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An Instruction-Based Analysis of Over

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Abstract

Many studies in cognitive linguistics have analysed the semantics of over, notably the semantics associated with over as a preposition. Most of them generally conclude that over is polysemic and that this polysemy is to be described thanks to a semantic radial network, showing the relationships between the different meanings of the word. What we would like to suggest on the contrary is that the meanings of over are highly dependent on the utterance context in which its occurrences are embedded, and consequently that the meaning of over itself is under-specified, rather than polysemic. Moreover, to provide a more accurate account of the apparently wide range of meanings of over in context, we ought to take into account the other uses of this unit: as an adverb and particle, and not only as a preposition. In this paper, we provide a corpus-based description of over which leads us to propose a monosemic definition.

Key-words: polysemy, instruction, gestalt compositionality, over, corpus, preposition, adverb particle, monosemy, convocation-evocation principle

1. Introduction

This paper deals with the semantics of the English word over. This word is particularly interesting to study since it can be a preposition, but also a particle, an adverb and even a prefix. Its semantics is therefore difficult to grasp, as the word appears in a wide range of contexts1 with apparently many potential meanings depending on these contexts. Over has been the subject of a large number of scientific papers attempting to describe its meaning, using different points of view and different theoretical frameworks (see section 1).

Most studies interested in the semantics of over enumerate a number of meanings in the hope

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1 This range of contexts is obviously connected with frequency as over ranks 182 among the most frequent units of the English language according to the Corpus of Contemporary American English (see the top 60,000 lemmas on http://www.wordfrequency.info/files/entriesWithoutCollocates.txt).
of accounting for all its different uses in context (Lakoff 1987, Dewell 1994, Deane 1993). These descriptions are rather unsatisfactory, however, as they are based on the questionable assumption that humans have access to a repertoire of meanings among which they choose the correct one depending on the context, and are therefore largely static. This kind of assumption leads to polysemy and multi-categorization of the word whereas we contend that it is more plausible to consider that the meaning of over appears gradually in interaction with the information provided by the context.

Very few studies refer to an ongoing process to explain how the semantics of the word could “appear” during communication, depending on the context. One of the most recent and most inspirational studies along these lines is that by Tyler and Evans (2001, 2003). They explicitly say in the introduction to their paper (Tyler and Evans, 2001) that the meaning of over is not stored in a repository of meanings but must be construed depending on the context. They also introduce the idea of a “protoscene” from which all the other meanings of the word can be derived. However, the process itself is not explicitly described in their paper: the protoscene is the center of a network of meanings but these meanings finally seem to be rather static. Moreover, their protoscene presupposes that a concrete, spatial representation comes first whereas this assumption has not yet been verified in corpora.

Finally, another reason to take a fresh look at the word over is the fact that few publications take into account the full complexity of the word: most studies focus on the preposition only, and some of them only take into account some of its uses. There is therefore a need to focus on real examples to get an idea of the productivity of the different uses of the word.

Our main hypothesis is that the meaning of over is not polysemic by nature. Rather, we believe that it is the context of use that triggers the different meanings of over. We suggest the idea of “a schematic form” that provides an underspecified account of the meaning of the word. Depending on the context, this schematic form can produce the different shades of meaning associated with over, but also the different categories associated with the word (in this framework, over is not a preposition or a particle in itself, it is the context of use that gives the word its category).

Our study is based on a corpus made up of occurrences of over extracted from the BNC.

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2 Another reason for disagreeing with this approach is that listing numerous entries in the dictionary shifts the emphasis onto disambiguating the word in context. Natural language processing showed long ago that lexical disambiguation is a hard task which is prone to combinatorial explosion.
The use of a real corpus has several advantages. One is the fact that it makes it possible to focus on real data that are representative of the usage of the word. A second important point, amply demonstrated by corpus linguistics studies, is the relevance of frequency information to semantic analysis. Last but not least, the use of real data gives access to actual contexts that are fundamental in defining the features relevant for a dynamic approach to meaning.

Of course, we agree that *over* in context conveys several potential meanings. We thus took Tyler and Evans’s study as a starting point for our corpus analysis and annotated a series of examples using the different word meanings defined by these authors (their repertoire of senses of *over* is one of the most precise and complete). However, this is not our end point but rather our starting point: taking into account the different meanings in context and the main co-occurring features, we attempt to define *i)* how a schematic meaning can be “profiled” to give birth to the full meaning of the word in context and *ii)* what the core meaning of *over* is, *i.e.* its “schematic form”. The investigation of these two questions is the main goal of this paper.

The study is structured as follows. In the first section, we give an overview of previous approaches and explain what their limitations are. In the second section, we describe the corpus used and the method followed for the exploitation of the data. We then observe the main features associated with the different meanings of the word, which allows us, in the last section, to offer an answer to our two initial questions: we try to define the “schematic form” associated with *over* and explain how this form can be profiled depending on the context to explain the different uses of the word.

2. State of the Art
2.1. Polysemic Frameworks

*Over* seems to be the favourite unit of many cognitive studies: see Taylor 1988, Deane 1993, Dewell 1994, for the last century, and Deane 2005, Talmy 2005, Tyler and Evans 2001, 2003, Van der Gucht *et al* 2007 or Zlatev 2003 more recently. All of them derive from the seminal work by Brugman 1981 and Lakoff 1987. We can nonetheless make a clearcut distinction between analyses advocating a polysemic approach and those that favour a monosemic one.

The earliest work on *over* within cognitive semantics was drew on the radial network analysis by Lakoff 1987, after Brugman 1981. They have inspired many other studies on semantics as
they oppose a non-objectivist view to a conception of meaning committed to necessary and sufficient conditions. The lexical network theory puts forward the idea that meaning is represented by images and image schemas. This theory also advocates that meaning is present in a network of family resemblances based on Wittgenstein’s model.

Lakoff considered that an expression like *over* cannot be analysed and represented by a single core meaning because it is too polysemic. An abstract sense would not be able to

> “distinguish among the cases and [would be] so devoid of real meaning that it is not recognizable as what people think of as the meaning of [the] word” (Lakoff 1987: 416). “

A polysemic word like *over* is best represented by a motivated semantic network in a radial model in which:

> “the senses of each expression form a radially structured category, with a central member and links defined by image-schemas transformation and metaphors.” (ibid. 460).

From this perspective, the ‘central’ or ‘primary’ sense is spatial insofar as semantic structures are grounded in human experience and perception, notably the perception of space. The *Above-Across* Sense – a combination of *above* and *across* -- is then the central node of the radial network, as expressed in (1):

(1) The plane flew *over*.

In (1) a trajector (TR) moves above an unidentified landmark (LM):

![Diagram](image)

Fig. 1. The *Above-Across* Sense (Lakoff 1987: 419)

By adding information, for instance about the nature of the landmark (*yard, hill, wall*) and by specifying the presence of contact or not, the basic schema will be enriched and become more complex, as in (2):
(2) Sam lives over the hill.

In this example, information is added by the verb and the noun. The LM is vertically extended, the TR is in contact with it, and the sentence yields an end-point focus corresponding to a new schema linked to the basic one. This sort of extension produces a very fine-grained conception of polysemy, based on what Lakoff called motivation. Meanings such as Excess or Repetition for instance are actually metaphorical extensions from the central spatial schema. They are not fully arbitrary, but they cannot be predicted from the central senses like the Covering Schema (Lakoff 1987: 426 and ff) or the Reflexive Schema (p. 430). Excess or Repetition are actually motivated by various elements of the semantic chaining: “they are conventional extensions” (p. 116). Words like overlook, oversee or look over are thus a “specialized assembly of independently existing parts” (p. 438), but their meaning cannot be predicted from the meaning of look, see or even ‘over’. Lakoff is actually concerned not by “why those expressions mean what they mean, but why those are natural meanings for them to have” (p. 438).

