undertake a crosslinguistic analysis of prepositional usage in 33 natural languages, and show that all the instances of spatial relations that are lexicalized in various languages can be categorized along a continuum that can systematically be mapped onto language, no matter which language one chooses. Departing from this striking conclusion, in this paper I try to locate the level at which language specificity occurs, and see whether, and if so then how can this specificity be integrated with the idea of a universal, cognitively based human language system.

Let us begin by taking a summary look at prepositional semantics in general, i.e. see whether it is possible to pin down the core meaning of prepositions and offer a prepositional 'semantic model' for the word class as such.

Grounds for hope – the mapping formula[1]

We know that words can be defined in terms of their extension*s* (or lexical references, i.e. in terms of all those instances to which a word can be applied) and in terms of their intentions (i.e. the set of the word's defining properties). It might seem quite sensible to say that a word's meaning is primarily a question of words' intentions (cf. e.g. Ijaz, 1986), but, in the case of prepositions at least, a crosslinguistic mapping of words' extensions appears to be the best (if not the only) way to answers about meaning. I would like to argue that prepositions fall within a category of words whose defining properties partly derive from their extensions, which thus represent the best starting point for anyone trying to clarify the issue of prepositional intentions.

The term 'preposition' refers to a grammatical form. (Grammatical forms) represent only certain categories, such as space, time (hence, also form, location, and motion), perspective point, distribution of attention, force, causation, knowledge state, reality status, and the current speech event, to name some main ones. And, importantly, they are not free to express just anything within these conceptual domains, but are limited to quite particular aspects and combinations of aspects, ones that can be thought to constitute the 'structure' of those domains' (Talmy, 1983, p. 227)

Departing from Talmy's view expressed in the words quoted above, Slobin (1985) proposes that children, like languages, are constrained in the meanings they assign to the grammaticized portions of language, and that, even more interestingly for our case, there exists a difference between the kinds of meaning expressed by open-class and closed-class forms. In fact, the meaning of the former is seen as being essentially unbounded, while the meaning of the latter is viewed as being constrained (cf. Slobin's 1985 notion of 'privileged set of grammaticizable notions'). As one of the closed – classes of the lexicon, prepositions could then carry meaning which is constrained. Our key question is: is this constrained meaning also definable?

When grammarians try to define prepositions as a category, they do so by terming them 'relational words'. If prepositions are, by definition, relational words, then

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[1] By the term 'mapping formula' I refer to the sort of 'mental algorythm' that 'translates' perceptive stimuli from the world into elements suitable for linguistic coding.

in order to understand the nature of their meaning, i.e. of the type of relation they can establish, we need to stop for a moment and think about the sort of things they put into relation. Herskovits (1986, p. 7) notes that the simplest type of prepositional spatial expression is composed of three constituents, i.e. the preposition and two noun phrases (NP), as in:

The spider (is) on the wall.

The two NP-s are referred to in the literature by various names ('theme', 'located entity', 'located object', 'spatial entity' … for the first NP, and 'reference object', 'reference entity', 'localizer', 'landmark' … for the second NP). The terminology adopted in this paper is: **Figure** (abbreviated as 'F') for the first NP, i.e. the object being located, and **Ground** (abbreviated as 'G') for the second NP, i.e. the object in reference to which F is being located. The notions of Figure and Ground were originally described in Gestalt psychology, but their application in linguistics stems from Talmy (1983), who characterized them as follows:

> "The Figure is a moving or conceptually movable object whose site, path, or orientation is conceived as a variable the particular value of which is the salient issue. The Ground is a reference object (itself having a stationary setting within a reference frame) with respect to which the Figure's site, path, or orientation receives characterisation" (Talmy, 1983, p. 232).

We might say at this point that those languages which 'activate' the grammatical form of preposition for their speakers, do so by using the category for expressing a meaning which I will try to describe as a computer programme:

1) SELECT SALIENT PORTION OF F (this becomes F')
2) SELECT SALIENT PORTION OF G (this becomes G')
3) PUT F' AND G' INTO RELATION F'G'
4) NAME THE RELATION F'G' WITH APPROPRIATE CATEGORY LABEL

E.g. the category label is **'in'** if F'G' come to conceptually represent a relation where (at least):

1) F' is smaller than G', and
2) F' is located internal to G', which has to be either a one-, two- or three- dimensional geometric construct[2]

