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A Cognitive Analysis of the Preposition OVER*: Image-schema transformations and metaphorical extensions*

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Abstract

Dewell (1994), following Brugman (1981) and Lakoff (1987), provides a semantic analysis of *over* by relying more exclusively on image-schema transformations than did Brugman and Lakoff. The Brugman-Lakoff-Dewell analysis, however, can be improved by using simpler image-schemas, more natural image-schema transformations, and metaphorical extensions. A key idea adopted in the present article is to capture both trajectors and landmarks three-dimensionally and topologically. This modification brings about the elimination of unessential features such as the shape and size of the trajector and the landmark, contact/non-contact between the trajector and the landmark, and physical properties of the trajector. Its main advantage is that a central image-schema for a semicircular path provides the basis for explaining all of the senses of *over* using natural image-schema transformations and metaphorical extensions. The proposed image-schema transformations include: segment profiling, profiling the endpoint of access paths, the profiled peak position of the semicircular path with the constraint that the rest of the semicircular path is excluded, and the extension of the semicircular path-trajectory to an image of covering. The proposed metaphorical senses are *time, means,* and *control.* In addition, the radial category relating each sense of *over* is presented.

Keywords: Semicircular path, three-dimensional and topological structure, image-schema transformations, metaphorical extensions, radial category

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Résumé

Dewell (1994), après Brugman (1981) et Lakoff (1987), a fourni une analyse sémantique de *over* 'dessus' en s'appuyant plus exclusivement que Brugman et Lakoff sur les transformations de schémas d'image. L'analyse de Brugman-Lakoff-Dewell peut cependant être améliorée en utilisant des schémas d'image plus simples, des transformations de schémas d'image plus naturelles et des extensions métaphoriques. Une idée clé adoptée dans le présent article concerne les trajectoires et les points de repère capturés en trois dimensions et topologiquement. Cette modification permet d'éliminer des caractéristiques non essentielles telles que la forme et la taille du trajet et du point de repère, le contact ou non-contact entre le trajet et le point de repère, et les propriétés physiques du trajecteur. Son principal avantage est que le schéma d'image central d'une trajectoire semi-circulaire constitue la base pour expliquer tous les sens de *over*, en utilisant des transformations de schémas d'image naturelles et des extensions métaphoriques. Les transformations de schéma d'image proposées comprennent: le profilage de segment, le profil du point d'extrémité des chemins d'accès, la position maximale profilée du chemin semi-circulaire avec la contrainte d'exclusion du reste du chemin semi-circulaire, et l'extension de la trajectoire semi-circulaire à une image de couverture. Les sens métaphoriques proposés sont: *temps*, *moyens,* et *contrôle*. En outre, la catégorie radiale relative à chaque sens de *over* est présentée.

Mots clés: Chemin semi-circulaire, structure tridimensionnelle et topologique, transformations de schéma d'image, extensions métaphoriques, catégorie radiale

1. INTRODUCTION

A number of semantic studies of *over* have been performed (Brugman 1981; Hawkins 1984; Lakoff 1987; Vandeloise 1990; Dirven 1993; Dewell 1994; Kreitzer 1997; Taylor 2002, 2003, 2012; Tyler and Evans 2003; Deane 2005; Van der Gucht et al. 2007).[1] Translation equivalents of *over* in other languages have also been examined (see Bellavia 1996, Dewell 1996, and Meex 2001 on German *über*, and Geeraerts 1992 on Dutch *over*). The studies use the framework of cognitive semantics, and their analyses are imagistic in character. The radial-network analysis of English *over* by Lakoff (1987) is now considered a key example of cognitive semantic analysis of polysemy. Tyler and Evans (2003) also analyse *over* using their own innovative method. This article takes Dewell (1994) as a point of departure, because his notions of a semicircular path image-schema and segment-profiling image-schema transformation capture the meanings of *over* more accurately than do the other works mentioned above.

The purpose of the current article is: (i) to show that in the semantic representation of the preposition *over*, the trajectors (TR) and landmarks (LM) are captured three-dimensionally and topologically; (ii) to present a semantic analysis of the preposition *over* using the image-schema of the semicircular path, an image-schema transformation of segment profiling which is rather different from Dewell's, and metaphor; and (iii) to present the senses of the preposition *over* and provide the radial category showing the network relating all the senses of *over*. In particular, point (i) (where, in all the non-metaphorical uses of *over* as a preposition, the

[1]The following abbreviations are used: LM: landmark; TR: trajector.

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trajectors and landmarks are captured three-dimensionally and topologically), is a novel analysis that allows us to explain the meanings of *over* without recourse to the shape and size of the trajector or the landmark as a component of *over*.

The discussion in this article focuses on *over* as a preposition. Although *over* is used as a prefix in words like *overeat*, *overestimate*, *overflow*, and *overrate*, and can function as an adverbial particle as in examples (1) and (2), we will restrict our discussion to the prepositional semantics.[2]

(1) The fence fell *over*. (Zlatev 2003: 451)

(2) The game is *over*.

I will present a semantic analysis of *over* on the basis of the image-schema of a semicircular path, image-schema transformations, and metaphorical applications of spatial senses to other domains. I will also present the senses of *over*, and a radial category showing how these are related. The next two sections briefly outline Dewell's (1994) contribution, and then point out problems with that account. Section 4 proposes an alternative analysis, while section 5 discusses in more depth the metaphorical senses of *over*.

2. Previous studies

The cognitive linguistic analysis of *over* began with Brugman (1981), and was reworked by Lakoff (1987). As Taylor (2012: 233) puts it, "the Brugman-Lakoff account spawned a veritable cottage industry of *over*-studies" (Vandeloise 1990; Dewell 1994; Kreitzer 1997; Taylor 2002, 2003, 2012; Tyler and Evans 2003; Deane 2005; Van der Gucht et al. 2007). Dewell (1994) attempted to improve on the Brugman-Lakoff analysis by relying more exclusively on image-schema transformations. In fact, some of Dewell's (1994) account of *over* is simpler and more intuition-based than Brugman/Lakoff's seminal work. The image-schema transformations proposed by Dewell (1994) include segment profiling, resulting state, subjective path to endpoint, linear-extending trajector, edge-trajector, planar-extending trajector, multi-directional planar trajector, etc. The reason that Dewell's analysis is taken as the point of departure, rather than those of Lakoff (1987) or Tyler and Evans (2003), is that the central schema of a semicircular path and an image-schema transformation called 'segment profiling' are very useful for analyzing the senses of the preposition *over*. Lakoff's (1987) analysis of *over* seems to be overly complex (particularly the image-schemas that he posits), because they make use of all three elements: the shape of the *landmark* (X, V, VX), *contact* (C) between trajector and landmark, and *no contact* (NC). Sandra and Rice (1995), based on their experimental findings, also call into question the extremely fine-grained structure proposed by Lakoff. Moreover, sentences like 'The power line stretches over the yard' (Lakoff 1987: 426) should be examples of mental scanning,[3]

[2]Quirk et al. (1985) and Huddleston and Pullum (2002) distinguish between *over* as a preposition and *over* as a particle.

[3]Mental scanning, according to Langacker (1990, 1999, 2008), can be described as *tracing a mental path in an image constructed by the conceptualizer*. Langacker (2008) adduces

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but Lakoff does not account for such sentences in this way. Tyler and Evans (2003), for their part, hypothesize that the interpretation of traversing is a context-dependent implicature arising from the particular nature of the verb, the trajector, and the landmark as mediated by *over*. They thus suggest that *over* does not prompt for an independent 'path' sense. However, in developing a general theory of the independent senses of *over*, it seems reasonable to assume that it includes an independent sense of a path, as discussed in detail in section 4. Incidentally, although Tyler and Evans (2003: 70) state that no motion is involved in the interpretation of the sentence 'The tree branch extended over the wall', it should be noted that this sentence also involves mental scanning.

We now turn to Dewell's (1994) account.

2.1 The central schema and segment profiling

Although Brugman (1981) and Lakoff (1987) presume that the central schema for *over* is a combination of the stative location ABOVE and the boundary-traversing path of ACROSS, Dewell (1994) posits as the central schema of *over* the semicircular path shown in Figure 1. In Figure 1, the path of the trajector (TR) semi-encloses the landmark (LM).

