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Conceptual vs. inter-lexical polysemy

An LCCM theory approach

Vyvyan Evans

In this chapter I consider two types of polysemy that have not received wide attention in the cognitive linguistics literature. First, I argue that polysemy can arise from the non-linguistic knowledge to which words facilitate access. This phenomenon I refer to as *conceptual polysemy*. I illustrate this with an analysis of the lexical item *book*. Moreover, polysemy also arises from different word forms, which, at least on first blush, appear to share a common semantic representation. This phenomenon I refer to as *inter-lexical polysemy*. I illustrate with a detailed case study involving an analysis of the prepositional forms *in* and *on*. I draw on the Theory of Lexical Concepts and Cognitive Models to account for these phenomena.

Keywords: polysemy, the Theory of Lexical Concepts and Cognitive Models

1. Introduction

The issue I address in this chapter relates, on the face of it, to two distinct types of polysemous phenomena. The first type concerns examples of the following kind, where a single lexical item – in this case *book* – obtains distinct readings in different contexts of use. For reasons to be explained below, I refer to this phenomenon as *conceptual polysemy*:

Phenomenon 1

- | | | |
|--------|------------------------------------|---------------------|
| (1) a. | That's a heavy book | 'tome' |
| b. | That antiquarian book is illegible | 'text' |
| c. | That's a boring book | 'level of interest' |
| d. | That's a long book | 'duration' |

In each of these examples, *book* means something slightly different. In (1a), *book* refers to the physical artifact, and the fact that as a physical artifact books can be heavy – this might be dubbed the 'tome' reading. In (1b), *book* again obtains

a reading that concerns the physical properties of books; but here, specifically, the reading relates to the physical text with which a reader engages – this might be dubbed the ‘text’ reading. In (1c) *book* is understood to refer to the activity of reading, and specifically the level of interest achieved by the reader – what we might think of as the ‘level of interest’ reading. And finally, in (1d), which again concerns the activity rather than the physical properties of the book, the reading concerns length of time taken to read the book – what might be dubbed a ‘duration’ reading. Collectively, these examples illustrate how an open-class lexical item can take on different interpretations in different linguistic contexts.

I refer to this phenomenon as conceptual polysemy as some analysts, (e.g. Evans 2009; Langacker 1987) have attributed this type of polysemy as arising in the following way: linguistic context can serve to differentially highlight different aspects of the non-linguistic or encyclopedic knowledge to which a word form facilitates access. The polysemy is made possible precisely because our knowledge representation for a book is not a monolithic structure, but consists of a complex array of interdependent components. For instance, Langacker (1987) terms polysemy such as this as being due to active zones: distinct facets of our conceptual representation for the physical artifact ‘book’ become active during language use, triggered by linguistic context. As such, context plays a role in modulating (Cruse 1986) exactly which parts of conceptual representation become activated during language understanding.

The second type of polysemous phenomenon concerns data of the following sort, where distinct lexical items, in this case prepositions, appear to have, at least on the face of it, broadly similar readings, a phenomenon we might term *inter-lexical polysemy*. In these examples, I am focusing on the English prepositions *in* and *on*:

Phenomenon 2

- | | | |
|--------|--|-----------|
| (2) a. | We are in love/shock/pain | ‘state’ |
| | Cf. We are in a room | ‘spatial’ |
| b. | We are on alert best behavior/look-out/the run | ‘state’ |
| | Cf. We are on the sand | ‘spatial’ |

In these examples, the prepositions *in* and *on* both appear to have a distinct ‘state’ sense – which contrasts with a spatial sense associated with each preposition. But while the ‘state’ senses of *in* and *on* are broadly similar, the referents, in the sense of the semantic arguments that can co-occur with each preposition, are markedly distinct, as we see from the following examples:

- | | | |
|--------|---|-----------------------------|
| (3) a. | *We are in alert/best behavior/look-out/the run | (intended meaning: ‘state’) |
| b. | *We are on love/shock/pain | (intended meaning: ‘state’) |

The examples in (3) demonstrate this: the range of semantic arguments that the ‘state’ senses *in* and *on* can take are in complementary distribution; the ‘state’ senses associated with *in* and *on* are not, in fact, identical.

In earlier work (Evans 2009, 2010, 2015a, c), the first work I am aware of concerning inter-lexical polysemy, I argued that this distinction arises from distinct sets of *parameters* associated with the ‘state’ senses of *in* and *on*. While I develop the notion of a parameter in some detail later in this chapter, briefly, a parameter is a schematic unit, or ‘atom’ of linguistic knowledge. The claim I defend below is that word senses are constituted of an assortment of parameters: atoms of schematic linguistic meaning that, collectively, give rise to a word’s *lexical concept*.

This construct of a lexical concept accounts, I argue, for the distinction observed in comparable senses across distinct lexical items: the phenomenon of inter-lexical polysemy. In contrast, the phenomenon of conceptual polysemy arises, I argue, from the non-linguistic knowledge to which lexical items facilitate access. Non-linguistic knowledge is constituted of what I refer to as *cognitive models*. And lexical concepts facilitate access to a set of cognitive models: a word’s semantic potential. While conceptual polysemy arises due to the nature and organization of non-linguistic knowledge, linguistic context nevertheless plays a role in guiding what sorts of non-linguistic knowledge are activated, in order to give rise to the requisite readings obtained, as evidenced by the examples in (1).

The two theoretical constructs – the lexical concept and the cognitive model – that I use to account for these two types of polysemy arise under the aegis of the *Theory of Lexical Concepts and Cognitive Models*, or LCCM Theory for short. (e.g. Evans 2006, 2009, 2010, 2013). This provides an account of lexical representation and compositional semantics: these two fundamental theoretical constructs provide the theory with its name. My overall objective in this chapter, and one facilitated by LCCM Theory, is to provide a unified account of contextual and inter-lexical polysemy, deploying the theoretical insights provided by LCCM Theory. The approach I develop is not ‘unified’ in the sense that these distinct phenomena can receive a single account. Rather, with a psychologically-appropriate account of language and its relationship with conceptual structure, these two distinct types of polysemy can be viewed as distinct, albeit predictable, symptoms of our universal meaning-making capacity.

Accordingly, my argument amounts to this: meaning construction involves conceptual representations of two qualitatively distinct types, inhering in two distinct systems: the linguistic and conceptual systems respectively (detailed arguments for the qualitative nature of these two systems are presented elsewhere, e.g. Evans 2009, 2015b, 2016). The representations that arise from the the linguistic system – lexical concepts – account for inter-lexical polysemy. In contrast, the representations that derive from the conceptual system – cognitive models – account for

conceptual polysemy. As LCCM Theory provides a joined-up account of the role of both conceptual linguistic and non-linguistic knowledge in meaning construction, this affords a unified account of these two distinct types of polysemy. Moreover, and more generally, the chapter makes the case for the distinct and differential role of linguistic and non-linguistic (sometimes referred to as encyclopedic) knowledge in accounting for (distinct types of) polysemy (see Evans and Green 2006).

The chapter is structured as follows. In Sections 2 and 3, I present the theoretical basis for the account of polysemy I provide later in the chapter. Section 2 is concerned with the distinction in the representational format of linguistic versus non-linguistic knowledge. And in Section 3, I situate that distinction in the framework of LCCM Theory. Sections 4 and 5 then deploy the theoretical constructs developed, in order to provide an analysis of conceptual polysemy (Section 4), and inter-lexical polysemy (Section 5). In Section 6 I draw conclusions, making the point that LCCM Theory provides a framework that enables a joined-up account of polysemy.

2. Parametric vs. analogue concepts

In this section and the next, I present the necessary theoretical context for the account of polysemy I present later in the chapter. In this section, I make the case for a qualitative distinction between conceptual structure on the one hand, and semantic structure on the other. Semantic structure is the representational format that inheres in the linguistic system, while conceptual structure is the representational format that sub-serves the conceptual system. I summarize, here, some of the reasons for thinking there is a principled distinction of this sort in human semantic representation, although for detailed discussion see Evans (2009, 2013: ch. 2, 2015b).

Research in cognitive science has definitively established that humans are not alone in possessing conceptual systems (see Evans 2014, and Hurford 2007 for overviews). A conceptual system, which serves as our repository for concepts, is essential for a wide array of tasks upon which basic mental function is contingent. These include categorization, learning, choice, wayfinding, and reasoning. Many non-human species have fairly sophisticated reasoning capabilities (see Hurford 2007 for a review).

