The meaning of *time*: polysemy, the lexicon and conceptual structure[1]

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In this paper I argue that the lexeme *time* constitutes a lexical category of distinct senses instantiated in semantic memory. The array of distinct senses constitutes a motivated semantic network organised with respect to a central sense termed the SANCTIONING SENSE. The senses associated with *time* are derived by virtue of the interaction between the Sanctioning Sense, conceptual processing and structuring, and context. Hence, semantic representations, cognitive mechanisms, and situated language use are appealed to in accounting for the polysemy associated with *time*. The model adduced is termed PRINCIPLED POLYSEMY. The conclusion which emerges, in keeping with recent studies in lexical semantics, most notably Lakoff (1987), Pustejovsky (1995), Tyler & Evans (2003) and Evans (2004), is that the lexicon is not an arbitrary repository of unrelated lexemes; rather, the lexicon exhibits a significant degree of systematicity, and productivity. In order to adduce what constitutes a distinct sense, I introduce three criteria: (1) a meaning criterion, (2) a concept elaboration criterion and (3) a grammatical criterion. A further claim is that the lexicon exhibits significant redundancy. This position is at odds with SINGLE-MEANING APPROACHES to polysemy, which posit highly underspecified lexical META-ENTRIES, such as the generative approach of Pustejovsky (1995) or the monosemy position of Ruhl (1989). That is, I propose that lexical items constitute highly granular categories of senses, which are encoded in semantic memory (=the lexicon). This necessitates a set of criteria for determining what counts as a distinct sense without deriving a proliferation of unwarranted senses, a criticism which has been levelled at some studies of word-meaning in cognitive linguistics (e.g. Lakoff 1987).

1. INTRODUCTION

In this paper I deal with the issue of semantic POLYSEMY, the phenomenon whereby a single linguistic form is paired with a number of distinct but related meanings or SENSES.[2] In particular I will be focusing on the polysemy

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[1] I am extremely grateful to Dominiek Sandra for comments on an earlier draft of this paper. Any remaining errors are mine.

[2] I am using the term SENSE to describe those meanings which have achieved conventionalisation and as such are instantiated in semantic memory as distinct meaning components.

associated with the abstract noun *time*, considering how the range of senses associated with this form can be accounted for in a principled and systematic manner. In so doing I will be drawing on recent research in the cognitive linguistics framework. I will argue that the range of distinct senses associated with *time* constitutes a motivated semantic network organised with respect to a central SANCTIONING SENSE. The range of distinct senses associated with *time* is accounted for by virtue of interaction between the Sanctioning Sense, conceptual processing and structuring, and context. Hence, semantic representations, cognitive mechanisms and situated language use are appealed to in accounting for the polysemy associated with *time*. The model adduced is termed PRINCIPLED POLYSEMY (see Tyler & Evans 2001b, 2003, 2004; Evans 2004; Evans & Tyler 2004a, b).

In more general terms I will argue, in keeping with recent research (e.g. Lakoff 1987; Langacker 1987, 1991b; Goldberg 1995; Pustejovsky 1995; Tyler & Evans 2001b, 2003; Evans 2004; Evans & Tyler 2004b), that the lexicon is not an arbitrary repository of unrelated lexemes; rather, it exhibits a significant degree of systematicity and productivity. A further claim is that the lexicon exhibits significant redundancy. This position is at odds with SINGLE-MEANING approaches to polysemy which posit highly underspecified lexical META-ENTRIES, such as the derivational approach of Pustejovsky (1995) or the monosemy position of Ruhl (1989). That is, I will propose that lexical items constitute highly granular categories of senses, which are encoded in semantic memory (= the lexicon). This necessitates a set of criteria for determining what counts as a distinct sense without deriving a proliferation of unwarranted senses (see Sandra's 1998 discussion of the POLYSEMY FALLACY).[3] Indeed, the primary aim of this paper is to present just such a set of criteria and their detailed application.

The general position I am adopting is a consequence of assumptions widely supported and demonstrated within the framework of cognitive linguistics. First, semantic structure derives from and mirrors conceptual structure (e.g. Jackendoff 1983, Lakoff 1987, Langacker 1987, Fauconnier 1997, Tyler & Evans 2003, Evans 2004, Evans & Green 2005). Hence, linguistic polysemy reflects complexity at the level of mental representation. Second, this complexity is the result of EMBODIMENT, the idea that the nature of human physiological morphology and neuro-anatomical structure – HOW WE EXPERIENCE – and the nature of our external socio-physical (inter-subjective) environment and our internal (subjective) states of feeling – WHAT WE EXPERIENCE – give rise to and motivate the conceptual structure and systematicity in conceptual organisation which we have.

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[3] This relates to fallacious reasoning which assumes that just because a proliferation of distinct but related senses can be plausibly posited for a single lexical item, such a position entails that this is how language users actually represent word-meaning. See Tyler & Evans (2001b, 2003) for discussion.

The view of the lexicon that I am advocating is also at odds with the traditional model of language, which holds that the lexicon is the repository of the idiosyncratic and the arbitrary, while all regularity and productivity occur in the rule-governed grammatical component. Indeed, this view of the lexicon can be traced back to the structuralists (e.g. Bloomfield 1933), and is alive and well in contemporary theories of language. For instance, Chomsky (1995:235) views the lexicon in the following way: 'I understand the lexicon in a rather traditional sense: as a list of "exceptions", whatever does not follow from general principles'. On this view, the lexicon constitutes a static set of word senses, tagged with morphological, syntactic and semantic features, which are inserted into syntactic frames. Within this tradition the lexicon has been viewed as 'a finite set of [discrete] memorised units of meaning' (Jackendoff 1997:4).

However, this position has been criticised for a number of reasons. First, the traditional view fails to account for the systematic ways in which numerous forms are clearly related (Langacker 1991a; Levin 1993; Pustejovsky 1995; Jackendoff 1997; Tyler & Evans 2001b, 2003; Evans 2004; Evans & Tyler 2004b). Second, the traditional view runs into problems when dealing with compositional semantics. As a number of scholars have pointed out (see in particular Langacker 1987; Pustejovsky 1995; Tyler & Evans 2003; Evans & Tyler 2004a, b), the complexity associated with accounting for the meanings associated with even simple sentences is staggering. Positing static word-senses which feed into syntactic frames cannot even begin to address this complexity in meaning construction. Third, as demonstrated by a range of cognitive linguists, meaning is neither discrete nor finite in the sense envisaged by the traditional view (Lakoff 1987, Langacker 1987, Sweetser 1990, Tyler & Evans 2003, Evans 2004).

