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Space in Cognitive Linguistics

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Abstract. Cognitive linguistics brought about changes starting from reshaping our approach to metaphors. Our bodily experience in space serves as the basis for the majority of metaphorical expressions and the present article focuses on some of the English, Romanian and Hungarian prepositions/verbal prefixes, such as *over, peste, túl, végig*. Their basic meaning(s) can be more easily understood resorting to basic spatial relationships, such as *up, down, beyond a certain point.* The conclusion presents various levels of metaphorisation and further possibilities regarding spatial exploration of metaphors.

Keywords: perception, body, space, time, mental spaces

1. Introduction

Many people would agree that one of the most complicated things is to study human experience. However, the development of cognitive linguistics offered new and interesting approaches, among which human experience deriving from the surrounding space must be mentioned.

The *human experience* – according to scientists – comes from the observation of the environment, an environment which is rather subjective, as "we are first and foremost spatial and visual creatures" and "there is no such thing as a neutral, disembodied, omniscient, or uninvolved observer. An observer's experience is enabled, shaped, and ineluctably constrained by its biological endowment"

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(Langacker 1999a: 203). Before arguing that physical experience is but one of the many possibilities of experience, let us focus on Lakoff and Johnson's view:

> We are not claiming that physical experience is in any way more basic than other kinds of experience, whether emotional, mental, cultural or whatever. All of these experiences may be just as basic as physical experiences. Rather, what we are claiming about grounding is that we typically conceptualize the non-physical in terms of the physical…that is, we conceptualize the less clearly delineated in terms of more clearly delineated. (Lakoff and Johnson 1980: 59)

We may conclude that the notion of (physical) perception is vital for human beings, and Frith also supports this idea, stating that "everything in the world is placed in just two categories: nice or nasty. But we do not experience the physical world in terms of such crude categories"; furthermore, one of his basic arguments is that "Our Brain Creates an Effortless Perception of the Physical World", so perception "is not a problem" (Frith 2007: 111). However, there is a problem, as Frith correctly observes, that the perception of the brain is in fact "an illusion created by our brains". Our brain gathers information from our senses, leading to the concept of the ideal Bayesian observer, thus "weak evidence is ignored; strong evidence is emphasized" (Frith 2007: 124). Frith goes on explaining the role of the Sun casting light and creating shadows (shaping objects) leading to false perceptions, which are "fantasies that coincide with reality" (Frith 2007: 134).

The next logical step is to check the relationship of *experience* and *motion*. Frith states that in case no sensory signals are available, then our brain fills in the missing information (Frith 2007: 135). Even infants spend a lot of time observing things and people in motion, and eventually "they come to understand how the world works at a physical level by grasping things, picking them up, dropping them, pulling and pushing them, hitting them, and throwing them, always watching how the object responds".[1] Thus infants understand spatial relationships and concepts of motion before they are able to use words to describe them, leading us to the recognition that "human beings naturally use space, motion, and the senses as domains for conceptually structuring less concrete, even entirely abstract aspects of our experience".[2]

As perception and motion are interrelated, it is worth discussing the concept of an object moving through space. Langacker mentions that in this case mental scanning through the spatial domain is involved (Langacker 1999a: 172); Ribout also emphasises the importance of movement, stating that the psychological notion

[1] http://www.chrisdb.me.uk/wiki/doku.php?id=cognitive_linguistics#lesson_3space_landmarks_and_trajectors
[2] Ibid.

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met with the majority of relationships is that of movement. He goes on and concludes that all relationships expressed by prepositions can be reduced to stability and movement in space and time (Ribout 2002: 85). According to Frith, our brain links perception and action, and our body helps us learn about the world: "We do things to the world with our bodies and see what happens" (Frith 2007: 130). Nevertheless, our physical body in the surrounding space is the primal source of information, a body which "necessarily has physical viewpoint" and

> human bodies share structure which ensures that they can see forwards but not backwards, can access objects in front of them better than ones in back of them, can move forwards better than backwards, and of course are experiencing a gravitic environment in which we are normally able to stand on our feet rather than our heads (Sweetser 2007: 216).