Lakoff’s radial conception of polysemy is considered too fine-grained by Tyler and Evans (2001, 2003). Instead, they propose what they call ‘principled polysemy’. They argue that the polysemy of over can be schematized as a proto-scene “involving a spatial configuration in which the TR is located higher than the LM” (Tyler and Evans 2003: 64) and associating a functional aspect: “the LM (or the TR) is conceptualized as being within the sphere of influence of the TR (or the LM)” (2003: 66). They suggest the following schema:

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Fig. 2: Proto-scene for over (Tyler and Evans 2003 : 66)
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Such a proto-scene is highly schematic insofar as its purpose is to capture configurational information, i.e. the conceptual-spatial relation between the TR and the LM. Tyler and Evans’s view – based on Lakoff 1987 and Langacker 1987 – is that

“the meaning assigned to any utterance is radically underdetermined by the lexical items and the grammatical structures in which they occur. Rather, sentential interpretation is largely the result
of various cognitive/inferential processes and accessing appropriate world knowledge” (2003: 69).

Hence according to them, sentences (3) and (4):

(3) The cat jumped over the wall.
(4) The tree branch extended over the wall.

do not represent two different senses as argued by Lakoff, but they prompt for the same one as exemplified in (3). In this example, the Path sense is derived by inference from knowledge of the real world, namely of the way a cat jumps (not straight up in the air):

“we argue that the interpretation regarding the ‘above-across’ trajectory of the movement assigned in sentence [(3)] is not prompted for by ‘over’, but rather from the integration of linguistic prompts at the conceptual level, in a way which is maximally coherent with and contingent upon real-world interactions.” (2003: 71).

Even though Tyler and Evans put forward a unique schematic scene, in contradistinction to classical lexical network theory, they nonetheless propose a semantic network for over with different clusters (the A-B-C Trajectory Cluster, Up Cluster) and senses (Covering, Examining, Reflexive):
Fig. 3 shows that some senses are not connected directly to the central schematic meaning of *over*. Covering, for instance, or Examining are rather connected to the proto-scene by *usage* – they are attested meanings – and not intrinsically, *i.e.* directly to the proto-scene. Deane 2005 points out however that the connection between senses “appears to be incidental, contingent upon inferential processes that remain relatively open und unspecificed” (Deane 2005: 244), and considers this sense discontinuity to be the main drawback of Tyler and Evans’s approach. He comments that the ‘covering’ schema motivates an example such as (5a) as well as an example like (5b):

(5a) The wig is *over* his head.
(5b) The wig is *over* his face.

Deane 2005 suggests that the core meaning of *over* applies to both examples, whereas Tyler and Evans argue that the interpretation of an example like (5b) derives from the context. They actually argue for a distinct meaning for the ‘covering’ sense, with an example like the following:
(6) They put a transparent plastic sheet over the painted ceiling of the chapel during repairs. (Tyler and Evans, 2003: 91)

In (6), the TR (“the transparent plastic sheet”) is physically lower than the LM namely “the painting ceiling”. Still, *over* is used in the utterance and not ‘under’ and

> “unless ‘over’ had a distinct Covering Sense associated with it, we would expect this sentence to be semantically anomalous because the TR is higher than the LM, a canonical part of the meaning of ‘over’” (Tyler and Evans 2003: 92).

The explanation given by the authors is that the vantage point in the case of (6) is higher than the TR and no longer off-stage:

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   Vantage point
   TR
   LM
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*Fig.4: The covering sense, from Tyler and Evans 2001: 133*

Hence, they conclude that “the covering implicature can be reanalysed as distinct from the spatial configuration designated by the proto-scene.” (2003: 91) and that “the ‘covering’ component comes to be instantiated in the semantic network, via pragmatic strengthening as a distinct sense” (*id.*).

Deane 2005 reformulates Tyler and Evans’s position on *over* in a more dynamic way. His analysis concerns *over* as a spatial preposition (which excludes its use as a particle or a prefix). He rejects both geometrical approaches such as Lakoff’s 1987 or Brugman’s 1981 and more functional ones such as Herskovits’s 1986 or Vandeloise’s 1991. He suggests instead that multiple reference frames are needed to understand prepositions, and that the role of these multiple frames is to capture the complexity of spatial thought. Deane’s position is that prepositions ought to be defined as “clusters of sensorimotor representations” (2005: 250). By introducing visual notions borrowed from the world of photography like *resolution,*
Deane analyses *over* in contrast with *on* and *above* in examples such as the following ones:

(7a) The balloon is *over* the table.
(7b) The balloon is *above* the table.
(7c) The balloon is *on* the table.

In Deane’s perspective, the difference between examples (7a) and (7b) resides in a difference of resolution and occlusion. From the same viewpoint (the side) and at the same level of resolution (i.e. low resolution) the TR is separated from the LM by a gap in (7b) whereas it is not separated from the LM in (7a). There is nonetheless no difference between these examples at high resolution. Viewed from the top, which is taken into account in the case of *over* only, the TR partially occludes the LM. This is also the case in (7c), with *on*, but this preposition differs from *over* as regards the viewpoint: from the side, the TR is not separated from the LM by any gap.

By introducing force dynamics notions such as movements, paths, and forces interacting in space, Deane proposes to define *over* in three image-sequences:

(a) the LM functions as a barrier on the locomotor space and the TR is on the far side of the LM from its initial position
(b) the LM functions as a barrier for movement over the locomotor surface and the force-dynamics impetus of the TR carries it to a location higher than the LM
(c) the TR has a force-dynamics impetus downward toward the LM and consequently the TR exerts force upon the LM.

Deane completes the definition of *over* by introducing an allocentric space (‘maneuver space’). The maneuver space comprises notions such as distance, relative orientation and the consequences of manipulation, the basic concern being clearance, defined as:

“the open space from a point within the edge of a figure to the nearest point on the ground. An object’s position may therefore be defined by systematically mapping its clearance under different manipulations such as rotation, motion toward the ground, or motion parallel to the ground.” (2005: 264).

*Over* is then defined by the following maneuver-space image complex (id.):
“a- Initial position: there is clearance between the TR and the LM, with the TR orientated parallel to the ground.
b- Image after vertical displacement: zero clearance
c- Image after horizontal displacement: no change in clearance
d- Image after rotation: zero clearance.”

Deane’s dynamic model aims at “provid[ing] an account of the mechanisms which relate a word’s polysemy to its prototype [whose] effect is to enforce a close relationship between a word’s conceptual representation and its potential for polysemy” (2005: 271). Starting from the premise that giving a general definition of the various senses of ‘over’ lumped together is as unsatisfactory as keeping these senses distinct (which could mask the semantic coherence even if each sense has its own definition), Deane puts forward the idea of a central prototype via the application of a “preference rule upon structured sets of images to produce contextually induced semantic interpretation” (2005: 272).

Deane’s study concerns the spatial meaning of over and very little is said about the other senses (temporal, examining, control, etc.) whereas Tyler and Evans offer a more general study and hence a more complete definition. Besides, in Deane’s study, nothing is said either about the other uses of this unit, such as for instance its role as a verb particle.

What transpires from the various semantic networks under consideration, and notably from Lakoff’s, is that they are too fine-grained – about 100 different meanings are described in Lakoff 1987 for instance. Moreover, the very structure of the network is not made clear in most (or all?) of the studies. Nothing is explicated about the orientation of the branches for instance, or about the distance between the nodes. While the absence of rules on the one hand and the proliferation of meanings on the other hand tend to show that over is indeed polysemic, Sandra and Rice 1995 highlight a major problem stemming from this kind of approach:

“the least that can be said is that prepositional network-style networks are minimally committed to a psychological process (or several such processes) of human categorization” (Sandra and Rice 1995: 100).

They argue convincingly that networks create a real confusion between semantic extension
and semantic representation: a network helps represent polysemy, but not its extension nor its proliferation. They recognize that speakers do make distinctions between the different uses of over, but “what is in the network is only in the structure of the language and not at all in the structure of the mind” (Sandra and Rice 1995: 104). For all these reasons, we will favour monosemic models rather than polysemic ones.