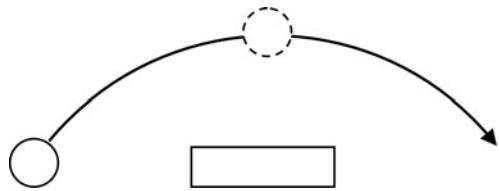


Figure 1: The central schema of *over* (Dewell 1994: 353)

This 'semicircular path' sense is reflected in *over*, as in (3).

(3) The dog jumped *over* the fence. (Dewell 1994: 353)

Dewell (1994) states that if we take the arced path to be central, we can take the image-schema seriously enough to account for all of the variants of *over*, using natural image-schema transformations or metaphorical applications of spatial senses to other domains.[4] Dewell (1994), for example, suggests segment profiling

examples (i) and (ii) below, and states that they describe the same spatial configuration; the difference between them lies in the direction of mental scanning. According to Langacker (2008), *rises from* in (i) induces upward mental scanning, while *falls to* in (ii) induces downward scanning.

(i) The hill gently rises from the bank of the river. (Langacker 2008: 82)

(ii) The hill gently falls to the bank of the river. (Langacker 2008: 82)

[4]In Lakoff's words, image schemas are "relatively simple structures that constantly recur in our everyday bodily experience: CONTAINERS, PATHS, LINKS, FORCES, BALANCE, and in various orientations and relations: UP-DOWN, FRONT-BACK, CENTER-PERIPHERY, etc." (Lakoff (1987: 267)) and are "a reflection of our sensory and general spatial experience" (Lakoff (1987: 443)).

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as the most obvious image-schema transformation. Briefly, segment profiling picks out a segment of the path. First, consider examples (4a) and (4b).

(4) a. The plane flew *over* the hill. (Dewell 1994: 352)

b. The bird flew *over* the yard. (Dewell 1994: 352)

Over, in these sentences, profiles the central region of the arc near the peak, as shown in Figure 2. The rest of the path, upward from the starting point and downward from the peak, is implicit pragmatically.

Also, according to Dewell (1994), *over*, in (5), profiles the upward trajectory in Figure 1 from the starting point to the peak. This *over* is illustrated in Figure 3.

(5) The sun came up *over* the mountains. (Dewell 1994: 356)

In example (6), *over* profiles the downward trajectory of the semicircular path illustrated in Figure 1. This variant of *over* is illustrated in Figure 4.

(6) Sam fell *over* the cliff. (Dewell 1994: 356)

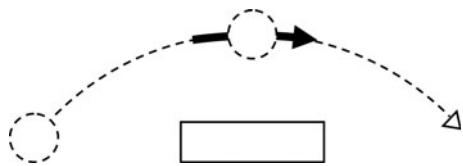


Figure 2: Profiled central region (Dewell 1994: 355)

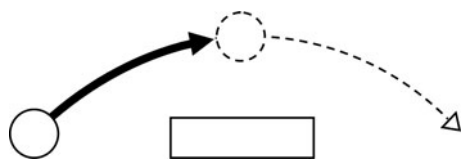


Figure 3: Profiled upward trajectory (Dewell 1994: 356)

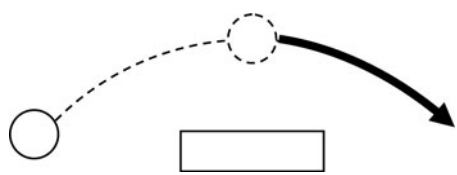


Figure 4: Profiled downward trajectory (Dewell 1994: 356)

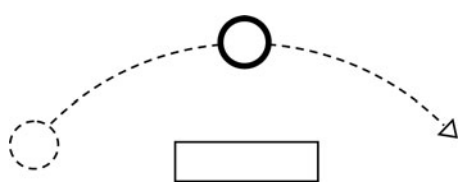


Figure 5: Freeze-frame at the peak (Dewell 1994: 357)

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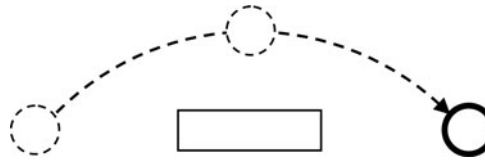


Figure 6: Resulting-state: endpoint location (Dewell 1994: 358)

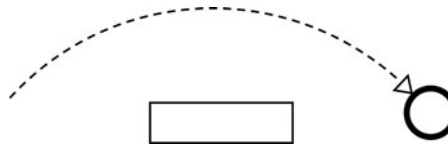


Figure 7: Subjective path to endpoint (Dewell 1994: 358)

Next, according to Dewell (1994), *over* in an example like (7) profiles the region of the peak of the semicircular path, as shown in Figure 5, giving what he calls a "freeze-frame at the peak." In his article, Dewell (1994) states that this use of *over* "retains the backgrounded sense of continued motion on a journey that will eventually lead to a landing."

(7) The plane should be *over* Baltimore by now. (Dewell 1994: 357)

These four instances of *over* involve image-schema transformations of segment profiling, in which part of the semicircular path is profiled.

Now consider example (8). Here, a TR (*Sam*) is at an endpoint location which is reached after a physical movement. Dewell (1994) describes an image-schema transformation like this as an image-schema transformation to a resulting-state, as illustrated in Figure 6. In resulting-state variants, the entire trajectory is intact.

(8) Sam is *over* the bridge now. (Dewell 1994: 357)

Over in (9), on the other hand, does not suggest a physical movement. There is no suggestion that this is the path that Sam took to get to the endpoint. Therefore, Dewell (1994) distinguishes the sense of *over* in (8) from that in (9). Lakoff (1987), in contrast, does not distinguish between these two uses of *over*. For him, both senses involve the image-schema transformation of "path focus ↔ endpoint focus." In Dewell's (1994) framework, the sense of *over* in (9) is explained by the image-schema transformation of a subjective path to an endpoint, illustrated in Figure 7. In this case, the speaker/interpreter mentally traverses the OVER-path.

(9) Sam lives *over* the bridge. (Dewell 1994: 358)

2.2 Extending paths: linear-extending trajectors

According to Dewell (1994), in one reading of (10), the rope is not a holistic TR maintaining a constant shape as it moves entirely over the LM. Rather, it is an extending TR, part of which remains at the starting location.

(10) Sam threw the rope *over* the limb. (Dewell 1994: 359)

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In this case, the focus is on the leading point of the TR. The resulting shape of the whole extended TR corresponds, more or less, to the summarily scanned path taken by the leading point, as shown in Figure 8.

Dewell (1994), calling such a path an "extending-path", describes this type of image-schema transformation as an "extending-path transformation."

Dewell (1994) argues that segment profiling also applies to the schema of Figure 8. Consider the sentences in (11):

(11) a. He leaned *over* the rail. (Dewell 1994: 359)

b. We stretched the rope *over* the yard. (Dewell 1994: 359)

c. We dropped the rope down *over* the edge. (Dewell 1994: 357)

For Dewell (1994), the uses of *over* in (11a), (11b), and (11c) correspond respectively to the left, middle, and right segments shown in Figure 9.

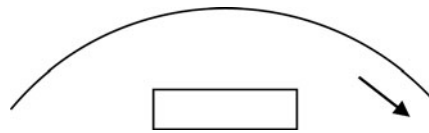


Figure 8: Linear-extending trajector (Dewell 1994: 359)

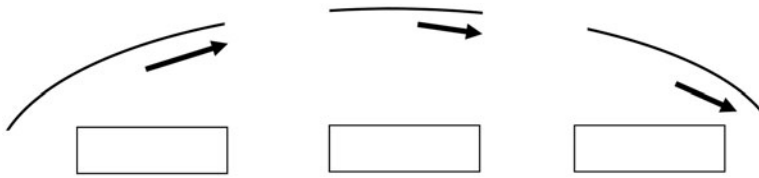


Figure 9: Profiled linear-extending trajector (Dewell 1994: 359)

2.3 A three-dimensional conception

Consider example (12). In Dewell's (1994: 362) words, "[a] vantage point above the TR reveals its linear shape as an edge extending horizontally and perpendicular to the OVER-path. In effect, each point in the TR may be seen as tracing its own OVER-arc …."