Note here that the first step in our prepositional programme represents a departure from Talmy's general views of lexicalization patterning. In fact, while in his treatments of the lexicalization of relational elements Talmy attributes little or no importance to the Figure, we maintain that the properties of F contribute, if to varying extents in different languages, to the lexicalization of location. In e.g. Dutch, it sounds pretty

[2] This sort of 'prepositional definition' is a «blend» based on the different definitions of the prepositional meaning of 'in' that I managed to find (Herskovits, 1986; Quirk et al., 1985; Cooper, 1968; Leech, 1969; Bennett, 1975, Bowerman, 1997).

awkward to say 'the book **is** on the shelf'. The book is either 'standing' of 'lying' on the shelf, depending on whether it is vertically or horizontally oriented. We see then that the difference between surfaces of F that are in contact with G can significantly influence the choice of lexical items used for lexicalizing a given relation.

Within a formal framework, Cooper (1968), in her analysis of 33 locational prepositions aimed at providing the basis for the extraction of the semantic reading for PP-s, defines prepositions as complex relational markers of the form:

R (f (x), g (y))

where 'f' and 'g' are what Cooper calls 'function markers', R is the 'relation marker' and 'x' and 'y' are the objects to be related.

Relating the formula to our 'programme', I would like to suggest rewriting the above formula as follows:

R (*f* (F), *g* (G))

where F and G stand, as said earlier, for Figure and Ground; '*f*' and '*g*' are the '*selectional functions'* operating on Figure and Ground and selecting their semantically salient part (with the output respectively F' and G'); and R is the '*relational function'* putting F' and G' into relation and labelling the relation with the appropriate preposition.

As they stand, both the 'program' and the 'formula' seem to have little practical value. However, they could prove useful as a 'universality vs. language specificity' filter by means of which to analyse prepositions crosslinguistically.

In fact, steps 1-2-3-4 of our prepositional program are universal. What can and does change, be it for different languages, or, occasionally, also for different speakers and contexts[3], are:

a) ways in which languages bundle up, i.e. combine conceptual elements to form units that can be expressed by lexical items (the way in which the F'G' relation is viewed);
b) the (number of) 'category labels' available in each language (the possible labels for the F'G' relation); and
c) the salient portions activated by each preposition ('f-s, and g-s, i.e. the functions) forming, however, a **closed, cognitively predisposed set** – and we shall return to this very important point below.

Let us see what exactly this means and how it works in practice.

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[3] What I have in mind here is that there is a certain degree of tolerance or flexibility related to prepositional usage: speakers and listeners can and, to a certain degree do, make adjustments in their conceptual representation of the relation entailed by the preposition, i.e. prepositions can be employed in 'anomalous ways'. A personal example by Bowerman is of an instance in which, while crossing a very busy street, she said to her husband: 'I wish I had a car around me'. Here we have an illustrative example of the selectional functions associated with prepositions ('around', here, selects, as it were, the 'chassis' of the vehicle and the speaker views herself inside, 'protected' from the heavy traffic).

Support from below	Marks on a surface	Clingy attachment	Hanging over/ against	Fixed attachment	Point- -to-point attachment	Encircle with contact	Impaled / spitted on	Pierces through	Partial inclusion	Inclusion
Cup on table	*Writing on paper*	*Raindrops on window*	*Picture on wall*	*Handle on cupboard*	*Apple on twig*	*Ring on finger*	*Apple on stick*	*Arrow in/throug apple*	*Cigarette in mouth*	*Apple in bowl*

Figure 1. The ON-IN scale of spatial meaning categories (Bowerman & Pederson, 1992)

The probe – prepositional systems crosslinguistically

As has already been mentioned, the most striking crosslinguistic study of prepositions is that by Bowerman and Pederson (1992; cf. also Bowerman and Choi, 2001, pp. 484-487). In this detailed study the authors examine the physical (spatial) senses lexicalized by the English prepositions 'on' and 'in', and the ways in which these same senses (i.e. types of spatial relations) are rendered in 33 other natural languages. Bowerman and Pederson aptly show that all the instances of spatial relations under consideration can be divided into 11 categories, with categorial boundaries being drawn whenever at least one language, in order to lexicalize one or more of these spatial relations, 'switches' from one preposition (or other lexical form)[4] to another. Even more interestingly, the authors observe that these categories can be ordered as to form the sequence (see Figure 1).