2. Description of space

At this point we should discuss the *conception of space*, a focal element in cognitive linguistics, relying on Langacker's seminal work:

> the notion [BODY] (so far as shape is concerned) is a configuration in three-dimensional space ... it would appear more promising to regard the conception of space (either two- or three-dimensional) as a basic field of representation grounded in genetically determined physical properties of the human organism and constituting an intrinsic part of our inborn cognitive apparatus (Langacker 1987: 148).

Regier briefly mentions that the human conception of space appears to structure other parts of the conceptual system through spatial metaphors, as the human experience of space is constrained by the nature of the human perceptual system (Regier 1996: 4). Lakoff and Johnson, similarly claim: "The structure of our spatial concepts emerges from our constant spatial experience, that is, our interaction with the physical environment", although Cormac states that even the experiences of spatial orientation involve cultural presuppositions, which means that one cannot have a purely physical as opposed to cultural experience (Cormac 1985: 66). However, Edelman (2007: 429) supports the idea that space should serve as a natural scaffolding for supporting structured representations, whose roots go back to the ancient mnemonic method of loci.[3] Thus we can reach a basic conclusion, namely that the source domain serves as the background for structuring and understanding the target domain, an idea supported by Langacker (1999a:

[3] See, for instance, http://en.wikipedia.org/wiki/Method_of_loci.

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208). So SPACE, TIME, MATERIAL/SUBSTANCE and ENERGY are connected within the Greek philosophical system with air, water, earth and fire,[4] as Langacker mentions, and he goes on by highlighting another aspect of conception: people are more concerned with what they are conceiving than in the particular way they are doing that (Langacker 1999b: 46).

Thus we can turn our attention to the conceived space, together with its components, forming a whole system with landmark (LM), trajectory (TR), source, path and goal, originally deriving from Langacker, then taken over by Lakoff & Johnson (Lakoff and Johnson 1980) and many others. Our effort to follow the Lakoffian findings in describing a part of language in terms of spatial concepts is merely one of the possibilities to have a view upon language. A spatial account of abstract conceptual categories helps us in understanding, and the combination of objective space and human (subjective mind) in fact (re)creates the world. But in this case, we have to take into account SPACE, which (more or less similarly to number and time) is first perceived before it is conceptualised (we operate with terms like *long, short, high, low, deep, close, distant, left,* and *right*). Relatively, it was not long ago (the foundation of geometry) that this rather long and fuzzy set of characteristics was simplified and rationalised by terms like *height, width, profundity, distance* and *position* (Ribout 2002: 145).

Vision – although not exclusively – constitutes a central means of apprehending space (Langacker 1999a: 204-207) and a spatial vantage point is offered by the speaker's location, "more abstractly, the time of speaking is a temporal vantage point". We should mention that there are languages with absolute spatial system (Sweetser 2007: 219)[5] and these speakers do not use their bodies as origos for everyday spatial representation as pervasively as users of relative spatial language systems. For instance, in an absolute spatial system the utterance '*The house is south of the bush.*' would sound "natural", so the speaker's vantage point does not influence the statement, leading to less egocentric spatialisation of time, as well, at the metaphoric level. Among others, Talmy describes this as "located object" (also known as target or figure) versus "reference object" (also known as a landmark or relatum), arguing that properties of the objects in the spatial world are associated with these two roles, with reference objects typically more stable and larger than located objects, which is consistent with the idea that the location of the reference object is presumed, known or easily found (Carlson and Hill 2007).

Space is not absolute, and Regier observes that whatever the range of cross-linguistic variation in spatial semantic structure, that variation does not in any way correspond to a conceptual difference across languages. There is a universally shared

[4] Cf. passage of time understood metaphorically in terms of flowing water.

