

On the nature of lexical concepts

Vyvyan Evans

Abstract

This paper addresses the nature of lexical concepts, a theoretical construct in LCCM Theory (Evans 2006, 2009b). The hallmark of LCCM Theory is its claim that linguistically-mediated communication relies on knowledge found in two distinct representational systems: the conceptual system and the linguistic system. The linguistic system is comprised of symbolic units, which involve a symbolic relation holding between a phonological pole and a semantic pole. Lexical concepts represent a means of modelling the semantic pole. This paper provides an overview of the main properties and characteristics of lexical concepts. It also provides a methodology for identifying and so distinguishing between lexical concepts. The latter is important when dealing with cases, such as polysemy, where a related form is paired with distinct lexical concepts.

1. Introduction

This article is concerned with providing an overview of the main properties and characteristics of lexical concepts. A *lexical concept* is a theoretical construct in LCCM Theory (Evans 2006, 2009a, 2009b, 2010, To appear), which models the semantic structure of language. LCCM Theory (or the Theory of Lexical Concepts and Cognitive Models), is an approach to lexical representation and semantic composition. Its major assumption is that linguistically-mediated meaning construction makes use of two distinct representational systems. The first, the *conceptual system*, consists of non-linguistic knowledge structures, modelled in terms

of the theoretical construct of the *cognitive model*. Cognitive models are coherent bodies of perceptual and subjective experience types. The second system, the *linguistic system*, consists of *symbolic units* (units made up of a phonological and a semantic pole). The linguistic system provides an executive control function, allowing cognitive models to become activated, in order to facilitate meaning construction. For full details see Evans (2009b). In this paper, I am concerned with detailing the nature of lexical concepts: the semantic pole of a linguistic unit.

This paper has three main sections. In the first, I outline a bifurcation in the nature of lexical concepts: only a subset of lexical concepts are specialised for activating cognitive models. In the subsequent section, I pull together the key attributes of the lexical concept based on previous research findings. Finally, I present a methodology for identifying lexical concepts based on usage data. Lexical concepts are units of semantic structure. Hence, they inhere in the mental grammar and so, strictly, do not arise in language use. Rather they sanction specific instances of use (see Evans 2009b for discussion). Nevertheless, they leave a ‘footprint’ in usage data: their *lexical profile*, the selectional tendencies which form part of the linguistic content encoded by a lexical concept. As a lexical concept’s lexical profile is held to be unique, this provides a principled basis for employing actual instances of use, *utterances*, in order to identify the lexical concept involved in sanctioning a given instance of use. As such, the final substantive section of the paper is also concerned with harnessing the construct of the lexical profile as a methodological tool for identifying lexical concepts.

2. A bifurcation in lexical concepts

According to Talmy (2000) a central design feature of language is that the concepts expressed are divided into two subsystems. Talmy characterises this in terms of what he refers to as the grammatical subsystem and lexical subsystem. These two subsystems serve to express the experiential complex—what Talmy refers to as the *cognitive representation*—that a speaker attempts to evoke in the listener by virtue of deploying language. The range of concepts expressed by the grammatical subsystem is highly restricted cross-linguistically, providing a basic framework for the structuring of the experiential complex that language users seek to evoke in their interlocutors. Put another way, the lexical concepts associated with the grammatical subsystem have *schematic content*, providing a structuring function. Lexical concepts provide a ‘scaffolding’, so to speak, across which the rich content associated with the lexical concepts of the lexical subsystem can be draped. In contradistinction to this, the lexical concepts associated with the so-called lexical subsystem provide *rich content*, giving rise to the details (rather than structural aspects) of the cognitive representation.

An important aspect of Talmy’s work is the claim that the distinction between rich versus schematic content corresponds to a bifurcation between form types: open-class versus closed-class forms. Closed-class forms are so-called because it is considered more difficult to add members to this set. This set of lexical items includes the so-called ‘grammatical’ or ‘functional’ words such as conjunctions, determiners, pronouns, prepositions, and so on. In contrast open-class forms include words belonging to the lexical classes: noun, verb, adjective and adverb.

While the concepts expressed by closed-class forms encode schematic content, they are nevertheless essential for the expression of the cognitive representation. To

make this point clear, consider the following semantic analysis of the range of open- and closed-class elements which comprise the utterance in (1):

(1) *A rockstar smashed the guitars*

The forms in bold: **a**, **-ed**, **the** and **-s** are associated with the grammatical subsystem. Their semantic contribution relates to whether the participants (rockstar/guitars) in the experiential complex evoked by (1) can be easily identified by the hearer (the use of the indefinite article **a** versus the definite article **the**), that the event took place before now (the use of the past tense marker **-ed**), and how many participants were involved (the absence or presence of the plural marker **-s**).

In contrast, the forms in italics: *rockstar*, *smash* and *guitar* are associated with the lexical subsystem. That is, their semantic contribution relates to the nature of participants involved in the experiential complex, and the relationship holding between them, namely one involving smashing. In other words, while the closed-class forms encode content relating to structural aspects of the experiential complex evoked, the open-class forms are associated with detailed information concerning the nature of the participants, scenes involving the participants, and the states and relationships that hold.

To make this point even clearer, consider the example in (2):

(2) *A waiter served the customers*

While the utterance in (2) involves exactly the same closed-class elements, and hence schematic content as (1), the cognitive representation evoked by (2) is radically

different. According to Talmy, this is because the content evoked by the lexical subsystem—the example in (2) involves different open-class forms from the example in (1)—involves very different content than that associated with schematic content encoded by the closed-class forms. The lexical subsystem relates to things, people, places, events, properties of things and so on. The grammatical subsystem, on the other hand, relates to content having to do with topological aspects of space, time and number (discussed in further detail below), whether a piece of information is old or new, and whether the speaker is providing information or requesting information and so on, as illustrated by (3) in which information is being requested:

(3) **Which** *waiter served the customers?*

The closed-class forms I have discussed thus far have an overt phonetic realisation. However, each of the examples discussed also include closed-class forms that are phonetically implicit. Examples include lexical classes: e.g., NOUN, VERB; lexical subclasses: e.g., COUNT NOUN, MASS NOUN; grammatical relations: e.g., SUBJECT, OBJECT; declarative versus integrative forms, active voice versus, passive voice, and clause-level symbolic units such as the ditransitive construction, and so forth.

In order to capture the range of concepts associated with both overt and implicit closed-class forms, as well as those encoded by open-class forms, Tables 1 and 2 present a Talmy-style analysis in order to illustrate the distinction in schematic versus rich content. The tables are based on the example in (2).

Closed-class vehicles	Schematic semantic content
A	Introduces a referent which the hearer is held to be unable to readily identify (from context or preceding discourse)
A	Designates a unitary instantiation of the referent
The	Introduces a referent which the hearer is held to be able to readily identify (from context or preceding discourse)
-s	Designates multiple instantiations of a referent
-er	Designates performer of a particular action or activity
lexical class: verb (for <i>serve</i>)	Designates entity as an event (as one possibility)
lexical class: noun (for <i>waiter/customer</i>)	Designates entity as an object (as one possibility)
Grammatical relation: subject (for <i>waiter</i>)	Designates entity as being the primary or focal entity in a designated relationship
Grammatical relation: object (for <i>customers</i>)	Designates entity as less important or secondary entity in a designated relationship
Active voice (through verb form)	Designates point of view being situated at the agent
Declarative word order	Speaker knows the situation to be true and asserts it to the hearer

Table 1. Schematic content associated with closed-class vehicles

Open-class vehicles	Rich semantic content
Waiter	Person with a particular function, and sometimes appearance, who works in a particular setting
Serve	Particular mode of activity involving two or more people and, typically, an entity with which one of the participants is provided by the other
Customer	Person who is provided with a particular object or service (of various sorts) in exchange for, typically, money

Table 2. Rich content associated with open-class vehicles

As is evident from a comparison of Tables 1 and 2, there is a clear distinction between the nature of the content associated with closed versus open-class forms.