Due to the complexity and systematicity associated with lexical structure, Croft (1998) notes that a number of linguists have argued for some type of derivation within the lexicon that would represent distinct senses as arising from an underlying abstract representation via a set of lexical operations. One such theory is the generative approach of Pustejovsky (1995). However, while this approach is important, not least because it takes seriously the complexity associated with lexical structure, there are a number of attendant problems.

First, this model can be criticised in terms of the reasoning employed to adduce it. The generative model of word-meaning is motivated by theoretical dictates such as parsimony, elegance, simplicity, and the desire to eschew redundancy (Croft 1998, Evans 2004). That is, Pustejovsky assumes that the 'right' model of word-meaning will be one which includes minimal underlying 'meta-entries', which he terms LEXICAL-CONCEPTUAL PARADIGMS (LCPs) from which contextually rich meanings can be 'generated'. While in principle this is not implausible, the mere fact that it is possible to adduce a plausible model of word-meaning which posits underspecified LCPs – and thereby

invokes the theoretical principle of economy – does not mean that this is how language users actually structure or derive the semantic representations associated with words. Indeed, a range of psycholinguistic experiments (e.g. Cuyckens & Zawada 2001, Sandra & Rice 1995, Rice et al. 1999) suggest that language users actually represent considerably more detail, with respect to word-meaning, than is assumed by the generative model.

A second problem with Pustejovsky's approach is that, while he posits a number of levels of representation in order to capture the semantic structure associated with 'concrete' lexemes such as *man* or *book*, it is more difficult to see how such representations would adequately capture the semantic structure associated with nouns such as *time*, which relate to highly abstract concepts. For instance, one of the levels of representation Pustejovsky posits is what he terms QUALIA. Qualia structure relates to 'our basic understanding of an object or a relation in the world' (ibid.: 85). Qualia roles include notions such as the relation between an object and its constituents such as material, weight, etc., its orientation, shape and magnitude, the purpose and function of the object and issues involved in bringing the object into being, such as how it is created. While such considerations might plausibly relate to conceptual representations for physical objects, it is less clear how they might account for the semantics associated with a lexical item such as *time*.

The third difficulty associated with the generative model is that in order to generate a range of different senses from a single LCP, the levels and nature of semantic representation posited by Pustejovsky are not justified or argued for but are simply asserted as constituting the requisite levels of representation. Hence, it is unclear, beyond the aims of economy of representation, why Pustejovsky's model should be preferred over ones which take a different approach to the levels and nature of semantic representations, etc.

Finally, as also with Ruhl's (1989) monosemy approach,[4] even if an underspecified characterisation of the LCP for *time* could be provided, by attempting to pare down the underlying semantic information associated with *time*, it is unclear how this lexeme and its various senses could be distinguished from other related lexemes such as *now*, *duration*, *moment*, *epoch*, *period*, *hour*, *era*, *present*, *future*, *eternity*, etc.

In essence, then, the perspective I am taking is a cognitive linguistic one. This approach assumes that semantic representation reflects the conceptual level. On this view, the fact that a lexeme such as *time* appears to be polysemous in linguistic terms follows from, and reflects, the way it is organised at the conceptual level. From this perspective it makes little sense to separate

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[4] Ruhl (1989) has elegantly argued against a polysemy position, championing instead a monosemy framework. Monosemy holds that each lexical item is associated with a highly abstract sense. On this view, the precise meaning of this abstract sense is filled in by context in conjunction with pragmatic knowledge.

the 'linguistic' and 'psychological' levels of representation. Rather, a theory of language should attempt psychological plausibility (Langacker 1987, 1991a, b, 1999; Croft 1998; Tyler & Evans 2003; Evans 2004; Evans & Green 2005).

There are a number of other tenets associated with the cognitive linguistic enterprise which inform the present study. First, lexical items, rather than being viewed as 'encoding' meaning, are treated as 'points of access' (in Langacker's 1987 terms) into a rich network of encyclopaedic meaning (for a detailed overview see Evans & Green 2005). Second, the lexicon constitutes an elaborate network of form-meaning associations (Langacker 1987, 1991a, b; Tyler & Evans 2001a, b, 2003; Evans 2004; Evans & Tyler 2004b; Evans & Green 2005), in which each form is paired with a semantic network (Lakoff 1987). In fact, it may be more accurate to think of the various senses associated with a lexical item as constituting a continuum of meaning, with word-meaning consisting of both relatively 'rigid' (i.e. stable) and 'flexible' aspects (Tyler & Evans 2001b, Croft & Cruse 2004, Evans & Tyler 2004b, Evans & Green 2005). Third, influenced by research from cognitive psychology on the nature of human categorisation and prototype theory (e.g. Rosch 1975; see Evans & Green 2005 for a review; see also Lakoff 1987, Taylor 2003), cognitive linguists have argued that lexical items can be thought of as natural categories of senses. Hence, the semantic network associated with a particular lexical form constitutes a 'radial' category of senses organised with respect to a central or prototypical sense.

Within the cognitive linguistics tradition it has been common to assume that the meanings associated with many lexical items are instantiated in memory neither in terms of features nor in terms of abstract propositions, but rather as image-schematic representations (Lakoff 1987, Brugman & Lakoff 1988, Dewell 1994). Such IMAGE-SCHEMAS are held to be embodied, in the sense that they arise from PERCEPTUAL ANALYSIS of recurring sensorimotor patterns in everyday experience (Johnson 1987; Mandler 1992, 1996; Tyler & Evans 2003). However, work by Grady (1997) and Evans (2004) has suggested that in addition to concepts redescribed from sensorimotor experience, there is a subset of concepts which derive from internal subjective experience. That is, work in this vein has suggested that there is a bifurcation in concept types, roughly divided along a subjective/inter-subjective axis. While most of the work on lexical polysemy within cognitive linguistics has focused on the polysemy associated with lexemes which at base relate to inter-subjective concepts (for instance, the voluminous literature on one lexical class, namely prepositions), relatively little work has been conducted on the polysemy of lexemes which relate to subjective noun concepts. Indeed, this is also true of other approaches (e.g. Pustejovsky 1995). As *time* is a paragon example of an abstract concept, an examination of the polysemy of this form will shed light on whether claims as to motivation and systematicity that have been invoked on the basis of an examination of inter-subjective

concepts are warranted for a lexeme such as *time*. Moreover, an examination of this lexeme will provide insight into the relationship between lexical structure, conceptual structure and subjective experience.