(12) A line of soldiers marched *over* the ridge. (Dewell 1994: 362)

According to Dewell (1994), the image-schema for *over* in (12) is three-dimensional, as shown in Figure 10.

Now consider example (13):

(13) He draped the sheet *over* the clothesline. (Dewell 1994: 363)

According to Dewell (1994), the edge-TR image of Figure 10 can be transformed naturally into an image like that in Figure 11. Example (13) can thus be read as a planar TR extending; in this case, the leading edge moves uniformly over the LM.

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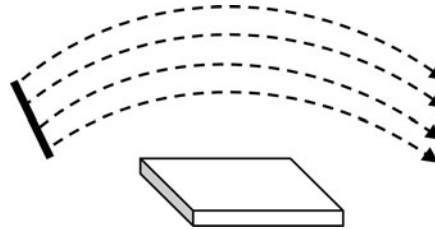


Figure 10: Edge-trajector (Dewell 1994: 362)

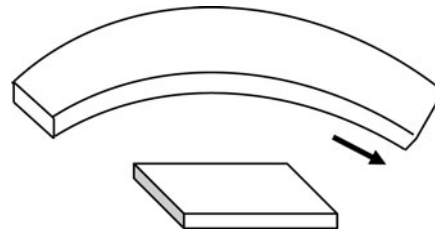


Figure 11: Planar-extending trajector (Dewell 1994: 363)

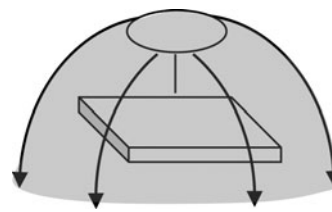


Figure 12: Multi-directional planar TR (Dewell 1994: 364)

Next, look at the sentences in (14):

(14) a. She poured the syrup out *over* the pancakes. (Dewell 1994: 363)

b. He spread the cloth out *over* the table. (Dewell 1994: 363)

Dewell states that example (14a) describes a situation in which a fluid moves outward in several directions at once, as in Figure 12, and (14b) gives essentially the same image. Figure 12 represents a planar TR with an edge extending outward in multiple directions at once, ultimately semi-enclosing the LM in at least one of those directions. This schema is essentially a curved-edge variant of the schema for planar-extending TRs (Figure 11), profiling the downward arc.

3. Problems with Dewell's (1994) account

In the previous section I described the main points put forward by Dewell (1994). I now turn to some problems with Dewell's account.

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3.1 Problem 1: two-dimensional/three-dimensional image-schemas of *over*

Dewell (1994) distinguishes between two-dimensional and three-dimensional image-schemas for *over*. However, is a distinction between dimensions like this necessary (Ando 2007)? The issue is rooted in the spatial-cognitive ability of human beings. We should understand three-dimensionally the image indicating a sense of *over*, and so the image-schema of *over* should be captured three-dimensionally (Van der Gucht et al. 2007). This is motivated by the fact that a container image-schema is captured three-dimensionally. According to Lakoff and Johnson (1999: 31–32), a container schema can be instantiated as a "bounded region in space, like a basketball court,"[5] which suggests that a container schema is captured three-dimensionally (Freeman 1995, Regier 1995, Sandra and Rice 1995, Gibbs 1996, Sinha and Jensen de López 2001, Evans and Green 2006, Radden and Dirven 2007, Lakoff 2012).

In cognitive-psychological terms too, images are captured three-dimensionally (Downs and Stea 1973, Roth and Frisby 1986, Thagard 1996, Richardson 1999, Smith et al. 2003, Anderson 2010). In fact, mental rotation in cognitive psychology, first discussed by Shepard and Metzler (1971), is captured stereoscopically, that is, three-dimensionally. We should therefore assume that the image-schema of *over* is structured three-dimensionally (Vandeloise 1991).

3.2 Problem 2: *over* in (15)

As we saw in section 2, Dewell (1994) represents *over* in (15) as in Figure 2, and argues that the rest of the path upward from the starting point and downward from the peak in Figure 2 is implicit pragmatically.

(15) a. The plane flew *over* the hill. (= (4a)), (Dewell 1994: 352)

b. The bird flew *over* the yard. (= (4b)), (Dewell 1994: 352)

Meanwhile, he states that *over* in (16) "retains the backgrounded sense of continued motion on a journey that will eventually lead to a landing" (Dewell 1994: 357).

(16) The plane should be *over* Baltimore by now. (= (7)), (Dewell 1994: 357)

The question I would like to pose about *over* in (15) is why the rest of the path is "implicit pragmatically", a question not answered by Dewell. Presumably, the semicircular path (upward from the starting point and downward from the peak) in Figure 2 is drawn by the common knowledge that the plane/bird takes off and lands. Furthermore, Dewell's (1994) analysis does not clearly capture the semantic difference between *over* in (15) versus (16).

3.3 Problem 3: *over* in (16)

As we saw in the last section, Dewell (1994) analyzes *over* in an example like (16) as profiling the region of the peak of the semicircular path. As he puts it, "the TR seems

[5] A container schema is a kind of image-schema whose structure includes an inside, a boundary, and an outside (Lakoff and Johnson 1999: 32, 380).

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to pause in 'freeze-frame' suspension at the peak of the arc" (Dewell 1994: 357). However, can this analysis be correct? I wonder whether speakers use this cognitive process in everyday language. It is technically true that when an object moves parabolically, its vertical velocity is briefly zero when it is at the peak of the path, but this is not something that ordinary speakers can be expected to know. Thus, it seems reasonable to assume that the process proposed by Dewell does not occur when native speakers of English use sentences with *over*. In fact, some senses of *over* suggest no actual physical movement, as in (17).

(17) a. The picture is *over* the mantel. (Tyler and Evans 2003: 110)

b. Hang the painting *over* the fireplace. (Lakoff 1987: 425)

As will be argued in section 4, *over* in (17) expresses a distinct 'above' sense.

3.4 Problem 4: on linear-extending trajectors

Dewell (1994), calling a TR in an example like (18) "linear-extending trajector," distinguishes between the TR in (18) and that in (19).

(18) Sam threw the rope *over* the limb. (= (10) (Dewell 1994: 359)

(19) The dog jumped *over* the fence. (= (3)) (Dewell 1994: 353)

This distinction, however, is unnecessary, for three reasons. First, linear-extending is a physical property of TR. Therefore, we should not attribute it to the meaning of *over*. Second, in (18) the leading point of the rope moves along the semicircular path, so it should be analyzed as the active zone in the sense of Langacker (1990) (see also Taylor 2002: 110–111). Finally, although Figure 8 is proposed by Dewell (1994) as the image-schema of *over* in (18), that figure is merely a picture that represents the state in which the rope hangs on the limb, and is by no means in line with an image-schema in the sense of Johnson (1987). In fact, Figure 8 is not based in bodily experience: the notion of linear-extending does not emerge through our bodily experience (see Taylor 2002: 523).

I conclude from this that linear-extending is not part of the image-schema of *over*. Rather, *over* in (18) reflects the central schema of the semicircular path.

3.5 Problem 5: the image-schema of *over* in (20)

Above, we argued against using linear-extending trajectors to account for examples like (18) and rejected linear-extending trajectors. However, even if we had adopted linear-extending trajectors there, *over* in (20) should profile not the upward trajectory of the path, but the downward trajectory. That is, the image-schema of *over* in (20) should be the same as that of *over* in (21).

(20) He leaned *over* the rail. (= (11a)) (Dewell 1994: 359)

(21) We dropped the rope down *over* the edge. (= (11c)) (Dewell 1994: 357)

This contradicts Dewell's (1994) account, where he describes *over* in (20) as profiling the upward trajectory of the path.

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3.6 Problem 6: *over* in (22)

In my view, *over* in (22) indicates a 'covering' sense. This will be discussed in detail in section 4.

(22) a. She poured the syrup out *over* the pancakes. (= (14a)) (Dewell 1994: 363)
b. He spread the cloth out *over* the table. (= (14b)) (Dewell 1994: 363)

Although Dewell (1994) does not recognize a 'covering' sense of *over*, I will argue that it is one of the senses of this preposition.