While the number of closed-class forms required to evoke the experiential complex

designated by (2) is more numerous, the concepts associated with the forms relate to structural aspects of the scene, and serve to relate different aspects of the cognitive representation. In contrast, there are fewer open-class forms, but the level of detail associated with these is much greater, involving social, physical and interpersonal function, details of the nature of the relationship holding between participants, as well as rich perceptual details concerning substance, shape, size, and so forth. This distinction is summarised in Figure 1.

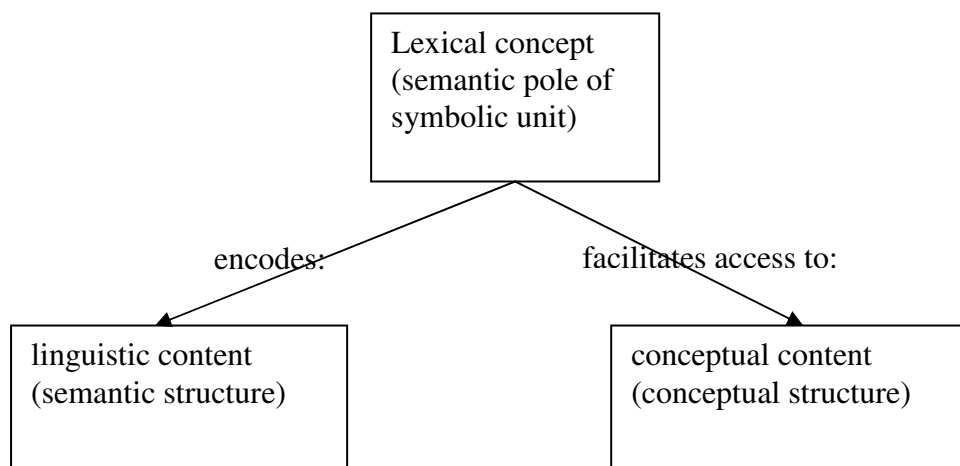


Figure 1. The bipartite structure of a lexical concept

LCCM Theory makes a principled distinction between *semantic structure* on one hand, and *conceptual structure* on the other. This distinction in the kind of knowledge—in present terms, *content*—evoked, is of two quite different kinds. While conceptual structure has to do with conceptual (i.e., non-linguistic) content, to which language, and specifically, lexical concepts, afford access, semantic structure has to do with *linguistic content*.

I argue that the distinction in content evoked by language, pointed to by Talmy, relates to the distinction between linguistic and *conceptual content*. The rich content evoked by open-class forms relates to conceptual content—a level of knowledge representation ‘above’ language. Information of this kind is multimodal in nature. As such, it derives from sensory-motor systems—those sensory systems that recruit information relating to the external environment and the human individuals’ interaction with the environment—as well as proprioception—the systems that recruit information relating to the motor aspects of the body’s own functioning—and subjective experience—which includes experiences ranging from emotions, temporal and other cognitive states, to the visceral sense (see Barsalou 1999). Conceptual content provides records of perceptual states, in the sense just given. Accordingly, it is *analogue* in character. That is, conceptual content encodes information that parallels the multimodal body-based (perceptual, motoric, subjective, etc.) experience that it constitutes a representation of.¹ As such, conceptual structure is not suitable for being encoded in language. After all, language as a representational system consisting of symbolic units is simply not equipped to directly encode the rich, multimodal character of sense-perceptory and subjective experience. While lexical concepts do not encode multimodal information of this sort, they do provide access to content of this sort—or at least lexical concepts associated with open-class forms do, as I argue below.

In contrast, the schematic content discussed by Talmy is not an analogue representation of multimodal experience. Rather, it represents an abstraction over multimodal content of various sorts, provided in a form that can be directly encoded

¹ Conceptual content is not an exact record of the multimodal states that are captured. Rather, it is somewhat attenuated. See Barsalou (1999) for discussion.

in language, i.e., by lexical concepts. Content of this kind constitutes what I refer to as linguistic content, and forms part of the information directly encoded by a lexical concept.

While the distinction between rich and schematic aspects of the cognitive representation provide evidence for the distinction in linguistic and conceptual content just outlined, the distinction in open-class and closed-class vehicles provides evidence for a closely related distinction in the nature of the associated lexical concepts.² The distinction in form types provides evidence that lexical concepts fall into two distinct categories. Closed-class forms are associated with lexical concepts which are specialised for encoding linguistic content. Lexical concepts of this sort I refer to as *closed-class lexical concepts*. Open-class forms, while also encoding linguistic content, are, in addition, specialised for serving as *access sites* to conceptual content. Lexical concepts of this sort I refer to as *open-class lexical concepts*.

In sum, the distinction between open-class lexical concepts versus closed-class lexical concepts embodies a bipartite organisation of lexical concepts, as captured in Figure 2. To reiterate, while both types of lexical concepts *encode* linguistic content, I hypothesise that only open-class lexical concepts *afford access* to conceptual content. The distinction between ‘encode’ and ‘afford access’ is critical here. Linguistic content is encoded by lexical concepts precisely because this is the content which makes up lexical concepts.

² Recall that symbolic units are made up of forms which serve as vehicles for the associated lexical concepts.

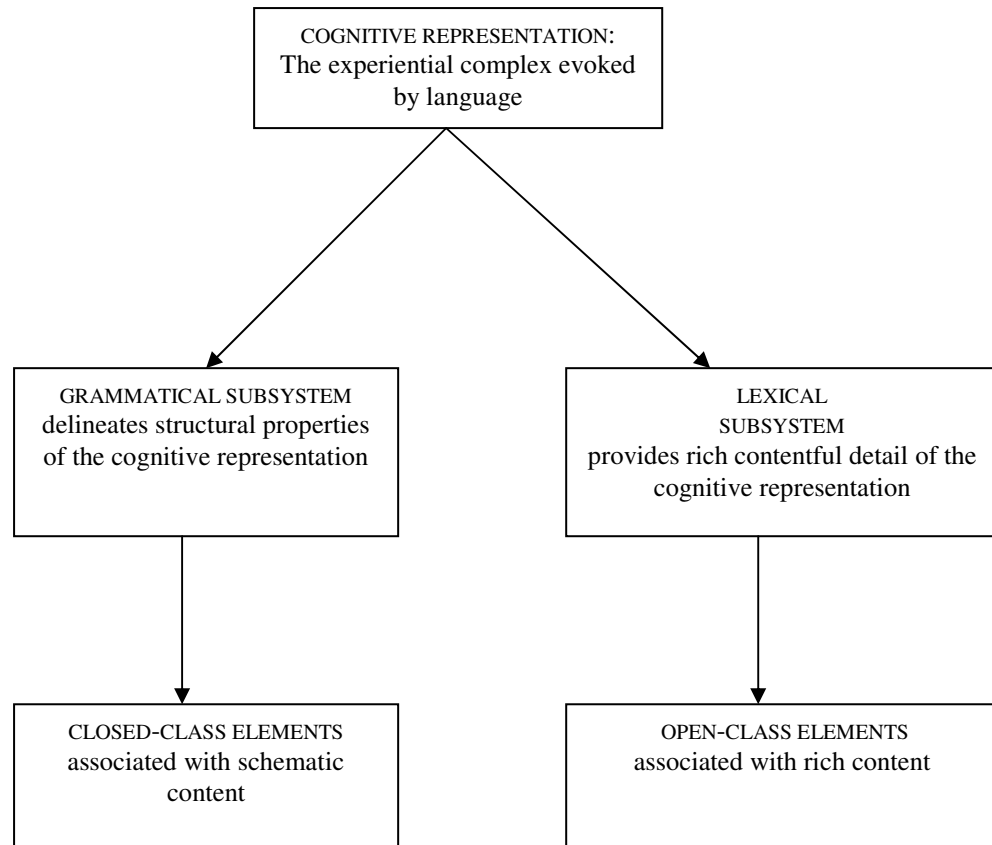


Figure 2. The bifurcation in the expression of the cognitive representation in language