This ordered sequence of meaning categories is, at a crosslinguistic level, differently partitioned into meaning clusters. E.g. Spanish and Portuguese lexicalize the whole range with one preposition only ("en", and "em" respectively), English, uses two prepositions ("on", and "in"), while German and Dutch partition the scale into three 'prepositional segments' ("auf", "an" and "in" for German, 'op', 'aan' and 'in' for Dutch), etc. The most striking observation is that the portions of the scale attributed to different prepositions are 'compact', i.e. there is no language which would lexicalize part of the scale with 'on', then part of the scale by 'in', and then part of the scale by 'on' again. If there is overlapping at all (i.e. if a language uses two prepositions interchangeably for one or more categories) this always occurs in the section of the scale which is "transitional" i.e. between the categories in which the use of only one of the two prepositions is possible[5]. All this lead to the hypothesis that the ON-IN scale is not formed on a random basis, but that there must be an underlying 'gradient', something more powerful than 'linguistic arbitrariness' governing the formation and arrangement of its categories.

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[4] The study by Bowerman and Pederson is not about prepositions per se, but about the expression (or rather, semantic categorization) of 'ON' and 'IN' spatial relations in natural languages. Thus, apart from considering adpositions (as the lexical form most frequently used for the expression of the on-in relation) the authors also consider spatial nominals (used in, e.g., Japanese and Korean), and case endings (used, e.g., in Finnish).

[5] E.g. in Hindi, categories 5 – fixed attachment, and 6 – point-to-point-attachment, can be lexicalized by two prepositions: 'per' or 'me'. Categories before category 5 are lexicalized by 'per' only, categories from category seven – by 'me'.

Taking things a step further, from the observational into the explanatory realm, Bowerman assumes the position that although the categories could be universal, linguistic relativity might nevertheless be strongly at play when it comes to the distribution of (prelinguistic?) spatial concepts, i.e. the organization of the spatial lexicon. In fact, she seems to be suggesting that the universality of spatial conceptualization is difficult to reconcile with the diversity and relativity of the acquisition of spatial relational words (Bowerman, 1996).

Yet, the two should not necessarily be irreconcilable. Vandeloise (1998) offers hope for reconciliation between a set of spatial prelinguistic concepts and the view of linguistic relativity departing from two very important observations:

a) prototypical spatial configurations are not essentially *perceptual* (as is the case with color or other natural categories), or perhaps more exactly, they are not *locational* but rather *functional*[6];
b) related to a) – the connection between the different words used for lexicalising various portions of the 'in'-'on' scale will remain difficult to establish for as long as one looks at categories described in the scale as topological concepts (as Bowerman does). What should be done is observe the distribution of (even locative) prepositions by taking into account **dynamic factors**.

The dynamic factor which links containment and support is their **function of control** (in one-, two- or three- dimensions). This fact leads to the possibility of connecting various categories (e.g. 'containment', 'tight fit', 'attachment' etc.) into a hierarchy.

A hierarchy of prelinguistic concepts

Vandeloise's proposal (1998, p. 7) looks as follows:

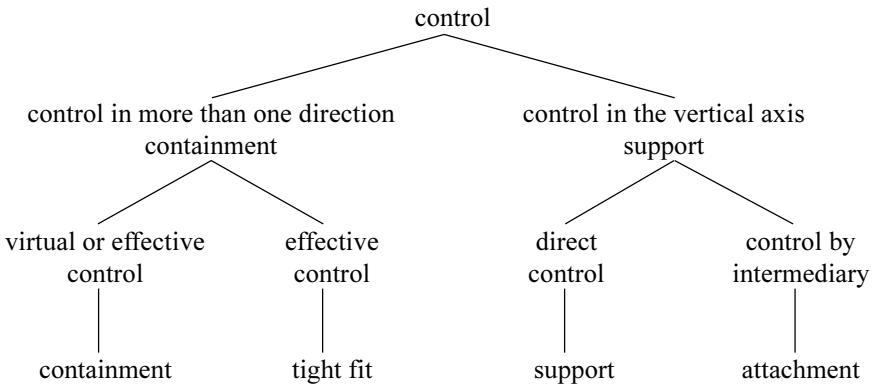

Figure 2. Vandeloise's hierarchy of prelinguistic concepts (source: Vandeloise, 1998, p. 7)

[6] Vandeloise (1998, p. 6) writes: 'Even though some of the traits involved in the characterization of relationships container / content and bearer / burden like surrounding, contact, or order in the vertical axis are perceptually registered, the fundamental trait of control involved in containment and in support can only be noticed when it fails to work. In other words, while the kinetic mechanics is always noticeable, static mechanics involved in support and containment escapes the attention as long as the balance is respected' (i.e. as long as the function of control - be it containing or supporting - is 'plus' +).