3.7 Problem 7: whether or not the shape of TRs is involved in meanings of *over*

As we saw in the last section, Dewell (1994) distinguishes *over* in (23) and (24) from *over* in (25)–(27) on the basis of whether the shape of the TR is linear or planar. However, I am not persuaded that the shape of the TR is part of the meaning of *over*.

(23) Sam threw the rope *over* the limb. (= (10)) (Dewell 1994: 359)
(24) a. He leaned *over* the rail. (= (11a)) (Dewell 1994: 359)
b. We stretched the rope *over* the yard. (= (11b)) (Dewell 1994: 359)
c. We dropped the rope down *over* the edge. (= (11c)) (Dewell 1994: 357)
(25) A line of soldiers marched *over* the ridge. (= (12)) (Dewell 1994: 362)
(26) He draped the sheet *over* the clothesline. (= (13)) (Dewell 1994: 363)
(27) a. She poured the syrup out *over* the pancakes. (= (14a)) (Dewell 1994: 363)
b. He spread the cloth out *over* the table. (= (14b)) (Dewell 1994: 363)

As was shown in the last section, Dewell (1994) proposed "edge-trajector" to explain the planar shape of the TR of (25). However, as Ando (2007) points out, one can see a line of soldiers as a single individual. Under that view, the meaning of *over* in (25) is the same as that of *over* in (28).

(28) The dog jumped *over* the fence. (= (3)) (Dewell 1994: 353)

This is based on the idea that the shape of TRs is not involved in meanings of *over*.

3.8 Problem 8: radial category

Dewell (1994) states that if we take a semicircular path to be the central schema of *over*, we can account for the interrelation of all of its spatial senses using only image-schema transformations and its nonspatial senses by metaphorical applications of spatial senses to other domains. However, he does not argue that the senses of *over* form a radial category, nor does he provide a radial category for *over*, as Lakoff (1987) does. A radial category which displays how all the senses of *over* are interrelated, as in Lakoff (1987), is required (see Geeraerts 2010 for a radial network analysis of polysemy).[6]

[6]The radially structured categories Brugman (1981) and Lakoff (1987) have shown are "the kind of structure that departs most radically from classical theories" (Lakoff 1987: 379).

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4. PROPOSAL

For the purposes of the present article, I accept the idea that the central schema of *over* represents a semicircular path, and I adopt the notion of segment profiling offered by Dewell (1994). The purpose of this section is to show that the semicircular path sense is central to the image-schema of *over*, and that the other senses can be derived from this sense. We begin with the working hypotheses in (29).

(29) Working hypotheses

a. TRs and LMs are captured three-dimensionally, and their shape and size are expandable and reducible topologically.

b. *Over* is unspecified as to contact versus non-contact between TR and LM. That is, whether or not TR is in contact with LM is not part of the senses of *over*.

c. In segment profiling, it is unspecified whether or not the actual movement of the TR along the backgrounded part of the path is suggested.

d. We assume Lakoff and Johnson's (1980, 1999) and Lakoff's (1987, 1990, 1993) metaphor theory.

In the subsections that follow, I will present a semantic analysis of the preposition *over* on the basis of these working hypotheses. The analysis solves the problems with Dewell's (1994) study which were pointed out in the previous section. For example, by assuming (29a), which is motivated by the cognitive-psychological assumption that images and image-schemas should be structured three-dimensionally and topologically, we can eliminate problems 1, 4, and 6. Hypothesis (29a) enables us to analyze the meanings of *over* without talking about the shape and size of TRs and LMs, which allows us to simplify the image-schemas of *over*.

Hypothesis (29a) is also motivated by the fact that speakers operate in three-dimensional space. The move from a two-dimensional to a three-dimensional treatment of TRs and LMs is the most important claim of the present article.

Now consider (30) and (31). In (30) there is no contact between the TR and the LM. In (31), on the other hand, there is contact between the TR and the LM. Lakoff (1987) distinguishes between the image-schema of *over* in (30) and that of *over* in (31) by specifying whether there is contact between TR and LM. Each schema is named using the abbreviations X 'extended', V 'vertical', C 'contact', and NC 'no contact'.

(30) The bird flew *over* the yard. (Schema 1.X.NC)
(Lakoff 1987: 421, Dewell 1994: 352)

(31) Sam drove *over* the bridge. (Schema 1.X.C) (Lakoff 1987: 422)

As Evans and Green (2006: 341) note, however, our knowledge about birds (they can fly) and people (they cannot) allows us to infer that birds do not come into contact with yards when crossing over them, while people do. Thus, it will be reasonable to assume that the presence or absence of contact between TR and LM is not part of the meanings of *over*. Under hypothesis (29b) there is no need to specify the image-schema of *over* as to whether there is contact between TR and LM.

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By positing (29c), we eliminate problem 2, which we saw in the last section. Finally, by assuming (29d), we can account for some examples that Lakoff (1987) and Dewell (1994) did not discuss, as will be argued in section 4.6.

4.1 The central image-schema A

We posit the central image-schema of *over* as a semicircular path, as in Figure 13 below (Deane 1988, Dewell 1994, Lindstromberg 1998). In Figure 13, the TR moves along the semicircular path parabolically, and no part of the path is profiled. Also, as stated in Hypothesis (29a), TRs and LMs are captured three-dimensionally (Gibbs and Colston 1995, Sandra and Rice 1995, Zlatev 2003), and their shape and size are expandable and reducible topologically. In addition, in this case, as stated in Hypothesis (29b), contact/non-contact between TR and LM is unspecified, that is to say, it is irrelevant to senses of *over*.

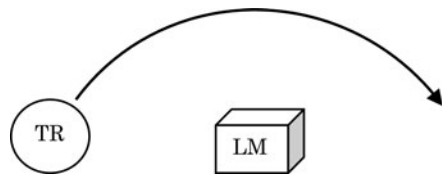


Figure 13: The central image-schema of *over*

Sentences (32)–(39) below are examples of *over* in this sense, used, as is very common, with action verbs of movement.

(32) The dog jumped *over* the fence. (= (3))

(33) Sam drove *over* the bridge. (= (31))

(34) Sam walked *over* the hill. (Lakoff 1987: 422)

(35) Sam climbed *over* the wall. (Lakoff 1987: 422)

(36) The rabbit hopped *over* the fence. (Tyler and Evans 2003: 79)

(37) She threw the rope *over* the limb. (= (10))

(38) A line of soldiers marched *over* the ridge. (= (12))

(39) He draped the sheet *over* the clothesline. (= (13))

Dewell (1994) treats the image-schema of *over* in (37)–(39) as distinct from that of *over* in (32)–(36). In contrast, the account being developed here treats the image-schema of *over* in (37)–(39) as the same as that of *over* in (32)–(36), because the shape and size of the TR and the LM are expandable and reducible topologically, as stated in Hypothesis (29a).[7] Also, although Lakoff (1987) subclassifies image-schemas of *over* by specifying whether there is contact between TR and LM, with the schemas for *over* in (33)–(35) represented as in C ('contact'), by Hypothesis

[7]Whereas (37) is ambiguous, (i) is not. The explanation for such ambiguity lies not in the preposition *over* but in the difference between ropes and balls (see section 3.4).

(i) She threw the ball *over* the wall.

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(29b) we do not distinguish *over* in (33)–(35) from cases with no contact between TR and LM, such as (32), (36), and (37).

4.2 Segment profiling: image-schema transformation B

Here, I adopt the notion of *segment profiling*: the image-schema transformation of profiling part of the semicircular path.[8] However, the segment profiling proposed here is not the same as that of Dewell (1994). Although Dewell (1994) treats *over* in an example like (40) as profiling the region of the peak at the semicircular path, we do not adopt this view, as discussed in section 3.3.

(40) The plane should be *over* Baltimore by now. (= (16))

I propose to analyze *over* in an example like (40) as the profiled central region of the arc, as in section 4.2.1 below.

4.2.1 Profiled central region of the semicircular path: image-schema transformation B1

Consider (41)–(44). In these examples, *over* profiles the central region of the semicircular path.