2.2. A Monosemic Answer

Rejecting polysemic approaches and the proliferation of values that they promote, Van Der Gucht et al. 2007 put forward a monosemic account of over. The authors try to give a more complete definition of the unit – even if nothing is said about over as a verb particle as we shall see. They choose to root the debate on polysemy in the classic opposition between Locke and Leibniz. Locke (1689) promotes the idea of a general polysemy insofar as he stresses that words cannot be translated from one language into another and that basically they are means to record human thoughts. He nonetheless makes a distinction between words that are “names of ideas in the mind” and words “that are made use of to signify the connexion that the mind gives to ideas, or to propositions, one with another” (1689, III, 7, §1, quoted by Van der Gucht). The latter, called “Particles”, have a functional role and their meaning is not directly calculated, as compared with the particle “but” for instance which has a great number of meanings but from which it is not always possible to draw a general, formal meaning. Locke’s position is to some extent mirrored in today’s cognitive framework developed in particular by Lakoff, Langacker or Taylor. In Lakoff’s view for instance (1987), polysemy is largely natural and characterizes any linguistic item. This view promotes a radial network conception of over with one or more centres (‘above’ meaning and ‘across’ meaning) in the network since

“One subcategory is the center; the other subcategories are linked to the center by various types of links. Non-central categories may be subcenters, that is, they may have further center-periphery structures imposed on them.” (Lakoff, 1987: 287).

As Lakoff favours a model of the mind as being “embodied”, the central values of the network are essentially spatial and semantic structures are grounded in experience and perception. The non central meanings are derived by different links (metaphor, metonymy,
similarity, etc.) and are not predictable from the central sense.

Leibnitz’s view on polysemy is less radical, even if he shares Locke’s conviction that it is difficult to find a single general meaning for particles like but. In fact, he favours a paraphrase, which can substitute for the word in every occasion, provided that this paraphrase is chosen once all instances of the linguistic item have been analysed. Van der Gucht et al. follow Leibnitz’s position and reject a conception of polysemy which enables meaning to proliferate rather than to form a coherent unit:

“the radical polysemy hypothesis leads to a semantic analysis that not only is too fine-grained but also fosters a highly problematic rampant polysemy.” (Van Der Gucht et al. 2007: 741)

They therefore favour Tyler and Evans’s moderate view on polysemy, akin to Leibnitz’s conception, mainly because Tyler and Evans reject the primacy of spatial meanings. Van der Gucht et al. do not follow them, however, on the embodiment postulate as according to them “the embodied meaning postulate can lead to assuming unnecessary polysemy.” (2007: 744). They consider that the ‘covering’ sense that Tyler and Evans underscore in their article is in fact the projection of extra-linguistic categories onto semantic ones and does not constitute a distinct meaning. Hence, Van der Gucht et al. consider that the following example,

(8) Joan nailed a board over the hole in the ceiling.

has two different readings and is thus ambiguous:

- a-reading: the board is situated in a lower position with regard to the ceiling
- b-reading: the board is situated in a higher position with regard to the ceiling

These readings construct two different perceptions of the situation, one in which we consider that the board is nailed below the hole and the other one where the board is considered to be nailed on the upper side of the ceiling\(^3\). This distinction is supported by the fact that this sentence could be uttered by two different speakers from two different viewpoints:

“Interpreting the scene from a focal perspective means that one interprets the meaning of over from the own point of view of the speaker ((a)-reading). By contrast, interpreting the scene

\(^3\) But in that case, we may suggest that the board could also be nailed over the hole located on the floor rather than in the ceiling.
from a disfocal perspective implies that one takes the point of view of the board or, by way of extension, the point of view of another speaker who is to be located at the attic or another room above the ceiling ((b)-reading).” (Van der Gucht et al. 2007: 746)

This leads Van der Gucht et al. to support the idea that over is not ambiguous but is realized in a distinct, unpredictable sense in this sentence. Their explanation is that

“over, being a means to conceptualize the relation between a spatially ‘superior’ TR and an ‘inferior’ LM and conceivable as a semantically invariable meaning bearing linguistic item, can be said to display a structured polyvalence (or: polyreferentiality) at the experiential level, i.e. at the level of interpreting extralinguistic reality, which is perfectly explainable. We stress that the item is polyvalent in a structured way, because the linguistic meaning constrains the range of interpretations in a principled fashion, due to the fact that over invariably expresses that one object is situated in a specific relation to a lower reference point. Therefore, to assess the relation between the invariable meaning proper and the polyvalence of over, it is imperative not to interpret the specific configuration which holds between the TR and LM in a single – call it ‘prototypical’ – way, excluding other possibilities which then have to be accounted for by invoking polysemy or certain kinds of ‘extension’.” (id.)

Their view is then that the meaning of over and the relation it refers to have to be distinguished: the relation established by over between two entities X and Y should be differentiated from the same relation which can be experienced and perceived in various ways by the speaker. The weakness of Tyler and Evans’s methodology, they claim, is that it does not enable them to make a clearcut distinction between the semantic contribution of over to the meaning construction of the utterance and the semantic contribution of the other linguistic units of the utterance. Building their own methodology on Coseriu (1985, 2000), Van Der Gucht et al. propose to assign a single, non ambiguous meaning to the preposition over and to reconsider the “battery of senses” associated with the preposition as a side effect of our connection with the outside world:

“The main reason why a battery of senses is postulated in the first place derives from a non-linguistic criterion we term the ‘iconicity of embodied meaning’. This criterion prompts the linguist to accept as many distinct senses as there are prototypical common sense experiences commonly associated with (or, ‘reflected by’) the use of a specific linguistic item in various instantiations.” (Van Der Gucht et al. 2007: 734)
Van Der Gucht et al. distinguish instruments from lexical items. A lexical item has a self-contained conceptual meaning, whereas prepositions have an instrumental meaning in that their main goal is to connect two different words. Therefore, the meaning of a preposition can be underspecified: its full meaning will be derived from the meaning of the words connected using this preposition. In other words, the meaning will be self-contained when and only when the preposition is analysed together with the words that it connects.

Contrary to Tyler and Evans’s view, the authors propose that:

• ‘the meaning of over is an instrumental meaning which can only be instantiated in combination with lexical meanings’;
• ‘the meaning of the linguistic context should not be projected into the meaning of the preposition’
• ‘the meaning of over should be conceived of as a ‘general’ non-lexical meaning which only specifies a relation between slots that have to be filled by autosemantic items, e.g., Noun over Noun, Noun BE over, Verb over Noun, etc.’ (Van Der Gucht et al. 2007: 748)

Van Der Gucht et al. then postulate a general instrumental meaning for over which is paraphrased as follows: ‘positioning of X vis-a-vis a reference point Y which is inferior to X’ (2007: 748) where X is an object and Y a landmark.

The present study will broadly follow Van Der Gucht et al’s position concerning polysemy and its processing in natural language. In particular, we agree with their attribution of an instrumental meaning to over rather than a proliferating semantic network based on Lakoff’s model or even a more moderate view of polysemy. However we think that it is of prime importance to determine the meaning of over thanks to the analysis of attested data, contrary to Van Der Gucht et al. who only consider a small set of examples and no attested corpus data. Furthermore, we consider that it is essential to take into consideration the use of over as an adverb since Hallan’s corpus-based study (2001) clearly showed that the adverbial use is primary in pre-school children’s speech as well as in adult speech (Van der Gucht et al.
only consider *over* as a preposition). The next section presents our study of a representative set of utterances containing *over* (whatever its category), extracted from the British National Corpus.

3. **Data Analysis: a closer look at the polysemy of over**

3.1. *A Corpus-Based Method*

Cognitive linguists now frequently make use of corpus data to ground their theories by the examination of attested examples (see for example Gries 2006). This paper will use a similar method to explore the semantics of *over* since previous studies of this word have been mostly based on introspection.

To provide a clear account of the diversity and frequency of the different values associated with *over*, a corpus-based approach is fundamental. Besides, the systematic annotation of data requires making the decision process explicit (‘how should one choose the right semantic value for this example?’) and helps identify borderline cases. It may even lead to the discovery of categories that have not been previously described.

On the other hand, we are aware that the precise analysis of all the slight differences of meaning of *over* would require the annotation of thousands of examples. This approach was clearly not realistic in our context. Moreover, all the relevant linguistic features for the analysis were not known in advance.

We therefore set up a four-stage process for data analysis:

1. First, a series of examples was annotated and discussed in order to find the different semantic values, the relevant variables and their contribution to the meaning of the lexical unit.

2. A detailed analysis of the different meanings along with the corresponding contexts was done through manual corpus annotation, in order to obtain an appropriate level of generalization on the basis of which senses could be distinguished.