We are looking at an extremely perceptive and valuable proposal. It is, namely, the first analysis (at least to my knowledge) that tries to 'systematically' decompose the classic primitive candidates of 'containment' and 'support' in terms of dynamic forces, hence suggesting another potential trait which might be underlying categorial intentions, and also the only view suggesting a 'hierarchic' organization of prelinguistic concepts, this latter being of particular relevance for our analysis.

In fact, Bowerman's categories can now, following Vandeloise suggestions, be treated as complex primitives (referring to relationships, i.e. dynamic factors). They are called 'primitive' because they are seen as prelinguistic concepts, and 'complex' because they need to be described by a list of properties which behave like traits of family resemblance – see also Vandeloise, 1998, pp. 11-15).

Departing from this observation, in my Ph.D. research (Brala, 2000), I set out to try to understand the internal structure of these complex primitives that, at a lexical level, are mapped onto the word class of prepositions. After a thorough literature review, extensive crosslinguistic probing, and two experimental case studies, my conclusion is that Bowerman's categories of spatial relations are formed (and later organized into meaning clusters) on a combinatorial basis, out of universal, primitive, bodily based semantic features, shared between the human language faculty and other sub-systems of human cognition. For our concrete case, the range of 'on' – 'in' static spatial meanings can be explicated in terms of varying combinatorial patterns of different values (or features) within the following three domains[7]:

DIMENSIONALITY (a domain relative to the number of axes of G that are taken into consideration for the purposes of linguistic expression), yielding (for the purposes of explanatory needs of the range of prepositional usages under consideration) four features, i.e.: 1DIM (one-dimensional), 2DIM (two-dimensional), CIRCLE, and 3 DIM (three dimensional or 'containment proper'). Schematically, this looks as follows:

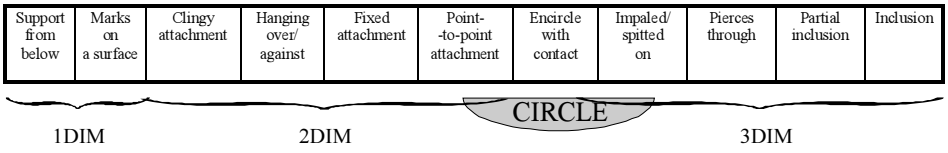

Figure 3. The'on'-'in' gradience scheme analyzed in terms of DIMENSIONALITY

[7] Following Lakoff's (1987, p. 93) proposal of the 'domain-of-experience-principle', the term 'domain' is here used to refer to basic patterns of neural activation which 'mean' without being propositional.

ORIENTATION (a domain which does not yield features but is based on the simple opposition between '+', i.e. 'present' vs. '-', i.e. 'absent'). 'Orientation present' refers to the 90° or the 180° angle with respect to the Earth's force of gravity (as exercized on the F). Thus the reading is: 'parallel or perpendicular to the force of gravity', when the domain is '+', or just 'inclined with angle irrelevant' when the domain has the '-' value[8]; and

ATTACHMENT – Conflated with boundedness – since their separation seemed to complicate the picture without any gains at the explanatory level – the domain of 'attachment' is best understood as the quantity of attachment between G and F that seems to be relevant for lexicalization. This domain seems to yield two features: ATTACHMENT (simple contact or attachment via man-made means such as screws or glue) and 1 SIDE BOUNDED ATTACHMENT.

These eight features now enable us to systematize the crosslinguistic variation in the 'on-in' range of spatial usages, as shown in Figure 3[9].

Support from below	Marks on a surface	Clingy attachment	Hanging over/ against	Fixed attachment	Point- -to-point attachment	Encircle with contact	Impaled/ spitted on	Pierces through	Partial inclusion	Inclusion
1DIM +OR. ATTCH	1DIM - OR. ATTCH	2DIM -OR ATTCH	2DIM + OR. ATTCH	2 DIM - OR. ATTCH	2 DIM + OR. 1SBATTCH	CIRCLE - OR ATTCH	3DIM F - OR. ATTCH.	3DIM G - OR. ATTCH.	3DIM - OR. 1SBATTCH	3DIM

Figure 4. The 'on'-'in' scale decomposed into cognitive, bodily basic features

The above division is interestingly paralleled by some results from studies of the brain, i.e. plenty of neurobiological evidence (Bloom et. al., 1996; Deacon, 1997).[10]

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[8] This domain bears an interesting relation to some recent studies in human perception (cf. e.g. Gregory, 1998) suggesting that human beings are **inclined** to perceptually adjust slightly leaning objects to 90 or 180 degrees).