2. A MODEL OF PRINCIPLED POLYSEMY

The analysis of *time* in sections 3 and 4 will employ the principled polysemy approach to LEXICAL CONCEPTS. The notion of lexical concept, a term I will use interchangeably with 'sense', is the central theoretical construct of this theory. A lexical concept constitutes a distinct and identifiable unit of meaning stored in semantic memory, and is conventionally expressed by a lexical form. As we will see in section 4, I argue that *time* is conventionally associated with eight lexical concepts. Principled polysemy was originally developed in joint research with Andrea Tyler in order to model the semantics of English prepositions (Tyler & Evans 2001b, 2003, 2004; Evans & Tyler 2004a, b; for an overview of this approach see Evans & Green 2005: chapter 10), and has been significantly extended in Evans (2004). The purpose of this section is both to outline the main tenets of this approach, and to indicate how it will be developed to account for the abstract noun *time*. The framework will then be employed to investigate the range of distinct lexical concepts for *time* presented in sections 3 and 4.

Principled polysemy is an approach which seeks to account for the meanings associated with words as not being absolute and fixed, but rather as being capable of changing over time. Hence, in this qualified sense lexical concepts are treated as being mutable and dynamic in nature. Word-meaning derives from the way in which words are used, which facilitates new lexical concepts or senses becoming associated with a particular form (meaning-extension). This process results in new senses becoming conventionalised, such that they achieve mental representation independent of the antecedent sense which motivated their occurrence. Hence, 'new' senses can, over time and through use, come to be reanalysed as being no longer related to the original sense. Principled polysemy captures this dynamic aspect of meaning-extension by recognising that not all the senses associated with a particular form are recognised by the language user as being related at the synchronic level.

The main tenets of the principled polysemy approach, based on Evans (2004), can be summarised as follows. A form such as *time* has, at the synchronic level, a number of distinct lexical concepts or senses independently stored in semantic memory. These derive in a principled way from a historically earlier sense (or senses). At the synchronic level the distinct senses can be analysed as being related by virtue of a semantic network. The senses are organised with respect to a Sanctioning Sense, which typically (although not inevitably) has parallels with the diachronically earliest sense.

This Sanctioning Sense is taken as prototypical in that it constitutes the 'citation' sense that language users would be most likely to produce in response to the question 'What does the word X mean?'[5] The distinct senses are the result of a dynamic process of meaning-extension, which is a function of language-use and the nature of socio-physical experience, as will be seen. Finally, language users do not inevitably recognise that all senses associated with a particular form are synchronically related (although they may be genetically, i.e. historically related, cf. Heine's 1997 notion of GENETIC POLYSEMY). Hence, the more peripheral members in the semantic network may be stored as independent entries associated with a particular form. Relations between senses are modelled in terms of a radiating-lattice structure, a 'network' of senses (e.g. Lakoff 1987, Langacker 1987, Tyler & Evans 2003, Evans 2004). This approach allows us to identify degrees of relatedness, with more peripheral members being less-related to the Sanctioning Sense than more central senses.

2.1 *Senses versus elaborations*

In terms of the lexical-semantic analysis to be presented here, it is important to distinguish between a sense and an ELABORATION of a particular sense. While a sense constitutes a distinct and identifiable lexical concept or meaning (based on criteria to be adduced) an elaboration, on the other hand, pertains to the nature of the semantic content appropriated by a particular sense, and which serves to structure a particular sense.

In order to clarify what I have in mind, let us consider the following examples:

(1) Time seemed to stand still.
(2) Time seemed to have flown by.

In the sentence in (1) *time* is being elaborated in terms of content which pertains to being stationary. In (2) *time* is being elaborated in terms of a certain kind of motion, namely flying. Although both these instances of *time* relate to elaboration in terms of different kinds of semantic substrate or content, both sentences represent conventional ways of expressing duration. In (1), relative to some norm, *time* is experienced as proceeding 'slowly', or not at all, while in (2) *time* is experienced as proceeding quickly. Hence, while different content is employed to elaborate both instances of *time*, they both pertain to a reading of duration, and so relate to a 'durational' sense, which is lexicalised here by the form *time*.

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[5] From this it does not follow that the Sanctioning Sense will constitute the most frequent sense. An informal survey indicates that the citation sense for the English lexeme 'fuck' is 'to have sex', even though the invective and swearing usages are far more frequent.

2.2 *Meaning-extension as a principled process*

In this section I address some of the issues that a principled theory of poly-semy must account for.[6] Criteria are adduced for distinguishing distinct lexical concepts, and for determining the central lexical concept, the Sanctioning Sense, which will be applied to *time* in section 4.

2.2.1 *The modelling issue*

The 'modelling issue' concerns how the synchronic polysemy exhibited by a particular lexeme, *time* in this case, should be modelled. Following Lakoff (1987), Taylor (2003) and Tyler & Evans (2003), and the results of psycho-linguistic studies such as Sandra & Rice (1995) and Rice et al. (1999), I will assume that lexical items constitute lexical categories consisting of form–meaning pairings. The semantic pole of the form–meaning pairing is modelled in terms of a semantic network, organised with respect to a Sanctioning Sense. The Sanctioning Sense need not, in principle, be the same as the diachronically earliest sense – what I elsewhere have referred to as the ORIGINATION SENSE (e.g. Evans 2004, Evans & Tyler 2004b) – inasmuch as the Sanctioning Sense is stipulated as constituting the synchronic sense which language users intuitively feel is the most representative meaning associated with a particular lexical item (discussed further below). However, as the historically earliest attested meaning may still play an active part in the synchronic network associated with the lexeme *time*, the Origination Sense and the Sanctioning Sense may overlap.

The intuition behind positing a Sanctioning Sense is that language users appear to intuitively categorise senses with respect to some lexical prototype (Lakoff 1987, Taylor 2003, Evans & Green 2005). A word's semantic net-work, i.e. the range of conventional senses associated with it, can be mod-elled or organised with respect to the Sanctioning Sense. I will later diagram the semantic network for *time* as a radial-like structure. One advantage of this is that it facilitates understanding degrees of relatedness between senses, and accounts for the appearance of CHAINING within categories (see Lakoff 1987). That is, while some senses will appear to be more closely related to the Sanctioning Sense, other senses may appear to be more closely related to other derived senses. This pattern of clustering suggests possible paths of derivation (see Tyler & Evans 2001b, 2003; Evans & Tyler 2004b) and yields predictions that can be assessed against what is known about the diachronic development of word senses from the historical record. Nevertheless, in this paper I am not primarily concerned with the diachronic development of *time*, which I have considered in more detail elsewhere (Evans 2004).

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[6] For further details see Evans (2004).

2.2.2 *Determining distinct senses*

We now turn to a consideration of the way in which the analyst can distinguish between entrenched meanings (stored in semantic memory) and contextually derived meanings. This relates to criteria for distinguishing between the conventional meaning associated with a word, i.e. relatively stable aspects of word-meaning, what I refer to as a sense or lexical concept, and the way words interact in context, resulting in more context-dependent UTTERANCE MEANING.