(41) The plane flew *over* the hill. (= (4a))

(42) The bird flew *over* the yard. (= (4b))

(43) We stretched the rope *over* the yard. (= (11b))

(44) Lisa just tapped the golf ball, but it still rolled *over* the cup. (Tyler and Evans 2003: 83)

The sense of *over* in these examples can be illustrated as in Figure 14.

The dotted line in Figure 14 represents the backgrounded part of the path. As stated in Hypothesis (29c), whether the TR actually moves along this part or not is unspecified.

4.2.2 Profiled upward region of the semicircular path: image-schema transformation B2

Consider (45) and (46). In these examples, *over* profiles the upward region of the semicircular path.

(45) The sun came up *over* the mountains. (= (5))

(46) The plane climbed high *over* the city. (Dewell 1994: 356)

The sense of *over* in examples like these can be illustrated as in Figure 15.

[8] Dewell (2007) states that the core meaning of *around* is circular motion, as in (i). Also, he states that in (ii) below, a semicircular path is profiled. This view corresponds to segment profiling.

(i) She walked *around* the table. (Dewell 2007: 384)

(ii) a. She drove *around* the pothole. (Dewell 2007: 385)

b. She disappeared *around* the corner. (Dewell 2007: 385)

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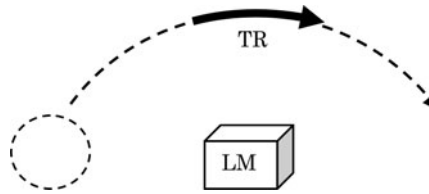


Figure 14: Profiled central region

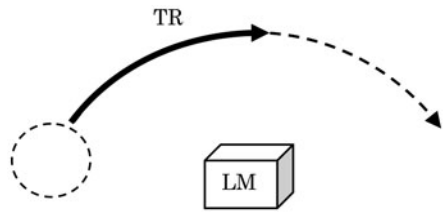


Figure 15: Profiled upward trajectory

The dotted downward trajectory in Figure 15 represents the backgrounded part of the path. As stated in Hypothesis (29c), whether the TR actually moves along this part or not is unspecified. In examples (45) and (46), the TRs (*the sun* and *the plane*) actually move along the downward dotted trajectory. However, this is provided by our common knowledge about the sun (it sets) and planes (they land).

4.2.3 Profiled downward region of the semicircular path: image-schema transformation B3

Consider (47)–(51). In these examples, *over* profiles the downward region of the semicircular path, as shown in Figure 16.

(47) Sam fell *over* the cliff. (= (6))

(48) We dropped the rope down *over* the edge. (= (11c))

(49) He leaned *over* the rail. (= (11a))

(50) He stumbled *over* a stone.

(51) Bill: "Mum! Joe tripped me with his foot."
Joe: "No, I didn't, Mum. Bill just tripped *over* my foot."
(Radden and Dirven 2007: 24)

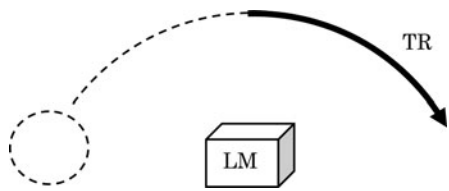


Figure 16: Profiled downward trajectory

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The dotted upward trajectory in Figure 16 above represents the backgrounded part of the path. As stated in Hypothesis (29c), whether the TR actually moves along this part or not is unspecified. In (47)–(51), the TR does not actually move along the upward dotted trajectory.

Note again that, as stated in Hypothesis (29a), the shape and size of TRs and LMs are expandable and reducible topologically. This means that the TR in (49), *he*, is captured topologically. We can therefore assert that *over* in (49) profiles the downward region of the semicircular path. This account of example (49) is more accurate than Dewell's.

4.2.4 Profiled endpoint of the semicircular path: image-schema transformation B4

In (52), *over* profiles the endpoint of the semicircular path, as illustrated in Figure 17.

(52) Sam is *over* the bridge now. (= (8))

The dotted arc in Figure 17 represents the backgrounded part of the path. As stated in Hypothesis (29c), whether the TR actually moves along this part is unspecified. As we will see in detail later, *over* in this case suggests actual movement (Ekberg 2001 notes that (52) denotes the actual path of the TR).

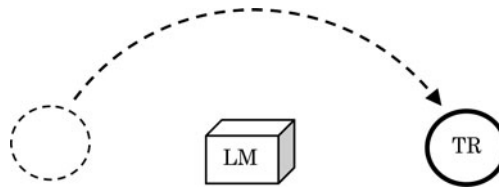


Figure 17: Profiled endpoint location

4.3 Profiled endpoint of the access path: image-schema transformation C

Consider (53)–(55) below. For Dewell (1994), these examples profile the endpoint reached after subjective motion (Langacker 1990). Here, there is no suggestion of actual physical movement. According to Lakoff (1987) and Ekberg (2001), *over* in these examples can be interpreted as "on the other side of" – or, as Blomberg (2015) and Blomberg and Zlatev (2015) put it, as the phenomenology of "non-actual motion."[9] With respect to *over* in examples like these, the speaker/interpreter mentally traces the path using the cognitive operation called *mental scanning*.

(53) Sam lives *over* the bridge. (= (9))

(54) Sausalito is *over* the bridge. (Lakoff 1987: 424)

(55) The mansion is situated *over* that wall. (Tyler and Evans 2003: 82)

The sense of *over* in examples like these can be represented as in Figure 18. Since in these examples, the TR (*Sam*, *Sausalito*, and *the mansion*) do not actually move, the dotted line in Figure 18 is drawn more finely than the one in Figure 17.

[9]In examples like (53)–(55), according to Huddleston and Pullum (2002: 649), there is "an implicit path from some point of orientation to the trajector."

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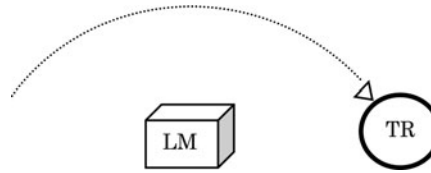


Figure 18: Profiled endpoint of the access path

Talmy (1996, 2000) and Matsumoto (1996) call path expressions like these *access paths*.[10] Adopting this term, we can say that *over* in (53)–(55) profiles the endpoint of the access path. For Lakoff (1987) and Taylor (2012: 237), *over* in these examples and in example (52) has this sense as a result of end-point focus (see section 2.1). However, since the special cognitive process of mental scanning is operating with examples (53)–(55), I distinguish between *over* in (52) and that in (53)–(55). Linguistic evidence in support of this claim comes from sentences like (56).

(56) Sam is *safely over* the bridge now.

This sentence profiles the endpoint of the *over*-path, and suggests actual movement. In fact, in this sentence *safely* is used. The interpretation of the sentence does not involve subjective motion.

A similar phenomenon can also be seen with *across* and *through*, as in (57)–(62).

(57) The child hurried *across* the street. (Langacker 1999: 301)

(58) The child is safely *across* the street. (Langacker 1999: 301)

(59) Last night there was a fire *across* the street. (Langacker 1999: 301)

According to Langacker (1999), (57) profiles objective movement. *Across* in (58) shows static location resulting from actual movement. In (59) no physical movement is suggested at all. Rather, *across* in (59) profiles the endpoint as a goal reached after mentally following the path using mental scanning. In this way, a distinction is already made between the senses of *across* in (58) and (59). This corresponds to the distinction between *over* in (52) and that in (53)–(55). The same holds for *through*, as shown in (60)–(62).

(60) The train rushed *through* the tunnel. (Lee 2001: 39)

(61) Tom is safely *through* the tunnel now.

(62) My office is located just *through* that door. (Tyler and Evans 2003: 222)

[10] According to Talmy (2000), an access path depicts a stationary object's location in terms of a path that another entity might follow to a point of encounter with the object. The object is represented as stationary, with no entity traversing the depicted path. The fictive moving entity can be imagined as a person, a body part, or the focus of attention (Matlock 2004, Matlock et al. 2005). Example (i) characterizes the location of the bakery in terms of a fictive path that begins at the bank, proceeds across the street, and terminates at the bakery (Talmy 2000: 137).

(i) The bakery is across the street from the bank.

(ii) The vacuum cleaner is down around the clotheshanger.