However, while other species have a conceptual system, humans are the only species with language (Evans 2014). Moreover, language appears to be an evolutionary trait that is specific to the genus *Homo*, common to humans as well as extinct species of our genus (Levinson and Gray 2012). In previous work I have argued that as the human conceptual system must have preceded language in evolutionary

terms, it is plausible to suppose that language evolved in order to serve as an executive control system on the conceptual system (Evans 2009). Language harnesses representations in the conceptual system – which evolved for other purposes – in order to facilitate linguistically-mediated representation. For this to have happened, it stands to reason that representations in the linguistic system – semantic structure – is qualitatively distinct from representations in the conceptual system – conceptual structure. While representations, or concepts, in the conceptual system are rich in nature, deriving from sensory-motor and interoceptive experiences in which they are directly grounded, representations in the linguistic system are schematic or much sparser in terms of the perceptual detail that they encode (Evans 2009, 2013, 2015b).

From the present perspective, words are in fact cues that index or point to body-based states processed and stored by the brain (Evans 2009, 2013; Fischer and Zwaan 2008; Glenberg and Robertson 1999). To illustrate, consider the use of *red* in the following example sentences (adapted from Zwaan 2004):

- (4) a. The school teacher scrawled in red ink all over the pupil's homework book
 b. The red squirrel is in danger of extinction in the British Isles

In (4a), the use of *red* evokes a bright, vivid red. In (4b), a dun or brownish red is most likely evoked. This illustrates the following: The meaning of *red* is not, in any sense, there in the word – although I nuance this view below. Rather, words cue perceptual and interoceptive states stored in the conceptual system. And these body-based states are re-activated during language use. Put another way, the word form *red* gives rise to distinct re-activations, or more technically *simulations* for different hues of red. These simulations arise as a consequence of reactivating stored experience types in the conceptual system. These reactivated experiences we might refer to as *analogue concepts* – concepts that are directly grounded in the experiences that give rise to them. How then does semantic structure (in language) differ from this level of conceptual structure – which is to say, from analogue concepts?

To illustrate, I consider the use of the adjective *red*, and the noun *redness*, in the following examples, adapted from a skin care product advert:

- (5) a. Treat redness with Clinique urgent relief cream.
 b. Treat red skin with Clinique urgent relief cream.

Both words – *red* and *redness* – relate to the same perceptual state, presumably. But the words package – which is to say, serve to construe – the content in a different way, giving rise to distinct simulations. In the example in (5a), *redness* gives rise to an interpretation relating to a skin 'condition'. In the second, (5b), *red* refers more straightforwardly to an unwanted property of the skin.

The different interpretations arising from these sentences are not due to a different hue being indexed. Rather, the words – noun versus adjective – modulate the perceptual hue in a slightly different way, giving rise to distinct simulations: ‘skin condition’ versus ‘discoloration of skin’ interpretations. In other words, the grammatical distinction between *red* (adjective) and *redness* (noun) appears to relate to a semantic distinction between the notion of property versus thing. The words *red* and *redness*, while indexing the same (or similar) perceptual state, also encode schematic concepts: PROPERTY versus THING (cf. Langacker 2008).

But unlike the body-based perceptual state – the hue of red – which is analogue in nature, PROPERTY and THING are highly schematic notions. They are what I refer to as *parametric concepts*. Unlike the perceptual experience of redness, which comes to mind when we variously imagine a fire engine, a Royal Mail post box (ubiquitous in the UK), henna, fire, the Chinese flag, or superman’s cape, parametric concepts are not like veridical embodied experiences. There is nothing about the (parametric) concepts PROPERTY or THING that is akin to the perceptual experience of redness (an analogue concept). Parameters are abstracted from embodied (= perceptual *and* interoceptive) states, filtering out all points of difference to leave highly image schematic content: the parameter.¹ The word form *red* encodes the parameter PROPERTY, while *redness* encodes the parameter THING. This is another way of saying that *red* is an adjective – it describes a property of a thing – while *redness* is a noun – it describes a property that is objectified in some way, and established as being identifiable, in principle, in its own right, independent of other entities in world. Figure 1 captures the relationship between a word form, and its parametric and analogue concepts.

My claim, then, is this. There is a distinction between analogue concepts on the one hand, and parametric concepts on the other. The former relate to non-linguistic concept-types that, in evolutionary terms, had to precede the existence of language. Parametric concepts, on the other hand, constitute a species of concept that arose as a consequence of the emergence of language. They provide a level of schematic representation directly encoded by language: parametric concepts guide *how* analogue concepts are activated, and, consequently, *how* simulations are constructed in the service of linguistically-mediated meaning construction. For instance, the forms *red* and *redness* both index the same perceptual state(s). But they parcelate the conceptual content in a different way, giving rise to distinct simulations: *redness* = condition; *red* = (unwanted) property of skin. The schematic parametric concepts, which is to say, that part of meaning that is native to language, relates to

1. Cf. the related notion of image schema developed in the work of Johnson (1987).

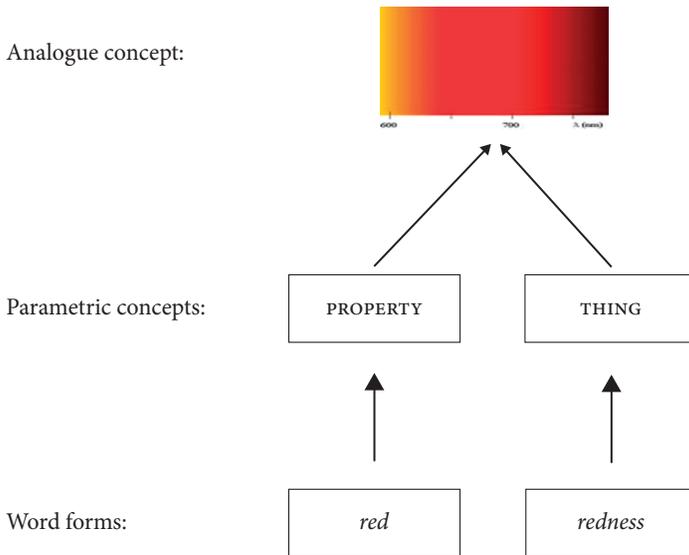


Figure 1. Analogue and parametric concepts

THING VERSUS PROPERTY. Parametric concepts are language-specific affordances, rather than affordances of the conceptual system.

Related proposals have been put forward by Bergen (2012), and Taylor and Zwaan (e.g. 2008, 2009). Taylor and Zwaan have captured this view in terms of what they dub the *Linguistic Focus Hypothesis*. They argue that during language understanding, motor representations are activated that are under the governance of linguistic constructions. These serve to differentially direct focus on the referential world. Bergen's findings are consonant with this hypothesis. In one set of behavioral experiments, Bergen (2012: 114) found that the grammatical subject, for instance, the use of *I* versus *you*, influences the perspective that a language user perceives a scene from. In the light of this discussion, what then is the function of language, and specifically, parametric concepts in meaning construction? My answer is that parametric concepts, encoded by language, guide the formation of complex simulations for purposes of linguistically-mediated communication. Parametric concepts guide the *parcellation* (focal adjustments, in Langacker's 2008 terms) of analogue (i.e. perceptual and interoceptive) concepts, in the construction of simulations. Parametric concepts encode schematic, which is to say, 'digitized' content. Content of this sort is abstracted from analogue, which is to say, perceptual and interoceptive representations. Hence, the parameters THING VERSUS PROPERTY are schemas drawn from embodied experience. Table 1 represents a summary of the distinction between parametric and analogue concepts.

Table 1. Parametric vs. analogue concepts

Parametric concepts	Analogue concepts
<ul style="list-style-type: none"> – Specific to language – Parametric (abstracted from embodied states, filtering out all points of difference to leave a highly schematic properties or parameters) – Underpin all linguistic units (where a linguistic unit is a form/parametric content unit of any complexity) 	<ul style="list-style-type: none"> – Specific to the conceptual system – Analogue (albeit attenuated) representations of body-based states – Arise directly from perceptual (conscious experience), and reside in the same neural system(s) as body-based states – Re-activated or simulated (by language, imagination, etc.) and can be combined to form complex and novel simulations

3. Towards an account of meaning construction

Having distinguished between analogue and parametric concepts, we now require an account of their respective contribution to the meaning construction process. This will facilitate my account of polysemy in subsequent sections.

3.1 LCCM Theory

In two book-length treatments (Evans 2009, 2013) I have developed a theoretical account of lexical representation and semantic composition dubbed the *Theory of Lexical Concepts and Cognitive Models*, or LCCM Theory for short. The claim at its heart is enshrined in the distinction between its two foundational theoretical constructs – the *lexical concept* and *cognitive model*: there is a qualitative distinction between the representations captured by these theoretical constructs. This distinction relates, ultimately, to the bifurcation between analogue versus parametric concepts, which respectively structure lexical concepts and cognitive models. While both types of knowledge are conceptual in nature, they are qualitatively distinct. Lexical concepts encompass knowledge that is more schematic in nature, and often associated with closed-class semantics. In contrast, cognitive models encode knowledge that is rich and contentful in nature, associated with encyclopedic dimensions of meaning evoked by open-class semantics (see also Talmy 2000 for a related perspective).