[9] Which is exactly what we get if we first switch the places of the 'support branch' and the 'attachment branch' on the right hand-side of Vandeloise's tree (on the 'control in the vertical axis - support' side), and then switch the right and the left hand-side branch. Such a procedure enables us to come up with a tree that can be perfectly mapped onto Bowerman's ON- IN gradience scheme

[10] It has been shown that a) spatial information in the brain is modal (we seem to have representations or maps of motor space, haptic space, auditory space, body space, egocentric space, and allocentric space; cf. Bloom et. al., 1996). We note that the primitive, bodily based features proposed here as the bases of prepositional semantics, seem to mirror the cognitive multimodality of spatial perception (i.e. 'contact' would mirror haptic space, 'gravity' - body / motor space, and 'orientation' - motor / visual space); and b) neural information about space does not include (detailed) representations of objects (in space), i.e. there seems to be a clear (although not total) separation between the neurobiological 'what' and 'where' systems. With respect to this we might wish to recall a very insightful analysis by Landau and Jackendoff (1993), discussing the divisions between the *linguistic* 'what' and 'where' systems, as well as Talmy's (1983, p. 227) or Slobin's (1985) proposals suggesting that the 'what' system is expressed by open class words, whereas the 'where' system is lexicalized by the closed class portion of language.

A new reading of prepositions

Summing up the conclusions reached up to this point we stress the most important idea: the categories on the 'on'-'in' scale are not to be viewed as topological but rather functional configurations. From this perspective, the reading of prepositional semantics, i.e. the reading of the meaning of the relational lexical unit PREPOSITION runs as follows: in terms of which features does G ***control*** the location of F? The answer to this question represents the F'G' relation proper, i.e. the answer to this question determines the choice of the preposition.

This simple formula easily explains a certain perceptual differences in the construal of reality noted by Lindstromberg (2001, p.80) between 'frog in the grass', vs. 'frog on the grass'; for 'in' to be a possible lexical choice, G needs to control the location of F in terms of *voluminosity* (see below), whereas for the English 'on' G controls the location of F in one of its (G's) axes (usually the horizontal or the vertical). We thus have the perceptual 'adjustment' (or a specific conceptualization) of G on a particular occasion of speaking, whereby G's features that are triggered by the given preposition (i.e. the features forming that prepositional lexical pattern), gain prominence. Such a 'mapping' of features between lexical patterns and referents would apply to language as a system, including its metaphoric devices (see also Brala, 2002). The ultimate goal then is to try and discover a) the set of basic, atomic features that selectional functions can operate on, and b) discover the linguistic mechanisms that can be performed on these features (describe the relational functions).

Once we have stated the goals of a research outlined in this paper, the 'program' and the 'formula' proposed at the very beginning start making sense.

Systematizing the 'chaos' in prepositional usage

Tackling things one at the time, let us first take a look at the issue relative to the set of basic, primitive atomic features that can be selected on real or imaginary items we wish to talk about, as basis for establishing a relation that will be lexically coded by a preposition. We have seen that it is possible to construe a closed and hierarchically ordered set of cognitive units, which can assume semantic significance (semantic primitives or atomic meanings[11]). At the top level we have the function of control, which is then subdivided into further semantic features (ending up with features underlying each of the eleven categories in the ON-IN gradience scheme – see Figure 4). These features represent all the elements that the selectional functions *f* and *g* (proposed above) can select.