[5] For instance, the Australian Guugu Yimithirr language is absolute, always using absolute reference points, namely north, east, south and west, so experience constrains language (Regier 1996).

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human conception of space derived from pre-linguistic experience, and although different languages may pick up on different aspects of that shared conception, no language can ever encode something that is conceptually alien to speakers of other languages. Gopnik, cited by Regier, adds that there cannot be semantic universals because children's concepts change profoundly, in radical ways, and simple spatial terms actually mean something quite different to children than to adults. Evans and Green – similarly to Regier – also mention Guugu Yimithirr:

> Guugu Yimithirr exclusively employs a field-based frame of reference for locating entities in space. An important consequence of this is that speakers of Guugu Yimithirr must be able to dead-reckon their location with respect to the cardinal points of their system, wherever they are in space. (Evans and Green 2006: 100)

Another evergreen topic connected to the aforementioned ones is the dichotomy of body and mind, a problem discussed by Chomsky (1988), stating that "the mind-body problem can be posed sensibly only insofar as we have a definite conception of body", but the Cartesian conception of body in terms of their contact mechanics would not suffice and neither would the British Neoplatonists or the twentieth-century Gestalt psychology. Chomsky concludes that "there is no clear and definite concept of body". The problem is rediscussed by Ryle:

> A person therefore lives through two collateral histories, one consisting of what happens in and to his body, the other consisting of what happens in and to his mind. The first is public, the second private. The events in the first history are events in the physical world; those in the second are events in the mental world... Minds are things, but different sorts of things from bodies; mental processes are causes and effects, but different sorts of causes and effects from bodily movements. (Ryle 1949)

Under normal circumstances body comes first, but occasionally it may happen that MIND precedes BODY. To illustrate this, we would like to mention the fragment from *Avatar,* when the protagonist is given a new body. The film presents this feeling successfully,[6] and we have to accept that hardly can language describe the feeling when after the wheelchairs toes delve in the earth for the first time.

Nevertheless, concepts about language are ardently debated within cognitive linguistics; at this point we would only like to mention Miller's approach: "a language is learnable ... speakers can understand novel utterances, without explicit training in their use" (Miller 1999: 148).

[6] http://www.youtube.com/watch?v=1QEFrI-D_3c&feature=related

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After human perception, body, motion and space, the next keyword may be *time*, which is often mentioned connected to space.

3. SPACE and TIME

According to cognitive linguists, SPACE and TIME can be regarded as the two most fundamental domains of human experience; in this respect see, for instance, Evans & Green (2006: 68). They propose a basic difference between TIME and SPACE: "while TIME has the property of progression, SPACE is static (Evans & Green 2006: 515). Thus the concept of TIME is described in terms of motion, from which results that expressions including time are all metaphoric in nature. Dominte (1970) mentions main and secondary prepositions in space and time, stating that in space we have position (state) and movement, whereas in time we have moment and period (length), adding that constructions with time follow the model of spatial ones, never vice versa,[7] quoting Pottier (1962); thus time can be described in terms of space, that is the "spatialisation of time", to which Gibbs (1994: 75) adds that certain concepts are impossible to describe non-metaphorically (e.g. TIME with recourse to SPACE and MOTION).

The relationship between SPACE and culture is another interesting topic in cognitive linguistics. For instance, Cormac formulates the question: if some spatial concepts vary from culture to culture, then how can we have any certainty that spatial concepts emerge directly? Metaphoric expressions depend on the context of the hearer for their interpretation, and the context can vary from culture to culture (Cormac 1985: 70); however, Lakoff later proves that variations from culture to culture are less important than similarities.

At this point we seem to reiterate the idea that physical experience is central, though we cannot say that it is more basic than other (cf. emotions or time), although at a given point Langacker considers time more important than space, as the former is needed to perceive changes in the latter (motion); the next section presents this reordering.