In keeping with the thrust of the argument developed in the previous section, LCCM Theory assumes the linguistic system emerged, in evolutionary terms, much later than the earlier conceptual system. The utility of a linguistic system, on my account, is that it provides an executive control mechanism facilitating the

deployment of conceptual representations in service of linguistically-mediated meaning construction. Hence, ‘semantic’ representations in the two systems are of a qualitatively distinct kind. I model semantic structure – the primary representational substrate of the linguistic system – in terms of the theoretical construct of the lexical concept. A lexical concept is a component of linguistic knowledge – the semantic pole of a *symbolic unit* (in Langacker’s 1987 terms) – that encodes a bundle of various types of highly schematic *linguistic content* (see Evans 2006, 2009). Hence, lexical concepts are parametric in nature.

While lexical concepts encode highly schematic linguistic content, a subset – those associated with open-class forms – are connected, and hence facilitate access, to the conceptual system. Lexical concepts of this type are termed *open-class lexical concepts*.² Such lexical concepts are typically associated with multiple areas in the conceptual system, referred to as *association areas*.

The range of association areas to which a given lexical concept facilitates access is termed an *access site*. LCCM Theory assumes that the access site for any given open-class lexical concept is unique. As lexical concepts facilitate access to a potentially large number of association areas in the conceptual system, any given open-class lexical concept, in principle, facilitates access to a large *semantic potential*. However, only a small subset of this semantic potential is typically activated in *interpretation* of a given utterance.

In LCCM Theory, *conceptual structure* – the semantic representational substrate of the conceptual system – is modeled by the theoretical construct of the cognitive model. A cognitive model is a coherent body of multimodal knowledge directly grounded in the brain’s modal systems, and derives from the full range of experience types processed by the brain including sensory-motor experience, proprioception and subjective experience including affect. Hence, cognitive models are analogue in nature, and as such are constituted by analogue concepts.

The conceptual content encoded as cognitive models can become re-activated during the simulation process. Simulation, as implied in earlier discussion, is a general purpose computation performed by the brain in order to implement the range of activities that sub-serve a fully functional conceptual system.³

2. See Evans (2009) for the rationale for this position.

3. For discussion and findings relating to the multimodal nature of conceptual representations and the role of simulation in drawing on such representations in facilitating conceptual function see, for instance, Barsalou (1999, 2008), Gallese and Lakoff (2005), Glenberg (1997) and references therein.

3.2 The cognitive model profile

An important construct in LCCM Theory, and one that is essential to providing an account of both polysemy and meaning construction, is that of the *cognitive model profile*. As an open-class lexical concept – a noun, verb, adjective or adverb – facilitates access to numerous association areas within the conceptual system, it facilitates access to numerous cognitive models. Moreover, the cognitive models to which a lexical concept facilitates access are themselves connected to other cognitive models. The range of cognitive models to which a given lexical concept facilitates direct access, and the range of additional cognitive models to which it therefore facilitates indirect access is termed its cognitive model profile. To illustrate, consider the cognitive model profile for the lexical concept that I gloss as [FRANCE] associated with the form *France*. A partial cognitive model profile for [FRANCE] is represented in Figure 2.

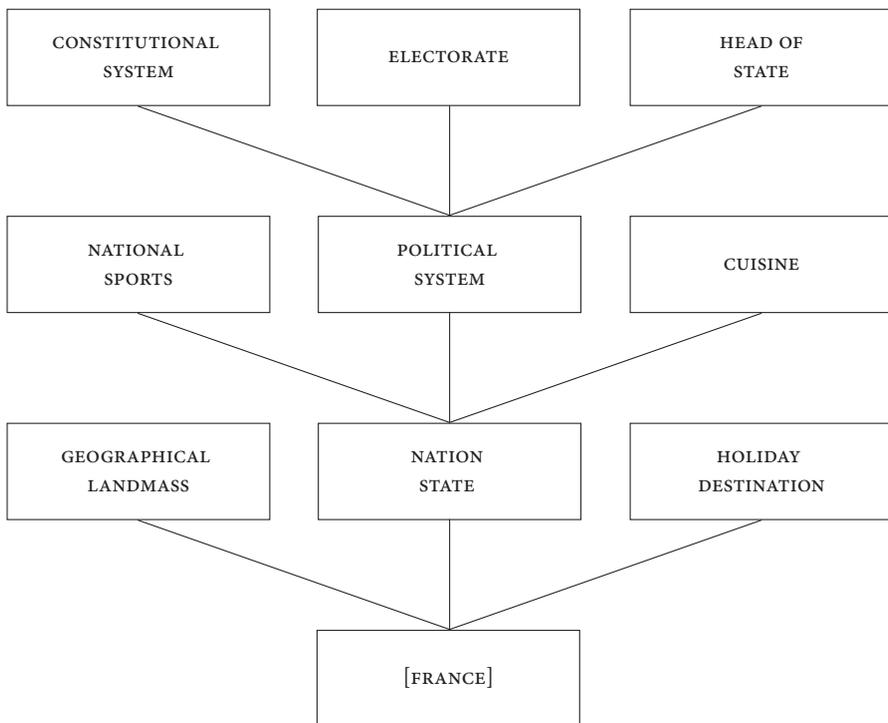


Figure 2. Partial cognitive model profile for [FRANCE]

Figure 2 is an attempt to capture (a subset of) the sort of knowledge that language users must presumably have access to when speaking and thinking about France. The lexical concept is denoted by the term in small caps and in square brackets: [FRANCE]. This is a mnemonic for the semantic content encoded by the lexical concept, which may include a cluster of parametric knowledge – parameters – about which I have more to say in the next section.

In contrast, cognitive models are denoted by terms in small caps without square brackets. As illustrated by Figure 2, the lexical concept [FRANCE] provides access to a potentially large number of cognitive models.⁴ As each cognitive model consists of a complex and structured body of knowledge, which, in turn, provides access to other sorts of knowledge, LCCM Theory distinguishes between cognitive models which are directly accessed via the lexical concept – *primary cognitive models* – and those cognitive models which form sub-structures of those which are directly accessed – *secondary cognitive models*. These secondary cognitive models are indirectly accessed via the lexical concept.

The lexical concept [FRANCE] affords access to a number of primary cognitive models, which make up the *primary cognitive model profile* for [FRANCE]. These are hypothesized to include: GEOGRAPHICAL LANDMASS, NATION STATE and HOLIDAY DESTINATION – and I reiterate, a cognitive model represents a coherent body of complex information: multimodal information, gleaned through sense-perception, interoceptive experience, and through propositional information achieved via cultural learning, language and other channels. Each of these cognitive models provides access to further cognitive models.

In Figure 2, a flavor of this is given by virtue of the various secondary cognitive models that are accessed via the nation state cognitive model – the *secondary cognitive model profile*. These include NATIONAL SPORTS, POLITICAL SYSTEM and CUISINE. For instance, we may know that in France, the French engage in national sports of particular types, for instance, football, rugby, athletics, and so on, rather than others: the French don't typically engage in American football, ice hockey, cricket, and so on. We may also know that as a sporting nation they take part in international sports competitions of various kinds, including the FIFA football world cup, the Six Nations rugby competition, the rugby world cup, the Olympics, and so on.

That is, we may have access to a large body of knowledge concerning the sorts of sports French people engage in. We may also have some knowledge of the funding structures and social and economic conditions and constraints that apply to these sports in France, France's international standing with respect to these particular sports, famous French sportsmen and women, and further knowledge about the sports themselves including the rules that govern their practice, and so forth. This

4. Note that the abbreviation [FRANCE] represents the linguistic content that is encoded by the vehicle *France*.

knowledge is derived from a large number of sources including direct experience and through cultural transmission (including language).

With respect to the secondary cognitive model of political system, Figure 2 illustrates a sample of further secondary cognitive models that are accessed via this cognitive model. Hence, each secondary cognitive model has further (secondary) cognitive models to which it provides access. For instance, (FRENCH) ELECTORATE is a cognitive model accessed via the cognitive model (FRENCH) POLITICAL SYSTEM. In turn the cognitive model (FRENCH) POLITICAL SYSTEM is accessed via the cognitive model NATION STATE. Accordingly, NATION STATE is a primary cognitive model while ELECTORATE and POLITICAL SYSTEM are secondary cognitive models.⁵

The utility of the LCCM Approach is that it provides a ready means of accounting for meaning construction. To illustrate, consider the following sentences all involving the lexical item *France*.

- (6) a. France is a country of outstanding natural beauty.
- b. France is one of the leading nations in the European Union.
- c. France beat New Zealand in the 2007 Rugby world cup.
- d. France voted against the EU constitution in the 2005 referendum.