One of the problems noted by Sandra & Rice (1995) is that there appear to be as many different approaches to how best to model a semantic network as there are semantic network theorists. Prior to the work of Tyler & Evans (e.g. 2001b) there had been an absence of what Sandra (1998) termed 'decision principles' for distinguishing between senses in cognitive linguistic studies of word-meaning. However, the criteria proposed in that earlier work of Tyler and Evans, relating to prepositions, has only partial applicability for other lexical classes which PROFILE (in the sense of Langacker e.g. 1987) different kinds of conceptual structure and relations. I propose three criteria for determining whether a particular instance of *time* counts as a distinct sense.

First, for a sense to count as distinct, it must contain additional meaning not apparent in any other senses associated with *time*. This constitutes the MEANING CRITERION. It is concerned with the assumption that, since a lexical concept relates to the semantic pole of a lexical item (or expression), for a lexical concept to be distinct it must demonstrate a distinct meaning.

Second, the putatively distinct lexical concept will feature unique or highly distinct patterns of concept elaboration (in the sense discussed in section 2.1). This constitutes the CONCEPT ELABORATION CRITERION. This concerns which lexical items are selected to appear in a syntagmatic or collocational relationship with the lexeme *time*. For instance, concept elaboration may relate to how the noun is being conceptualised, as in the lexical choices signalled by patterns of modification (e.g. *a **short** time*) or in the verb phrase which complements the noun phrase (e.g. *The time **sped by***), etc. I assume that syntagmatic relations of this kind follow from semantic/conceptual considerations (see Croft's 2001 discussion of what he terms COLLOCATIONAL DEPENDENCIES).

Third, a distinct lexical concept may manifest unique or highly distinct structural dependencies. That is, it may occur in unique grammatical constructions. This constitutes the GRAMMATICAL CRITERION, and concerns the nature of the grammatical profile adopted by the nominal (and hence in what grammatical constructions it can appear). In practice this concerns whether the nominal is a count noun, a mass noun, or a proper noun. Idealised grammatical properties associated with each of these categories are given in table 1, based on Quirk et al. (1985).

	PROPER NOUN	COUNT NOUN	MASS NOUN	COUNT OR MASS NOUN
(a)	Sid	*book	furniture	brick
(b)	*the Sid	the book	the furniture	the brick
(c)	*a Sid	a book	*a furniture	a brick
(d)	*some Sid	*some book	some furniture	some brick
(e)	*Sids	books	*furnitures	bricks

Table 1
Test table for noun classes (after Quirk et al. 1985: 246)

As we will see when we apply the Grammatical Criterion in section 4, *time* does not always neatly fit into any one of the categories identified in table 1. For present purposes, the test table provided in table 1 is useful in that it will assist in highlighting distinctions in grammatical behaviour, which may be indicative of distinct lexical concepts.

For a lexical concept to count as distinct, I hypothesise that it must satisfy the Meaning Criterion and at least one other. The reason for this is that it is, in principle at least, sufficient that a usage of *time* satisfy the Meaning Criterion for it to count as a distinct lexical concept. However, in practice the meaning associated with a lexeme can be interpreted in various ways given different contexts. Cruse (1986) has termed this CONTEXTUAL MODULATION. The application of at least one other criterion is meant to safeguard judgements of meaning distinctiveness (on the part of the analyst) from the undue influence of context in identifying a particular usage as a particular lexical concept. After all, I am attempting to establish the range of lexical concepts associated with *time* instantiated as distinct units in semantic memory.

In order to provide an initial demonstration of how these criteria apply, consider the following sentences:

(3) The romance fizzled out of the relationship after only a short time.
(4) Looking back on the evening of their first date, it seemed to the couple that the time had flown by.

In the sentence in (3) *time* designates a bounded interval of duration, namely a period of time, in this case short, before the romance fizzles out of a particular relationship. In (4) *time* also references a bounded interval of duration, namely, a period of time spent by two people out for the evening on a first date. What is interesting is that although the interpretation of duration is elaborated in (3) in terms of physical length, while in (4) it is elaborated in terms of motion (satisfying the Concept Elaboration Criterion for being distinct senses), both sentences designate an interval of duration. Hence, as both usages of *time* have approximately the same meaning, the Meaning

Criterion has not been satisfied. From this we can conclude that they constitute two instances of the same sense.

Now let us consider another usage of *time*:

(5)   Time flows on forever.

In this sentence *time* designates an entity which 'flows on forever' and as such constitutes an entity which is unbounded and so infinite in nature. This adds meaning not apparent in the examples in (3) and (4). As we have seen, in those examples *time* references an interval of bounded duration. Hence, based on the first criterion the sense indexed by *time* in (5) would seem to constitute a distinct sense.

But for a particular usage to index a distinct lexical concept, it must also meet either the second or the third criteron. In terms of the second criterion it appears that this meaning component, which corresponds to what I will later identify as an instance of the Matrix Sense, cannot be elaborated in terms of length content, as in (6) (cf. (3) above), nor can it be elaborated in terms of rapid deictic motion, as in (7) (cf. (4) above).

(6)   ?Time flows for a short period. [Temporal Matrix reading]
(7)   ?Time has flown (rapidly) by. [Temporal Matrix reading]

In neither (6) nor (7) do the patterns of elaboration allow us to understand *time* as prompting for an entity which is infinite in nature. In other words, by altering the way in which the lexeme *time* in (5) is elaborated, we appear either to derive an utterance which cannot be readily interpreted as the Matrix Sense, as in (6), or else one which indexes a 'temporal compression' reading in (7), a reading in which time is conceived as proceeding 'more quickly' than usual (see Flaherty 1999, Evans 2004), rather than an unbounded temporal elapse, a 'matrix' reading.

Taken together, application of the criteria presented above may preclude meanings which do constitute distinct senses from being included in the semantic network associated with a particular noun such as *time*. Ultimately, however, determining which meanings associated with particular forms constitute distinct senses remains an empirical question. Future psycholinguistic work in the vein of Sandra, Rice and their colleagues (e.g. Sandra & Rice 1995, Rice et al. 1999) will yield important insights into the way in which language users represent and relate distinct meaning components associated with a particular lexical form. Moreover, such work may reveal that some senses, legitimately instantiated in memory, are excluded by the foregoing criteria. It may also transpire that while some language users derive certain meanings contextually, others may have already conventionalised these particular meaning components. Nonetheless, the advantage of the criteria proposed is that they offer a rigorous and relatively consistent (i.e. inter-subjective) methodology for assessing what counts as a distinct sense.