4. TIME and SPACE

Ribout highlights the diachronic aspect of time: it was often personified and even worshipped in many religions (Ribout 2002: 165–166), an honour never shared by space. Langacker replenishes the fire:

[7] In original: "Construcțiile temporale ... iau ca model pe cele spațiale, niciodată invers." (Dominte 1970: 270)

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> The fact that we often conceive and speak of time in spatial terms only shows the utility of such metaphor for higher-level conceptualization. It does not imply that the experience of time is reducible to a purely spatial one; if anything, the opposite would seem more plausible. (Langacker 1987: 148–149)

Langacker even accepts Givón's (Givón 1979) perspective, according to which "time is in some sense more fundamental than space: the conception of spatial relationships involves scanning, which requires processing time, and our notions of spatial extension are intimately bound up with time-extended physical actions". However, "some kind of inborn field of spatial representation" is also left, as human sensory capacities are "responsible" for a variety of basic domains (visual system, taste, smell, touch), concluding that:

> we cannot reasonably hope, for example, to explicate a taste sensation in terms of space, time in terms of color, smells in terms of pitch, kinaesthetic sensations in terms of temperature, or pressure in terms of emotion. (idem.)

5. SPACE and prepositions

Brugman's seminal work on prepositions (Brugman 1988) started a revolution within cognitive linguistics, which came to complete (and not necessarily compete) generative linguistics (Imre 2010a). The study of *over* offered the possibility to analyse all the "marginal" morphological categories starting from perception, world-knowledge, image schema and prototype theory. As we analysed the rather intricate system of prepositions, we can conclude that space serves as the scaffolding in their understanding, and more and more cases within a category come up, our brain/knowledge tries to "fit it into" the previous schema. Frith supports this idea:

> A system that constructs models of the outside world in this way will use any information it can get to help it make better models. No preference is given to vision or sound or touch as long as they are informative. And the system will make predictions about how the signals coming from all the senses will change when I act on the world. (Frith 2007: 127)

We suppose – for instance – that the linguistic modelling of prepositions in various languages (*over* in English, *peste* in Romanian or *át* in Hungarian) is similar: the moment we mention any of these items, either starting with a verb (verbal preposition, verbal prefix) or without (preposition), our brain tries to create an acceptable space for that: *jump over* (En), *sare peste* (Ro), *átugrik* (Hu), probably starting from the ICM/image schema, as our brain contains many maps and models to make predictions and simulate actions (Frith). For instance, if the

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trajectory (TR) touches the landmark (LM) while in motion, we can say that there is an *on* relationship between the two, but if there is some space between the two, the relationship changes into *over/above.* The latter can be further differentiated: if distance is viewed relatively small, then we are likely to choose *above*, but if it is huge, *over* is highly preferred in a canonical view[8] (Imre 2010a).

The majority of prepositions fall into spatial and temporal categories, but Cuniță – interestingly – splits the main meanings of the Romanian *peste* into three categories (Cuniță 1999), expressing spatial, temporal and quantitative relations. Moreover, she observes that in some spatial relations there is no contact between TR and LM; we can add that sometimes the lack of contact is *minimal*, so the moving object seems to preserve a minimal distance in order to avoid contact (Imre 2009: 726):

(1) *A aruncat un bulgăre peste acoperiş.*
'He threw a snowball over the roof.'

(2) *A sărit peste groapă.*
'He jumped over the hole.'

However, if contact is established, especially in combination with verbs indicating movement (*run, pass*), then *peste* can be translated into English with *across* instead of *over*, and thus we get to Vasiliu's description (Vasiliu 1961). This only proves the idea developed by Eleanor Rosch, namely prototype theory, which relies on spatial semantics (Rosch 1975). However, TR and LM are usually included schematically, as an open slot (Langacker 1986: 8). The most important function of a preposition is to establish connection (Guțu Romalo 2005: 607) and as such, it is part of a structure with three elements, being placed between two autonomous lexical terms. For instance, with the help of the prototypical spatial case, we could describe 10 different variants for the Romanian *deasupra* (Imre 2010b), but in case of the Hungarian *át*, we detected at least 6 major senses, and only one of them had around 30 less prototypical possibilities deriving from the central sense (Imre 2010a), detailed below.