In each of these examples the semantic contribution associated with the form *France* is slightly distinct: the reading for *France* varies across these distinct utterances. France, in (6a) has a geographical landmass reading; in (6b) it is France as a political entity, a nation state; in (6c), it is the 15 players who make up the French Rugby team; and in (6d) the reading involves that proportion of the French electorate who voted ‘non’ when presented, in a national referendum, with the proposal to endorse a constitution for the European Union. The key insight of LCCM Theory is that the reason for this variation is due to differential activation of non-linguistic knowledge structures within the cognitive model profile to which the lexical concept associated with *France* affords access.

The differential readings associated with the examples in (6) arise as follows. In (6a) the interpretation associated with the form *France*, which relates to a particular geographical region, derives from activation of the GEOGRAPHICAL LANDMASS cognitive model. Individual language users have knowledge relating to the physical aspects of France, including its terrain, and its geographical location. In this example, the utterance context serves to activate this part of the cognitive model profile accessed by the lexical concept [FRANCE]. In the second example, the utterance context serves to activate a different part of the cognitive model profile to which the lexical concept [FRANCE] affords access. In this example, the reading derives from activation of the NATION STATE cognitive model. The use of *France* in the

5. The rationale for distinguishing between primary and secondary levels of cognitive models has been laid out in detail elsewhere (e.g. Evans 2013: ch. 2).

example in (2c) relates to the group of 15 French individuals who play as a team and thereby represent the French nation on the rugby field. In the example in (2d) the form *France* relates not to a geographical landmass, nor a political entity – a nation-state – nor to a group of 15 rugby players who happen to be representing the entire population of France. Rather, it relates to that portion of the French electorate that voted against ratification of the EU constitution in a referendum held in 2005. Accordingly, what is activated here is the **ELECTORATE** cognitive model.

This last example provides an elegant illustration of the way in which activation of a cognitive model serves to provide a situated interpretation of a lexical concept by giving rise to an access route through the semantic potential. In this example, interpretation requires that an access route is established through the cognitive model profile accessed via the lexical concept [FRANCE] in a way that is consistent with the lexical concepts associated with the other linguistic forms and units in the utterance. The interpretation associated with *France* in this example has to do with the French electorate, and specifically that part of the French electorate that voted against ratification of the EU constitution. In other words, [FRANCE] in this example achieves an interpretation that is facilitated by activating the cognitive models shown in bold in Figure 3.

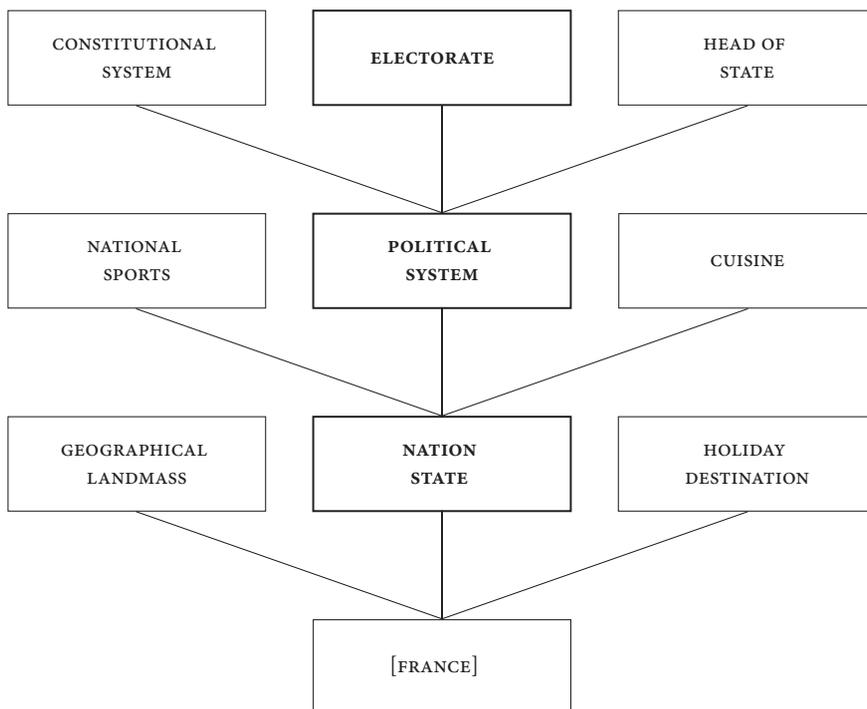


Figure 3. Access route established by the interpretation of [FRANCE] in the utterance *France voted against the EU constitution*

An important consequence of assuming a distinction between primary and secondary cognitive models relates to figurative language. Specifically, some aspects of the distinction between literal and figurative language can be elegantly accounted for. For instance, consider knowledge representation for the celebrated French novelist, critic and essayist Marcel Proust. Many native speakers of English, especially those not steeped in French literature, or without a literature background more generally, may only be dimly aware of Proust's literary contribution. Speakers in this category may simply know that Proust was a French literary figure. They may be unaware precisely when he lived, what his literary output related to, and indeed any other information about him. Cognitive model profiles relating to Proust, for these speakers, will involve knowledge inherited from *type* cognitive models. Such cognitive models facilitate inheritance of content in order to populate a cognitive model profile for an *individual*. In this case, a *schematic cognitive model profile* will be derived. Such a cognitive model profile is presented in Figure 4.

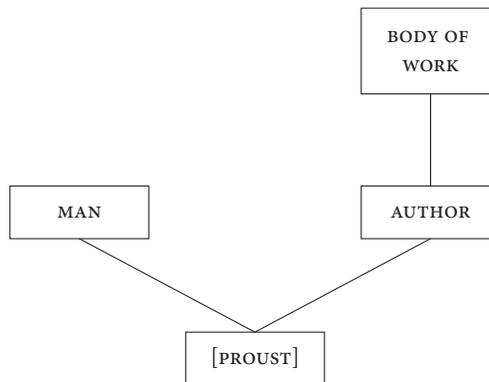


Figure 4. Schematic cognitive model profile for [PROUST]

In the schematic cognitive model profile in Figure 4, there are at least two primary cognitive models, for MAN and AUTHOR respectively. Each will consist of a range of *attributes*, inherited from type cognitive models for man and author. For instance, the type cognitive model for MAN will include generic information relating to aspects of physiology, appearance, personality, socio-cultural role, dress, behavioral traits, and so on. The schematic cognitive model for AUTHOR will include generic information relating to the generic habits and qualities associated with being an author, the nature of the activities engaged in, potential for success, and so on. A salient secondary type cognitive model also inherited by the schematic cognitive model profile is likely to relate to BODY OF WORK. This might include generic knowledge about the type and nature of the output associated with being an author, some

information about the publishing process, the requirement to have a literary agent, the role of booksellers, and so on.

Now consider the following sentences:

- (7) a. Proust had a moustache.
 b. Proust is difficult to read.

The sentence in (7a) gives rise to a reading in which the man identified as Proust had a moustache. In contrast, the example in (7b) relates not to the man per se, but rather to his literary output. That is, in an example such as this *Proust* would normally be taken as referring not to the man, but rather to the literary works produced by Proust the man. Moreover, the interpretation of *Proust* in (7a) would normally be judged to be literal, while the interpretation in (7b) would be judged as figurative, and more specifically an instance of metonymy: Proust stands for the works created by the man – PRODUCER FOR PRODUCT.

A central claim of LCCM Theory is that one reason for the distinction in literal versus figurative interpretations is a consequence of the cognitive model profile, and a distinction, therefore, in terms of the range of analogue concepts directly and indirectly accessed by the lexical concept. Literal interpretations involve activation of a primary cognitive model – in this case *MAN* – while figurative interpretations involve activation of secondary cognitive models – in this case *BODY OF WORK*. And intuitively, it does seem as if there is some sense in which body of literary output is more peripherally accessed by the lexical concept [*PROUST*], than that of being a human male, a man, and having a particular profession, namely being an author. In other words, the explicit claim made by LCCM Theory is that cognitive model profiles accessed by open-class lexical concepts exhibit a qualitative distinction between cognitive models that are in some sense more central to the knowledge associated with, for instance, Proust, and knowledge that is less central. While there is unlikely to be a neat distinction between primary and secondary cognitive models, and while the distinction is likely to vary from individual to individual, and indeed across discourse communities, there appears to be grounds for making a qualitative distinction of this sort.

4. Conceptual polysemy

With the foregoing theoretical background, let us now return to the first of the phenomena under the microscope in this chapter: conceptual polysemy. I reproduce the relevant data below.

Phenomenon 1

- (8) a. That's a heavy book 'tome'
- b. That antiquarian book is illegible 'text'
- c. That's a boring book 'level of interest'
- d. That's a long book 'duration'

We now begin to see that polysemy of this sort is a consequence of differential activation of regions of the cognitive model profile – the vast semantic potential, aka encyclopedic knowledge – to which the lexical concept [BOOK] facilitates access. To see how this works, let's examine the sorts of knowledge that the lexical concept [BOOK] must afford access to.

