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The Meaning of English Spatial Prepositions — Sense or Reference? —

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The aim of this article is twofold. The first is to illustrate that the prototype approach to the meaning of English spatial prepositions, not to mention componential analysis, is not doing very well. Close examination of the prototype analysis of *over* by G. Lakoff reveals a discrepancy between theory and practice. Whereas the theory denounces the two-valued Aristotelian logic, thereby emphasizing the fuzziness of human cognition, the practice turns out to be just another version of classical, formal semantics which is akin to componential analysis. The components are stipulated and grouped together in an arbitrary way, leaving room for equally well-motivated alternative accounts. Worse yet, this prototype/componential analysis fails to produce any coherent picture as the preposition's meaning. The truth is, no account that tries to capture the meaning of spatial prepositions by means of *sense* as defined by G. Frege will serve the purpose.

The second aim of this article is to argue that English spatial prepositions including *over* have no sense but only reference. They refer to the action of walking. In fact, walking is a family of actions, each of which is designated by different spatial prepositions. This is why the meanings of spatial prepositions are best understood by imagining a situation or a relation in space. They refer to the action of walking, in the same way as a proper name refers to a person.

1. Approaches to English spatial prepositions

1.1. G. Lakoff's account of *over*

The account of the meaning of *over* presented in G. Lakoff (1987) illustrates how the concept of *radial structure* is central to his version of prototype theory, in the same way as *necessary and sufficient* is central to componential analysis: both are ideals the two competing theories aim at but never really achieve. Between the two theories, prototype theory suffers from a more serious theoretical flaw. An attempt to define the word meaning in terms of explicit links and structures undermines the foundation of prototype theory because such an attempt is theoretically incompatible with prototype theory.

Prototype theory, in its earliest version stipulated by E. Rosch (1973), claimed that the meaning of a category is a gestalt image which is created by the best example, some good examples, and peripheral examples of the category. The category *bird*, for example, has robins as the best example, and sparrows, larks, doves, etc. as good examples. The best example is the prototype. The best and the good together make up the *core meaning* of the category. The core meaning and the peripheral examples form an internal structure, which then creates a gestalt image. This is how a speaker comes to possess a fuzzy outline of an image as the category's meaning. The image is important. The gestalt, the outline of the whole, precedes the internal parts.

When Rosche said *internal structure*, she did not mean a clear-cut, principled, well-defined radial structure like the one Lakoff is trying to establish. The birds do not form a radial structure. Nor do vegetables or furniture. Prototype theory was immensely different from its rival, componential analysis. It was R.M.W. Dixon that gave Lakoff a push toward a more rigid, formalistic account of meaning.

In the explanation below, the underlined parts show my own interpretation or naming.

Dixon (1982) showed how in the Dyirbal language in Australia the membership of some categories are determined because of their core meanings and experientially-based links, thus creating a radial structure in a principled way. The category *balan*, for example, includes women, fire,

and dangerous things, hence the title of his 1987 book: *Women, Fire, and Dangerous things*. In this book, Lakoff slightly modifies Dixon and stipulates women as the unique core member. The core is linked with the sun, most birds, and crickets, because in their myth these are believed to be the moon's wife, spirits of dead human females, and old ladies, respectively. This is the mythic link. This link stands strong against the challenge of time and change in the people's life style. The sun is in turn linked with fire, light, stars, fireflies, and anything that burns, which are then linked with water, rivers, and swamps, things that extinguish fire. These are both semantic links. (Lakoff himself does not give a clear explanation.)

The danger link is also important in category formation in Dyirbal. Stone fish and other harmful fishes are put into this category to make them stand out from the other fish, which belongs to another category, *bayi*. Stinging nettles and stinging trees are also marked by calling them by this category, as opposed to the other plants, which belong to a third category, *balan*. These marked members naturally belong to *balan* because its core, woman, is also a marked human being; *balan* is a marked category. The core, the well-motivated links, and the peripheral members create a beautiful radial structure. As Lakoff says, Dixon's achievement is remarkable (p. 95).

The unmarked member of human beings, men, forms the core of *bayi*. This category also has mythic, danger, semantic, and domain-of-experience links. It also presents a radial structure. Hawks are included in this category through a danger link. The other birds belong to *balan* because Dyirbal people's myth says that birds are human females. The links are correlated.