2.2.3 *Determining the Sanctioning Sense*

We now turn to a consideration of criteria for determining the appropriate Sanctioning Sense for *time*. As with my criteria for determining distinct senses, I see these criteria as beginning to build a plausible methodology leading to inter-subjective replicability of findings for this particular lexeme. Further experimentation may eventually prove the criteria inadequate, but for the present, I suggest they provide an important step in the right direction. I hypothesise that some of these same criteria may also be useful for the analysis of other abstract and concrete nouns, and possibly for other lexical classes.

Following Tyler & Evans (2001b, 2003) and Evans & Tyler (2004a, b), I suggest that there are two major types of evidence that can be used to narrow the arbitrariness of the selection of a Sanctioning Sense – linguistic and empirical. I suggest that no one piece of evidence is criterial but that when used together, a substantial body of evidence can be gathered. This CONVERGING EVIDENCE points to one lexical concept among the many distinct temporal lexical concepts constituting the Sanctioning Sense. I will primarily focus on the linguistic evidence here. Accordingly, I propose four criteria for establishing the Sanctioning Sense associated with *time*. The proposed criteria are as follows: (1) historically earliest attested meaning, (2) predominance in the semantic network, in the sense of type-frequency, (3) predictability regarding other senses,[7] and (4) a sense which relates to lived human experience of time, i.e. experience at the phenomenological level.

In terms of the first criterion, a likely candidate for the Sanctioning Sense is the synchronic sense which most closely relates to the historically earliest attested sense. This follows because the first meaning to emerge is likely to have played an important part in giving rise to the development of further meanings. Hence, the historically earliest sense has some claim to centrality.[8] According to the second criterion, predominance, the meaning component (type) which is most predominant (frequent) in the semantic network may assist in pinpointing which sense should be taken as the Sanctioning Sense. The third criterion concerns the notion of predictability. Given my polysemy commitment (meaning extension is principled and motivated), and the assumption that language is a usage-based system (meaning-extensions derive from situated use, as will be explicated; see Hopper & Traugott 1993, Bybee 1985, Barlow & Kemmer 2000, Croft 2000, Traugott & Dasher 2002, Tyler & Evans 2003, Croft & Cruse 2004, Evans 2004, Evans & Green 2005), it follows that a likely candidate for the Sanctioning Sense will be one from which the other senses would most naturally be derived. That is, senses in the

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[7] This is analogous to Tyler & Evans' (2001b) criterion of grammatical predictions.

[8] However, there is some evidence that the historically earliest sense may not always relate to the synchronically most central sense (see Michaelis 1996, Tyler & Evans 2003: chapter 6).

semantic network should, to varying degrees, be predictable on the basis of the Sanctioning Sense. The fourth criterion relates to how we experience time at the phenomenological level. Our subjective experience of time concerns an awareness of temporal magnitude (i.e. duration). This gives rise to our ability to distinguish the present activity and moment from a moment which has gone before, and our ability to gauge the elapse of events (see Bergson [1922] 1999, Pöppel 1994, Evans 2004; see also Ornstein [1969] 1997, Flaherty 1999). Hence, the fourth criterion suggests that a likely candidate for the Sanctioning Sense will be the meaning component which best matches this lived experience of time. In section 3, I will argue that these criteria suggest that the Duration Sense constitutes the Sanctioning Sense.

In terms of empirical evidence, much more experimental testing along the lines of that done by Sandra & Rice (1995), Cuyckens et al. (1997), Gibbs & Matlock (2001) and Bietel et al. (2001) should eventually provide evidence which would assist in assessing whether criteria of the kind adduced above provide an empirically accurate outcome.[9]

2.2.4 *The actuation issue*

The development of new meanings associated with words (the actuation issue) involves a complex interaction between the nature of experience and the way in which language is used, given that word-meaning is in large part determined by use. It has been previously recognised by language change theorists that lexical forms can take on new lexical concepts due to situated inferences or implicatures becoming conventionally associated with a

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[9] In terms of constructing a semantic network which accurately models synchronic lexical knowledge and organisation, the empirical work by Sandra & Rice (1995) suggests that it may not be the case that a particular lexical form has a single Sanctioning Sense by virtue of which language users categorise all other senses associated with the lexical item. Thus, their empirical work raises questions concerning the view that we can define polysemy as a strictly synchronic phenomenon in which there is a relationship, which speakers are consciously aware of, holding between distinct senses of a particular lexical form. This is an empirical question which we do not yet have sufficient evidence to address. If extensive experimental evidence shows that language users systematically and consistently fail to perceive some senses as being related, then we must call into question that what we are terming polysemy constitutes a phenomenon that is wholly synchronic in nature. While it appears highly probable that all the senses in a particular semantic network are diachronically related, in the adult lexicon there may be differences in the perceived relatedness between distinct sets of senses, due to reanalysis and entrenchment (pragmatic strengthening) obscuring the original motivation for the derivation of senses from pre-existing senses such as the Sanctioning Sense (see Rice et al. 1999, in particular). Hence, due to processes of language change, not all senses associated with a particular phonological form may be recognised by a language user as being synchronically related. That is, while meaning extension is highly motivated, it may result in a semantic network, which may appear, to the language user (and perhaps also to the linguist), to be only partially motivated.

particular lexical form (e.g. Traugott 1989; Heine 1993, 1997; Hopper & Traugott 1993; Bybee et al. 1994; Svorou 1994; Traugott & Dasher 2002). These implicatures result from the nature of the world and the way in which we interact with it; in short, implicatures are contextually derived meanings which through recurrence can become conventionally associated with a particular lexical form associated with the context of use. Once an implicature has become conventionally associated with a particular form, this derived sense can be employed in contexts of use unrelated to the original context which gave rise to the implicature in the first place. Following Traugott (1989), Hopper & Traugott (1993) and Traugott & Dasher (2002), I identify this process as PRAGMATIC STRENGTHENING.

There is some evidence that the Duration Sense, exemplified by the example in (8), may have been the historically earliest sense associated with *time*, as will be discussed in section 3.

(8)   My headache went (away) after a short time.

In order to illustrate the process of pragmatic strengthening we consider here how it might have given rise to further senses. The notion of pragmatic strengthening predicts that situated implicatures arising from experience can become conventionally associated with a particular lexeme as a new meaning component. This meaning component is then stored in semantic memory as a distinct sense. The example in (9) illustrates this point.

(9)   Time is running out for those trapped beneath the earthquake rubble.

In this sentence, given that a reading of a bounded interval is obtained in which survivors must be found, this usage of *time* prompts for the Duration Sense. Yet, in this particular context the Duration Sense gives rise to an implicature of finiteness. This is due to the fact that if a particular activity – the location and removal of the survivors – is not completed within a specified interval then there will be non-trivial consequences, i.e. the death of any would-be survivors. While the implicature of finiteness is presumably a consequence of this specific context, the implicature may have given rise to the development of a new lexical concept which I will later identify as the Commodity Sense.