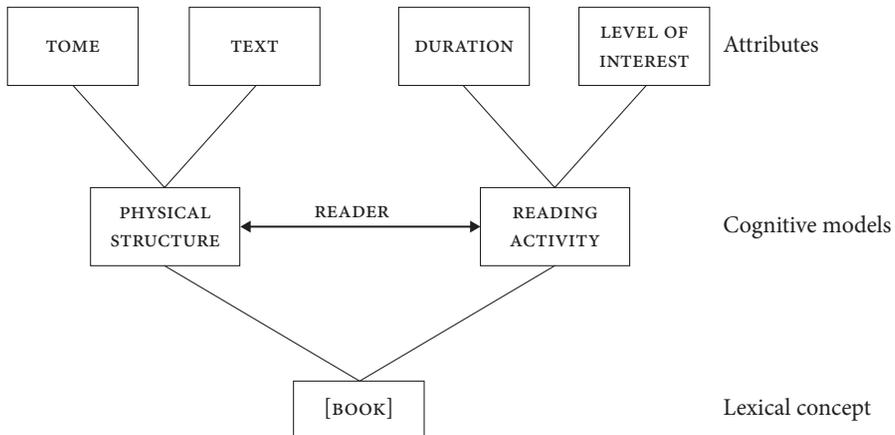


Figure 5. The relationship between lexical concepts, cognitive models, and attributes and values

Let's consider the cognitive models accessed via [BOOK]. As illustrated in the partial cognitive model profile given in Figure 5, the knowledge accessed by [BOOK] includes, at the very least, that a book is a physical entity and is interacted with via a process of reading. These two distinct sorts of knowledge – knowledge relating to an artifact, on one hand, and the process of reading, on the other – are captured in Figure 5 by the two cognitive models: PHYSICAL STRUCTURE and READING ACTIVITY respectively. The two cognitive models are related by virtue of a reader – the entity that interacts with the physical artifact by handling the tome and reading the printed text. Relationships of this sort holding between cognitive models I refer to as a *structural invariant*: a stable knowledge structure that is relational in nature. I capture the structural invariant in Figure 5 by a double-headed arrow, and the specific relation involved is signaled by the mnemonic READER. In addition, cognitive

models consist of a large, detailed, but structured, body of knowledge: what I refer to as *attributes*. Figure 5 provides two attributes for each of the cognitive models that [BOOK] provides access to.

The cognitive model PHYSICAL STRUCTURE relates to the physical artifact, consisting of, at the very least, knowledge as to the physical structure and organization of a given book. This includes detailed knowledge concerning the material aspects of the artifact, including its dimensions, weight, binding (paper or cloth), and so forth. This aspect of our knowledge about books I refer to as the TOME attribute. In addition to the physical organization and construction of a book, books consist of text, which is interacted with through the process of reading. This I refer to as the TEXT attribute. The READING ACTIVITY cognitive model relates to the process involved in interacting with books, especially the nature of the interaction with the text itself. One consequence of this interaction is that reading takes up a period of time, which I refer to as the DURATION attribute. That is, depending on the amount of text involved, reading can take lesser or greater amounts of time. Another consequence of interaction with books is the level of interest that a given book holds for the reader. This I refer to as the LEVEL OF INTEREST attribute. While the reader might judge the book to be interesting another might be judged to be boring, and so on.

Now we return to the specific type of polysemy under the spotlight in this section. Each of the utterances in (8) involves a distinct interpretation of the [BOOK] lexical concept. This is achieved by virtue of each instance of *book* being interpreted in a way consistent with the utterance context: consequently, a slightly different access route is established through the cognitive model profile accessed via the lexical concept [BOOK]. For instance, the readings that result from (8a) and (8b) have to do with activation of the PHYSICAL STRUCTURE cognitive model. However, each involves differential activation of attributes associated with this cognitive model – a process I term *highlighting* (Evans 2009). While the reading associated with *book* in (8a) involves highlighting of the TOME attribute, the reading associated with *book* in (8b) involves highlighting of the TEXT attribute.

In contrast, the readings that result from the utterances in (8c) and (8d) have to do with activation of the READING EVENT cognitive model accessed via [BOOK]. The reading associated with *book* in (8c) results from highlighting of the DURATION attribute. The reading associated with *book* in (8d) results from highlighting the LEVEL OF INTEREST attribute.

5. Inter-lexical polysemy

Now let's consider inter-lexical polysemy. Perhaps inevitably, this is a somewhat more complex phenomenon to account for, involving, as it does, distinct lexical items. I reproduce the relevant examples below:

Phenomenon 2

- | | | |
|--------|--|-----------|
| (9) a. | We are in love/shock/pain | ‘state’ |
| | Cf. We are in a room | ‘spatial’ |
| b. | We are on alert best behavior/look-out/the run | ‘state’ |
| | Cf. We are on the sand | ‘spatial’ |

The challenge is to account for why it is that prepositions such as *in* and *on* have seemingly related ‘state’ senses. In this section, I argue that the ‘state’ lexical concept associated with *in* selects for co-occurring open-class lexical concepts which access conceptual structure concerning emotional or psychological ‘force’ such as being ‘in love’, ‘in pain’ and so on. In contrast, the semantic arguments that co-occur with *on* relate to content that has to do with time-restricted activities, as well as actions that involve being currently active. These include being ‘on alert’, ‘on duty’, and so forth. In short, the types of co-occurring lexical concepts selected by each of the ‘state’ lexical concepts for these prepositions is of a quite different kind. This suggests that each of the prepositions is associated with a distinct ‘state’ lexical concept.

5.1 ‘State’ lexical concepts for *in*

In this section I present an LCCM analysis of the ‘state’ lexical concepts associated with *in*. In particular, I argue that there is more than one distinct ‘state’ lexical concept conventionally associated with the preposition *in*. I also show how these ‘state’ lexical concepts relate to, and are motivated by the prototypical spatial lexical concept, which I gloss as [ENCLOSURE].⁶

In LCCM Theory, the semantic content that makes up a lexical concept consists of a number of parameters: schematic units or ‘atoms’ of linguistic content – that is parametric knowledge, which, recall, is a type of conceptual content encoded by the linguistic system. The prototypical spatial lexical concept for *in* – the [ENCLOSURE] lexical concept – encodes the Enclosure parameter, as evidenced by the example in (10). In contrast, the [PSYCHO-SOMATIC STATE] lexical concept – one of the ‘state’ lexical concepts associated with *in* – encodes the parameter Psycho-somatic State, as evidenced in (11), but not the Enclosure parameter.

6. For detailed argumentation for the claim that [ENCLOSURE] is the prototypical lexical concept for *in* see Evans (2009, 2010)

- (10) The kitten is in the box Salient parameter: Enclosure
 (11) John is in love Salient parameter: Psycho-somatic state

Hence, the [ENCLOSURE] lexical concept, which sanctions the use of *in* in (10), encodes a schematic dimension abstracted from sensory-motor experience in which the figure (F) – e.g. *the kitten* – is contained by the bounded landmark (b-LM) – e.g. *the box*. Notice that the relation encoded is highly schematic in nature: it says nothing about whether there is contact or not between the F and b-LM as in (12), nor whether the F represents part of the landmark (LM) or not as in (13):

- (12) a. The fly is in the jar (i.e. flying around)
 b. The fly is in the jar (i.e. stationary on one interior surface)
 (13) There's a crack in the vase

Indeed, the precise spatio-topological nature of the F, LM and their relationship is a function of the F and LM and their possible forms of interaction, rather than the abstract parameter encoded by the [ENCLOSURE] lexical concept. This information derives from the semantic potential accessed via the open-class lexical concepts, for instance *fly* and *jar*.

In contrast, the [PSYCHO-SOMATIC STATE] lexical concept encodes the parameter Psycho-somatic state. This information is also highly schematic in nature: the parameter encoded does not determine the precise nature of the psycho-somatic state. Rather, that is a consequence of the semantic argument that co-occurs with *in*. Hence, while the parameters encoded by a preposition's lexical concept determine the possible range of lexical concepts – and hence semantic arguments – that can co-occur, the open-class semantic arguments specify the precise nature of the psycho-somatic state (e.g. *in love* versus *in a rage*).