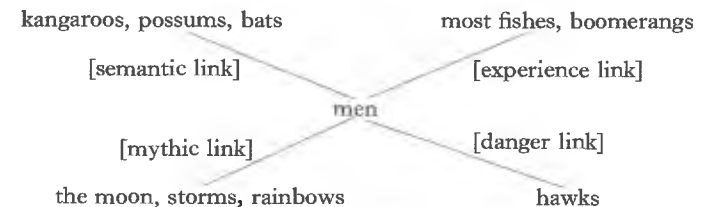


Figure 1 *bayi*: men, kangaroos, the moon, most fishes, hawks

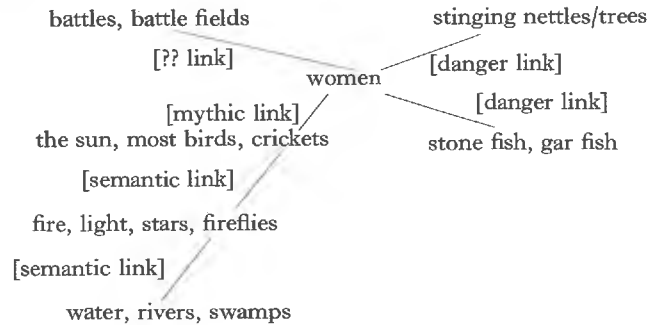


Figure 2 *balan*: women, the sun, fire, water, stinging nettles, stone fish

In his analysis of *over*, G. Lakoff aimed and failed to establish a radial structure like the ones in Figures 1 and 2. According to him, the core meaning of *over* is represented in sentences like the following.

- (1)-a The bird flew over the yard.
 -b Sam drove over the bridge.
 -c Sam walked over the hill.
 -d Sam climbed over the wall.
 -e The dog jumped over the fence
 -f Sausalito is over the bridge.
 -g Sam was passed over for promotion.

These sentences cluster around the following features to create the core image schema. Image schema is a sense; it is a bundle of features like the following (pp. 420–425).

- ① The landmark (LM) extends vertically or horizontally
- ② LM and the trajector (TR) have contact or no contact
- ③ TR moves above LM, or the path begins and ends on the ground
- ④ The endpoint is focused on or it is not.

We should note here that the term *image schema* is used rather ambiguously. Each sentence represents an image schema of *over* on one hand; and, on the other hand, the whole group of sentences also represents one. The latter is a fuzzy amalgamation of the former.

The core image schema is linked to several extended image schemata or

senses through various links. A *transformational link*, for example, leads to the following sentence:

- (2) The power line stretches over the yard.

This sentence depicts the image schema where TR and LM have no contact, TR is not moving, and no path is created. This schema is static, as opposed to schema (1), which is dynamic. This dynamic-static opposition apparently led Lakoff to call this link transformational. By the way, some native speakers of English find sentence (2) hard to accept, whereas “The power line stretches over the house” would be fine.

A third sense of *over* is that of covering. Unlike image schema (2), which is one-dimensional, this schema presents TR as a two-dimensional entity, and TR covers LM, as the following sentences exemplify.

- (3)-a The city clouded over.
 -b I walked all over the hill.
 -c There was a veil over her face.
 -d Look over my corrections.

Insofar as the dynamic relation between TR and LM is not as important as the end result of covering of LM by TR, this sense is basically a variant of sense (2); therefore, it is also considered to be linked to the core meaning through transformation.

A fourth sense of *over* which also makes use of a transformational link is illustrated by the following sentences. Here, TR is equivalent to LM.

- (4)-a Turn the page over.
 -b The fence fell over.
 -c The rebels overthrew the government.
 -d He turned the question over in his mind.

As the reader might have noticed, image schemata (1), (3), and (4) above contain metaphors ((1)-g, (3)-d, (4)-c, and (4)-d). They are derived from each of these image schemata. Other metaphorical sentences depend more specifically on the image schemata of particular sentences. For example, *Harry still hasn't gotten over his divorce* is a metaphorical extension of sentence (1)-c, and *The play is over* of (1)-f. Apart from all these, however,

there are two groups of metaphorical sentences that are given special treatment by Lakoff. They have their own image schemata to represent, and are connected with the core meaning through metaphorical links.

- (5)-a The bathtub overflowed.
 -b I overate.
 (6) Do it over.

Sentences (5)-a and (5)-b share the sense of excess, and they count as metaphorical extensions of (1)-e. Sentence (6) has the sense of repetition or re-doing *it* from the beginning to the end, and therefore it is a metaphorical extension of (1)-b. They are given the special treatment because they represent the now classic image schemata of Container and Path, respectively.