3. The nature of lexical concepts

In this section I seek to briefly survey a number of the most notable properties of lexical concepts. These are as follows and are addressed in more detail below:

- i) lexical concepts are elements of mental grammar
- ii) lexical concepts sanction instances of language use
- iii) lexical concepts are vehicle-specific
- iv) lexical concepts are language-specific
- v) vehicles are not lexical concept-specific
- vi) lexical concepts are associated with different vehicle types
- vii) lexical concepts have bipartite structure

viii) lexical concepts have an encapsulation function

ix) lexical concepts have a lexical profile

x) lexical concepts can be combined

i) LEXICAL CONCEPTS ARE ELEMENTS OF MENTAL GRAMMAR

Lexical concepts are units of semantic structure. That is, they provide the semantic pole of a bipolar symbolic assembly. LCCM Theory adheres to the symbolic thesis—the linguistic system is comprised of symbolic units, consisting of a semantic and phonological poles, which are held to be the fundamental units of grammar (Goldberg 1995, 2006; Langacker 1987, 2008; see also Evans and Green 2006). As such, lexical concepts are themselves units of mental grammar.

However, being units of mental grammar lexical concepts do not arise in language use. Rather, they are units of linguistic knowledge abstracted from across usage events (i.e., utterances) that encode linguistic content and facilitate access to conceptual (i.e., non-linguistic) knowledge. Thus, a lexical concept is a unit of linguistic knowledge that populates the ‘mental grammar’, deriving from commonalities in patterns of language use. By way of analogy, lexical concepts can be likened to phonemes in phonological theory. Like phonemes, lexical concepts are abstractions over multiple instances of language use.

ii) LEXICAL CONCEPTS SANCTION INSTANCES OF LANGUAGE USE

Lexical concepts sanction—which is to say licence—instances of language use (Langacker 1987). While the semantic contribution of any given form—word or linguistic expression—in a particular utterance is licensed by a given lexical concept, the nature of the semantic contribution associated with that expression will always be

a function of the unique context in which it is embedded. In other words, any usage of a given form constitutes a unique instantiation of a lexical concept, and is thus subject to processes of semantic composition—see Evans (2009b) for details—due to the specific of context, which, in part, determines the semantic contribution of the lexical concept in question.

Given that lexical concepts do not occur in language use, but rather sanction instances of use, it is often the case that more than one lexical concept may be sanctioning a particular use of a form. This state of affairs I refer to as *multiple sanction*. To illustrate, take the form *fast*. The way in which this form is used by language users often appears to assume a number of distinct lexical concepts, including those that can be glossed as [PERFORM SOME ACT(ION) QUICKLY]³, as evidenced by (4a), and [REQUIRE LITTLE TIME FOR COMPLETION], as evidenced by (4b):

- (4) a. She's a fast typist
 b. Which courier company would you recommend to get a package from Brighton to London fast?

Now consider the following example:

- (5) We need a fast garage for our car, as we leave the day after tomorrow

³ Note that in LCCM Theory lexical concepts are glossed employed the convention of small capitals in square brackets. A lexical concept is a bundle of different knowledge types. The purpose of the gloss is to provide a short-hand means of identifying this unit-like bundle of knowledge.

The example in (5) appears to be a ‘blend’ of both the lexical concepts which sanction the examples in (4). In other words, the semantic contribution of *fast* in (5) involves nuances relating to both these lexical concepts. A garage is required in which the mechanics can both perform the relevant repairs quickly, and in doing so take little time for completion of repairs, given that the car will be required the day after tomorrow.

iii) LEXICAL CONCEPTS ARE FORM-SPECIFIC

Lexical concepts are *form-specific*. That is, they are conventionally associated with specific linguistic expressions. While it is, perhaps, obvious that the forms *cat* and *car* would be associated with distinct lexical concepts, it is perhaps less obvious that the vehicles *sing* and *sang* would also be associated with distinct lexical concepts. Nevertheless, this is indeed the claim made by LCCM Theory, in keeping with constructional approaches to grammar. A distinction in form spells a distinct lexical concept.

Notwithstanding this claim, some approaches to lexical representation make the assumption that vehicles such as *run* and *ran*, and so forth, relate to essentially the same semantic representational unit, what is traditionally referred to a lexeme. On this account, forms such as *run* and *ran* essentially provide equivalent semantic content—the lexeme RUN—and only differ in terms of the grammatical information they encode, which is held to be non-semantic in nature. In other words, the traditional view attempts to account for the intuition that the semantic units associated with forms such as these are closely related.

LCCM Theory accounts for the intuition that *run* and *ran* are associated with closely related semantic units in the following way. As we seen in the previous

section, lexical concepts have bipartite organisation, encoding linguistic content and facilitating access to conceptual content. Hence, lexical concepts as units of semantic structure can differ in at least one of two ways. Firstly, lexical concepts may provide differential access to the cognitive models to which they facilitate access. That is, they may provide access at different points in conceptual structure.

The second way in which lexical concepts may differ relates to the nature of the linguistic content they encode. The difference between the lexical concepts associated with *run* and *ran* has to do not with a difference in terms of access to cognitive models. Rather, the difference relates to linguistic encoding, in particular, the nature of the *parameters* relating to Time-reference encoded by the respective lexical concepts. Hence, in LCCM Theory, *run* and *ran* are associated with distinct lexical concepts, which facilitate access to the same cognitive models but encode a different bundle of *linguistic content*. As such, their linguistic content is similar but not identical.

iv) LEXICAL CONCEPTS ARE LANGUAGE-SPECIFIC

An important corollary of the position that lexical concepts are form-specific is that lexical concepts are necessarily language-specific. Thus, each language, by virtue of comprising language-specific forms which populate the language, necessarily provides an inventory of language-specific lexical concepts. A difference in form results in a difference in the lexical concept associated with the form. In short, what might be dubbed the naïve view, which holds that a language represents an inventory of language-specific forms for encoding cross-linguistically identical semantic units is rejected by LCCM Theory.

To illustrate this point, consider the way in which two unrelated languages, English and Korean, encode ostensibly the same spatial relationship. This discussion is based on the work of Choi and Bowerman (1991; Bowerman and Choi 2003). In order to prompt for the spatial scenes evoked by the utterances in (6), the English lexical concept that I gloss as [PLACEMENT OF ONE ENTITY ONTO ANOTHER] associated with the English vehicle *put on* can be deployed.