3. Then, an instructional schematic form was developed from the analysis of examples, unfolding the core semantic of the word (schematic form) and its interaction with the

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The same criticism could be levelled at the various authors presented here.
context (the set of instructions it gives and/or receives).

4. Lastly, some old and new examples were analysed using the conclusions reached during the second stage, to ensure that the model was coherent and practically manageable.

This method is very close to Corpus Pattern Analysis (CPA), a lexicographic method defined by Hanks in coordination with various other linguists (see Hanks, 2004 and the Website http://nlp.fi.muni.cz/projects/cpa/).

The key point of CPA and other corpus-based approaches like Gries 2006 is that the lexical meaning of linguistic items cannot be defined for words in isolation.

However, while verbs have been intensively studied in corpus linguistics (e.g. the flagship of CPA is the DVC project, Disambiguation of Verbs by Collocation, see http://clg.wlv.ac.uk/projects/DVC/), connectors have received less attention, probably because the problem is more challenging. A word like over corresponds to several parts-of-speech, with a wide range of different meanings as we have just seen in section 2.

Our corpus was automatically extracted from the British National Corpus using over as a keyword. 325 utterances were extracted containing more than 346 occurrences of over (over may appear twice in the same utterance; it can also be part of the collocation over and over). This corpus was then manually annotated using a specifically designed multi-level annotation scheme. For the annotation itself, we chose to use ANALEC, a piece of software especially designed for this kind of problem: ANALEC uses an XML structure for annotation but contrary to other annotation tools, ANALEC makes it very easy to add a new feature, remove another one, or merge two initially distinct features (taking into account conflicts and proposing a nice interactive process to solve them, etc). ANALEC also provides various visualization modules to identify relevant features, correlations of relevant features and exceptions.

As already said, a crucial point is that the annotation was not done with a fixed set of a priori features. Several cycles of annotation and revision of the annotation scheme (involving several annotators) were necessary to reach a consensus, and define an annotation scheme that was at the same time rich, tractable and storable in generic formats (to ensure that the corpus and the annotation are re-usable). Thus, the use of a corpus makes it possible to have a data-

\footnote{ANALEC is downloadable at: http://www.lattice.cnrs.fr/Telecharger-Analec. For a presentation of ANALEC, see Landragin, Poibeau, Victorri 2012.}
driven approach to meaning.

Practically, the syntactic value of *over* was first tagged: *over* can be a preposition, a particle or an adverb. All the occurrences were then annotated with a semantic value derived from Tyler and Evans (2003: 125, see Figure 3 above). We then coded information concerning the context of *over*. We annotated dependencies around *over* (e.g. trajectory / landmark); lastly, information about these elements was annotated as well (lemma and tense of the verbs, *etc*).

One of the main problems of corpus linguistics is to be able to annotate all or most of the useful information in context, but still get a tractable annotation scheme. We made several practical experiments to find an optimal solution using different annotation schemes and different annotators. Lastly, disagreements between annotators were solved by consensus after discussion. During the last stage of the annotation process described above, new examples were extracted from the BNC to check the adequacy of the linguistic description on new, unseen sentences.

3.2. Results of the Corpus Annotation

We annotated the 325 sentences using the semantic categories identified by Tyler and Evans (2003) presented in Figure 3. Yet, this classification needed to be refined so as to integrate recurrent values of *over*, such as for instance temporal values. So, even if this classification remains a good starting point for the study of *over*, it had to be modified. We relabeled certain meanings, such as 2.D (“Temporal” became “Scanning of an Interval”), 4.A (“Focus-of-Attention” became “Topic”) or 5.C (“Preference” became “Divider”). These new labels actually suit the data we found in our corpus and provide a better account of their meanings. “Scanning of an Interval” for instance is more precise than “Temporal” since the data showed that *over* is generally followed by a period rather than just a date: “over a number of years”, “over the course of the last 25 years”, “over time”, *etc*. “Topic” (a subject people talk or write about) is also more precise than “Focus of Attention” insofar as in the majority of the examples we analysed, *over* was associated with a noun or a verb of debate, opposition, or agreement:

(9a) French Museums proved unable to agree over the price at which the paintings should go to the Museum of Melun

(9b) Methodists’ main concern was not so much the debate over collectivism v. individualism as over reunion of the various Methodist divisions.
In the case of “Divider”, we found that the context of most of the utterances in our corpus were mathematical, as in “A hundred and seventy over eighty”, which drove us to change Tyler and Evans’s label.

We also suggested new labels, which were not included in Tyler and Evans’s classification. These new meanings are in fact derived from the Covering node, that we divided into 3.A “Full covering” and 3.B “Scattering”. These new meanings came to light through the annotation of the corpus and the analysis of the data. Thus, we made a distinction between two different cases:

(10a) ZEPPELINS of World War One by Wilbur Cross, tells of the little-known aerial battles that took place over England during the Great War, when Germany attempted to paralyse the British by dropping tons of bombs from a fleet of super-Zeppelins.

(10a) construes the case of “Scattering” because the battle took place over different parts/regions of England, but not all over the land itself.

(10b) I do thank you for stopping and not running poor Nellie over.

(10b) construes the case of “Full Covering” because the pet could have been entirely “flattened out” by the car.

Apart from distinctions of labels, we obtained results in terms of correlations and regularities that are presented and discussed in the following sub-section.

3.3. Data Analysis: Correlations and Regularities

The results obtained thanks to our annotations make it possible to establish correlations between the semantic values of over and the various linguistic features observed in the corpus, notably concerning the matching of semantic values and categories (Chart 1) and the distribution of the different semantic values (Chart 2):

<table>
<thead>
<tr>
<th>Semantic Values</th>
<th>adverb</th>
<th>particle</th>
<th>preposition</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2E - scanning of an interval</td>
<td>1</td>
<td>0</td>
<td>60</td>
<td>61</td>
</tr>
<tr>
<td>4A - topic</td>
<td>0</td>
<td>1</td>
<td>57</td>
<td>58</td>
</tr>
<tr>
<td>5A - more</td>
<td>45</td>
<td>0</td>
<td>4</td>
<td>49</td>
</tr>
<tr>
<td>2B - above and beyond</td>
<td>4</td>
<td>5</td>
<td>23</td>
<td>32</td>
</tr>
</tbody>
</table>
What clearly appears in Chart 2 is that semantic values are not evenly distributed. Values 2.E (Scanning-of-an-interval, 61 occurrences, 17.38% of the total), 4.A (Topic, 58 occurrences, 16.52%) and 5.A (More, 49 occurrences, 13.96%) are by far the most representative cases, whereas semantic values related to a spatial meaning (2.A, On-the-other-side-of, 16 occurrences, 4.6%; 2.B, Above-and-beyond”, 32 occurrences, 9.12%) are less used in our
corpus. Text genre might have an impact on this feature (abstract texts may entail more abstract semantic uses of the word) but as the BNC comprises different text genres, the impact of the genre should be limited. This general observation shows that the spatial use of over whatever its syntactic status is not pervasive.

Now, if we take a closer look at the data (considering both Chart 1 and Chart 2), finer-grained regularities can be observed. These regularities, or selectional preferences, show that some patterns (be they lexical, syntactic or semantic) are to be found in the context of over and that these patterns can explain why a given semantic value is associated with the occurrence.

The most frequent tag is Scanning-of-an-interval (examples 2.E, 61 occurrences, 17.38%). When expressing this value, it is clear that over is a preposition and this preposition establishes a link between a process and (generally) a period of time:

(11) The process has evolved over the decade with the linking up of what used to be short runs into long, cross-country routes.
(12) Distinguished architecture matures over time
(13) progressive impoverishment of the flora and vegetation over thousands of years

This usage of over is massive and regular. The range of nouns governed by over is rather restricted (decade, time, thousands of years, past decade, lunch, Sabbath).

The same can be said for Topic (4.A, 58 occurrences, 16.52%). Even if this usage of the word seems more abstract (because the noun appearing after over itself is abstract), over is here clearly a preposition establishing a link between a noun or a verb that expresses the idea of debating and the topic of the debate itself.