An entity which is finite can often be valuable. Hence, in examples such as (9), as the 'amount' of time – the interval – available for locating and retrieving survivors is finite, it is also extremely valuable, particularly as lives are at stake. Via pragmatic strengthening this implicature of value has, I suggest, been reanalysed as a distinct meaning component, that is to say, 'detached' from the original context of use and 'strengthened', i.e. entrenched in semantic memory, such that it has come to be conventionally associated with the form *time*. That a meaning of value is associated with *time*, independent of contexts of finite duration, is attested by sentences such as (10).

(10) (a) My psychiatrist's time is so expensive!
  (b) Time is money. So start an Equitable 2000 Personal Pension Plan now.

> (Advertisement for Equitable Life, *The Sunday Times*,
> 22 October 2000)

In these examples, *time* prompts for an entity which is inherently valuable. As such, *time* constitutes a commodity which can be bought and sold, as shown in sentences such as *The advertisers bought more air time for their ads*. Clearly, this usage of *time* and the attributes presupposed provide meaning not apparent in the earlier example, (9). After all, in (10), *time* prompts for an entity which is understood as inherently valuable (without requiring a context of finite duration in order to evoke such an understanding) and moreover can be purchased, as is clear from the use of *expensive* in (10a). This suggests that the 'commodity' meaning does represent a sense distinct from the Duration Sense. Hence, a commodity interpretation, once instantiated in memory, is available for use in contexts unrelated to the original situated use which gave rise to it. In this way, the Commodity Sense can be used even absent a finite interval reading. This satisfies the Meaning Criterion. In addition, as we will see in section 4, both the Concept Elaboration and Grammatical Criteria are also met. This suggests that the Commodity Sense may constitute a distinct lexical concept, instantiated in semantic memory.

In arguing that pragmatic strengthening gives rise to 'new' lexical concepts, it is often the case that there may be several plausible explanations for the derivation of new senses which may reflect multiple paths of development. That is, the Commodity Sense may have derived from a number of different experiences which reinforce the meaning component of value associated with *time*. For instance, since pre-industrial times the amount of payment in exchange for labour has been measured in terms of intervals such as the day, and later in terms of the hour with the advent of accurate mechanical clocks in the eighteenth century (Whitrow 1988, Barnett 1998). As amount of payment correlates with amount of time worked, this implicates that time is valuable. Accordingly, another way that the Commodity Sense may have arisen is due to the association of money, on the one hand, with intervals of time spent at work on the other.

In addition, there may be a third possible explanation which may have given rise to, or reinforced, the development of the Commodity Sense. As the amount of time one has available correlates with the likelihood of achieving of one's goals, an implicature of value is associated with time. This follows because in order to achieve a particular goal, which is desirable, we require time in which to do so. Hence, a lack of time correlates with an inability to achieve objectives, while more time correlates with a greater opportunity for doing so.

As this discussion has illustrated, pragmatic strengthening serves simultaneously to associate new lexical concepts with lexical items (by extending the array of meanings instantiated in a particular semantic network), and to enlarge the range of lexical concepts by adding, for instance, a concept of temporal value to the range of temporal concepts subsumed by the conceptual system. This illustrates that language represents a powerful means not only of prompting for meaning, but also of mediating the formation of new conventionalised meaning and hence conceptual structure.

As the primary purpose of this paper is to illustrate how the methodology for determining the Sanctioning Sense and distinct senses is applied, and to delineate the distinct senses associated with *time*, I will only make very brief comments on plausible path(s) of derivation for each sense. For a fuller discussion of this issue see Evans (2004).

3. THE SANCTIONING SENSE FOR *TIME*

The semantic network for the English lexeme *time* is organised around a primary conventional meaning, the Sanctioning Sense. I argue that the Sanctioning Sense constitutes a meaning of bounded duration, termed the Duration Sense. Consider some examples:

(11) (a) The relationship lasted a long/short time.
    (b) It was some/a short/a long time ago that they met.
    (c) [I]n the past, all that time that you were away from me, you really went on existing.
            (Iris Murdoch, *The Sea, The Sea*; Vintage [1978] 1999: 71)
    (d) The time of life is short;
        To spend that shortness basely were too long
                  (Shakespeare, Henry IV part I. V. ii. 81–82)[10]

In each of these examples, *time* references an interval which is co-extensive with a particular state or process. In (11a) the interval is co-extensive with and hence bounded by a particular (romantic or marital) relationship. In (11b) the interval is delimited by the period holding between the moment of first meeting and now. In (11c) the interval is delimited by the period which two people spent apart from one another. In (11d) the interval is co-extensive with a human life-span, and hence bounded by the successive events of birth and death.[11]

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[10] In the first line of this quotation Shakespeare treats time as prompting for an interval of bounded duration, i.e. the Sanctioning Sense. In the second line he evokes the notion of time as a commodity which can be spent. This will be dealt with later.

[11] There is significant historical evidence that salient intervals were lexicalised by the forms *tide* or *time* (*tide* was the Old English form of *time*). However, *tide* is still used in modern English with a meaning pertaining to the interval separating high and low water. *Tide* is also apparent in literature and poetry in particular, where it is used in conjunction with

3.1 *Applying criteria for determining the Sanctioning Sense*

In section 2.2.3 I provided four criteria for adducing the Sanctioning Sense for *time*. They included the criterion of earliest attested meaning, the criterion of predominance, the criterion of predictability, and the criterion of lived temporal experience. The reasons for thinking that the Duration Sense exemplified in (11) constitutes the Sanctioning Sense for *time* are compelling.

Let's first consider the criterion of earliest attested meaning. This states that the synchronic sense which most closely approximates the earliest attested meaning associated with *time* is likely to be the Sanctioning Sense. A clear candidate for such a sense is a lexeme's earliest attested sense. According to *The Oxford English dictionary*, a 'duration' sense represented the earliest attested meaning associated with *time*.[12] The form *time* is hypothesised to have derived from an earlier form **tî-mon*, comprised of a reconstructed proto-Teutonic verb root **tî*, 'to extend/stretch', and the suffix *mon*, denoting an abstract entity. Processes such as stretching or extending are temporally protracted and hence correlate with our experience of duration. The fact that stretching and extending are necessarily bounded and thus delimited follows from the fact that physical bodies can only stretch or extend so far. In this way, the processes of extending or stretching represent an interval between two events (the beginning and ending of the extending or stretching). The fact that the earliest attested meaning associated with the