[ENCLOSURE] AND ITS PARAMETERS

I now turn to a more detailed analysis of the [ENCLOSURE] lexical concept. This is necessary as the 'state' lexical concepts for *in* have derived from this more prototypical lexical concept for *in*. As noted above, the [ENCLOSURE] lexical concept encodes a spatio-topological relation holding between a schematic F, the entity enclosed, and a bounded landmark. Bounded landmarks themselves consist of many types even in everyday experience. A bounded landmark includes an interior, which further subsumes an interior surface, and the volumetric interior bounded by the interior surface. It also subsumes a boundary, which can be rigid, as in a metal safe, or non-rigid, as in a plastic carrier bag. The boundary also has other physical characteristics such as permeability and degrees of opacity. Finally, the bounded landmark has, by definition, an exterior: that region which constitutes the inverse of the volumetric interior. Accordingly, part of the exterior includes the exterior surface. The spatio-topological attributes just described relate to enclosure.

Due to human interaction with enclosures, the [ENCLOSURE] lexical concept, as manifested in usage events, is associated with a number of functional consequences. There are a number of identifiably distinct sorts of functional categories associated with spatial scenes involving enclosure. In addition to the functional category of enclosure itself, these additionally include Location with Surety (aka containment), Occlusion and Affecting Conditions, summarized in Figure 6.

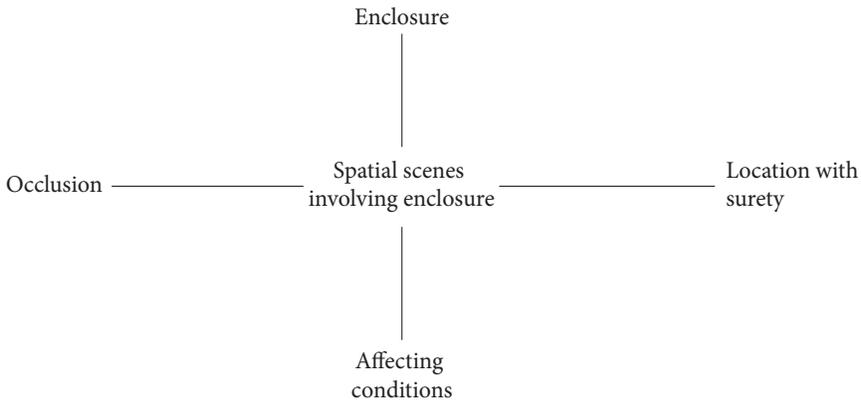


Figure 6. Parameters deriving from spatial scenes involving the spatio-topological relation: Enclosure

Bounded landmarks that are specialized for providing a Location with Surety function are known as ‘containers’. This functional category is encoded in linguistic content in terms of what I refer to as the Location with Surety parameter. Containers can provide a support function by virtue of locating by fixing – i.e. holding and restricting – the location of the F, as in the case of coffee in a coffee cup. Alternatively, containers can restrict access (and escape), as in the case of prisons, and safes.

The second functional category mentioned relates to Occlusion. A consequence of certain bounded landmarks, due to the opacity of the material that forms the boundary, is that the figure located on the volumetric interior is occluded, and hence hidden from view. This functional category gives rise to the Occlusion parameter.

The third functional category, that of Affecting conditions, relates to the fact that an enclosure provides a delimited environment which thereby affects the F located on the volumetric interior. For instance, a prisoner held in solitary confinement in a windowless sound-proofed room is thereby subjected to a particular sensory environment that is a direct consequence of the nature of the bounded landmark in which s/he is located.

My claim is, then, that by virtue of interacting in humanly relevant ways with the spatio-topological relation Enclosure, a number of distinct functional consequences arise, which I formalize as distinct and identifiable categories. These

functional categories amount to schematic parameters that come to be encoded as semantic ‘atoms’, forming part of the bundle of linguistic content encoded by the [ENCLOSURE] lexical concept. In essence, the lexical concept [ENCLOSURE] encodes the spatio-topological relation Enclosure, a schematic unit of knowledge akin to a parameter, and the parameters – arising from the encoding of distinct functional categories – Location with surety, Occlusion and Affecting Conditions.

How then does polysemy arise? Due to the multiplicity of parameters encoded by a single lexical concept, under certain conditions, a parameter (or parameters) that is (or are) particularly salient in a given context of use can become reanalyzed as a distinct sense-unit, giving rise to a new lexical concept in its own right. This doesn’t mean, for instance, that the [ENCLOSURE] lexical concept loses the Affecting Conditions parameter from its linguistic content. Rather, the Affecting Conditions parameter can become established as the core parameter of a new lexical concept.

‘STATE’ LEXICAL CONCEPTS FOR IN

I now consider the ‘state’ lexical concepts for *in*, in order to see how these arise from the core spatial lexical concept: [ENCLOSURE]. Consider the following examples, all involving *in*.

- (14) a. She is in good health.
 b. She is in love.
 c. She is in trouble/debt.
 d. She’s in banking [i.e. works in the banking industry].

While each relates to a ‘state’ of some kind, these examples in fact relate to slightly different ‘states’: those that have a physical cause, as in (14a) – the state of being ‘in good health’, which is a consequence of the physical condition of an organism’s body – those that have a psychological or emotional cause, as in (14b) – the state is a consequence of a subjective state, which may (or may not) have physical, i.e. observable, manifestations – those that have a social/inter-personal cause, as in (14c) – resulting from social/interpersonal interactions which result in an externally-maintained state – and those that are a result of a habitual professional activity, as in (14d). Put another way, each of these ‘states’ co-occurs with distinct lexical concepts – they take distinct semantic arguments – that relate a particular entity to quite different sorts of states. Hence, there are four distinct sorts of semantic tendencies in evidence, supporting the view that we are dealing with four distinct lexical concepts for *in*. This is illustrated more clearly in the examples below:

[PHYSIOLOGICAL STATE] (i.e. bodily state)

- (15) a. he’s in poor/good health
 b. The woman is in labor

[PSYCHO-SOMATIC STATE] (i.e. subjective/internal state)

- (16) a. She is in shock/pain (over the break-up of the relationship)
b. Susan is in love (with herself/her husband)

[SOCIO-INTERPERSONAL STATE] (i.e. externally-maintained state)

- (17) a. a. The girl is in trouble (with the authorities)
b. b. She is in debt (to the tune of £1000)

[PROFESSIONAL STATE] (i.e. professional activity habitually engaged in)

- (18) a. She is in banking
b. She is in insurance

In addition to evidence based on distinct patterns in terms of semantic arguments, there is an additional line of evidence to support the position that there must be a number of distinct 'state' lexical concepts associated with *in*. This is demonstrated by virtue of ambiguities associated with an utterance of the following kind:

- (19) She's in milk

The utterance in (19) could potentially be interpreted as relating to a woman who is nursing a baby, and thus lactating. Alternatively, it could relate to a woman who works in the dairy industry. Given an appropriate extra-linguistic context, an example such as this can be interpreted in at least two ways. The potential for divergent interpretations is a consequence, in part, of our knowledge that *in* has a number of distinct lexical concepts associated with it: what is relevant for this example is the distinction between a [PHYSIOLOGICAL STATE] lexical concept and a [PROFESSIONAL STATE] lexical concept. Moreover, ambiguities can be generated even when a relatively well entrenched example is employed. For instance, even examples of the following kind:

- (20) She is in labor
(21) She is in love

can be interpreted in alternate ways. For instance, (20) could be interpreted as relating to childbirth or to a professional activity, e.g. the trade union movement. Similarly, (21) could be interpreted as relating to an emotional state or a professional activity, e.g. marriage guidance counseling. The former reading is only possible by virtue of assuming something akin to an [PSYCHO-SOMATIC STATE] lexical concept that is distinct from a [PROFESSIONAL STATE] lexical concept. And so, both lexical concepts *must* inhere in long-term semantic memory if 'love' can be interpreted in these ways in this example.

DERIVATION OF THE 'STATE' LEXICAL CONCEPTS

I now examine how the distinct 'state' lexical concepts may have arisen. My claim is that these lexical concepts developed from the Affecting Conditions parameter associated with the prototypical [ENCLOSURE] lexical concept for *in*.

In terms of an LCCM account of the emergence of the 'state' lexical concepts for *in*, the trajectory is as follows. Situated implicatures arise in *bridging contexts* (Evans 2009). These are contexts in which a usage sanctioned by the relevant 'spatial' lexical concept, such as the [ENCLOSURE] lexical concept, also gives rise to a situated implicature, such as an affecting condition. If the prepositional form is repeatedly used in such bridging contexts, the situated implicature may give rise to the formation of a new parameter, or the detachment of an existing parameter, as the core parameter of a new lexical concept. I argue below that bridging contexts involving the functional category of Affecting Conditions may have given rise to the formation of a number of related but distinct 'state' parameters, and hence lexical concepts.