After having discussed the major senses of *over*, we realised that the complete picture includes *above, across* and *through* as well. Naturally, these English prepositions have their equivalents in Romanian and Hungarian as well, so we analysed *prin* and *peste* (Romanian), *át, keresztül, fölött/felett* and *felül* (Hungarian).

The central sense of *prin* was subdivided into eight more types:

[8] As an example, remember Israel Kamakawiwo'ole's famous song entitled *Somewhere over the rainbow.*

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PRIN through obstacle:
Eroul trece prin foc şi sabie. 'The hero goes through fire and sword.'
(The hero goes through thick and thin.)
PRIN through aperture:
A scăpat ca prin urechile acului. 'He escaped as if through the pin-point.'
(He had a narrow escape.)
PRIN create aperture:
A scăpat prin uşa din dos. 'He escaped through the back door.'
PRIN inside:
Se plimbă ca vodă prin lobodă. 'He is walking as a prince through the orache.'
(He is peacocking around.)
PRIN through inside:
I-a trăsnit prin minte că ea a avut dreptate. 'It struck through his mind that she was right.'
PRIN instrumental:
Se răspândeşte prin viu grai. 'It spreads by word of mouth.'
PRIN proximity:
Turcii năvălesc (*de*) *prin toate părţile.* 'The Turks are invading from everywhere.'
PRIN time:
Se vor căsători prin luna mai. 'They will get married (somewhere) around/in May.'

The central sense of *peste* offered four more possibilities:

PESTE over/above (the obstacle may be vertical or horizontal, either in contact or not with the moving object and even 'upward'):
L-a aruncat peste bord. 'He threw it over board.' (He gave up using it.)
Erau cadavre peste cadavre. 'There were corpses one over the other.' (The corpses were piled up.)
PESTE excess:
Obrăznicia ta e peste măsură. 'You are impudent beyond measure.'
PESTE (partial) cover:
A trecut cu buretele peste incidentul de ieri. 'He passed the sponge over yesterday's incident.'
PESTE time:
S-a făcut matur peste noapte. 'He grew up overnight.'

The very complex Hungarian *át* initially was split into six major categories, but further subdivision was also needed. However, due to the constraints of this article, only the six major categories are presented below:

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ÁT through (virtual) boundary/obstacle:
Áthatol a falon. 'It penetrates (through) the wall.'
ÁT through aperture:
Átnéz a kulcslyukon. 'He peeps through the key-hole.'
ÁT over (above/across):
A gólya átszállt a tó fölött. 'The stork flew over the lake.'
ÁT change:
Átalakítja a kormányt. 'He changes the cabinet.'
ÁT from-to:
Az árok egyik partjáról átbeszélnek a másikra. 'They are talking over the ditch.'
ÁT (partial) cover:
A vadszőlő átfonja a kerítést. 'The ampelopsis enwreathes the fence.'

The Hungarian *keresztül* seems to be a partial synonym to *át* (*through*), but at a closer look we were able to identify eight distinct categories:

KERESZTÜL through:
Pista sok bajon ment keresztül. 'Steve went through many hardships.'
KERESZTÜL through aperture:
Keresztülnéz a lőrésen. 'He is looking through the oillet.'
KERESZTÜL over-above:
Keresztülhord az ágyú a hegyen. 'The cannon carries across the mountain.'
KERESZTÜL through/across horizontal:
Keresztülvágja magát mindenen. 'He cuts his way through/across everything.'
KERESZTÜL again:
Keresztüljárta a hideg. 'The cold went through him over and over again.' (He was taken in by the cold.)
KERESZTÜL block:
Tüskék keresztülfekszik útját. 'Thorns thwart his advancement.'
KERESZTÜL time:
Évszázadokon keresztül élt a tévhit. 'People were under the delusion for centuries.'
KERESZTÜL instrumental:
A sajtón keresztül értesült a történtekről. 'He gathered from the papers what happened.'