- (6)
- a. She put the cup on the table
 - b. She put the magnet on the refrigerator
 - c. She put the hat on
 - d. She put the ring on her finger
 - e. She put the top on the pen
 - f. She put the lego block on the lego stack

The lexical concept [PLACEMENT OF ONE ENTITY ONTO ANOTHER] encodes placement of the figure in contact with a surface of some kind. The reader familiar only with English might be forgiven for thinking that this is the only way these spatial scenes can be encoded by a linguistic system. However, the situation in Korean is very different. The English examples in (6) are categorised into lexical concepts of four different kinds in Korean. This is achieved using the four distinct symbolic units, as in (7):

- (7)
- a. vehicle: ‘*nohta*’
lexical concept: [PLACEMENT ON HORIZONTAL SURFACE]
 - b. vehicle: ‘*pwuchita*’

- lexical concept: [JUXTAPOSITION OF SURFACES]
- c. vehicle: ‘*ssuta*’
- lexical concept [PLACEMENT OF APPAREL ON HEAD]
- d. vehicle: ‘*kkita*’
- lexical concept: [FIT TWO ENTITIES TIGHTLY TOGETHER]

<i>Nohta</i> [PLACEMENT ON HORIZONTAL SURFACE]	Corresponds to...	[PLACEMENT OF ONE ENTITY ONTO ANOTHER] <i>e.g., put cup on table</i>
<i>Pwuchita</i> [JUXTAPOSITION OF SURFACES]	Corresponds to...	[PLACEMENT OF ONE ENTITY ONTO ANOTHER] <i>e.g., put magnet on refrigerator</i>
<i>ssuta</i> [PLACEMENT OF APPAREL ON HEAD]	Corresponds to...	[PLACEMENT OF ONE ENTITY ONTO ANOTHER] <i>e.g., put hat on</i>
<i>Kkita</i> [FIT TWO ENTITIES TIGHTLY TOGETHER]	Corresponds to...	[PLACEMENT OF ONE ENTITY ONTO ANOTHER] <i>e.g., put ring on finger/ put top on pen/ put lego block on lego stack</i>

Table 3. Korean lexical concepts and their correspondence to English spatial relations

While the situation just described makes the point clearly that lexical concepts, as well as forms, are language-specific, my claim is that more mundane examples, for instance, the lexical concept associated with the vehicle *cat* in English and *chat* in French are also distinct. This follows as lexical concepts have bipartite organisation, as discussed briefly above. Hence, even in cases where lexical concepts share similar linguistic content cross-linguistically, the nature of the conceptual structure to which lexical concepts afford access will always be distinct. This follows as the individuals that make up distinct linguistic communities have divergent bodies of knowledge based on experiences that are different due to linguistic, cultural and areal divergences.

v) FORMS ARE NOT LEXICAL CONCEPT-SPECIFIC

Although lexical concepts are form-specific, a single vehicle can be conventionally associated with a potentially large number of distinct lexical concepts, which may or may not be semantically related. Hence, forms are not lexical concept-specific.

Lexical concepts that are related, either in terms of similar linguistic content, or in terms of facilitating access to related cognitive model profiles—by virtue of providing proximal access sites to conceptual content—or both, are held to exhibit a *polysemy relationship*. For example, in the utterances below in (8), the form *flying* is associated with four distinct lexical concepts, each of which facilitates access to distinct, but closely related, cognitive model profiles:

- (8) a. The plane/bird is flying (in the sky) [SELF-PROPELLED AERODYNAMIC MOTION]
- b. The pilot is flying the plane (in the sky) [OPERATION OF ENTITY CAPABLE OF AERODYNAMIC MOTION]

- c. The child is flying the kite (in the breeze) [CONTROL OF LIGHTWEIGHT ENTITY]
 d. The flag is flying (in the breeze) [SUSPENSION OF LIGHTWEIGHT OBJECT]

vi) LEXICAL CONCEPTS ARE ASSOCIATED WITH DIFFERENT VEHICLE TYPES

As lexical concepts are conventionally associated with a given linguistic form, it follows that lexical concepts are conventionally associated with a wide range of form types. The range of forms with which lexical concepts are conventionally associated include phonetically overt forms, such as *cat*, and phonetically implicit forms, such as the ditransitive vehicle: (SUBJECT VERB OBJ1 OBJ2), e.g., *John baked Mary a cake*; *John gave Mary the cake*; *John refused Mary the cake*. Moreover, explicit forms that have distinct lexical concepts conventionally associated with them include bound morphemes, ‘simplex’ words, ‘complex’ or polymorphemic words, and idiomatic expressions and phrases.

vii) LEXICAL CONCEPTS HAVE BIPARTITE STRUCTURE

As already mentioned, lexical concepts are units of semantic structure with bipartite organisation. They encode linguistic content and facilitate access to conceptual structure. Linguistic content represents the form that conceptual structure takes for direct encoding in language. There are a large number of different properties encoded by linguistic content which serve to provide a schematic or skeletal representation that can be encoded in language. The various characteristics involved are detailed in (Evans 2009a, and 2009b).

In addition, a subset of lexical concepts serve as access sites to conceptual structure. Conceptual structure relates to non-linguistic information to which lexical concepts potentially afford access. The potential body of non-linguistic knowledge: a

lexical concept's semantic potential, is modelled in terms of a set of cognitive models. In LCCM Theory, I refer to the body of cognitive models and their relationships, as accessed by a given lexical concept, as the *cognitive model profile*.

A design feature of language is that it involves a bifurcation of lexical concepts into two types: open-class lexical concepts and closed-class lexical concepts. While both encode linguistic content it is only open-class lexical concepts which facilitate access to a cognitive model profile.

viii) LEXICAL CONCEPTS HAVE AN ENCAPSULATION FUNCTION

Lexical concepts provide what I refer to as an *encapsulation function*. This is achieved by virtue of open-class lexical concepts providing an access site to conceptual knowledge which is often complex and informationally diffuse. This provides the illusion that words have semantic unity, and that it is language which is directly encoding the complex body of knowledge which I refer to as a cognitive model profile. Indeed, what I refer to as an access site is, in fact, made up, typically, of a large number of association areas which hold between a single open-class lexical concept and the conceptual system. Thus, the encapsulation function is a consequence of two distinct systems being related such that the linguistic system provides a means of interfacing at specific points with the knowledge 'matrix' that is conceptual structure.

An example of the encapsulation function of lexical concepts comes from the following culture-specific example from Korean which cannot be easily and/or simply expressed in another language. This is the lexical concept encoded by the vehicle *nunchi*, which might be translated into English as 'eye-measure'. This lexical concept relates to the idea that one should be able to judge how others are feeling, such as

whether a guest in one's home is hungry or not, and thus be in a position to offer food so that the guest is not embarrassed by having to request it. Hence, the lexical concept facilitates access to complex ideas which are typically diffusely grounded in an intricate cultural web of ideas and information. But by virtue of providing a unique access site to this complex body of conceptual content the lexical concept provides an encapsulation function.

ix) LEXICAL CONCEPTS HAVE A LEXICAL PROFILE

Lexical concepts have a lexical profile. A lexical profile constitutes knowledge relating to the range of other lexical concepts and vehicles with which a particular lexical concept regularly co-occurs. This constitutes what we might refer to, informally, as its *use potential*.⁴ As such, as each lexical concept is unique, so too its lexical profile is unique. Moreover, the lexical profile relates to knowledge, stored as part of the linguistic content encoded by a lexical concept.

The sorts of other lexical concepts and forms with which a lexical concept can co-occur, and which thereby make up its lexical profile, I term *selectional tendencies*. A lexical profile's selectional tendencies can be *restricted* or *non-restricted*. For instance, the lexical profile of the lexical concept [KITH] is 'X *and kin*' where 'X' is the position occupied by the form *kith* which is paired with [KIN]. This is the only occurrence of [KITH] in the language. As such this restricted lexical profile I refer to as an instance of *extreme restriction*. In this case, the lexical concept is indissociable from the larger lexical concept, and hence form with which it is associated.

⁴ See Zlatev (1997, 2003) for a related, albeit distinct, notion of the use potential of words. See also Allwood (2003).