This analysis leads us to the following radial structure. Lakoff calls it an instance of Wittgenstein's *family resemblance* (p. 435).

The question arises, however, whether this diagram really captures the meaning of *over*. According to this diagram, the core meaning of *over* is a mysterious abstraction from all the image schemata that are represented by the core sentence group (1). The group is quite heterogeneous, but it is differentiated from group (2) and (3) by the feature *dynamic*. Then (2) and (3) are differentiated by whether it is one-dimensional or two-dimensional; whether TR is a line or a cover. Group (1) is also not *reflexive*,

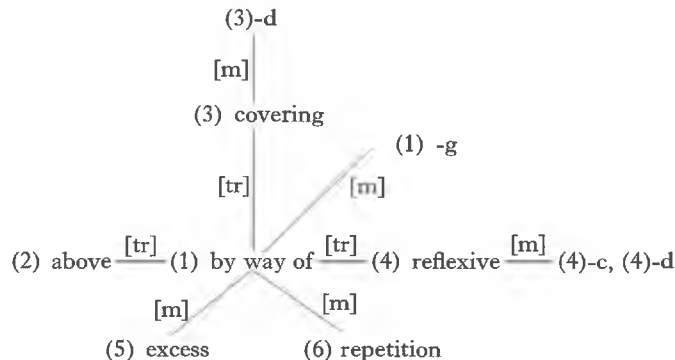


Figure 3 Radial structure of *over*

which is the one feature that distinguishes (1) from (4). Lastly, the feature *metaphorical* differentiates (1) from both (5) and (6). As a result, we come to have the following list of features at our disposal for discussing the meaning of *over*. The first four features are repeated here from page 3, and the rest are new additions.

- ① The landmark (LM) extends vertically or horizontally
- ② LM and the trajector (TR) have contact or no contact
- ③ TR moves above LM, or the path begins and ends on the ground
- ④ The endpoint is focused on or it is not.
- ⑤ TR is dynamic or static
- ⑥ TR is a line or a cover
- ⑦ TR is reflexive or not
- ⑧ TR and LM are abstract or not

Taking all these features into consideration, we come to notice that there are possible alternatives to Lakoff's classification. In his analysis, features ① and ⑥ are the defining characteristics. We can easily imagine, however, one which gives feature ② top priority. Then the semantic representation of *over* would look quite different from the one we have now. In conclusion, there is an arbitrary element involved in Lakoff's analysis of the core meaning of *over*.

Transformational link sounds scientific and convincing at first, but it actually refers in a vague way to the differences between dynamic and static, one and two-dimensional, and reflexive and non-reflexive image schemata. When the defining features change, the internal structure will change. But there will always be transformational links radiating in multiple directions from the core image schema.

A third arbitrary element is observed in his uneven treatment of metaphors. The two groups of metaphors, (5) and (6), are stipulated as distinctive image schemata and contribute to increase the number of links in the radial structure for no other reason than that the metaphors of Container and Path are theoretically important for cognitive semantics. Otherwise they could be categorized into sense (4) and/or (1), just like the other metaphorical sentences.

These three observations lead us to wonder whether Figure 3 is merely

a fictitious construct produced from a theory-driven imagination. It has the spirit of a deductive approach. Inferences and conclusions are allowed only within the boundary of the given premises which the theory advocates.

A fourth criticism is even more serious. As Bennett (1997) also notes, the above analysis of *over* is so heavily feature-oriented that it ends up being a notational variant of componential analysis. While denouncing two-valued logic and emphasizing the fuzziness of meaning in theory, Lakoff is driving at a rigid, formalistic description of meaning in practice.

Lastly, no coherent picture results as the core meaning of *over*. Instead we are given a group of different and yet similar image schemata, as figures 4 and 5 illustrate. It is impossible to draw an image schema of all the image schemata put together. Instead we are given individual uses.

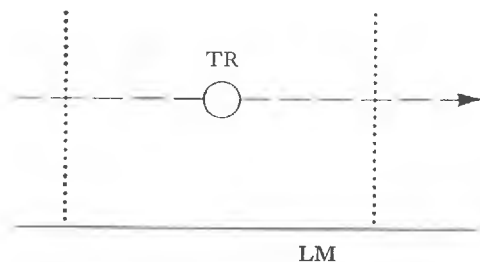


Figure 4 The bird flew over the yard (Lakoff, p. 421).