Much fewer cases were found regarding *fölött/felett* (above level/amount, time, cover), whereas in case of *felül* it is worth considering its different grammatical functions: adverb, postposition and preverb (verbal prefix).

During mapping various senses we could detect metaphorical extensions which "communicate" with each other without the mediating central senses (e.g. in

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case of *through*). We have also realised that *beyond* will further extend the meaning of *over* in all three languages, bringing into picture further prepositions or verbal prefixes. Finally, it is our firm belief that results of cognitive linguistics may be used in translation studies as well; it is really fascinating how prepositions are preserved, changed, or they completely disappear in the act of translation.

6. Mental SPACE

Geeraerts mentions twelve fundamental parts of cognitive linguistics: Cognitive Grammar, grammatical construal, radial network, prototype theory, schematic network, conceptual metaphor, image schema, metonymy, mental spaces, frame semantics, construction grammar, and usage-based linguistics (Geeraerts, Dirven, & Taylor 2006: 2). The list contains *mental spaces*, which was discussed by Fauconnier & Turner extensively (2003).

In their framework four spaces are mentioned: a source input space, a target input space, a blend between both, and a so-called generic space (Geeraerts 2006: 14). Thus, the mapping between the two input spaces creates a blended space, whereas the generic space contains the common structure of the input spaces. Thus theoretical/unreal situations are easily created (including metaphors as well), as we can imagine new situations, such possible worlds, in which Homo neanderthalensis can challenge Homo sapiens, without thinking too much about the possibility of their meeting, and focusing on the type of challenge. The present is blended with the past, so the conceptual process is metaphorical. Fauconnier & Turner further warn us that the process is in fact central, uniform, and pervasive, not an exotic blend or marginal manifestations of meaning. They explain:

> Mental spaces are small conceptual packets constructed as we think and talk, for purposes of local understanding and action. Mental spaces are ... interconnected, and can be modified as thought and discourse unfold. ... Blending is an operation that takes place over conceptual integrations networks. Conceptual integration networks often involve many mental spaces. Blending can occur at many different sites in the network. A blended space can have multiple input spaces. Blending is a dynamic process that can happen repeatedly in the same network. (Fauconnier & Turner 1998: 305)

It is important to remember that even if the blend has been formed, the initial spaces do not disappear, as "the blend is valuable only because it is connected conceptually to the inputs" (Fauconnier & Turner 1998), and there is no danger of confusing the blend with reality. The final aim is to create an effect at "human scale" of direct perception with few participants and immediate bodily effect.

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At this point we get back to our starting point (cf. human experience, body, surrounding environment), thus we can draw the conclusion that "blending is a basic cognitive operation" partially responsible for human creativity, as they develop through composition, completion, and elaboration. Thus we can agree with Fauconnier when observing that "spaces are built up from many sources. One of these is the set of conceptual domains we already know about", and humans never stop creating newer mental spaces as they are placed dynamically in working memory, even being entrenched in long-term memory (Fauconnier 2007: 351). He mentions "space builders", i.e. linguistic elements that create *possibility*: prepositions, adverbials, conjunctions, clauses, subject-verb complexes (*think, believe*), but names, tenses, moods, presuppositional constructions can also function as space builders; possible connectors between these spaces is the copula and other copulative verbs: *be, become, remain* (Fauconnier 2007: 371–372).

7. Conclusions

Similarly to things that are usually taken for granted, it is very problematic to discuss *space as such*. Consequently we have tried to offer a *possible* view on SPACE in cognitive linguistics (as the title suggests) by trying to unveil the sources of human perception, the concept of body, the relationship of space and time, offering a glimpse from the extensive studies on prepositions as well, concluding with blended mental SPACES. We can only hope that it was worth the effort.

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