Extreme restrictions of this kind in a lexical concept's selectional tendencies are in fact rare, as are selectional tendencies which are wholly non-restricted. The kind of restricted selectional tendencies which are somewhat less rare relate to what are otherwise known as *collocations*. For instance, the lexical concepts associated with the following lexical forms: *stale*, *rotten*, *sour* and *rancid*, as applied to particular foodstuffs exhibit the following restrictions in terms of their selectional tendencies:

- (9)
- a. stale bread/cake/cheese, etc.
 - b. rotten fruit/eggs/vegetables, etc.
 - c. sour milk/yoghurt, etc.
 - d. rancid butter/oil, etc.

In terms of the examples in (9) we see that the lexical concepts associated with the forms *stale*, *rotten*, *sour* and *rancid* exhibit quite distinct selectional tendencies. The pattern associated with each can thus be said to be restricted.

A selectional tendency for any given lexical concept, for convenience, can be divided into *semantic selectional tendencies* and *formal selectional tendencies*.

Semantic selectional tendencies have to do with the (range of) lexical concepts with which a lexical concept co-occurs and in which it can be embedded. Formal selectional tendencies has to do with the (range of) forms with which a given lexical concept co-occurs, or in which it can be embedded. I illustrate each kind with an example adapted from Goldberg (2006: 56). Consider, first of all, the semantic selectional tendencies associated with the [PLACEMENT] lexical concept encoded by *put on*:

- (10) a. Jane put the butter on the table
 b. <actor> *put* <thing> <location>

The [PLACEMENT] lexical concept selects for semantic arguments that can be construed as, respectively, an ACTOR, a THING and a LOCATION. In other words, part of our knowledge concerning this lexical concept involves knowing what kinds of lexical concepts it can co-occur with. In terms of formal selectional tendencies, part of our knowledge of the same lexical concept is knowing the order in which the forms associated with the [ACTOR], [THING] and [LOCATION] lexical concepts occur, with respect to the form *put on*. That is, part of knowledge involves knowing where the ACTOR, THING and LOCATION slots are located relative to the vehicle. Together these two types of knowledge form the lexical profile for the [PLACEMENT] lexical concept.⁵

In addition, formal selection tendencies needn't be restricted to knowledge of word order. It can also include knowledge concerning the nature of the permissible forms that can co-occur with a given lexical concept. For instance, and again adapting an example from Goldberg (2006: 57), the [LOCATE] lexical concept associated with the lexical form *found* exhibits a distinct formal selectional tendency from the [REALISE] lexical concept exhibited by the same form:

- (11) a. Jane found the cat [LOCATE]
 b. Jane found that the cat was missing [REALISE]

⁵ See Goldberg (2006) for discussion of how the item-based knowledge which comprises the lexical profiles of lexical concepts is acquired.

The [LOCATE] lexical concept selects for a direct object, whilst the [REALISE] lexical concept selects for a sentential complement.

Thus far I have primarily addressed the selectional tendencies associated with lexical concepts associated with forms that have overt phonetic content. I now briefly consider the lexical profile associated with lexical concepts that are *internally open*. An internally open lexical concept is a lexical concept that is paired with forms which have implicit phonetic content. An example is the lexical concept [THING X CAUSES THING Y TO RECEIVE THING Z] conventionally paired with the ditransitive form.

The lexical profile of such lexical concepts relates to what I refer to as *internal selectional tendencies*. That is, as the lexical concept is internally open, it can be integrated with other less abstract lexical concepts: those paired with forms that do have phonetically explicit phonetic content. Yet, such lexical concepts are constrained in certain ways, as specified by the lexical profile that forms part of the linguistic content encoded by the [THING X CAUSES THING Y TO RECEIVE THING Z] lexical concept. In particular, part of the knowledge captured by lexical profiles for internally open lexical concepts involve which kind of lexically-closed lexical concepts can align with particular slots in the internally complex lexical form. For instance, in terms of the [THING X CAUSES THING Y TO RECEIVE THING Z] lexical concept, its lexical profile specifies that only animate entities capable of causing transfer can be integrated with the NP1 slot. Some of the internal selectional tendencies associated with this lexical concept are summarised in Table 4.

The English ditransitive: X CAUSES Y TO RECEIVE Z
Contributes TRANSFER semantics that cannot be attributed to the lexical verb
The GOAL argument must be animate (RECIPIENT rather than PATIENT)
Two non-predicative NPs are licensed in post-verbal position
The construction links RECIPIENT role with OBJ function
The SUBJ role must be filled with a volitional AGENT, who intends TRANSFER

Table 4. Properties of the English symbolic unit: ditransitive construction (Goldberg 1995)

There is now well-established empirical evidence for the notion of a lexical profile associated with lexical concepts. Compelling evidence comes from work in corpus linguistics which reveals that part of the knowledge language users have of words, for instance, includes what I am referring to as a lexical profile. In particular, this notion has been empirically explored in the work of Atkins (1987) who uses the term ‘ID Tag’. Developing ideas from Hanks (1996), Gries and Divjak (2009) employ the term ‘behavioural profile’. Other empirical work that is consonant with the theoretical construct of the lexical profile is represented in the work of Dąbrowska (2009) her notion of ‘words as constructions’. Still other work that supports this perspective is discussed in Goldberg (2006).

Finally, some lexical concepts do not have a lexical profile associated with them. This is a feature of lexical concepts which constitute semantically well-formed utterances in their own right. Such lexical concepts I refer to as being *externally closed*. Lexical concepts of this kind include greetings such as *hello!*, *How do you do?*, *Hi!*, exclamatives such as *Shit!*.

However, being externally-closed does not inevitably mean that a lexical concepts must lack a lexical profile. For instance, many lexical concepts, which I refer to, informally, as ‘clause-level’ lexical concepts—traditionally referred to as ‘independent clauses’, or alternatively ‘simple sentences’—such as the [THING X CAUSES THING Y TO RECEIVE THING Z] lexical concept, as observed above, do indeed have a lexical profile. If they didn’t, we wouldn’t know how such lexical concepts could be combined with other, more specific, symbolic units, in order to produce a well-formed utterance.

Finally, it is also important to observe that being externally-closed does not imply, however, that a given lexical concept cannot be combined with other lexical concepts above the level of the utterance. After all, the ditransitive symbolic unit can be combined with other lexical concepts to make more complex utterances:

(12) Fred gave Holly flowers, and she smelled them.

Traditionally an utterance of the sort provided in (12) is referred to as a ‘compound sentence’, involving two independent clauses related by a coordinator, which, in this case, is *and*.

In sum, a lexical profile constitutes a body of more or less restricted linguistic knowledge relating to its use potential that is specific to a given lexical concept. It expresses sets of tendencies: patterns of co-occurrence abstracted from usage events. Moreover, as the lexical profile is apparent in language use, it provides a ‘footprint’ that can serve in identifying the specific lexical concept that sanctions a given instance of use. As such, we might think of the lexical profile as providing a distinct ‘biometric’ identifier for each lexical concept. This is particularly useful in cases of

polysemy, where a single form is associated with a number of semantically related lexical concepts. Polysemy provides an analytical challenge for the linguist, as it is not always clear where sense-boundaries begin (and end). In the final substantive section of the paper I will illustrate how the lexical profile can be applied in adducing distinct polysemous lexical concepts.

x) LEXICAL CONCEPTS CAN BE COMBINED

One consequence of lexical concepts encoding a lexical profile as part of their linguistic knowledge bundle is that lexical concepts can be combined. While the lexical profile expresses schematic tendencies, lexical concept combination involves the integration of actual instances of specific lexical concepts in a way that serves to combine both the linguistic content encoded by lexical concepts and a subset of the cognitive model profiles that each open-class lexical concept facilitates access to. The general process of combination of both linguistic and conceptual content is referred to, in LCCM Theory, as *fusion*.