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other expressions to refer to an interval of a particular kind, particularly religious festivals or periods in the year, e.g. *Christmas-tide, Easter-tide, June-tide, New-Year's tide, summer's tide*, etc. These have modern equivalents employing the form *time*, which include the following: *Christmas-time, term-time, spring-time, summer-time, night-time, morning-time, evening-time*, etc. Other intervals once lexicalised by *tide* and later *time* include an hour, and for *time*, a year, as attested by (i) and (ii), respectively:

(i) (a) þe foure & twenti tydes in day & in þe nyȝt   (*The Oxford English dictionary*)
    (b) To knowe … euery tyme of the nyt by the sterres fixe
                                         (*The Oxford English dictionary*)
(ii) Of such numbers, the three times and a half, the 42 months, and the 1260 days, are mutually equivalent   (*The Oxford English dictionary*)

In modern English the lexical form *time* no longer has a conventional reading of an hour or a year. Yet, in the highly conventional expression: *What time is it?* we can still see the original motivation for using *time* (due to the earlier meaning of hour associated with *time*), which replaced the now archaic expressions *What hour is it?* and *What's o'clock?* The foregoing notwithstanding, at the synchronic level *time* still does contextually prompt for a salient interval, namely an age, as is attested by the examples in (iii) and (iv)

(iii) It is one of the hallmarks of our time.   (British National Corpus)
(iv) Anne Frank lived in a time when the world was a dangerous place.

[12] According to *The Oxford English dictionary*, the earliest attested appearance of a 'duration' sense is lexicalised by the archaic form *tide*, and is found in Beowulf, around 700 AD.

form *time* (the form *tide* was used in Old English)[13] is related to the notion of an interval, and that the etymology of *time* also relates to this notion, suggests, on the basis of the first criterion, that the synchronic Duration Sense is a likely candidate for the Sanctioning Sense.

Turning now to the second criterion, predominance, this suggests that the most likely candidate for the Sanctioning Sense is that meaning component which is most predominant in the semantic network. As the analysis proceeds, it will become clear that the meaning-type 'duration' features in over half the distinct senses in the semantic network for *time*.

The third criterion suggests that the Sanctioning Sense is likely to be that sense on the basis of which the other distinct senses can be most plausibly predicted. As I will argue in section 4, the meaning associated with *time* pertaining to 'duration' best meets this criterion.

The fourth criterion suggests that the Sanctioning Sense is likely to be that sense which can be most closely related to our phenomenological experience of time. In terms of lived human experience it is our awareness of and ability to assess magnitude of duration which first and foremost allows us to distinguish past from present, and thus allows us to experience events as successive. Hence, succession is a consequence of our awareness of duration. Without it, we would live within the straitjacket of an updated now continually replayed. As the Duration Sense relates most directly to this phenomenological experience, this suggests that it does indeed constitute a likely candidate for the Sanctioning Sense.

3.2 *Notable characteristics of the Duration Sense*

At this point I briefly consider three notable characteristics of the Duration Sense. These relate to the meaning, concept elaboration and grammatical profile of this sense, and will be important later, when we compare this sense with others, to be uncovered in this study.

Before proceeding, compare the examples of the Duration Sense in (11) with two salient variants, the 'temporal compression' and 'protracted duration' variants, illustrated in (12) and (13), respectively.

(12)   Time flies when you're having fun. ['temporal compression']
(13)   Time drags when you're bored. ['protracted duration']

These two variants relate to the phenomenologically real experiences in which time 'feels' as if it is 'passing' either abnormally 'quickly' or 'slowly'.

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[13] According to *The Oxford English dictionary*, by the 16th century *tide* lost its earlier meaning of 'time', retaining the meaning of period between high and low sea-water, i.e. 'tide of the sea'.

(For discussion of these phenomena see Flaherty 1999 and Evans 2004.) What is common to the readings in (11)–(13) is that they all relate to the experience of duration, albeit of slightly different kinds. However, while the examples in (11) are elaborated in terms of what I will refer to as LENGTH CONTENT, as illustrated by the use of adjectives such as *long* or *short*, the two variants in (12) and (13) are systematically elaborated in terms of distinct kinds of MOTION CONTENT. The 'temporal compression' variant is invariably elaborated in terms of motion events involving rapid motion, as in (14), or imperceptible motion, as in (15).

(14)   Time whizzes/speeds/zooms/rushes (by) when you're having fun.
(15) (a) The time has sneaked/tiptoed by/past.
      (b) Where has all the time gone?
      (c) The time's vanished.

This contrasts with the nature of motion events which elaborate the 'protracted duration' variant. These invariably relate to stationariness, as in (16), or extremely slow motion, as we saw in (13) above.

(16)   Time seemed to stand still

Accordingly, the first notable characteristic of the variants of the Duration Sense in (11)–(13) is that they are all related to the notion of 'duration', and hence all represent assessments of temporal magnitude. However, the two variants illustrated in (12) and (13) are distinct from the examples in (11) in that they are elaborated in terms of distinct kinds of semantic content. Put another way, elaborating the Duration Sense in terms of motion events as illustrated in (13)–(16) provides contextually-modified variants. Following Cruse (e.g. 2000) and Croft & Cruse (2004), I will refer to such variants as SUB-SENSES. Hence, the second notable characteristic of the Duration Sense is that it has two sub-senses, due to differential but highly predictable patterns of concept elaboration in terms of motion events. Third, all the examples provided for the Duration Sense and its sub-senses involve mass nouns. That is, their grammatical profile is the same. Evidence that the examples in (11) involve mass nouns comes from the fact that these examples can be determined by quantifiers such as *any*, *some*, etc., which provide what Talmy (2000) terms a BOUNDING or PORTION-EXCERPTING function. Only mass nouns can undergo such an operation (recall table 1). Evidence that the examples in (12) and (13) involve mass nouns comes from the fact that they cannot be determined by the indefinite article:

(17)   *A time flies when you're having fun. ['temporal compression']
(18)   *A time drags when you're bored.   ['protracted duration']

Hence, while the Duration Sense and its two variants are related semantically and grammatically, they have distinct patterns of concept elaboration.
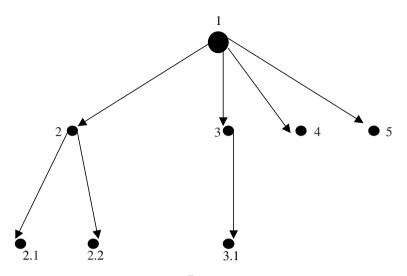
Figure 1
The semantic network for *time*

1: The Duration Sense   3: The Matrix Sense
2: The Moment Sense   3.1: The Agentive Sense
2.1: The Instance Sense   4: The Measurement-system Sense
2.2: The Event Sense   5: The Commodity Sense