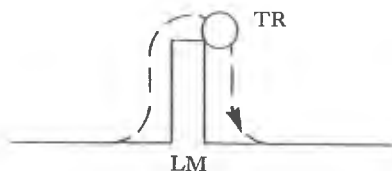


Figure 5 Sam climbed over the wall (Lakoff, p. 422).

1.2. Other accounts

Researchers long noted that English spatial prepositions form a rather clear-cut semantic field. They used the linguistic tools of the times to explicate their meanings and their sense relations. G. Leech (pp. 126–128)

discussed the seven spatial prepositions, *over*, *under*, *in front of*, *behind*, *on the left of*, *on the right of*, and *beside/by*, making use of semantic components like HORIZONTAL, LATERAL, PROXIMATE, and DIRECTIONAL. The first three components successfully differentiate the seven prepositions into four classes. They also explain the polysemy of *by* as in the following sentences.

- (7) The shell exploded *by* the wing of the airplane.
- (8) Place the one coin *by* the other.
- (9) The red car was parked *by* the green one.

	HORIZONTAL	LATERAL	PROXIMATE
by (7)	*	*	+
by (8)	+	*	+
by (9)	(+)	+	+

However, the last of the four components, DIRECTIONAL, is rather tricky. You have to know in advance that *over* and *under*, for example, would be totally synonymous without this component. Then it assigns them a right-headed and a left-headed arrows to show that they are in a contrastive relation. *In front of* and *on the left of* also have a right-headed arrow, but it means nothing but a relative difference from *behind* and *on the right of*, respectively.

Bennett (1975; 1997) also adopts componential analysis in his account of *over*. He uses such components as LOCATIVE, SOURCE, PATH, and GOAL. He claims that these components are very useful in describing the core meaning of the preposition, and that other than Lakoff's treatment of *reflexive* and *rotated* senses and Lakoff's use of metaphorical extensions, there is no significant difference between his analysis and Lakoff's.

In recent years, prototype theory has been much preferred among linguists who are interested in prepositional meanings. Among them are G. Lakoff (1987), as we already discussed, A. Herskovits (1986), B. Wege (1990), R. Dirven (1993), J. Taylor (1993; 1995), B. W. Hawkins (1993), and S. Lindstromberg (1998).

Herskovits' theoretical position is somewhat in between prototype theory and the traditional structuralist approach, which admits one rather abstract meaning that belongs to the linguistic structure and a multiple

number of concrete uses which can vary according to the context. She claims that spatial prepositions have a single, ideal, geometric meaning plus sense shifts and tolerance shifts. The ideal meaning of *on*, for example, is as follows.

on: for a geometric construct X to be contiguous with a line or surface Y; if Y is the surface of an object Oy, and X is the space occupied by another object Ox, for Oy to support Ox.

This definition says the ideal meaning of *on* is that of contiguity and support. Sense shift occurs when we realize attachment co-occurs with contiguity and support. Hence the following expression.

- (10) the apple on the branch
- (11) the medal on a chain

Tolerance shift occurs when the ideal meaning is only approximately true, as in the following sentence, which depicts a situation where there is a table-cloth between *Ulysses* and the table, or there are some inconspicuous books between the book and the table.

- (12) *Ulysses* is on the table.

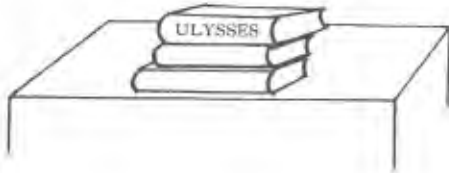


Figure 6 *Ulysses* is on the table (Herskovit, p. 14).

Herskovits claims that hers is not a prototype analysis, because the ideal meaning is a very abstract geometric relation which functions as a central model to shape the category, unlike a prototype, which is concrete and of obscure nature.

Other researchers exhibit the same inclinations as Lakoff which are typical of prototype theorists, except J. Taylor. Taylor (1986) presents a radical, meaning-chain analysis. According to him, there is no such thing as core meaning, and therefore no radial structure. Instead, each sense of

a polysemous word share some feature(s) with and partially overlaps with one another, thus creating a meaning chain. The whole of the meaning chain is vaguely recognized by the speech community as the word's meaning.

The meaning-chain theory is allegedly more true to Wittgenstein's concept of family resemblance. It might be. To a linguistic theory, however, adopting such a stance amounts to abandoning the higher goal of explanation and limit itself to the task of describing how language looks arbitrary and wayward at first glance. Worse still, the description will be an endless task.