There are two mechanisms which relate to the different sorts of content associated with a lexical concept: linguistic content versus conceptual content. The mechanism which governs the combination of the various types of linguistic content encoded by lexical concepts is termed *lexical concept integration*. This involves a process termed *unpacking*, and results in a word (or other linguistic expression) receiving a *semantic value*. The mechanism which relates to the way in which conceptual content is then accessed via open-class lexical concepts, following lexical concept integration, is termed *interpretation*. This is guided by lexical concept integration, and results in the formation of an *informational characterisation*. The combination of lexical concepts resulting in the formation of a semantically well-

formed utterance gives rise to a *conception*. The two types of mechanism that give rise to fusion are, in LCCM Theory, constraint-based, expressed in terms of a set of principles that facilitate and govern the combination of lexical concepts in the construction of meaning (see Evans 2009b for details).

Of course, lexical concepts are components of symbolic units. They can be combined precisely because symbolic units can be combined. One of the main claims of LCCM Theory, in keeping with constructional approaches such as Cognitive Construction Grammar (Goldberg 2006) and Cognitive Grammar (Langacker 2008) is that symbolic units, and hence lexical concepts, are combined in nested fashion. By way of illustration, consider the following utterance:

(13) Max hid the mobile telephone

The basic insight is that there are (at least) three distinct levels of lexical concept apparent in this particular utterance. Proceeding from the most abstract level, there is a lexical concept that specifies an asymmetric relationship holding between two related entities. This corresponds to the intuition that many utterances in English (and indeed many other languages) assign focal prominence to one entity, rather than another in a *profiled relationship* (Langacker 1987). A profiled relationship involves a linguistically encoded relationship holding between two entities, the trajector (TR) and the landmark (LM). This corresponds to the intuition that there is a subject/object asymmetry encoded by sentence-level symbolic units (in English). The symbolic unit in question is provided in (14):

(14) a. form: ‘NP1 VERB PHRASE NP2’

- b. lexical concept: [A PROFILED RELATIONSHIP HOLDS BETWEEN A TR AND A
LM]

At the next level, there is a lexical concept which establishes that the perspective from which the profiled relationship is viewed is that of the agent. Hence, this lexical concept encodes an asymmetric relationship between an agent and a patient, and in so doing serves to align the agent role with that of TR and the patient role with that of the LM in the lexical concept provided in (14b). That is, the lexical profile encoded by the lexical concept in (14b) stipulates that the internally closed lexical concept that is construed as agentive in a profiled relationship is integrated with the TR role. Hence, the lexical concept provided in (14b) relates to what is more commonly referred to as active voice:

- (15) a. form NP1 VERB+TNS NP2'
b. lexical concept [PROFILED RELATIONSHIP INVOLVING AGENT AND
PATIENT VIEWED FROM PERSPECTIVE OF AGENT]

The lexical profile for the lexical concept in (15b) stipulates that the agent role aligns with NP1 while the patient role aligns with NP2.

Finally, the third level of lexical concepts involves those which are internally closed, and are hence conventionally paired with forms that have overt phonetic content. For the utterance in (13) these relates to lexical concepts associated with the vehicles: *Max*, *hid*, *the*, and *mobile telephone*.

While asymmetric focal prominence, as captured by the lexical concept in (14b) is a feature of all linguistically overt (i.e., profiled) relationships, the 'active'

lexical concept in (15b) need not be. That is, there are situations in which the agent is not associated with the TR. This happens in utterances involving what is commonly referred to as passive voice. Consider the utterance in (16):

(16) The mobile phone was hidden by Max

In this utterance, the internally closed lexical concept: [MOBILE PHONE] is aligned with NP1. This is a consequence of the lexical profile of the ‘passive’ lexical concept which determines that the lexical concept which is construed as being the patient receives focal prominence. Hence, the patient aligns with the NP1 slot associated with the symbolic unit provided in (14). I formalise the ‘passive’ symbolic unit as follows:

- (17) a. form: ‘NP1 BE VERB+PPT by NP2’
 b. lexical concept [PROFILED RELATIONSHIP INVOLVING AGENT AND PATIENT VIEWED FROM PERSPECTIVE OF PATIENT]

A summary of the various characteristics associated with lexical concepts is provided in table 5.

Property	Details
Lexical concepts are elements of mental grammar	Lexical concepts are elements of linguistic knowledge: the semantic pole of a symbolic unit, abstracted from across usage events (i.e., utterances). They comprise a bundle of different knowledge types, collectively referred to as linguistic content.
Lexical concepts sanction instances of language use	Lexical concepts, <i>qua</i> mental knowledge structures, don't appear in utterances, but rather are realised as contextualised semantic contributions. As such, they licence instances of language use.
Lexical concepts are vehicle-specific	Lexical concepts are conventionally associated with a specific vehicle.
Lexical concepts are language-specific	Each language, by virtue of comprising language-specific vehicles which populate the language, necessarily provides an inventory of language-specific lexical concepts
Lexical concepts are associated with different vehicle types	Lexical concepts are associated with vehicles of various kinds, including forms with overt phonetic content as well as those with implicit phonetic content
Vehicles are not lexical concept-specific	Lexical concepts are associated with a 'semantic network' of related lexical concepts, and thus exhibit polysemy

Lexical concepts have bipartite structure	<p>Lexical concepts encode linguistic content and facilitate access to conceptual structure.</p> <p>Linguistic content represents the form that conceptual structure takes for direct encoding in language. Conceptual structure relates to non-linguistic information to which lexical concepts potentially afford access.</p>
Lexical concepts have an encapsulation function	By virtue of lexical concepts facilitating access to conceptual structure they serve to encapsulate often complex and informationally diffuse ideas.
Lexical concepts have a lexical profile	<p>A lexical profile constitutes a body of more or less restricted linguistic knowledge relating to its use potential that is specific to a given lexical. It expresses sets of tendencies: patterns of co-occurrence abstracted from usage events.</p> <p>Moreover, as the lexical profile is apparent in language use, it provides a ‘footprint’ that can serve in identifying the specific lexical concept that sanctions a given instance of use. As such, we might think of the lexical profile as providing a distinct ‘biometric’ identifier for each lexical concept.</p>

Lexical concepts can be combined	Lexical concepts can be combined in various predictable ways in service of activating semantic potential and thus facilitating meaning construction. Combination of lexical concepts involves the integration of linguistic content—a process termed lexical concept integration—and the activation of a subset of the semantic potential accessed via the open-class lexical concepts in the utterance—a process termed interpretation. Lexical concept integration and interpretation—collectively termed fusion—are governed by various constraints modelled in terms of a set of principles.
Lexical concepts have relativistic consequences for non-linguistic Representation	As lexical concepts are language-specific, and contribute to simulations which can serve to modify conceptual structure, each language has relativistic effects on non-linguistic representation.

Table 5. Summary of the characteristics of lexical concepts

4. A methodology for identifying lexical concepts

We now return to one of the key characteristics of the linguistic content encoded by a lexical concept: its lexical profile. In this section I do two things. Firstly, I illustrate the procedure by which distinct selectional tendencies can be employed to identify distinct lexical concepts associated with particular lexical forms. And, secondly, as

word forms typically have multiple lexical concepts conventionally associated with them, identifying the lexical profiles associated with instances of a given form across discrete utterances serves to disambiguate the range of lexical concepts associated with any given form.