(14) The Party's formative years were marked by controversy over its relations with the Labour Party, over its internal reorganization along "Bolshevik" lines, over its attitudes towards parliamentary democracy, but not significantly over its allegiance to the Communist International and the Soviet Union
(9b) Methodists' main concern was not so much the debate over collectivism v. individualism as over reunion of the various Methodist divisions
(15) Interest was also expressed over another site in the village, adjacent to the school

Regularities concerning the headword are also noteworthy. Most of the time, the headword is related to the idea of debate, discussion or controversy. The idea of Control (5.B, 30
occurrences, 8.55%) reflects the same pattern: the headword itself expresses the idea of control, while the dependent noun expresses the entity under control, a country for instance in (16) and (17):

(16) In the fifth century, the Pauline orthodoxy of Rome was still attempting to impose its hegemony over Egypt.
(17) B'nai B'rith International's decision-makers now seek total control over their empire.

Note that in this case the second noun may not be expressed, in which case over is categorized as a particle:

(18) In fact Leamington got a few things wrong, because they've now been taken over.

When over corresponds to More (5.A, 49 occurrences, 13.96%), it is generally followed by a quantitative expression (expressing quantity, distance, time, etc.):

(19) Chernobyl, the Soviet nuclear reactor which blew up in January 1987 caused nuclear traces to be recorded over 2000 miles away in the sheep of Scotland.
(20) The distance from his grandmother's house was just over a mile.
(21) The time between sleep onset and active sleep onset thus tends to be either very short indeed (less than ten minutes) or over fifty minutes.

As for 2.A (On-the-other-side-of, 16 occurrences, 4.6%) and 2.B (Above-and-beyond, 32 occurrences, 9.12%), they clearly emerge from the spatial relationship between two objects/surfaces associated with a verb of motion:

(22) Go over the bridge and turn right immediately onto a track leading into the trees.
(23) Wood arrived at the conclusion that the compass error they were experiencing was opposite to the error they had found coming south over the Timor Sea
(24) Lions jump over obstacles in their home territory or laze around under a favourite tree

Note that in some examples, when the dependent noun is not expressed, over is categorized as a particle expressing the manner of motion, as in the following pair:
(25) Why don’t you come over?

(26) Not far from the citadel, should you choose to cross over to that less appealing side of Bayonne

The spatial relationship between a surface and an entity can also be observed with the Full-covering (3.A, 25 occurrences, 7.12%) and Scattering (3.B, 13 occurrences, 3.7%) meanings. The verb found in the pattern is not a motion verb in that case:

(27) My eyes were open, just able to discern the tent staked out over me. (Full-covering)

(28) I was interested last year to see Tim Jonke's article and his method of spraying acrylic paint over oil paint. (Scattering)

The difference we make between 3.A and 3.B is relevant to the distinction of two situations of covering. In (27), the function of the tent is to cover (and protect) the people inside whereas what is important in (28) is that the acrylic paint is sprayed over the oil paint and not spread onto it (i.e. it does not cover it completely). However, over can be categorized as a preposition in both cases. Here again, one can find frequent uses of over as a particle when it expresses Full Covering:

(10b) I do thank you for stopping and not running poor Nellie over. (“Full Covering”)

4. Toward a Dynamic Solution

Polysemy has been intensively studied in linguistics (Lyons 1977, Apresjan 1974), and even more in cognitive linguistics (Cuyckens and Zawada 2001, Nerlich et al. 2003, Ravin and Leacock 2000). The omnipresence of polysemy makes a purely bottom-up calculation of meaning along with a homonymic processing of polysemy totally unrealistic, both from a computational and cognitive point of view (the consequence of the polysemy approach being either a combinatorial explosion of meaning potentials or undecidability issues in the disambiguation process).

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6 Examples of over expressing Scattering and categorized as a particle were not found in our corpus.
We advocate instead a non-homonymic treatment of polysemy and consequently a context-dependent specification of an abstract meaning shared by all the uses of a polysemic unit. This point of view is not new since we are following in the footsteps of famous ancestors within the framework of cognitive grammar (Langacker 1987, Talmy 2000, etc.), or in theories of enunciation (Ducrot 1984, Culioli 1990, 1995, Victorri 1994) and other semantic-based theories (Cadiot, Visetti 2001, Visetti, Cadiot 2002, Ruhl 1989, Van der Gucht et al. 2007). The following quotation from Fauconnier (1997: 37-38) for instance is particularly illuminating:

A language expression does not have a meaning in itself; rather, it has a meaning potential, and it is only within a complete discourse and in context that meaning will actually be produced. The unfolding of discourse brings into play complex cognitive constructions. They include the setting up of internally structured domains linked to each other by connectors; this is effected on the basis of linguistic, contextual and situational clues.

We assume that linguistic units are perceived dynamically. In this context, the Necker cube can provide an interesting analogy. The Necker cube is an ambiguous line drawing: each part of the picture is ambiguous by itself, yet the human visual system picks an interpretation of each part that makes the whole consistent (as a completion process). The same is true with human languages: each word of a sentence is ambiguous by itself but the human brain is able to dynamically choose a meaning that will make the whole sentence meaningful. Victorri and Fuchs (1996) coined the term “gestalt compositionality” to describe the calculation process that leads to the simultaneous attribution of a global meaning to an utterance and a particular meaning to each unit composing the utterance. Gestalt compositionality is a dynamic process implying a non-homonymic treatment of polysemy: each unit taken out of context is characterized by an instruction describing how the unit has to behave in context during the process of meaning construction (this model is detailed below).

4.1. A Continuous Model of Meaning

To describe the meaning of over without rejecting its polysemy, we chose to ground our model on the description of meaning construction during the unfolding of discourse, as detailed in Col et al. 2012. As a matter of fact, cognitive psychology has shown that the processing of a sentence has four major features: it is automatic, very quick, non conscious and irrepressible – it cannot be stopped.
“As a listener or a reader perceives an utterance, the information carried by it is processed and interpreted without any effort, and its meaning is constructed extremely rapidly without his being conscious of the words used in the utterance, or of the grammatical structure or of the style and even less of the way his mind has operated to understand.” (Le Ny 2005: 116; our translation)

Another fundamental feature of the process is that it is continuous, as Spivey 2007 points out:

“Real-time language comprehension takes place not just “incrementally,” as the field of sentence processing is fond of saying, but in a genuinely continuous fashion, without breaks, without stops and starts. As phonemes, words, and sentences flow into a listener’s ears, this stream of input is continuously processed into an evolving estimate of the communicative message and of plans for motor action.” (Spivey 2007: 172)

These features drive us to propose a constructivist model, following Barsalou (Barsalou 1999, 2008, 2010) or Coulson (Coulson 2001, 2006). Barsalou puts forward the idea that cognition is grounded in multiple ways including simulation, “situated actions” as well as “bodily states”. In the field of language and language comprehension, Barsalou highlights the central role of simulation:

“As people comprehend a text, they construct simulations to represent its perceptual, motor, and affective content. Simulations appear central to the representation of meaning.” (Barsalou 2008: 633)

From our perspective, “information processing” corresponds to the construction of a series of representations that are continuously modified during processing. In order to truly account for the construction of meaning, what ought to be described is the continuous evolution of these representations, including what Coulson calls Frame Shifting, i.e. an “operation of semantic reanalysis that reorganizes existing information into a new frame” (Coulson 2001: 34).

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7 This quotation describes the ideal situation, but we assume that there are frequent cases when a speaker or writer fails to put across the intended meaning of her utterance.
Consequently, our model is grounded on both the *perception* and the *comprehension* of meaning, and considers the construction of meaning as on-line information processing. What now needs to be specified is the kind of information actually processed.

*An Instruction-Based Model*

We consider that the meaning of an utterance depends on the instructions given by the linguistic units of the utterance. An instruction is a “directive” associated with each linguistic unit that is used to guide the dynamic process of meaning construction. In the framework of cognitive science, several researchers have already used the term with a related meaning, see for example Barsalou 1999 or Fauconnier 1997:

“On parsing the sentences in a text, surface syntax provides instructions for building perceptual simulations” (Barsalou 1999: 52).