All these studies, whether they use a geometric, radial, or componential approach, share one important characteristic: they all search for the sense of prepositions. So far, no satisfactory result has ensued from these sense-oriented studies. They only make the meaning of prepositions look more complicated than it really is. This is because these analyses are sent off the track. In the rest of this article I would like to illustrate that the right way to deal with the meanings of spatial prepositions is to search for their reference.

2. Reference as the meaning of English spatial prepositions

2.1. Sense and reference

Most analyses of word meaning in recent years have been searching for sense. Meaning relation is equivalent to sense relation. A bundle of semantic components makes up a sense. Different uses of a word is attributed to sense extension. Image schema is equivalent to sense. A radial structure is a representation of the sense relations of a polysemous word like *over*.

This explains why pronouns like *it*, and *them*, deictics like *here*, *I*, and *today* did not attract much attention in lexical semantics. People thought they lack the kind of sense which is worth analyzing. Neither did proper names like *Mary* and *Tom* create much enthusiasm except in the philosophy of language.

These essentially senseless words, however, do convey a sense of reality and presence. When someone says, *Listen to this*, you automatically pay

attention to what *this* refers to. When someone says *I'm meeting Sally* and you don't know the person called Sally, you still get a feeling of intimacy and co-existence from the name. This kind of responses and feelings is made possible by the fact that these words have reference. Reference connects us to the real world. Reference plays a much greater role in language than many people think.

G. Frege said every linguistic expression has *sense*, and that *sense* determines *reference*. F. de Saussure said that a linguistic sign always has *concept* as its inseparable part. His *concept* is a close parallel of Frege's *sense*. The truth is, however, that some words have reference as their primary meaning, and spatial prepositions are among them. They serve the purpose of bringing back the feel of spatial orientation, as in walking, standing, or other bodily experiences. What looks like the meaning of spatial prepositions is their connotative meaning. They have no denotative meaning.

2.2. The activity of walking as the reference of English spatial prepositions

Walking is one of the most basic bodily experiences of human beings. It can even be a defining characteristic for homo sapience. The heavy brain, free hands, easy articulation of speech sounds, and efficient communication must have been greatly promoted when our ancestors stood up straight and walked on their feet. Walking is such an important, universal experience for us that it is no wonder that some natural languages like English refer to it with special names such as *on*, *over*, *at*, *in*, *from*, *to*, *off*, and *under*.

Sense-reference dichotomy as defined by Frege is very useful in the field of semantics. A linguistic expression designates something in a particular manner. What is designated is the expression's *reference*; the manner of presenting the designation is its *sense*. *Sense* and *reference* are thus two different planes of meaning. *Sense* is conceptual, denotative, and public. *Reference* is perceptual and experiential. Frege said *sense* determines *reference*. My position is: *sense* can determine *reference*; *reference* brings forth connotations, images and feelings; connotations, images and feelings

are private.

The U.S. President, for example, has Mr. G. Bush as its reference and the concept of the U.S. President as its sense. The proper name George Bush has reference only. Speakers of English know Mr. Bush in one way or another through their own experience. Upon hearing *the U.S. President* or *George Bush*, they picture (gestalt) images of him and feel various feelings toward him. These images and feelings are private in the sense that they are confined to one consciousness and often vary from person to person. They are connotative. Unlike *sense*, which is public, these private, connotative meanings are not efficient materials of communication. This is why researchers have directed their attention to *sense*, *concept*, *denotative meaning*, or whatever they called *sense*. I believe, however, that these private elements help make expressions vivid and powerful, and that there are more linguistic devices in the English language than many linguists consider whose main function is to convey feelings or feels by making reference to real-world experiences. The category of spatial prepositions is one of them.

The spatial prepositions like *on*, *over*, *at*, *in*, *from*, *to*, *off*, and *under* refer to different aspects of the experience of walking. In walking, you have to first stand *on* the road or the floor. Then you take steps forward, making an arch-like movement of your legs. Preposition *over* directly refers to this action. That is to say, the verb may have the action as its *sense*; the preposition has the action as its reference; this is how and why it creates a sense of spatial orientation. Then, you might notice something on your way and stop *at* that point. You might get into a building and stay *in* there for some time. You intend to walk *from* somewhere *to* some destination, but you might get *off* the track for some reason. All these are possible because there is a road *under* your feet.

Each of these prepositions are considered to be highly polysemous by most researchers. I contend that calling a spatial preposition polysemous is like calling a proper name polysemous. In both cases, what we have is not multiple senses but a single reference and multiple connotations. In the rest of this article, I focus on the first three prepositions *on*, *over*, and *at* for closer examination of their usage.