As we saw above, the lexical profile is made up of selectional tendencies of two kinds: semantic selectional tendencies and formal selectional tendencies. I develop two criteria below, relating to the distinct types of knowledge that make up these two sorts of selectional tendencies.⁶ I then apply these criteria in order to identify a number of distinct lexical concepts associated with the open-class forms: *time*, and *flying*. I do so based on usage data. The two criteria are as follows:

i) The Semantic Selectional Criterion:

A distinct lexical profile—by definition encoded by a distinct lexical concept—provides unique or highly distinct patterns in terms of the nature and range of the lexical concepts with which a lexical concept can co-occur or in which it can be embedded, or in the case of an internally open lexical concept, which occur within it.

ii) The Formal Selectional Criterion:

⁶ In previous work (Evans 2004, 2005), I formalised criteria for distinguishing between polysemous sense-units in somewhat different terms. These were the Meaning Criterion and the Formal Criterion developed as part of the refinement of the Principled Polysemy model presented in that work. The present criteria build on the insights developed in (Evans 2004), but operate within the new context of LCCM Theory.

A distinct lexical profile—by definition encoded by a distinct lexical concept—provides unique or highly distinct patterns in terms of the forms with which a lexical concept can co-occur or within which it can be embedded, or in the case of an internally open lexical concept, the nature of the alignment between forms and the internally closed lexical concepts that lexically fill the internally open lexical concept.

While successful application of only one of the two criteria will normally be sufficient to point to the likelihood of a distinct lexical concept, in the final analysis, identifying the existence of a given lexical concept requires converging evidence employing a number of lines of support and deploying a complementary set of methodologies. Recent work in this regard, which can be used to support the evidence from linguistic analysis presented below, include techniques from psycholinguistic testing (see e.g., Cuyckens *et al.* 1997) as well as corpus-based tools and methodologies (Gries 2006).

4.1. *Lexical concepts for 'time'*

Before being able to apply the two selectional criteria just introduced, it is first necessary to develop a hypothesis as to the nature of the distinct lexical concepts involved in particular utterances. That is, how many lexical concepts are involved across the utterances to be examined? To this end, consider the following examples which involve the form *time*:

- (18) Time flies when you're having fun
- (19) The time for a decision is getting closer
- (20) The old man's time [= death] is fast approaching

(21) Time flows on (forever)

These instances of the lexical form *time* all appear in the ‘subject’ phrase. Moreover, the verb phrase which complements the subject phrase relates to a motion event.

Thus, motion is being ascribed to the entities that *time* contributes in prompting for, in each example. In addition, the semantic contribution associated with *time* appears to be distinct in each example. In the first example in (18), *time* appears to relate to an assessment of temporal magnitude. Thus, we might provisionally gloss the lexical concept which sanctions this instance of *time* as [DURATION]. In (19) the lexical concept sanctioning *time* might be glossed as [MOMENT]. This follows as the conception associated with the utterance as a whole relates to a specific temporal moment when a particular decision is to be taken. Thus, the contribution of *time* in this example appears not to relate to a durational elapse, but rather a discrete instant. In (20) the lexical concept which sanctions this use of *time* appears to relate to an event, which extra-linguistic context informs us is death. Thus, the lexical concept involved here might be glossed as [EVENT]. Finally, in (21), the lexical concept which sanctions this use of *time* appears to relate to an unending temporal elapse. In earlier work (Evans 2004) I described this as the ‘matrix’ lexical concept associated with *time*, in which we understand time to be *the* event within which all other events occur. Thus, the gloss we might apply to describe the lexical concept involved here is [MATRIX].

Indeed, this preliminary analysis suggests that distinct lexical concepts underpin the usages of *time* in each of these examples (see Evans 2004). In order to test this hypothesis, I apply the selectional criteria. For a distinct lexical profile (and hence a distinct lexical concept) to be confirmed, at least one of these two criteria

must apply. In order to confirm whether the instances of *time* in (18) to (21) inclusive are sanctioned by distinct lexical concepts, I begin by applying the Formal Selectional Criterion. To do this, let's consider the kind of noun phrase in which each use of *time* appears. I start by noting that the examples in (18) and (21), appear, on the face of it, to be similar. Neither is pre-modified by a determiner. However, further examples reveal that what I have hypothesised to be a distinct [DURATION] lexical concept of *time* as in (18) can be determined by the definite article when the assessment of temporal magnitude is specific rather than generic, while the use that I hypothesise to be sanctioned by the [MATRIX] lexical concept cannot be. To see that this is the case, consider the following instances of *time*, which are similar to those in (18) and (21):

(22) During the dinner date, the time seemed to fly [DURATION]

(23) *The time flows on (forever) [MATRIX]

The asterisk in (23) here indicates that a usage that I hypothesise to be sanctioned by the [MATRIX] lexical concept cannot co-occur with the definite article. In contrast, an instance of *time* I hypothesise to be sanctioned by the [DURATION] lexical concept can be. Indeed, this formal patterning appears consistent with the linguistic content encoded by the [MATRIX] lexical concept. The [MATRIX] lexical concept is hypothesised to relate to a unique referent: the event which subsumes all others, and thus further specification which the lexical concept associated with the definite article would provide is superfluous.

The examples in (19) and (20) also exhibit unique patterns in terms of formal selectional tendencies: both from each other and from the examples in (18) and (21). The use of *time* hypothesised to be sanctioned by the [MOMENT] lexical concept

appears to pattern straightforwardly as a count noun, allowing determination by the definite article, as in (19), or by the indefinite article, as in (24) below:

(24) A time will come when we'll be forced to make a decision [MOMENT]

In this, its behaviour is distinct from the use of *time* in (18), hypothesised to be sanctioned by the [DURATION] lexical concept, which cannot be pre-modified by the indefinite article:

(25) *During the dinner date a time seemed to fly [DURATION]

The [EVENT] lexical concept, which I suggest sanctions the use of *time* in (20) appears to require a pre-modifying genitive noun phrase followed by the enclitic possessive '-s', or else an attributive pronoun, serving a similar function:

(26) His time [=death] is fast approaching.

Thus, in subject position, these uses of *time* all appear to have quite distinct formal selectional tendencies.

Let's now turn to the semantic lexical concept selectional tendencies associated with these uses of *time*. I do so by applying the Semantic Selectional Criterion. The point here is that the nature of the motion event encoded by the lexical concept associated with the verb phrase form is distinct for each of the uses in a significant way. Moreover, the choice of motion event type is compatible with the

nature of the various lexical concepts hypothesised to sanction the distinct uses of *time*.

For instance, the [DURATION] lexical concept which I suggest underpins the use of *time* in (18), and the particular variant—which in previous work I refer to as the [TEMPORAL COMPRESSION] lexical concept, as it relates to an assessment of temporal magnitude which proceeds more ‘quickly’ than usual (Evans 2004, 2009b)—co-occurs with lexical concepts that encode motion events which are rapid in nature, as evidenced by the example in (18).⁷ In contrast, what I hypothesise to be the [MOMENT] lexical concept appears to possess a lexical profile which allows a wider range of motion events to co-occur with it, including imperceptible motion as in (27), rapid motion, as in (28), and terminal motion, as in (29):

(27) The time for a decision has gone/vanished/disappeared

(28) The time for decision is racing towards us/fast approaching

(29) The time for a decision is approaching/getting closer/has arrived

The [EVENT] lexical concept appears to possess a lexical profile which restricts the range of motion lexical concepts which can co-occur with it to terminal motion events, i.e., motion events which terminate ‘at’ the experiential locus, typically a human experiencer. Finally, the [MATRIX] lexical concept appears to possess a lexical profile which requires lexical concepts encoding motion events which are non-

⁷ The temporal compression variant of duration associated with *time* can also co-occur with lexical concepts that encode motion events which imply a lack of perceptual awareness, such as the following: *Where has the time gone? The time seemed to have vanished*, etc.

terminal in nature. That is, it requires motion events which are on-going, a paradigm example being the lexical concept associated with the form *flow*.