In order to trace the development of the parameter Affecting Conditions, we need to consider spatial scenes that might provide appropriate bridging contexts. To illustrate, consider the following expressions:

- (22) a. in the dust
 b. in the sand
 c. in the snow

While dust, sand and snow are physical entities that can 'enclose' they cannot, normally, fulfill the functions provided by, for instance, containers: they do not typically serve to locate with surety, exceptional circumstances such as quicksand and avalanches excepted. For instance, dust, sand and snow, by virtue of enclosing, do not normally have the structural attributes that allow an entity to be supported and thus transported (cf. a bucket, or a coffee cup), nor do they normally restrict access in the way a prison cell does, for instance.

Nevertheless, these examples exhibit some of the spatio-topological properties associated with the [ENCLOSURE] lexical concept. This is a consequence of the properties associated with these 'bounded' landmarks: they provide an affecting condition, an environmental influence that affects our behavior. For instance, they determine the kinds of apparel we wear, and how we behave when we are exposed to the dust/sand/snow, and so on. As such, these contexts of use provide bridging contexts: both enclosure and affecting conditions are implicated, and either (or both) may be understood. While examples such as sand, snow and dust can be construed as enclosures with boundaries, there are other related examples of what we might refer to as Prevailing Conditions that are much less clear-cut in terms of the nature of the boundaries involved:

- (23) a. the flag in the storm
b. the flag in the wind

I suggest that these instances of *in* in (23) are sanctioned by virtue of there existing a distinct parameter Affecting Conditions, which forms part of the linguistic content encoded by a distinct [PREVAILING CONDITIONS] lexical concept. Hence, the next stage in the development of a new lexical concept is for the parameter: Affecting Conditions, to be re-analyzed as a core component of an independent lexical concept. Clearly a storm and wind are much less prototypically enclosures, and more saliently provide prevailing conditions that thereby constitute an environment that affects us. As such, spatial scenes involving more prototypical enclosures have given rise to the functional category Affecting Conditions, which has led to the formation of a distinct Affecting Conditions parameter in semantic memory. The existence of a distinct [PREVAILING CONDITIONS] lexical concept, as evidenced by examples in (23), provides suggestive evidence that such a distinct Affecting Conditions parameter exists.

I argue that the distinct 'state' lexical concepts associated with *in* evidenced in (15) to (18) encode the parameter Affecting Conditions, but not Enclosure. Indeed, these lexical concepts are what I have referred to as 'state' lexical concepts, as the states invoked all provide, in some sense, affecting conditions. Moreover, all these 'state' lexical concepts are relatively, and to degrees, far removed from the physical notion of enclosure from which they developed. In essence, once an Affecting Conditions parameter becomes conventionalized, it can be applied to distinct kinds of affecting conditions, even those that are non-spatial in nature, such as states. This leads to the development of new lexical concepts.

The first such 'state' lexical concept relates to the physical condition of an organism that thus provides an affecting condition. Such physical conditions include good/ill health, pregnancy, and any salient physical aspect of the organism's condition that affects and thus impacts on the organism's functioning. This lexical concept I gloss as [PHYSIOLOGICAL STATE]. In addition to environmental and physical conditions, affecting conditions can be caused by psycho-somatic states, such as grief, happiness and sadness, which are internal in nature. This 'state' gives rise to a [PSYCHO-SOMATIC STATE] lexical concept associated with *in*. In addition, social interactions that give rise to social or interpersonal relationships lead to conditions that may affect the individual. Such extrinsic or socially-induced affecting conditions might include debts, or other sorts of difficult situations that impose conditions on the behavior of an individual. This set of affecting conditions gives rise, I suggest, to what I gloss as the [SOCIO-INTERPERSONAL STATE] lexical concept associated with *in*. Finally, one's habitual professional activity provides an affecting condition by virtue of the physical and social interactions that are attendant upon

such activities. This provides an affecting condition giving rise to a lexical concept glossed as [PROFESSIONAL STATE] associated with *in*. The relationship between the Affecting Conditions parameter and the range of non-spatial lexical concepts for *in* discussed is summarized in Figure 7.

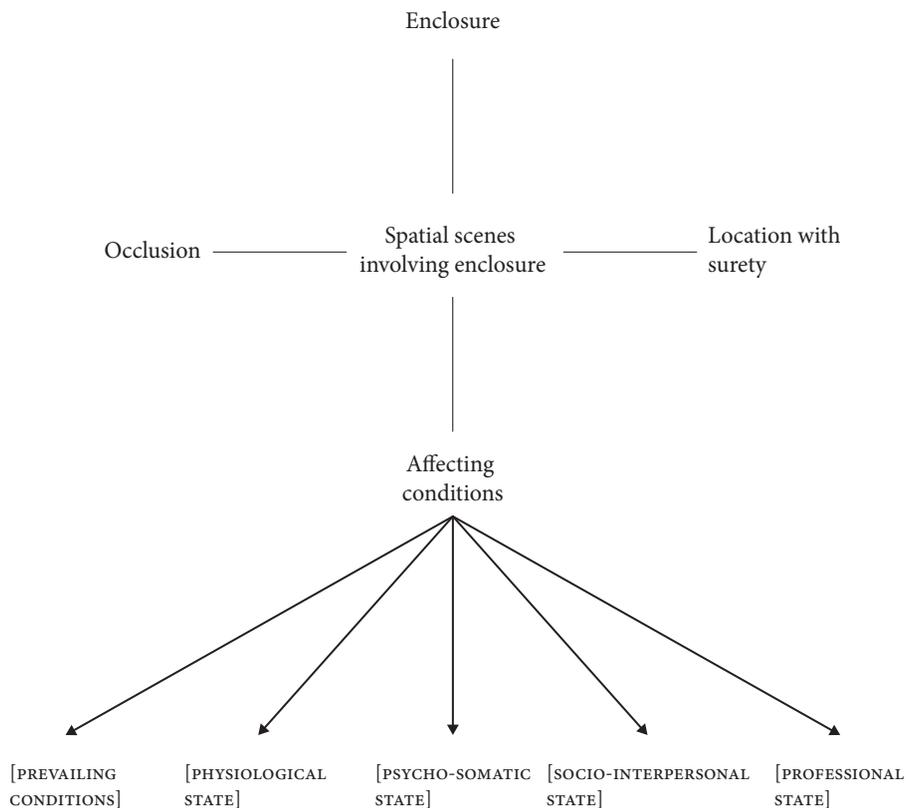


Figure 7. Parameters and their relationship with the ‘state’ lexical concepts for *in*

5.2 Lexical concepts for *on*

In this section I deal, somewhat more briefly, with lexical concepts associated with the prepositional vehicle *on*. The spatial relation designated by *on* involves the relation of contact or proximity to the surface of a landmark (LM), and so the functional consequence of being supported or upheld by it. I gloss the prototypical spatial lexical concept conventionally associated with *on* as [CONTACT]. This serves to encode the spatio-topological relation Contact, giving rise to a Contact parameter encoded by the preposition. A functional consequence of contact is that

the TR is thereby supported by the LM. This gives rise to the parameter Support, which is also encoded by *on*. The [CONTACT] lexical concept sanctions an example of the following sort:

(24) the apple on the table

Notice that evidence that the parameters Contact and Support are both encoded by the lexical concept [CONTACT] comes from the fact that *on* can only felicitously be employed to describe spatial scenes in which both parameters are apparent. For instance, if an apple is held against a wall by someone, the utterance in (25) is semantically anomalous. However, if the apple is affixed to the wall, for instance by glue, then (25) is entirely appropriate.

(25) the apple on the wall

In short, while the apple is in contact with the wall in both scenarios, in the first scenario it is the person, rather than the wall, that affords support, while it is the wall, and the glue, which employs the wall as a means of affixing the apple, in the second. Hence, the example in (25) applies *only* when there is both physical contact between the TR and the LM, and when the latter has a role in supporting the former.

Indeed, there are a number of distinct 'support' lexical concepts associated with *on* which privilege the Support parameter at the expense of the Contact parameter, as illustrated by the following examples:

[SUPPORTING BODY PART]

- (26) a. on one's feet/knees/legs/back
b. on tiptoe
c. on all fours

In the examples in (26), the use of *on* relates to that part of the body that provides support, rather than being concerned with contact. That is, *on all fours*, for instance, does not mean that something is in contact with all fours. Rather, the conventional interpretation is that 'all fours' provides the means of support.

[MEANS OF CONVEYANCE]

- (27) a. on foot/horseback
b. on the bus

With respect to the example in (27b), it is worth pointing out, as Herskovits (1988) does, that if children were playing on a stationary bus, for instance, that had been abandoned, then it would not be appropriate to say: *on the bus*, but rather *in* would be more natural. This supports the view that the [MEANS OF CONVEYANCE] lexical concept is a distinct 'support' lexical concept encoded by *on*.