“the space building *instructions* associated with a particular grammatical construction are unique. […] But the effect of such instructions may be widely different, depending on the configuration they operate on when they come into the discourse” (Fauconnier 1997: 65, original emphasis)

Besides being unique and producing various effects, the most typical feature of an instruction is its under-specification: it is not sufficient to provide the full meaning of a linguistic expression. In fact, an instruction makes a contribution that may bend the previous contribution and may in turn be bent by the instruction provided by the following linguistic expression. This process is dynamic and progressive since the meaning of an expression expands as the discourse unfolds.

“a language expression entering the discourse at stage n constrains the construction of a new configuration, together with the previous configuration of stage n-1 and various pragmatic features.” (Fauconnier 1997: 38)

As argued in our previous study (Col et al. 2012), any linguistic unit provides an instruction, whether lexical or grammatical. We also consider that the instruction provided by a linguistic
unit must be generic enough to ensure its compatibility with a large number of co-texts. There is only one instruction per linguistic unit and this instruction must remain independent of any particular context.

4.2. The Instruction Given by Over

To attribute a specific meaning to over that takes into account both its apparent polysemy in context and the different categories it belongs to drives the linguist to put forward the mechanisms producing the various meanings rather than a single artificial meaning. We must avoid selecting one meaning associated with one particular category even if this meaning and this category are the most frequently used ones (for instance, considering over as a “spatial preposition”) or else we would run the risk of creating two different units, a proposition on the one hand, and a particle on the other. What should be central is the unique meaning potential associated with over and hence its capacity to produce one meaning or another. This potential is actually “beyond”, as it were, any categorization and polysemy. The instruction presented here is therefore based on the three main groups of meanings observed on corpus-data (scanning of an interval, excess and repetition, completion and transfer). This instruction may nonetheless display both general and under-specified features, and it may even appear insufficient insofar as it is in the interaction with the contextual elements called up by over that the meaning of the unit will gradually and temporarily emerge and be staged. We suggest formulating the instruction given by over as follows:

OVER convokes a bounded domain and evokes a movement of covering of the domain, including its bounds.

The notions of ‘covering’, ‘domain’ and ‘bound’ are to be understood as topological, thus encompassing spatiality, temporality and more abstract meanings. Note that this instruction does not reflect diachrony: we assume the point of view of a contemporary speaker who uses the word without any metalinguistic knowledge (or ‘epilinguistic’ knowledge, to refer to the kind of knowledge of a language a non linguist would have). We claim that a unique instruction can explain the different usages of over in all kinds of contexts, as we will try to show in the following section.

4.3 Application to the Different Usages of Over

It is now necessary to detail how the underspecified schematic form we propose for over
makes it possible to explain the different usages and meanings in context. It is thus necessary to show that the different meanings in context are due to the interaction between *over* and other lexical units, and not to the sole meaning of *over* itself.

**On-the-other-side-of (2.A)**

Let us begin with an example where *over* has the meaning On-the-other-side-of:

(22) Go *over* the bridge and turn right immediately onto a track leading into the trees

The bounded domain construed in this example is a spatial one, as is almost always the case with the On-the-other-side-of meaning: the space under the bridge (a river or a road) is minimally delimited by both ends of the bridge itself. This first example, where *over* is used as a preposition, is rather obvious; *over* is part of the spatial meaning of the sentence.

(29) Jenny rose lethargically from her bed and went *over* to the wash basin and began bathing her eyes.

In (29), the bounded domain is also a spatial one: the space between the bed and the wash basin. Thus, Jenny ‘covered’ the space delimited by the bed (one of the bounds) to reach the wash basin (the other bound). In both examples, *over* is used with a motion verb (*go*). But the domain does not need to be spatial, as in (30):

(30) The day Ruth walked out of this family — when she went *over* to the Roman Church — she cut herself off from us.

The bounded domain is actually delimited by two entities, *family* on the one hand and *Roman Church* on the other, which are not spatial but construed as the bounds of the domain anyway. The idea of conversion is indeed the product of the interaction between these lexical units and *over*. This example shows that the meaning of the sentence is distributed over more than one unit and at the same time that the instruction given by *over* is compatible with more metaphorical meanings.

In the first two examples (22 and 29), the bounded domain is a location (*i.e.* a physical object, a geographical entity) that describes a closed surface. In the third one (30), the domain is
associated with a metaphor (conversion as a journey) and it is also construed as a space covered and eventually crossed. The covering process for 2.A means to go from one side of this closed surface to the other, be they banks of a river or different religions.

**Above and beyond (2.B)**

As for 2.B, the bounded domain is generally physical or geographical but one of the bounds is not merely covered because the movement of covering the domain goes further. Let us consider example (31):

(31) ‘That policewoman I was telling you about’, she exclaimed over her shoulder.

It is obvious that the sound of her voice will be heard even beyond the domain itself, i.e. her shoulder. Hence, the domain is fully covered, including its bounds. What is most interesting in this example is the notion of bound since it enables the idea of exceeding. The following example, associated with a spatial domain, still construes the Above and Beyond meaning:

(32) "He could see over the tops of the trees of the demesne; over bog and river and plain to the distant Partry mountains."

In this example, ‘the tops of the trees’ as well as ‘bog and river and plain to the distant Partry mountains’ correspond to the bounded domain and the gaze covers the trees, up to the distant Partry mountains. But we also find examples where the domain is not spatial yet physical, as we saw in (31) and (32):

(33) Inside I am delirious, but then comes the bombshell: Ma turns to me and, shouting over the screams, says: ‘Let baby have your spoon, dear, there's a good boy.’

In (33), the domain is actually a quantity of noise delimited by a sound level. Once beyond this level, i.e. once the full domain covered up to its highest level, Ma can be heard.

**Completion (2.C)**

The Completion meaning is massively associated with a temporal dimension, thus in the
following examples, the bounded domain is a period of time:

(34) By the time the summer was over, the predictions that Syria was about to release all the hostages had come to nothing and the issue was dead again.
(35) Her on-off romance with 27-year-old Rob Camilleti, who she met serving pizzas, is also definitely over.

In (34), the bounded domain is the summer and time has ‘covered’ all the duration of summer, and in (35), the bounded domain is the romance which has been lived through until it came to an end. More generally speaking, the bounded domain is a period of time and this period of time has been completely covered, i.e. the corresponding time has expired.

Transfer (2.D)
Here again, *over* interacts with a specific environment, namely a limited group of verbs such as *hand*, *take*, or *turn*. In these cases, *over* is almost always a verb particle and the Transfer meaning is largely dependent on the meaning of the verb itself. These verbs specify the orientation of the covering movement, the domain being covered either ‘from one bound to the other one’ (*hand* over) or ‘toward one bound from the other one’ (*take* over or *turn* over).

The domain may be spatial or even physical as in (36) or rather abstract as in (37):

(36) ‘Oh, do lend me your anorak, Seb dear’, Nutty said, and he nobly took it off and handed it over.
(37) In or before 1814 Augustus Applegath and his younger brother Joseph ran a printing establishment in Covent Garden, until 1815 when Augustus Applegath took over the printing firm of Cornish & Co. at Nelson Square, Peckham.

The domain in (36) is bounded by Seb and Nutty and in this case, it is a spatio-physical domain: the anorak fully ‘covers’ the space between the two persons, from one hand to the other. In (37), it is more abstract as it refers to the notion of power and control. The printing firm of Cornish & Co is controlled by new owners and the domain is a blend of time (the period bounded by ‘in or before 1814’ and 1815) and physical elements (previous owners and new owners). The firm goes from one owner to the other over a period of time.
**Temporal (or Scanning of an interval) (2.E)**

The Temporal meaning is close to the Completion one as regards the domain, since it is temporal and corresponds to a period of time.

(11) The process has evolved over the decade with the linking up of what used to be short runs into long, cross-country routes.

(38) At least her show of independence may have avoided an intolerable sense of strain over lunch, in Sandringham's pale green dining room.

In (11), the bounded domain is the decade (the process has covered the whole decade and during that time, it has evolved) and in (38) the bounded domain is the time taken to have lunch. Even if the domain is generally temporal, we also encounter examples where it is spatial:

(39) If it is transported over long distances, it can be dangerous.