2.3. *On*

The preposition *on* refers to the situation where someone's foot is touching and over a road. Your feet are in direct contact with the road. The road takes your weight and you are supported by it. All these are physical facts which you learn by experience. Herskovits' ideal meaning of *on*, contiguity and support, is thus derived in a natural way from the experience of walking. An important thing is not that *on* contains the semantic components *contiguity* and *support* but that the experience of walking allows us to look at some other situations as similar to walking.

The ability to see similarity in different things and situations is *analogy*. A fly on the ceiling and a picture on the wall, for example, remind us of the way we stand on the road. Clothes can stand out well when someone wears them. Hence the following sentences:

- (13) The fly is on the ceiling.
- (14) There is a picture on the wall.
- (15) Pink looks good on her.

Metaphorical extension is an easy step to make. It is a jump, again by analogy, from the physical to the abstract, as the following sentences illustrate:

- (16) I'm on the committee.
- (17) She will act on his advice.
- (18) I'll speak on horses today.

Usually you are on the road; the road is not on you. However, in some situations, you feel as if you were the one who is under someone's feet and take the weight. As if you were the road instead of the walker. Such a change of perspective is easy to make when a word's meaning is not *sense* but *reference*. *Sense* prescribes the way you should look at a thing; it presents the word's *reference* in a certain way. *Reference*, on the other hand, is a real-world entity; it has multiple aspects and there are multiple angles to look at it. The following sentences illustrate the case where you feel as if you were under someone's feet:

- (19) My boyfriend walked out on me.

- (20) You hung up on your father?
- (21) Have a drink. It's on me.

Also from experience, you know that the road is narrow and long. This is the general image of a road. A river or the sides of anything (as opposed to its end) is narrow and long, which enables the speaker to say the following:

- (22) The city is on the Hudson/*on the entrance of the harbor.
- (23) He's sitting on my left (side).

By the way, *off* means *not on*, either vertically or horizontally. Or analogically.

- (24) I got off the chair.
- (25) I pulled off the road.
- (26) The meeting was put off.

A large amount of conventionalism must be involved in such cases as the following:

- (27) We played on the night of July 7.
- (28) You'll be on your best behavior, right?

Native speakers of English learn, through years of practice in their early childhood, to perceive *night* and their own *behavior* as something like a road. These uses do not strike me, a non-native speaker of English, as natural as the other uses. They require years of cognitive training. Possibly, *on* is selected because no other prepositions depicts these cases better.

2.4. *Over*

The preposition *over* refers to the way you move your legs when you walk. Your legs create an arch over the ground, are above the ground, and at every step you cover the ground underneath your legs and end up standing on the ground ahead. This explanation solves all the puzzles over *over*. It looks overwhelmingly polysemous because its reference itself is a rather complex and dynamic movement. Once you accept the referential meaning, however, *over* ceases to be polysemous. Some uses which Lakoff categorized in different image schemata now come to belong together

because they are part of the same one action. For example:

- (29) The bird flew over the yard. (Lakoff's (1)-a)
- (30) The dog jumped over the fence. (Lakoff's (1)-e)
- (31) Sausalito is over the bridge. (Lakoff's (1)-f)
- (32) The power line stretches over the yard. (Lakoff's (2))
- (33) I walked all over the hill. (Lakoff's (3)-b)
- (34) The bathtub overflowed. (= Water flowed over the bathtub.) (Lakoff's (5)-a)

We should note that in all these examples and in the others in this article the prepositions not only refer to the activity but also convey the actual sense of spatial orientation. The point is that these feels are produced by virtue of direct reference.

Analogy licenses the speaker to say the following:

- (35) Look over my corrections. (Lakoff's (3)-d)
- (36) We talked over coffee.

Usually, the speaker empathizes with the agent who does the walking. Sometimes, however, a change of perspective occurs and the speaker empathizes with the ground on which walking takes place. In the following sentences, the speaker empathizes with *Sam* and *me*. In such cases, *over* can connote suffering:

- (37) Sam was passed over for promotion. (Lakoff's (1)-g)
- (38) He picked Sue over me.

This use of *over* reminds us of sentences like the following where *under*, the semantic opposite of *over*, conveys a negative patient-like connotation:

- (39) She was a little under weather today.