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Through in (60) represents actual physical movement, while in (61) it shows the location resulting from actual movement of the TR *Tom*. In (62), *through* suggests no actual movement, but should be analyzed as profiling the endpoint as goal reached after the speaker/interpreter mentally follows the path. In this way, a distinction can be drawn between *through* in (61) and that in (62).

From what we have seen above, we can conclude that a distinction should be made between *over* in (52), which suggests movement of the TR, and that in (53)–(55), which does not.

4.4 The 'above' sense: image-schema transformation D

In sentences like (63)–(68) below, *over* has no sense of following a semicircular path. For sentences like these, Tyler and Evans (2003) state that it does not seem possible to form an interpretation in which the TR is following a trajectory. Thus, it seems that *over* in these examples has a sense distinct from sense A, shown in Figure 13, or sense B1, shown in Figure 14. In (63)–(68), the TR is located physically above the LM, and the semicircular path is excluded. Under my approach, a path is excluded if there is no image in which the TR follows it.

(63) Hang the painting *over* the fireplace. (= (17b))

(64) The helicopter is hovering *over* the hill. (Lakoff 1987: 425)

(65) The helicopter hovered *over* the city. (Brugman 1981: 40; Tyler and Evans 2003: 75)

(66) The picture is *over* the mantel. (= (17a))

(67) The lamp hangs *over* the table. (Taylor 2003: 113)

(68) The clothesline is suspended *over* the yard. (Dewell 1994: 360)

Over in this sense, which I term the 'above' sense, seems to involve a transformation of the semicircular path represented in Figure 13. We posit the relevant image-schema transformation as follows: the peak of the semicircular path is profiled, and the rest of the semicircular path is excluded, giving the representation in Figure 19.

According to Lakoff (1987), *over* marking this sense is roughly equivalent in meaning to *above*. However, as shown in (69), sometimes *above* cannot be replaced by *over* (Deane 2005).

(69) a. There are birds somewhere *above* us. (Kreitzer 1997: 308)

b. *There are birds somewhere *over* us. (Kreitzer 1997: 308)

Also, (70a) and (70b) have different meanings. According to Tyler and Evans (2003), in (70a) the TR 'Nora' is in contact with the LM 'the polished floor', whereas in (70b), the TR is not in contact with the LM. A salient interpretation of (70b), but not of (70a), is that *Nora* refers to some fantastical creature, perhaps a fairy, capable of dancing in the air without actually touching the floor. Thus, *over* marking the 'above' sense in (70a) differs in meaning from *above*.

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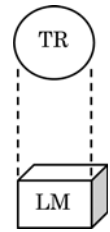


Figure 19: 'Above'

(70) a. Nora twirled *over* the polished floor. (Tyler and Evans 2003: 112)

b. Nora twirled *above* the polished floor. (Tyler and Evans 2003: 112)

As we have seen, examples (69) and (70) suggest that *over* is not completely equivalent in meaning to *above*. Incidentally, although Taylor (2003) states that in *over* indicating the 'above' sense, the TR is not in contact with the LM, the TR in (70a) is in contact with the LM.

4.5 The 'covering' sense: image-schema transformation E

Consider (71)–(75). The sense of *over* in these examples involves 'covering.' While Lakoff (1987) treats this *over* as a variant of the 'above' sense, Taylor (2003, 2012), Tyler and Evans (2003) and Zlatev (2003) take 'covering' to be a separate sense of *over*.

(71) The board is *over* the hole. (Lakoff 1987: 427)

(72) They laid a board down *over* the hole. (Dewell 1994: 367)

(73) He spread the cloth out *over* the table. (= (22b))

(74) The tablecloth is *over* the table. (Tyler and Evans 2003: 90)

(75) She poured the syrup out *over* the pancakes. (= (22a))

Some sentences with *over* mark the sense of 'covering' explicitly. In (76)–(80), the spatial relation between the TR and the LM has nothing to do with the vector of actual up versus down. For example, in (79), the transparent plastic sheet is attached to the ceiling and is located below it, while in (80), the hands are at the same level as the face. Examples (76)–(80) thus suggest that we should take the TR and the LM to be in a 'covering' relation.[11] I therefore call the sense of *over* in examples like (71)–(80) the 'covering' sense. Again, as stated in Hypothesis (29a), the shape and size of the TR and the LM are expandable and reducible topologically. Therefore, even if the TR (*the syrup*) in (75) does not completely cover the LM (*the pancakes*), and even if the TR (*his hands*) in (80) is usually smaller than the LM (*his face*), we can take *over* in these examples as expressing the 'covering' sense.

[11] Lakoff (1987: 429) and Deane (2005) treat examples like (76)–(80) as a rotation of the TR and the LM. However, that analysis is problematic.

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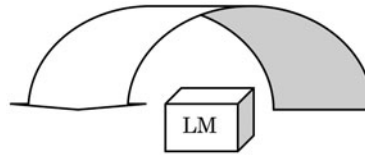


Figure 20: Covering

(76) She put the coat on *over* her dress. (Dewell 1994: 368)

(77) She held her hands *over* her eyes.

(78) He hung a curtain *over* the picture.

(79) They put a transparent plastic sheet *over* the painted ceiling of the chapel during repairs. (Tyler and Evans 2003: 91)

(80) He put his hands *over* his face. (Taylor 2003: 114)

The 'covering' sense is derived by a transformation of the semicircular path that is the central image-schema of *over*. I assume that the image-schema transformation is an extension from the semicircular path-trajectory traced by the TR to an image of covering. Such an image-schema transformation is motivated by the nature of the TR, the shape and size of which are expandable topologically. Since the TR is captured topologically, in this sense of *over* the TR is perceived as a continuous mass. The sense of *over* in examples such as (71)–(80) can thus be illustrated as in Figure 20.

The 'covering' sense of *over* is closely related to the function of the TR (Huddleston and Pullum 2002: 650).[12] In (74), for instance, the function of table-cloths is to cover tables, while in (76) and (78), the function of a coat and a curtain is to cover a dress and a picture, respectively. In this way, the 'covering' sense of *over* is motivated by the function of the TR as well.

4.6 Metaphorical senses: Mapping F

In what follows, we will consider some metaphorical extensions of *over* not discussed by Lakoff and Johnson (1980, 1999) and Lakoff (1987, 1990, 1993) (see Hypothesis (29d).[13] Lakoff (1990) postulated the Invariance Hypothesis, according to which

[12]According to Huddleston and Pullum (2002: 650), the function of *at* is to describe two entities as having precisely the same spatial location.

[13]According to Lakoff and Johnson (1980: 5), "[t]he essence of metaphor is understanding and expressing one kind of thing in terms of another". With respect to the conceptual metaphor ARGUMENT IS WAR, for example, they explain that arguments and wars are different kinds of things and the actions performed are different kinds of actions, but that ARGUMENT is partly structured, understood, performed, and talked about in terms of WAR, as in (i)–(iv).

(i) Your claims are indefensible.

(ii) He attacked every weak point in my argument.

(iii) I demolished his argument.

(iv) I've never won an argument with him. (Lakoff and Johnson 1980: 4)

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metaphorical mappings preserve the cognitive topology (that is, the image-schema structure) of the source domain (Rudzka-Ostyn 1995). Subsequently, Lakoff (1993) refined the Invariance Hypothesis as the Invariance Principle, which states that metaphorical mappings preserve the cognitive topology (that is, the image-schema structure) of the source domain, *in a way consistent with the inherent structure of the target domain*. The Invariance Principle thus guarantees that the cognitive topology of the source domain is invariant across metaphorical mappings (Deignan 1999). Now, we will see that in three specific cases, the cognitive structure of the image-schema represented in Figure 13 is preserved.

4.6.1 Metaphorical sense F1: Time

Consider example (81).