The domain is the distances covered by the product and its possible dangerous evolution during transportation. In the case of the Temporal meaning, the idea of ‘covering’ of the bounded domain is closer to the idea of ‘scanning’: the bounds themselves are not as important as the interval between them and they are not taken into account as is the case with the Completion meaning. The period of time or the distances are covered but what is salient is the scanning itself, whereas in the case of the Completion meaning, the ‘result’ of the covering is essential.

**Covering (3)**

The specificity of this value is that the domain may be either fully covered or partially covered, as specified in section 3.2, where we made a distinction between two different cases:

- Scattering in (10a):

  (10a) ZEPPELINS of World War One by Wilbur Cross, tells of the little-known aerial battles that took place over England during the Great War, when Germany attempted to paralyse the British by dropping tons of bombs from a fleet of super-Zeppelins.

  The battle took place over different parts/regions of England, but not all over the land
itself.

- Full Covering in (10b):

(10b) ‘I do thank you for stopping and not running poor Nellie over.

Here, the pet could have been entirely “flattened out” by the car.
The bounded domain is then either England or a pet. The first example could be glossed by ‘the bounded domain is England and the battles took place somewhere in the partially covered domain’ and the second example could be glossed by ‘the bounded domain is a pet and the domain has not been fully covered’. The difference between them is the extension of the covering, but in both cases the domain is bounded, whether the bounds are reached and salient or not.

**Topic (“Focus-of-Attention” in Tyler and Evans’s terms) (4)**

Contrary to most of the meanings examined so far, the Topic/Focus of attention meaning is massively expressed by the same pattern: N₁ prep N₂. N₁ is generally a ‘cognitive’ noun like nouns evoking speech (argument, debate, settlements *etc.*) or thought (concern, confusion, position *etc*.). The bounded domain is generally a topic for discussion and debate and corresponds to N₂. It may be bounded for different reasons. In the following example:

(40) Though Perkins, Stubbes, and Chamberlain hardly convey this, the controversy over dress was no less complex than the social shifts which provoked it.

it is bounded because the speakers cannot have a controversy about every type of dress in the world but about the idea of dress among other notions. In (41):

(41) As he released his anger, he felt his love for his ex-wife, and wept over their divorce.

The boundedness rather comes from the specificity of the divorce, i.e. their divorce. This last example is particularly interesting as 1) the pattern is different (V over N) and 2) we clearly notice that it is in the interaction with *weep* and *divorce* that *over* succeeds in giving the Topic meaning to the sentence. Still, *over* alone does not make the Topic meaning emerge; it needs the other lexical units to construe it, and particularly an ‘object to weep over’. The interaction
between *over* and the lexical units of (41) for instance, as well as its recurrence in regular pattern like \( N_1 \) \text{over}_{\text{prep}} \, N_2 \) facilitate the emergence of the Topic meaning. But it does not prevent other meanings from emerging with some of the same units, like *weep* in (42):

(42) These children weep, will weep as long as they live. There are other children who have wept *over* the decades, have grown into adulthood in the midst of their tears. (GloWbE Corpus)

In (42), *over* makes a contribution to the emergence of the Temporal/Scanning meaning together with *the decades* and the more general context (enhancing the weeping of dead parents).

**More (5.A)**
The More meaning depends on a regular pattern like the previous meaning: *over* + quantity. This quantity is the bounded domain and its bounds are included since one of them is ‘exceeded’:

(43) Radio 1 is heard by an average audience of *over* seventeen million every week.

The bounded domain is *seventeen million* (people) and the sentence may be glossed as the following: the audience ‘covers’ seventeen million people. All our examples of More contain a quantity; the difference between this meaning and the Temporal one is to be found in the difference of category. The preposition *over* is part of the temporal meaning, as in (11) and (38), whereas in (43) and the examples expressing the More meaning, it is the adverb *over*.

**Control (5.B)**
Most of the examples expressing this meaning contain nouns or verbs belonging to the semantic field of control: *control, victory, win, hegemony, right, power, influence, triumph* etc. The bounded domain is the controlled entity, as in:

(44) B'nai B'rith International's decision-makers now seek total control *over* their empire.
The bounded domain is ‘their empire’ and we could rephrase the sentence by: ‘B'nai B'rith International's decision-makers now want to have full coverage of their empire’. The difference with the Transfer meaning is that in the case of the Control meaning, the mastering of the bounds is central, hence the bounds are salient, whereas in the Transfer meaning, the process of ‘transferring’ is central and salient.

**Preference (5.C)**
The Preference meaning requires at least two entities making up the set which is covered. One of them is selected, but the full domain is covered first.

(45a) Since 1961 (to be precise, since Selwyn Lloyd's 'pay pause' that summer) British people had given sustaining the economy the priority over foreign affairs among their concerns.

The bounded domain is the ‘concerns’ and one of the entities of the set is ‘preferred’. Most of the examples we encountered are taken from mathematical contexts, hence the Divider meaning that we suggest in 3.2.:

(45b) A hundred and seventy over eighty.

**Reflexive (6)**
As in the case of the Transfer meaning, over is most of the time a verb particle when it takes part in the construction of the Reflexive meaning.

(46) My stomach turned over as I watched the ball heading for the out-of-bounds, but to my relief it looked as though it had stayed in, even if it seemed in an awful spot.

The bounded domain in this sentence is ‘my stomach’ and to some extent, it ‘covers itself’ as it ‘turns over itself’. The following example describing a physical movement and not a state functions the same way:

(47) Yeah but even so, even so you could still fall over.
In (47), the bounded domain is the body which could fall headfirst. The domain would be vertically covered, ‘from head to foot’ so to say.

**Repetition (6.A)**

This meaning is expressed by regular patterns such as *over and over* or *start over.*

(48) She wept and spoke at the same time — uttering fragments of sentences, half completed threats, pieces of swear words, repeating the name Richard *over and over* with the intonation of a child calling for its mother.

We could assume that the Repetition meaning comes from the repetition of *over* but in fact, it comes from the verb *repeat.* The bounded domain is the process of repeating the name of Richard. But in the following example:

(49) Taking out of his pockets whatever might be in them — keys, pencil, purse, or pen-knife — and laying himself parallel with the edge of the hill, he actually descended turning himself over and over till he came to the bottom.’ "

the repetition meaning comes from the verb *turn himself* implying some circularity (of the body) and the repetition of the same motion. The bounded domain is the process *turn himself* and once its aspectual interval is fully covered, the covering movement is repeated. *Over and over* hence implies two coverings of the same domain. The repetition of *over* is in fact not necessary:

(50) The mechanical voice intoned, ‘The number you require is’ and he found he hadn't got a pen handy, nor anything to write on, and had to start all *over* again.

Here again, the whole process is repeated, hence the bounded domain (the process of calling) will have to be covered a second time.
4.4 Discussion: Relevance of the Instruction-Based Definition of Over

4.4.1. Spatiality

As we pointed out in the previous part of this study, *over* expresses a large range of meanings, which cannot be accounted for by the prototypical values Across-Above only. Actually, this sense sometimes seems to be the least suitable one to describe *over*. As a preposition, *over* may of course evoke spatiality as in (51), which is the closest example to the Across-Above meaning:

(51) 200 walks organised by The Ramblers' Association to be held all over England, Scotland and Wales.

Yet the spatial meaning of *over* in (51) largely depends on the adverb *all* which is by the way the most frequent adverb connected with *over* as a preposition expressing spatiality in our corpus (50% of the combination <adv. + over>):

(52a) All over the country, and particularly in American libraries abroad run by the International Information Administration, intelligent men rushed to destroy books by 'suspect' authors, embracing among others Sherwood Anderson, W. H. Auden, Theodore Dreiser and Edmund Wilson.

(52b) He is an expert in grading wools that come from all over the world and blending together the many different types for yarn production.

It also closely depends on the noun *country* in (52a), which evokes in this example a spatial domain (‘a nation’ for instance would have evoked something more than spatiality). By definition, this domain is bounded and when it is convoked by *over*, together they give pride of place to the notion of covering. The same analysis can be made of (52b) even if the spatial domain evoked by “world” in this example is bigger. This domain is actually seen as bounded insofar as *all* enables a full vision of it, hence again a covering including the bounds of the domain.

When analysing corpus data, one can notice that the majority of the occurrences of the
preposition *over*\(^8\) actually mirrors two meanings, which are either only partially spatial -- Scanning of an interval, as in (11) and (53), or not spatial at all -- Topic in (54):

(11) The process has evolved over the decade with the linking up of what used to be short runs into long, cross-country routes.