2.5. *At*

The preposition *at* denotes a situation where the walker finds something on his/her way and stops to look *at* it. You zoom in and pick out the specific object out of its environment. This is why *at* always implies delimitation and the lack of inner structure. When you hear *Alice is at A*, you understand there are also *B*, *C*, *D*, etc. *A*'s inner structure is irrelevant

because what is important is its outer boundary.

The above explanation plus analogy successfully captures the shared meaning of *at* in a variety of sentences like the following:

- (40) We met at Cody's bookstore.
- (41) At these words, he left.
- (42) The storm was at its worst.
- (43) Let's do one thing at a time.
- (44) What are you at?

Sentence (40) implies that *we* singled out Cody's out of all the buildings or other landmarks. They might have met inside the bookstore, but the speaker's perspective remains outside. (41) implies that other words had been uttered before these intolerable words. In (42), the state of the storm is regarded as a transient phase. The speaker is implicitly referring to the storm's other possible states as well. Likewise, *a time* implies a band of times in (43). Lastly, *at* can connote a sense of selection and targeting as in (44). All these uses are possible because of the meaning of *at*: an action of zooming in on a specific point along the road.

Citing Lindkvist (1978), Lindstromberg says that *at* is more common before proper names like *Ritz* than before building nouns like *restaurant* (p. 167). This strikes us as a natural course of things once we accept the meanings of spatial prepositions as aspects of walking. *At* only requires a delimited point of reference, whereas *in* requires something that has an inside.

Lindstromberg also observes that one of the senses of *at* is to contribute or reinforce the idea that the object is a target, as in the following sentence (p. 170):

- (45) Don't throw it at him. It could hurt. Throw it to him.

He claims that *at* and *to* take a target and a recipient as their object, respectively. In our theory, *to* refers to a goal. It is the end of the road the walker is on. The goal is somewhat distant from the walker, and this creates psychological distance. This is one of the reasons why *throw to* sounds more indirect and less aggressive than *throw at*.

Another reason is the following: we have seen *to* can be more polite than

at, but it is still a spatial preposition; the nouns following the spatial prepositions designates mere places, not people. *For*, on the other hand, refers to something abstract and therefore higher than a place. Hence the interesting contrast in connotation in the following examples:

- (46) How could you do this to me? How dare you!
 (47) Did you do it for me? Oh, thank you!

In (46), *me* is a sufferer, something as lowly as dirt on the ground, a mere goal on the road. In this context, the use of *to* is more possible than *for*. In (47), *me* is a motivation, something much more respectable than any part of the ground. Hence the use of *for*. However, going into details regarding *for* vs. *to* will be beyond the scope of this article.

The theory of reference I am proposing in this article solves the pseudo-polysemy of *at* as well as other spatial prepositions. Now we don't need to worry over the multiple "senses" of *at* as Lindstromberg does (pp. 165–174):

Actions or events take place at points along a route when

1. LM is a point, not an area.
2. LM is an intersection.
3. LM is a boundary or extremity of some kind (because *at* suggests extreme nearness to or contact with the point at which one thing ends and another begins).
4. LM is a target.

All these uses can be captured as a natural consequence of the referential meaning of *at*.

3. Spatial prepositions and other reference-oriented expressions in English

There are more linguistic categories and devices than we might think which are designed to directly refer to real-world entities rather than have abstract senses. They include:

1. Deictic expressions and pronouns: I, you, here, today, this, that, it, etc.
2. Numbers and other signs: #1, #2, (1), (2), A, B, C, etc.

3. Interjections: ouch, wow, yuck, hurray, voila, etc.
4. Onomatopoeia: bow-wow, mew, bubble, splash, rattle, ding-dong, etc.
5. Proper names: Jane, Gregg, Socrates, George Bush, etc.
6. Sound-symbolic expressions: petit, teeny, gloom, crunch, etc.
7. Idiomatic expressions: rain cats and dogs, spic-and-span, there you go, etc.
8. Spatial prepositions: on, over, at, in, from, to, off, under, etc.
9. Phonetic modulation: intonation, length of pause, pitch difference, etc.

Putting phonetics aside, these reference-oriented expressions numbered 1 through 8 above share some interesting characteristics with each other. First of all, many of them are short. This comes as no surprise considering the fact that except for imitative expressions their primary function is to refer to a thing, a feel, a sensation, an action, etc. They are tags. Tags can be short and simple so long as they serve the purpose of referring to experience. They can be short because there are far fewer entities to be labeled and tagged in this world than attributes and properties to be depicted. This reminds us of the fact that many basic content words are also short. Although, unlike reference words, common nouns such as *dog* and *cat* indirectly refer to the animals by means of their sense, these are such familiar animals that their prototypical images, their reference, play an important part in daily communication. Such basic words tend to be short. Shortness and reference go together. This might be the reason why nicknames are shorter than their official counterparts.