It is of crucial importance to note here that *f*-s and *g*-s are not to be confused with F'-s and G'-s. In fact, *f*-s and *g*-s are not parts of any concrete, real object, but rather selectional functions which have the potential to *select parts of real objects and assign them salience for the purpose of lexicalization*. On the other hand, F'-s and G'-s are the output of the selection function once it had operated on a concrete F and a

[11] The main problem, here, remains how to look for these elements, in view of the fact that they might be *sublexical units* (hence, the moment we try to express them in words we are at least one level higher - this point is further analyzed later in the text).

concrete G. Since F and G can be *anything* at all (real, fictional, still to be invented …), it follows that F'-s and G'-s are part of an unbounded set which cannot be cognitively predisposed. Let us clarify this important point by providing an example:

If we take the sentence "The picture is on wall" we can now analyse the preposition "on" as acting in the following way:

1) the function *f* selects the back surface of the picture (this highlighted part become F' – while the whole object picture is F)
2) the function g selects the front surface of the wall (where the wall is G and the highlighted, frontal surface selected by *f* becomes G')
3) "on" is activated for the relation F'G' , since the relation established between the two highlighted portions falls, in English, within the schema of "on" (see Figure 1)

It should be clear from this example that, since *any* thing (or person, or concept) could potentially be taken as F or G, F's and G's *cannot* be part of a cognitively predisposed set. Only elements such as axes, circles, control, containment, support or attachment (tight fit), as part of a closed set of primitive traits and universal functions i.e. relations established between F's and G's, could be cognitively predisposed.

Language specificity: causes and consequences

We have seen in this paper that natural languages that exploit the word class of prepositions, differ in the way they use prepositions. I now propose that this crosslinguistic variation, or rather language specificity, is due to the fact that languages associate words with prelinguistic concepts at different levels of generality, i.e. *f*-s and *g*-s do not operate at the same level in all languages.

The most obvious example is the one we tackled at the beginning of this section, i.e. the fact that the Spanish and Portuguese prepositional systems provide only one label for the whole range of "in"-'on' usages, while e.g. Dutch and German each need three lexical items for the same range. We could say that, when it comes to prepositions, Spanish and Portuguese operate at a higher level (i.e. at the level of "control" – see Figure 2.) than Dutch and German (which operate at lower levels).

In other words, languages seem to differ as far as categorial combinational patterns are concerned in terms of the different F's and / or G's they select in order to 'run' the 'prepositional programme' for the same FG objective (not linguistic) relational situation. Two further points follow:

1) a given language can choose to 'activate' for a certain FG relational situation a different F' and / or G' than another language (hence, ending up with a different componential pattern, i.e. a different preposition);

A good example of this is provided by the difference between the English use of "on" with "Bob is on TV", and the Italian use of "in" for lexicalizing the same situation. In fact, while the part of the television set that is "activated" in English is the external part of the screen, in Italian it is the internal part of the TV set, i.e. the internal part of the screen.

2) a given language cannot activate at all certain F'G'-s, in that the specific conceptual representation (e.g. 'tight fit' between F' and G', or sensitivity to F's shape) has not been 'activated' as a semantic component contributing to prepositional meaning in that given language.

Here, a number of examples can be found in Choi and Bowerman's (1991) contrastive analysis of English and Korean, where Korean strongly reacts to the feature "tight fit" and element to which the English language seems to be totally insensitive[12]. Another example is represented by the absence, in Chinese, of lexical markers expressing the concept of countability.

As the latter part of this study deals very closely with the issues of language and thought, we cannot conclude without posing a question that has recently been revisited by many researchers: does language specificity or rather the nature of the language we speak influence our thought processes – the way we think (linguistic relativity) or perhaps even the way we are capable of thinking (linguistic determinism)?

In a nutshell, my answer is that the ideas proposed in this paper have nothing to do with radical Whorfianism as traditionally envisaged. The fact that, let us say, English speakers, communicate in a language which, for lexical purposes, does not "react" to certain spatial relations such as the aforementioned 'tight fit' as it does to critical semantic distinctions, is *not to say* that these speakers *cannot* discriminate (or, for that matter, cannot be articulate about) such spatial relations (for evidence see Brala, 2000). The only extent to which I would allow a certain degree of linguistic relativity, not in the Whorfian but rather in Slobin's (1996) sense[13] – where we envisage a special form of thought which is mobilized for communication, i.e. where the contents of our mind are encountered in a special, language specific way when they are being accessed for lexical use – is related to the following two possibilities:

a) while speaking their own language, speakers do not attend to those relations or distinctions which, in the prepositional system of that language, do not constitute a component within the pattern underlying prepositional (but not only prepositional) meaning. This changes when such distinctions are specifically pointed out to them;
b) categorization patterns operating in their own language might seem very 'natural' to the speakers of that language. This 'feeling of naturalness' might make it very difficult for (certain) patterns to be 'unlearnt', hence making the new categorization patterns (operating in other languages) difficult to master. This point is closely linked to the basic principles of language economy.