(53) But to be able to hunt successfully, males have to remain close together — sometimes, when hunting success is low, for many hours and over several kilometres, and so unusual tolerance of each other is called for.

(54) "The Party's formative years were marked by controversy over its relations with the Labour Party, over its internal reorganization along "Bolshevik" lines, over its attitudes towards parliamentary democracy, but not significantly over its allegiance to the Communist International and the Soviet Union."

As explained in section 3.2., it is the very nature of the noun governed by *over* which drives us to suggest the Scattering meaning. This noun massively refers to a period of time. The domain convoked by *over* is then more temporal than spatial. Furthermore, as (11) shows, the evolution of the process mentioned in the example is accomplished at the end of the period: the domain is then covered from one bound to the other. The notion of interval actually enables us to explain the meaning of *over* in (53) which is apparently spatial (thanks to *kilometres*) but which puts forward a notion of length rather than space, especially as it is in the neighbourhood of *for many hours*.

### 4.4.2 Covering and Boundedness

*Over* contributes to evoking the notion of Topic in many examples of our corpus. The instruction supplied by *over* in terms of covering of a bounded domain is again relevant. We actually chose the term ‘covering’ for at least two reasons. We are conscious that Covering is one of the meanings listed in Tyler and Evans 2003, but it is isolated in the semantic network and this is why we prefer to give the term ‘covering’ a usage that does not suit Tyler and Evans’s. Besides, the notion conveyed by ‘cover’ implies some kind of multi-dimensionality. The multi-dimensional aspect of the notion of covering actually includes the notion of

\(^{8}\) To be precise: 117 cases out of 228, so more than 50%. See 4.3.
focussing on a specific point as well as the notion of “surrounding” that we find in (41):

(41) As he released his anger, he felt his love for his ex-wife, and wept over their divorce.

In this example, the domain has a temporal dimension because the process of getting divorced is accomplished (cf. ex-wife) and hence is comparable to a boundary. The meaning of Topic that (41) construes is then based on the fact that this domain is entirely covered in all its dimensions. The divorce is presented here in its interaction with weep and over and not from a legal point of view or from the financial one for instance. It is presented as an entity compacting its different steps in a non-sequential way, in a global vision or “summary scanning” (Langacker 1987). To some extent, this domain could be reduced to a point and thanks to this discrete character, it encompasses its bounds.

In the formulation of the instruction supplied by over, the notion of boundedness is of capital importance. It accounts for various meanings such as the spatial or temporal ones, as well as the More, Control or Transfer ones thanks to the alternative between an open bounded domain and a closed bounded one. Thus, the notion of covering of a bounded domain also accounts for the meaning of More as we find in (55):

(55) Rescue workers had battled for over an hour to revive them.

As a matter of fact, we assume that the boundedness of the domain includes the possibility for the covering to extend beyond the bounds themselves. Examples (55) or (56), like the majority of the examples encountered in our corpus, convoke a quantified domain which contains intrinsic limits (from one to 60 minutes in (55), from one to 50 per cent of social workers in (56)):

(56) Over 50 per cent of social workers gave the questions in all dimensions a rating of 4 or 5.

Incidentally, we note that the instrumental meaning put forward by Van der Gucht et al. 2007 (‘positioning of X vis-à-vis a reference point Y which is inferior to X’) does not provide a suitable explanation for such examples; positioning remains a spatial notion absent from this context.
If we examine less frequent semantic values construed by *over*, notably when *over* is a particle or an adverb, the instruction given by the unit in the construction of the meaning of the utterance is still relevant. As a particle, the meaning associated with *over* is the idea of Transfer (2.D) in (57), or Completion (2.C) in (58):

(57) They will hand *over* to new operators at the end of this year, and are likely to sell their shareholdings in ITN.

(58) Her on-off romance with 27-year-old Rob Camilleti, who she met serving pizzas, is also definitely *over*.

In the case of Transfer, we saw that *over* is mainly combined with the verb *hand*, which is actually essential to this meaning. In this specific context, *hand* expresses the idea of change, in which the notion of boundary is central. As for Completion, the idea of a topological interval fully covered from one bound to the other seems obvious. Once again, the nature of the phrase governed by *over* or the nature of the governing verb are of paramount importance; the context plays an essential role whatever the category of *over*.

4.4.3 Semantic Continuity

What consequently appears is the necessity to make allowance for both the variety of syntactic categories and the heterogeneity of meanings. The appeal to networks as in Lakoff (1987) or Tyler and Evans (2003) hardly promotes true continuity in the various meanings of *over* or in its different categories, especially as no real cues are given so as to calculate the distance between the meanings or the congruence between them and the exact usage of *over*. If we consider the following pair of examples:

(59) "Quickly they spread it out, and it became a sail; the boat flew *over* the waves, faster than the sea-people could follow."

(60) When we were flying *over* Holland I did steel myself to look out and I remember seeing where miles of land had been submerged under sea water to keep the Germans out, and
houses, trees and roads were still under water.

We notice that with the same verb, the difference of aspect (*flew* vs. *were flying*) brings a slight difference of interpretation to the meaning of *over*. In the latter example, *over* expresses the Over-and-Above meaning (5.A.1) as the process is not accomplished, whereas (59) rather conveys the Above-and-Beyond meaning (2.B) as the process is finished. This simple comparison shows that the interpretation of *over* depends, in this particular case, on an aspectual difference only. More generally, this comparison enhances a true continuity of the meaning of this unit. In (59) and (60), the semantic difference between 5.A.1 and 2.B actually relies on grammar, but we may also assume that the nature of the phrase governed by *over* has consequences on the categorization of the unit itself, and similarly on its semantic interpretation. Thus, (61) clearly expresses the idea of examination (4 or 4.A) and *over* is categorized as a particle:

(61) Now breathing, breathing in erm poisons, we'll go *over* this in more detail erm, there's so many things as we've already gone through that can cause us asphyxia, one of them's poison in itself isn't it?

Yet, in the following utterance:

(22) Go *over* the bridge and turn right immediately onto a track leading into the trees.

which contains the same verb *go*, *over* is clearly categorized as a preposition thanks to the noun clause *the bridge* referring itself to a spatial entity. Consequently, *over* makes its contribution to the emergence of the spatial meaning of (22), *i.e.* On-The-Other-Side-Of (2.A). This example shows that the dynamic interaction between the unit (*over*) and its context -- the governed noun clause in (22) or the aspectual markers in (59) / (60) -- are central in the interpretation of *over*, and more generally in the comprehension of the utterance. What appears through these observations is that the process of meaning construction is twofold as it comprises the categorization of *over* (as a preposition, adverb or particle) and the *simultaneous* emergence of a specific meaning. Consequently, what we need is a more regular
and schematic meaning which presents two essential features: it should be corpus-based as we have already shown and it should be defined in a continuous semantic model.

Conclusion

The “story of over” has mostly been a spatial one, as can be seen from the literature. As a result, the spatial meaning is generally considered to be the core meaning of a large semantic network whose aim is to show the polysemy of the unit. The starting point of our paper was dissatisfaction with this kind of approach: the spatial meaning is unable to explain every meaning of over, even thanks to semantic extensions. Finer-grained analysis cannot cover every particular meaning and usage of the unit, especially as most of the time in the literature, over is studied as a preposition. Arguably, the risk with a monosemic definition of the unit is that of suggesting a general meaning devoid of any kind of dynamicity or continuity, thus erasing what makes semantic diversity possible.

What we propose here is a corpus-based study of the unit over considered in its different usages and categories (preposition, particle, adverb). Our purpose is not to suggest a finer range of meanings for over, but rather to describe a new theoretical framework so as to capture its semantic dynamics as well as its categorial dynamics. As the role of the context is central here, our compositional gestalt framework enables us to take into account the dynamic shifting from one meaning to another through an instructional definition of over.

What we intend to work on now is a systematic analysis of a large number of grammatical units of the English language in the same continuous, dynamic framework. The purpose of this kind of analysis is to compile the instructions given by these units in a repertoire which would be the first step towards an “instructional grammar” of the English language.

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