[SUPPORTING PIVOT]

(28) The Earth turns on its axis

Again, in this example, being ‘on’ an axis has to do with being supported and thus, in this case, being able to turn. Other examples of more abstract support, ranging for chemical reliance to rational support are illustrated below:

[CHEMICAL RELIANCE]

- (29) a. Are you on heroin?
b. She’s on the pill

[PSYCHOLOGICAL SUPPORT]

(30) You can count/rely on my vote

[RATIONAL SUPPORT]

(31) on account of/on purpose

THE [ACTIVE STATE] LEXICAL CONCEPT

There is just one ‘state’ lexical concept for *on*, which I gloss as [ACTIVE STATE]. This lexical concept derives not from the parameter Support. Rather, it pertains to a functional category concerning ‘functionality’ or ‘activity’. In many spatial scenes, a consequence of contact is that the TR, as it comes into contact with a particular surface, becomes functional. This parameter I refer to as Functional Actioning. Removing contact precludes functional actioning. Such forms of contact, for instance, invoke scenarios involving physical transmission, such as the very salient one of electricity. Many times a day we plug-in or switch ‘on’ electrical appliances. It is by facilitating contact between the appliance and the electrical circuit that an appliance is rendered functional. A ‘switch’ provides a means of facilitating this contact, which is why we employ the term ‘switch on’ in English. I propose that the [ACTIVE STATE] lexical concept associated with *on* encodes a Functional Actioning parameter as part of its linguistic content. It is this which makes it distinctive from the spatial lexical concepts for *on* discussed in the previous examples.

The [ACTIVE STATE] lexical concept associated with *on* relates to lexical concepts which concern a particular state that can be construed as ‘active’ or ‘functional’, as contrasted with a, perhaps, normative scenario in which the state does not hold. In other words, states described by instances of *on* sanctioned by this lexical concept are often temporally circumscribed and thus endure for a prescribed or limited period of time. In this, the states referred to are quite distinct from those that the ‘state’ lexical concepts associated with *in* relate to. Here, the notion of being ‘affected’, apparent with *in*, is almost entirely absent. Consider some examples:

- (32) a. on fire
 b. on live (i.e. a sports game)
 c. on tap (i.e. beer is available)
 d. on sleep (as in an alarm clock on a particular mode)
 e. on pause (as in a DVD player)
 f. on sale
 g. on loan
 h. on alert
 i. on best behavior
 j. on look-out
 k. on the move
 l. on the wane
 m. on the run

Figure 8 depicts the parameters associated with the [CONTACT] lexical concept encoded by *on*.

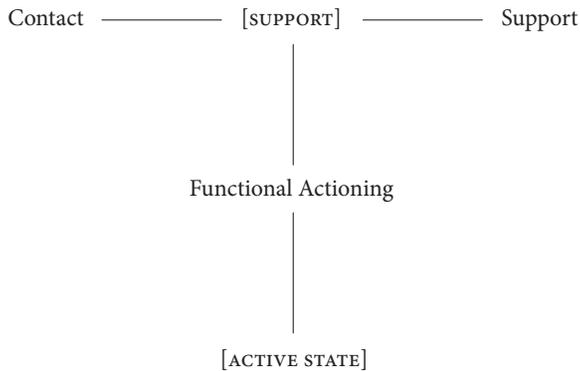


Figure 8. Parameters and their relationship with ‘state’ lexical concept associated with *on*

5.3 Discussion

On first blush, the ‘state’ lexical concepts of *in* and *on* appear to be comparable: they relate not to spatial scenes, but rather abstract states. But on closer analysis, it turns out that the semantic arguments that co-occur with *in* and *on* are distinct. And based on an analysis deriving from LCCM Theory, which posits that semantic sense units – lexical concepts – consist of schematic parameters – units of semantic structure – it appears that the ‘state’ lexical concepts for *in* and *on* are in fact wholly distinct. I have argued that the difference concerns the distinct core spatial lexical concepts – associated with *in* and *on* respectively – from which the respective ‘state’ senses have derived.

According to LCCM Theory, parameters derive from the humanly-relevant scenes with which words are associated during language use. Any such scene involves a number of situated implicatures, associated with the scene. Implicatures that re-occur in usage contexts associated with the same lexical form can come to be stored as parameters – schematic units of semantic structure – conventionally associated with a distinct form. And over time, some parameters can come to be reanalyzed as being more salient than others, allowing a lexical item to gradually be used in new contexts of use. And when this happens, we are provided with evidence that a new lexical concept associated with the form has emerged, with a revised inventory of parameters vis-à-vis the prototypical spatial lexical concepts – in the case of *in* and *on*.

In the case of prepositions, functional consequences of the spatial relations give rise to parameters such as Affecting conditions – in the case of *in* – and Functional Actioning – in the case of *on*. These quite different parameters entail a divergent distribution in terms of the semantic arguments that can co-occur with the ‘state’ lexical concepts for *in* and *on*. While the various ‘state’ lexical concepts for *in* require semantic arguments that provide, in some sense, an affecting condition, in contrast, the ‘state’ lexical concept for *on* involves semantic arguments that give rise to an active state of some sort. And these qualitatively different sorts of states are directly attributable to the spatial semantics conventionally associated with the prototypical lexical concept of each preposition.

6. Conclusion

Polysemy is often defined in the literature as the relation between two distinct, albeit related sense-units associated with the same lexical form. For instance, the relation between the following usages of *over* would normally be considered polysemous:

- | | | |
|------|--------------------------------|---------------------|
| (33) | The lamp is over the desk | ‘above’ |
| | The ball is over the wall | ‘on the other side’ |
| | The clouds are over the sun | ‘occlusion’ |
| | The relationship is over | ‘completion’ |
| | He prefers red over white wine | ‘preference’ |

The focus of much research within language science, and especially within cognitive linguistics, has been on trying to account for the relationship between such relatively stable, albeit distinct, interpretations associated with a single form. One view, dubbed monosemy (e.g. Ruhl 1989), takes the view that polysemy arises from the filling-in of context. On this account, a form such as *over* would possess a relatively abstract underlying representation that is filled in by context. Pustejovsky

(1995) provides an impressively detailed attempt to account for the sorts of ways in which words might get contextually filled-in. In the cognitive linguistics tradition, polysemy has been viewed as a function of underlying entries in semantic memory, stored in long-term semantic memory. On this view, the lexical form has the interpretations evident in (33) not because context fills in, or modulates its underlying abstract meaning. But rather, *over* already has these distinct sense-units stored in semantic memory (Tyler and Evans 2001, 2003). In this chapter, I have tackled polysemy from a slightly different angle than this bifurcation. Polysemy arises, in part, from non-linguistic (i.e. encyclopedic) knowledge, I have proposed. The complex conceptual representations to which words facilitate access provides a vast semantic potential that we deploy during language use and meaning construction.

As my discussion of *France*, *Proust* and *book* have shown, polysemy arises, in large measure, from the sorts of analogue knowledge we possess, and which we draw upon during language understanding. Moreover, in my discussion of inter-lexical polysemy, we see that polysemy arises from the semantic lineages of words: any given word has a usage history, which relates to the usage contexts and humanly relevant scenes that correlate with its use. And these, in the guise of my notion of a 'parameter', can come to embellish and modify a word's representation. Over time, this can lead to new lexical concepts, which deviate from the 'originating' lexical concept, although in a lineage-specific way: the 'state' lexical concepts for *in* are different from *on* precisely because of the originating spatial semantics that gave rise to them. In the final analysis, what this reveals is that polysemy is a complex and multifaceted phenomenon. It is probably overly simplistic to assume, as has sometimes been done (e.g. Tyler and Evans 2003) that discussions of polysemy boil down to the polemic of monosemy on the one hand, versus the multiple distinct sense-units of the *principled polysemy* approach that I espoused with Andrea Tyler in our 2003 book. This bifurcation is too neat, and consequently ignores the very phenomena that I have been addressing in this chapter.

While polysemy as viewed through the eyes of Charles Ruhl (1989) is surely empirically flawed, it is fair to say that the view of polysemy developed in Tyler and Evans (2003) is probably also too simplistic. There we argued for neat semantic networks, where word-senses constituted clearly-demarcated nodes within a radiating lattice of semantic memory, which we thought, ultimately, would be locatable in the brain. But what I've shown in this chapter is that polysemy derives from different sources, and in various ways. To account for what I have termed conceptual polysemy, we need to understand the nature of non-linguistic knowledge to which a word facilitates access. And to account for inter-lexical polysemy, we need to know how word-senses develop, and hence, the linguistic knowledge that words contain as part of their semantic structure – what I have referred to as parameters. In short, we require an account of the nature of semantic structure – representation

unique to language – and conceptual structure – representation that is wholly non-linguistic in nature. LCCM Theory provides just such an account: it offers a psychologically-plausible way of viewing the qualitatively distinct and distinguishable types of representations – the linguistic and the conceptual – that are essential to understanding linguistically-mediated meaning construction. And in so doing, LCCM Theory affords a joined-up account of polysemy.

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