(81) The festival will take place *over* the weekend. (Tyler and Evans 2003: 88)

Here, the use of *over* is metaphorical, reflecting the central image-schema of a semi-circular path. The metaphor involved is TIME IS OBJECTS IN SPACE (Clark 1973; Lakoff and Johnson 1980, 1999; Sweetser 1990; Lakoff 1993; Heine 1994; Sandra and Rice 1995; Lindstromberg 1998; Boroditsky 2000; Johnson and Lakoff 2002; Torralbo et al. 2006; Galton 2011). In (81), the LM *the weekend* corresponds to an entity in space, and the time sense in *over* is motivated by a metaphorical extension.[14] Actually, Heine et al. (1991), based on an examination of many languages, suggest that in metaphor a domain of conceptualization can be mapped from SPACE to TIME, but cannot be mapped from TIME to SPACE. Lyons (1977: 718) also states that "spatial expressions are more basic, grammatically and semantically, than various kinds of expressions" and that "the spatialization of time is so obvious and so pervasive a phenomenon in the grammatical and lexical structure of so many of the world's languages […]." (see also Traugott 1978, Alverson 1994, Boroditsky 2001, Gentner et al. 2002, Moore 2006). Casasanto and Boroditsky (2008: 580) likewise state that "we construct representations of time by co-opting mental representations of space, but not necessarily the converse". In any case, with regard to *over* in (81), we can say that in the metaphorical 'time' sense of *over*, the cognitive structure of the image-schema represented in Figure 13 is preserved.

A phenomenon similar to *over* in (81) can be seen with the prepositions *in* and *through*. According to Huddleston and Pullum (2002: 657), *in* is "the basic preposition for expressing interior location (*in the box*)" and extends via the temporal metaphor into "a time period conceived as a container within which an event is located (*That happened in the winter*, 'at a time included in the winter')."

[14] Antecedents of the relative adverb *where* are usually place-referring nouns. However, in (i) and (ii), from Satonaka (2013), the antecedents of *where* are not places but temporal expressions, treating times as places in space.

(i) We are living in an *age where* we have to deal with crimes which we have never heard of before.

(ii) We are living in a *time where* people all over the world may face starvation. (Satonaka 2013: 171)

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The preposition *through* also has (at least) two senses. One is the more basic 'space' sense, as in *across an area* (Longman dictionary 2008), illustrated in (82), and the other is the metaphorically extended 'time' sense, as in *from the beginning to the end point of an activity, situation or period of time* (Oxford advanced learners dictionary 2010), illustrated in (83).

(82) The burglar got in *through* the window.

(83) Sometimes I go to bed at 5 a.m. and sleep right *through* the day.

4.6.2 Metaphorical sense F2: Means

Consider examples (84)–(86).

(84) We talked about it *over* the telephone.

(85) Yesterday I heard the news *over* the radio.

(86) A message came *over* the loudspeaker.

In these examples, *over* carries the sense of 'means.' This sense of *over* is derived by a metaphorical extension from sense A, the semicircular path sense. I claim that the metaphorical extension of *over* from the semicircular path sense to the 'means' sense involves Reddy's (1979) conduit metaphor, which has also been employed by Lakoff and Johnson (1980) and whose significance is described in Lakoff (1993).[15] Lakoff and Johnson (1980) structure the complex conduit metaphor as built from the components in (87).

(87) a. IDEAS ARE OBJECTS.
b. LINGUISTIC EXPRESSIONS ARE CONTAINERS.
c. COMMUNICATION IS SENDING. (Lakoff and Johnson 1980: 10)

As they put it, "[t]he speaker puts ideas (objects) into words (containers) and sends them (along a conduit) to a hearer who takes the idea/objects out of the word/containers" (Lakoff and Johnson 1980: 10). In (84)–(86), for example, ideas are sent through the conduits of the telephone, radio, or loudspeaker. In this case as well as the case of

[15]Some examples of the conduit metaphor from Lakoff and Johnson (1980: 11) are given in (i)–(iv).

(i) It's hard to get that idea across to him.

(ii) I gave you that idea.

(iii) It's difficult to put my ideas into words.

(iv) His words carry little meaning.

As Lakoff and Johnson state, "in examples like these it is far more difficult to see that there is anything hidden by the metaphor or even to see there is a metaphor here at all. This is so much the conventional way of thinking about language that it is sometimes hard to imagine that it might not fit reality."

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metaphorical extension F1, the cognitive structure of the image-schema shown in Figure 13 is preserved.

The Oxford English Dictionary 2 (sense 13 of *over*) gives (88) as an example of the 'means' sense.

(88) Persons who, speaking *over* the field telephones, gave away any information at all […] would be court-martialled. (1928 Blunden *Overtones of War* iv 43)

From descriptions in the Oxford English Dictionary, it is obvious that in historical terms, the means sense of *over* developed more recently than the semicircular-path sense.

4.6.3 Metaphorical sense F3: Control

Consider examples (89)–(93):

(89) She has a strange power *over* me. (Lakoff 1987: 435)

(90) I have no control *over* what he does.

(91) He has no authority *over* me. (Taylor 2003: 115)

(92) He rules *over* a large kingdom.

(93) Henry VIII reigned *over* England from 1509 to 1547.

Lakoff and Johnson argue that *over* in these examples is a metaphorical extension of the 'above' sense (Lakoff and Johnson 1980, Lakoff 1987). Lakoff and Johnson (1980) state that the relevant metaphor is: "HAVING CONTROL OR FORCE IS UP; BEING SUBJECT TO CONTROL OR FORCE IS DOWN" (Lakoff and Johnson 1980: 15). Indeed, *over* in (89)–(93) at first appears to be metaphorically extended from the 'above' sense in section 4.4, but I challenge this view. Although I agree with the inclusion of 'above in physical space' as a sense of *over*, and accept the conceptual metaphor of "HAVING CONTROL OR FORCE IS UP; BEING SUBJECT TO CONTROL OR FORCE IS DOWN", I nonetheless claim that the sense of *over* in (89)–(93) should not be analyzed as a metaphorically extended 'above' sense. The reasons for this claim are as follows. First, in examples (89)–(93) the lexical items used in the verb phrases are fixed to some extent, and the verb phrases constitute verbal idioms (Huddleston and Pullum 2002: 273, 288). Second, compared with the sentences in (94), which Lakoff and Johnson (1980) adduce as examples of the metaphor HAVING CONTROL OR FORCE IS UP; BEING SUBJECT TO CONTROL OR FORCE IS DOWN, it is less clear that *over* in (89)–(93) involves this metaphor. The reason that this metaphor seems to be operating on *over* in (89)–(93) is that in each of the verb phrases one of the lexical items *power, control, authority, rule,* and *reign* is used.

(94) a. He's at the height of his power.

b. He is in the upper echelon.

c. His power rose.

d. He fell from power. (Lakoff and Johnson 1980: 15)

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While Lakoff and Johnson (1980) describe the metaphor involved in (89) as HAVING CONTROL OR FORCE IS UP; BEING SUBJECT TO CONTROL OR FORCE IS DOWN, Lakoff (1987) describes it differently, as CONTROL IS UP; LACK OF CONTROL IS DOWN (see also Murphy 1996). We must therefore carefully examine the use of *over* in examples like (89).

I claim that the sense of *over* found in (89)–(93) is a metaphorical extension from the central image-schema in Figure 13. I call this metaphorical sense of *over* 'control.'[16] I will show that as Lakoff's (1993) Invariance Principle requires, the cognitive topology of the source domain is preserved in these examples. As will be argued in detail in the next section, the source domain is physical space, the target domain is a dominion, and the cognitive topology preserved is the image of the structure wherein a TR moves parabolically above and across a LM in physical space.

In this section we have seen that the preposition *over* has eleven distinct senses, labelled above as A–F, with their subtypes. I will now argue that the senses of the preposition *over* form a radial category in which A is central, and B–F are derived from A, as shown in Figure 21. More specifically, the senses within this network result from ten transformations or extensions of the central sense: segment profiling (B1–B4), profiling the endpoint of a path that the speaker/interpreter mentally traces (C), profiling the peak of the semicircular path and excluding the rest (D), extending the semicircular path-trajectory to an image of covering (E), and other metaphorical extensions (F1–F3).