Thus, each of the examples of *time* in (18) to (21) inclusive, based on the Semantic Selectional Criterion and the Formal Selectional Criterion behave as if sanctioned by distinct lexical concepts with distinct lexical profiles. Table 6 summarises the semantic and formal selectional tendencies which comprise the lexical profiles for the lexical concepts considered.

Gloss	Brief description of conceptual content	Nature of semantic selectional tendencies	Nature of formal selectional tendencies
[DURATION] two variants: [PROTRACTED DURATION] TEMPORAL COMPRESSION]	Assessment of magnitude of duration Duration “slower” than usual Duration “faster” than usual	Slow motion, e.g., <i>time drags</i> Fast motion, e.g., <i>time flies</i>	Mass noun; can appear with definite article and some quantifiers
[MOMENT]	A discrete temporal “point”	Ego-centred motion, e.g., <i>the time is approaching...</i>	Count noun; can appear with definite and indefinite articles
[EVENT]	A boundary-event of some kind	Ego-centred motion, e.g., <i>Her time is approaching...</i>	Count noun; cannot take articles, but can be preceded by pronouns and possessive noun phrases
[MATRIX]	An unbounded elapse conceived as the event subsuming all others	Non-terminal motion, e.g., <i>Time flows on forever</i>	Mass noun; cannot be preceded by definite or indefinite articles

Table 6. Lexical profiles associated with lexical concepts which sanction the uses of *time* considered

4.2. Lexical concepts for ‘flying’

While the lexical concepts associated with the lexical form *time* are nominal in nature, I now provide a further illustration, this time involving relational lexical concepts.

Hence, I now consider the lexical profile relating to distinct lexical concepts associated with the verbal form: *flying*. To do so, consider the examples in (8) presented earlier in the paper and reproduced below:

- (8) a. The plane/bird is flying (in the sky) [SELF-PROPELLED AERODYNAMIC MOTION]
 b. The pilot is flying the plane (in the sky) [OPERATION OF ENTITY CAPABLE OF AERODYNAMIC MOTION]
 c. The child is flying the kite (in the breeze) [CONTROL OF LIGHTWEIGHT ENTITY]
 d. The flag is flying (in the breeze) [SUSPENSION OF LIGHTWEIGHT OBJECT]

For convenience I have provided the lexical concepts which I hypothesise to sanction each of the uses of *flying* alongside the examples. These data, and the glosses, suggest that each instance is sanctioned by a distinct lexical concept associated with the form: *flying*. If so, we should expect to be able to adduce a distinct lexical profile associated with each use. Unlike many (English) nominal lexical concepts, for which a salient grammatical feature is how they are determined, a salient grammatical feature for relational lexical concepts, associated with verb forms, is transitivity.

Hence, in terms of formal selectional tendencies, and hence the Formal Selectional Criterion, the hallmark of the lexical concepts which license the uses of *flying* in (8a) and (8d) is the lack of a direct object—what is traditionally referred to as an intransitive verb. This contrasts with the lexical concepts which sanction the examples in (8b) and (8c) which both require a direct object—making them transitive verbs. This distinction in transitivity fails to distinguish (8a) from (8d) and (8b) from

(8c). For this we must rely on semantic selectional tendencies, and the Semantic Selectional Criterion.

The hallmark of each of these lexical concepts is that they stipulate distinct types of lexical concepts. For instance, the [SELF-PROPELLED AERODYNAMIC MOTION] lexical concept, which, I suggest, sanctions the use of *flying* in (8a), only applies to entities that are capable of self-propelled aerodynamic motion. Entities that are not self-propelled, such as tennis balls, cannot be used in this sense (**the tennis ball is flying in the sky*).

The lexical concept which underlies the use of *flying* in (8b): [OPERATION OF ENTITY CAPABLE OF AERODYNAMIC MOTION] is restricted to operation by an entity which can be construed as an agent, and moreover, to entities that can undergo self-propelled aerodynamic motion. Further, the entity must be able to accommodate the agent and thereby serve as a means of transport. This explains why aeroplanes and hot air balloons are compatible with uses sanctioned by this lexical concept, but entities unable to accommodate an agent are not. This is illustrated by example (30).

(30) ??He flew the sparrow across the English Channel

Nevertheless, entities which can be construed as being guided, or at least susceptible to being trained, by a volitional agent, yet which cannot accommodate an agent, are partially sanctioned by this lexical concept, as the following example illustrates:

(31) He flew the homing pigeon across the English Channel

In the case of the use sanctioned by the [CONTROL OF LIGHTWEIGHT ENTITY] lexical concept, as evidenced by the use of *flying* in (8c), this lexical concept appears to be restricted to entities that are capable of becoming airborne by turbulence, and can be controlled by an agent on the ground. This lexical concept appears to be specialised for objects like kites and model/remote-controlled aeroplanes.

Interestingly, as we saw in our discussion of the lexical concepts associated with the vehicle *fast* in example in (5) earlier, particular instances of *flying* appear to rely on multiple sanction. In the following example:

(32) The kite is flying (in the sky)

this use appears to be partly sanctioned by both the [SELF-PROPELLED AERODYNAMIC MOTION] and the [CONTROL OF LIGHTWEIGHT ENTITY] lexical concepts. It exhibits the formal selectional tendencies of the former lexical concept, but we understand that it must be controlled by an agent, rather than being self-propelled.

The final use of *flying*, sanctioned by the lexical concept which I gloss as [SUSPENSION OF LIGHTWEIGHT OBJECT], selects for entities that can be supported by virtue of air turbulence, but remain ‘connected to’ the ground. This lexical concept applies to flags as well as hair and scarves, which can ‘fly’ in the wind.

In sum, this discussion of lexical concepts which sanction distinct uses of *flying* can be identified by virtue of examining formal and semantic selectional tendencies, which relate to the Formal and Semantic Selectional Criteria. As each use of the vehicle patterns in a markedly different way across the utterances in (8), based on application of these criteria, we can conclude that a distinct lexical profile

underpins each use and hence, each use is indeed sanctioned by a distinct lexical concept.

5. Summary

This paper has provided an overview of the main properties of lexical concepts, within the framework of LCCM Theory (Evans 2006, 2009a, 2009b, 2010, To appear). I argued that lexical concepts, by virtue of constituting units of semantic structure—the semantic pole of a symbolic unit—are thereby central elements of a language user’s mental grammar. As such, lexical concepts sanction instances of language and are conventionally associated with a lexical form. Accordingly, they are form-specific. A corollary of this is that lexical concepts are necessarily language-specific. While lexical concepts may encode related, and hence similar, linguistic content across languages, they will always facilitate access to a distinct body of conceptual structure: their semantic potential. This is a consequence of lexical concepts having bipartite structure: encoding linguistic content while facilitating access to the contents of the human conceptual system. One consequence of lexical concepts facilitating access to conceptual structure is that they provide an access site—consisting of multiple association areas in the conceptual system—for a diffuse body of non-linguistic knowledge. As such, they provide an encapsulation function. Another important aspect of the linguistic content encoded by a lexical concept is its lexical profile. This constitutes knowledge relating to the semantic and formal tendencies: the (types of) lexical concepts and forms with which a given lexical concept co-occurs. Moreover, as the lexical profile is abstracted from across usage events, it can be applied to usage data in order to provide evidence as to whether a given lexical concept is sanctioning a particular usage of a form. The procedure for

employing the lexical profile in this way was formalised in terms of the Semantic and Formal Selectional Criteria. The application of these was illustrated by virtue of an analysis of nominal lexical concepts associated with the form *time*, and relational lexical concepts associated with the verbal form *flying*.

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