Secondly, these reference words are often employed in colloquialisms. Direct reference is more possible when utterances take place in a real setting than in an abstract writing or other lofty situation. It makes daily communication easy, fast and effective because it refers to things close by, and summons familiar images and feelings that the hearer himself knows by experience. The point is that these reference words have experiential basis, and that they work effectively when speakers share experience.

Talking of colloquialisms, spatial prepositions often appear as part of colloquial phrasal verbs. Phrasal verbs like *come on*, *wait on*, *flow over*, *put up with*, *give in*, etc. are so common and ubiquitous in casual conversations

between native speakers that I used to wonder what's the use of learning two different levels of words; for a non-native speaker of English like myself, these phrasal verbs demand as much time and effort to learn as more formal content words do. The fact is, however, that they summon familiar feels to native speakers which they have acquired through bodily experiences like walking on the road; and communication becomes so much more vivid and lively if the speaker uses them. They have reference. Whereas content words have sense. The English language exploits both routes to understanding and effective communication.

Thirdly, the reference-oriented words don't contribute much content to the sentence. Just like pronouns and numbers, neither proper names nor interjections carry exact content. Nor do spatial prepositions. In sentences like *On hearing the news, she turned pale*, and *Turn the page over, on* and *over* are totally dispensable. In *I'll speak on insects*, *The power line stretches over the yard*, and *We met at Cody's bookstore, on, over, and at* can be replaced by *about, above, and in*, respectively, without changing the truth-conditional meaning of the sentence. In fact, the speaker can use wrong prepositions or not use them at all without causing any miscommunication. This is because what they contribute is the sense of reality, not the concept.

Fourthly, some of them convey, if any, private connotative meanings. Their primary function is reference, but the human mind, obsessed with the meaning imperative, keeps creating meanings. So, for example, #1 tends to connote superiority over #2 and other numbers, *teeny* means not only small but also cute and lovable, *over* is good while *under* is bad, and *on* is normal while *off* is abnormal. The name *Jane*, for example, brings forth all one's memories with her and feelings toward her. They are *Jane's* meanings. The speakers know, however, that these meanings are not official or public; they are connotative and private.

Lastly, whereas *sense* prescribes a perspective, reference does not. Spatial prepositions and proper names in particular allow for multiple perspectives. A real person or a real activity is not a mere bundle of semantic components; they are a multi-dimensional, context-dependent, space-time complex. The speaker can look at them from various perspectives. Thus

over comes to have many uses as we have seen, just as *Jane* has many aspects: a mother to Nicole, a PC freak, a reputed "green thumber", etc. It all depends on which perspective you take.

4. Conclusion

In this article we have shown that spatial prepositions can be analyzed as referential expressions. The English language has a richer system of reference than people generally think. In other words, the language reflects the real world in a more direct way than many theoretical linguists say.

In the course of analysis we have also seen that *metaphorical links* and *transformational links* in some cognitivist literature are no longer needed. Metaphor can be replaced by analogy. *Metaphorical extension* turns out to be just another name for something as simple and familiar as referential similarity. As for transformational link, dynamic and static readings of a spatial preposition correspond to different phases of the same one activity of walking.

The activity of walking has turned out to be crucial in explicating the meanings of spatial expressions such as *on, over, at, in, from, to, off, and under*. It is very likely to shed light on the whole cluster of other spatial or non-spatial prepositions such as *up, down, below, before, behind, beyond, by, along, with, and for* in future research.

There is one category of referential expressions that I left out in this article: manner verbs. *Roll, romp, skip, scurry, saunter*, etc. conjure up vivid images of movements because they are imbued with referential elements. These words are a package of sense and reference. Also, they are often sound-symbolic. Ordinary dictionaries could never get their meanings across to the readers. The readers will have to see or do the actions themselves in order to grasp the words' meaning. Future research agenda will have to include these verbs and probably some other manner words as well.

Direct reference is not only performed on the lexical level. Sentences can directly refer to reality by being iconic to the state of affairs. Iconicity is observed in sentence patterns and other word orders. This will make the referential system of English even richer. However, it is far beyond the

scope of this article, and I only mention it here.

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