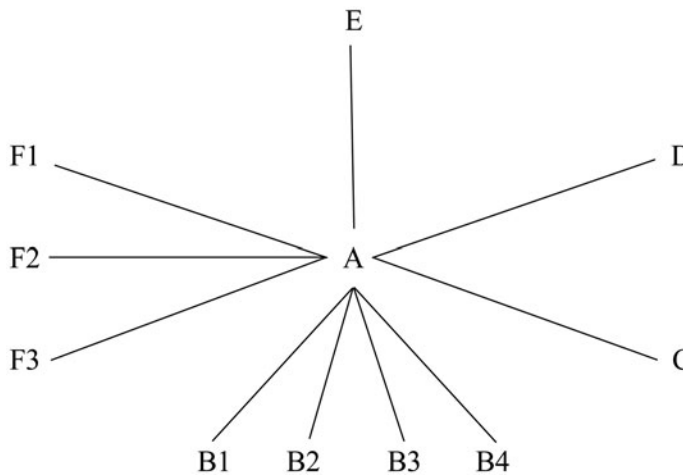


Figure 21: The radial category of the preposition *over*

[16] *The Oxford English Dictionary* 2 (sense III 8 of *over*) gives examples (i) and (ii), in which *over* has a metaphorical control sense. Also, from descriptions in the OED it is clear that the control sense of *over* as described in section 4.6.3 developed later than the semicircular-path sense.

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We take the radial network in Figure 21 as a cognitive model of how categories of lexical meanings are organized. According to Lakoff (1987: 438–444), the radial structure is psychologically real and motivates the spatial polysemy of the lexical item independently of the context in which the word appears (Zlatev 2003). The radial structure in Figure 21 is simpler than the radial structures shown by Lakoff (1987) and other previous studies. This section has thus provided a natural semantic analysis of the preposition *over* from a cognitive perspective.

5. Further discussions of metaphor analyses of OVER

In the previous section it was shown that the preposition *over* has as distinct senses A, B1, B2, B3, B4, C, D, E, F1, F2, and F3. Senses A–E in *over* are spatial, and based on the hypothesis that image-schemas are captured three-dimensionally and topologically.[17] In this section, we focus on *over*'s metaphorical senses F1–F3. Prior studies on the metaphorical uses of *over* have been carried out by Lakoff (1987), Kreitzer (1997), Taylor (2002, 2003, 2012), among others. However, there is room for more comprehensive and insightful research into the metaphorical extensions of *over*.

Consider first the metaphorical time-sense F1. It was argued in section 4.6.1 that sense F1 has to do with the metaphor: TIME IS OBJECTS IN SPACE. This metaphor is a type of primary metaphor, provided by Grady (1997).[18] A primary metaphor "has a minimal structure and arises naturally, automatically, and unconsciously through everyday experience" (Lakoff and Johnson 1999: 46). More specifically, primary metaphors are "part of the cognitive unconscious. We acquire them (primary metaphors) automatically and unconsciously via the normal process of neural learning and may be unaware that we have them" (Lakoff and Johnson 1999: 56). Following Heine et al. (1991) regarding the directionality of mapping, described in

(i) I will not, that a woman haue authority, charge or power *ouer* man. (1558 Knox *First Blast* (Arb.) 37)

(ii) Oh, that my dear Mother had more command *over* herself.
(1796 Jane Austen *Pride and Prejudice* I. xxiv)

[17]Huddleston and Pullum (2002: 649) state that all prepositions demonstrate a considerable degree of flexibility in how they apply to locative situations. Indeed, *over* exhibits considerable flexibility, as in A–E. For some examples, (e.g., (71), (73), (75)), the sense of *over* is difficult to determine. For example, Lakoff (1987) describes the 'covering' sense of *over* in (71) as a variant of the 'above' sense, while Dewell (1994) categorizes senses of *over* based on the physical properties of TR. His analysis of *over* in (73) and (75) was problematic under the framework assumed here. I attribute the difficulty in classifying the senses of *over* to the nature of flexibility in *over*.

[18]Some examples of primary metaphor are given in (i)–(v).

(i) AFFECTION IS WARMTH: *They greeted me warmly.*

(ii) MORE IS UP: *Prices are high.*

(iii) INTIMACY IS CLOSENESS: *We are close friends.*

(iv) UNDERSTANDING IS GRASPING: *He grasped our idea immediately.*

(v) CATEGORIES ARE CONTAINERS: Are tomatoes in the fruit or vegetable category?

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section 4.6.1, we can see that the metaphor TIME IS OBJECTS IN SPACE applied to derive sense F1 is a primary metaphor (Evans 2003: 62).

Next, let us turn to the metaphorical means sense (F2). In section 4.6.2, we argued that the metaphor applied to give sense F2 is Reddy's conduit metaphor. It seems clear that the conduit metaphor is not a primary metaphor. Primary metaphors are part of the cognitive unconscious, and we acquire them through embodied experiences (Murphy 1997, Gibbs 2001, Lakoff 2012).[19] In fact, Grady (1997) argues that primary metaphors emerge from a clear experiential basis (see Evans and Green 2006: 309). Clearly, the association in the conduit metaphor between the source domain and the target domain lacks this experiential basis. In light of the fact that the conduit metaphor is not a primary metaphor, we can see that sense F2, 'means', is less conventionalized than sense F1, 'time'.

In addition to examples with *over,* it is easy to find expressions whose central sense involves a path being used to represent means, as in (95) and (96).

(95) It is chiefly *through* books that we enjoy intercourse with superior minds.
William Ellery Channing

(96) He is watching the players *through* binoculars.

Although it is originally an expression for a path, *through* in these examples carries the sense of 'means.' Even non-native speakers of English can perceive this sense of *through* as a metaphorical extension of a path.

Last, let us consider sense F3, the 'control' sense, discussed in section 4.6.3. I claimed that this sense of *over*, illustrated in (89)–(93), is metaphorically extended from the central, semicircular-path sense A. This raises the question of what kind of metaphor is involved in that extension. It will be an image metaphor (Lakoff and Turner 1989, Gibbs 1994).[20] In sense F3, a semicircular image drawn in physical space is mapped into a dominion, preserving the cognitive topology of a semicircular mental image. In the metaphorical mapping applied to sense F3, the source domain is physical space, and the target domain is a dominion; the TR's actual movement above and across the LM does not have to be present. Furthermore, since primary metaphors are part of the cognitive unconscious and emerge from a clear experiential basis, an image metaphor is not a primary metaphor.

In this section we have shown that the metaphor that applies to sense F1 is a primary metaphor, which arises naturally, automatically, and unconsciously through everyday experience. We have also argued that the metaphors that apply to senses F2 and F3 are the conduit metaphor and an image metaphor, respectively, which are not primary metaphors.

[19]According to Lakoff and Johnson (1999: 57), a primary metaphor is not the result of a conscious multistage process of interpretation.

[20]According to Lakoff and Turner (1989: 8), an image metaphor is a mapping from one conventional image onto another conventional image.

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6. Concluding remarks

In this article, I have discussed various senses of the preposition *over*, arguing that the image-schemas of *over* are structured three-dimensionally, and that the shape and size of the TR and LM are expandable and reducible topologically. I have shown that the preposition *over* has the distinct senses listed in (97).

(97) A: Semicircular path
B1: Profiled central region of the semicircular path
B2: Profiled upward region of the semicircular path
B3: Profiled downward region of the semicircular path
B4: Profiled endpoint of the semicircular path
C: Profiled endpoint of the access path
D: 'Above' sense
E: 'Covering' sense
F1: Metaphorical extension, 'time'
F2: Metaphorical extension, 'means'
F3: Metaphorical extension, 'control'

I have assumed the semicircular path A to be the central image-schema, and have argued that the senses of *over* form a radial category where A is central and B–F are derived from A. The senses in B–E are derived via image-schema transformations. Specifically, B1–B4 result from segment profiling. The image-schema transformation involved in C profiles the endpoint of the path the speaker/interpreter has mentally traced. In D, the image-schema transformation profiles the peak of the semicircular path, and excludes the rest of it, while in E the transformation extends semicircular trajectory to an image of covering. The senses in F1–F3, on the other hand, are formed by metaphorical extension.

The main contribution of this article is to provide an alternative analysis of an extensively studied phenomenon which makes possible an improved, simplified cognitive linguistic analysis of the preposition *over*. The claim made here that TRs, LMs, and image-schemas should be structured three-dimensionally and topologically is crucial to this simplification, and advances our knowledge and understanding of linguistic behavior in important ways, while also contributing to defining and characterizing the semantics of spatial language, in particular of prepositions.

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