Two things need to be stressed here: one in reference to point a), one in reference to b).

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[12] Note that this claim, although true of prepositions, might be too strong for the English language in general. Suffice it to think of verbs such as «squeeze» (cf. "squeeze" vs. "enter" in "they entered the metro" vs. "they squeezed *into* the metro".)

[13] The basic idea is that Slobin replaces the static 'language – thought' binomial, by a more dynamic (and malleable) 'thinking and speaking' binomial. Linguistic relativity would be at issue in the actual process of 'thinking for speaking', i.e. 'on-line', in the process of speaking (cf. Slobin, 1996, pp. 76-77).

As concerns a), it should be noted that, when it comes to first language acquisition, children in all languages approach the world and the language learning game by attending to a **commonly shared inventory of perceptions**. However, there seems to be abundant evidence for the fact that the very moment they start using prepositions, children distinguish among very 'language specific' relational elements. Children's earliest prepositions are, as it were, 'tailored' according to their language's specific model. But then again, we should be very careful when we talk about language specificity, in that the fact that children do not manifest certain relational distinctions *linguistically* (i.e. 'for language', when they are asked to speak about these relations) does *not* mean that their conceptualization of such elements differs, in any way, from those of children speaking a language in which a given relation functions as a trait of semantic differentiation. The fact that children might learn (or activate) certain 'potentials of conceptualization' for a language, does not mean that the elements available (to be conceptualized) that have not been activated for language (and, hence, cannot be expressed, at least in and for the child's 'early' language) are not active when it comes to other mental processes. We are only talking about what is manifest 'on-line', in the process of encoding / decoding language.

As concerns 'naturalness' or (un)learnability of categorization patterns (point b) above), I would hypothesize that certain words might be more 'componential' (or, should we say, more 'componentially flexible') than others; while there is little space for speaker's (or language) subjectivity when it comes to e.g. labelling objects, naming relations, on the other hand, seems to allow some space for subjectivity as far as representation, i.e. perspective taking is concerned. Here, 'perspective taking' is intended as the process of emphasizing certain aspects of the world – be it physical and / or contextual – rather than others.

There are some proposals in the literature which seem to be in line with this latter hypothesis. Gentner (1982) argues that object concepts are cognitively more 'given' whereas relational concepts are more imposed by the structure of language, and Bowerman (1996), in a similar fashion, states that some conceptual domains may be more susceptible to linguistic influence than others. Further support for this hypothesis is provided by Slobin's (1985) position related to (un)boundedness of closed vs. open categories, briefly mentioned in the first part of this paper. All this might lead us to conclude that the 'OBJECT' (or Jackendoff's 1996 'THING') slot in the vocabulary gets 'filled' with a less componential content than e.g. the 'PREPOSITION' slot (i.e. '+ RELATION'). A more componential pattern could then "yield" a greater number of perspectives.

Furthermore, the fact that prepositions are 'relational words' by definition, and as a closed-class highly componential, might be a hint as to why prepositions seem to be extremely difficult to master in a foreign language (e.g. claims in Lindstromberg, 1997). On the other hand, as Cooper (1968) correctly points out, (adult) native speakers, who often make all kinds of syntactic and semantic errors, never seem to use prepositions in prepositional phrases incorrectly. What could be "natural" to a native speaker, could be counterintuitive to a second language learner coming from a first language exhibiting a different combinatorial pattern within the prepositional system.

To summarize, seen from the perspective reached at this point, prepositions seem to represent a mapping between, on the one hand, a linguistically contingent set of visual (and other) percepts through which we register the world around us, and a universal (biologically predetermined, inborn?) set of perceptual units[14] i.e. semantic conceptual primitives or atomic meanings, on the other.

Just exactly *how* this mapping happens is still unknown, just as it remains unknown in how far first language specificity interferes with second language learning (or, for that matter, the very mechanisms which cause these interferences, or, at an even more speculative level, whether the triggering of these 'perceptual units' for language, influences in any way the availability or nature of these perceptual units for non-linguistic mental processes). What we now need in order to face these intriguing issues is a series of controlled crosslinguistic studies of the possible effects of (spatial) language on (spatial) cognition. The task is important as its results bear answers that most definitely represent the key to the workings of the human language faculty.

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