4. THE SEMANTIC NETWORK FOR TIME

A number of distinct senses appear to be derived from the Sanctioning Sense. Before proceeding with a description of these, I present in figure 1 a diagrammatic overview of the semantic network for *time*. This shows that, on the basis of the application of the criteria outlined in section 2, there are eight distinct senses prompted for by the form *time*. A sense is represented by a node. The arrows indicate putative relationships between the senses, and may reflect paths of diachronic development. Moreover, it is to be expected that the relationships indicated by this network will hold to varying degrees of relatedness at the synchronic level.[14] However, verifying the nature of the

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[14] It is evident from figure 1 that my claim is that not all the senses are directly derived from the Sanctioning Sense. It may be possible, therefore, to provide a variety of plausible accounts of how a particular sense was derived given the nature of experience and historical evidence. Such multiplicity of explanations (reflecting multiple paths of development) would, however, undermine neither the basic approach nor the underlying assumptions of the present analysis. Rather, I suggest that it appropriately reflects the flexibility and utility of language as a symbolic instrument in externalising concepts and thus facilitating communication.

relationships holding between the various senses, and indeed verifying the proposed network, is ultimately an empirical question, as discussed earlier.

4.1 *The Moment Sense (2 in figure 1)*

This sense is illustrated by the examples in (19). In the Moment Sense, *time* prompts for a conceptualisation of a discrete or punctual point or moment without reference to its duration.

(19) (a) The time for a decision has arrived/come.
  (b) Doctors had warned that Daniel, five, of Sinfin, Derby, could die at any time.   (British National Corpus: CBF 12610)
  (c) His ambition, which was to drive him so hard in later life, resulted in his being made choirmaster by the time he was fourteen.
                    (British National Corpus: B34 22)
  (d) The UN has recently endorsed the principle that an international peace conference on Palestine might be useful at an appropriate time.   (British National Corpus: ABD 1080)

Given my methodology, in order to be able to claim that the examples in (19) index a sense distinct from the Sanctioning Sense I have to be able to demonstrate at least two things: first, that these examples provide additional meaning not apparent in the Duration Sense (the Meaning Criterion), and second, that the putative Moment Sense either has distinct patterns of concept elaboration with respect to the Duration Sense (the Concept Elaboration Criterion) or appears in distinct grammatical constructions (the Grammatical Criterion).

4.1.1 *The Meaning Criterion*

In the examples in (19), unlike the Duration Sense, *time* does not prompt for a reading relating to an interval, but rather to a discrete point; in fact, a 'duration' reading is completely absent. Accordingly, in view of the Meaning Criterion, these instances of *time* would indeed appear to bring additional meaning, suggesting that we are dealing with a lexical concept distinct from the Duration Sense.

4.1.2 *The Concept Elaboration Criterion*

In terms of the second criterion, a 'moment' reading appears to be elaborated solely in terms of deictic motion: that is, motion which presupposes a particular deictic centre with respect to which the motion takes place. Moreover, the deictic centre often appears to coincide with the starting or ending point of the motion. The example in (20) is typical.

(20)   The time for a decision has come/arrived/gone/passed.

In (20), unlike the motion associated with the Duration Sense (recall the elaboration of the 'temporal compression' and 'protracted duration' sub-senses), what is important is that motion occurs with respect to a salient deictic centre, rather than the relative rapidity (or otherwise) of the motion. For instance, it is with respect to a specific deictic centre that a temporal moment can 'come', or 'arrive', or 'pass'. That is, the deictic centre constitutes the locus of experience. Hence, by virtue of a temporal moment's fleeting co-location with this locus of experience (the 'experiencer'), the particular temporal moment is conceptualised as having occurred.

Evidence for the foregoing comes from sentences involving the Moment Sense which are semantically anomalous when elaborated in terms of motion concepts which are not deictic in nature. For instance, the intended readings are not appropriately conveyed in (21), where the lack of deictic motion verbs and/or spatial particles fail to evoke a deictic centre towards which motion is directed:

(21)   ?The time for a decision flies/stands still.
       (Intended reading: Moment Sense)

4.1.3 *The Grammatical Criterion*

Let us now consider the third criterion, which relates to grammatical distinctiveness. In grammatical terms, the Moment Sense is clearly distinct from the Duration Sense. While *time* in the latter is formally a mass noun, the Moment Sense of *time* constitutes a count noun, as is shown by its ability to be modified by the indefinite article:

(22)   Due to the volatile nature of the market, we left instructions to sell at an appropriate time.

Hence, the three criteria considered strongly suggest that the 'moment' reading in (19) constitutes a distinct lexical concept.

4.1.4 *Derivation of the Moment Sense*

As suggested by figure 1, the Moment Sense is derived from the Duration Sense. A plausible motivation for the Moment Sense relates to the phenomenon of TIME EMBEDDEDNESS (Flaherty 1999), which is a consequence of our social experience (in the sense of our interpersonal coordination and interaction) being temporally constructed. As certain events are embedded within other events, intervals can be analysed as participating in other intervals. For instance, salient intervals such as hours are subsumed by another interval, namely the day.

In mediaeval Europe life was highly influenced and regulated by religion, and religious practice and convention. Christianity was deeply entrenched in everyday life. In monasteries, the mediaeval seats of learning and education, the day was divided into seven hours, termed the CANONICAL HOURS. A bell would ring announcing the new hour. Each canonical hour corresponded to a different activity, and began with prayer, each hour having its own particular prayer (Barnett 1998). This division of the day represented a highly regulated and conventionalised means of stipulating the nature of the activity to be engaged in, and an instance of time embeddedness.

It is highly plausible that due to time embeddedness, the embedded intervals came to be reanalysed as being subsumed by the greater interval, without reference to their duration. Such a reanalysis, as in the case of the canonical hours, would have been strengthened by a discrete signal such as a bell chiming. As an hour was already lexicalised by the term *tide/time* in English (the use of *time* to signal 'hour' is now archaic), a reanalysis of hours as discrete 'points' within an interval, i.e. a day, would have facilitated the use of the lexeme *tim*e to implicate a point without reference to its duration.[15]

4.2 *The Instance Sense (2.1)*

In this sense *time* prompts for a reading in which an instance of a particular event, activity, process or state is being referenced, rather than an interval as in the Sanctioning Sense, or a discrete point embedded within an interval, as in the Moment Sense. Moreover, as it is an instance which is being referenced, it can be enumerated. In order to make this clear consider the examples in (23).

(23) (a) Devine improved for the fourth time this winter when he reached 64.40 metres at a meeting in Melbourne.

(British National Corpus: K5A 2740)

　　 (b) This time, it was a bit more serious because I got a registered letter.

(British National Corpus: CBG 9709)

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[15] Indeed, there is some evidence that the Moment Sense associated with *time* derived from time-embeddedness within a religious context. From an early stage in the development of the language it is clear that the now-archaic *tide* was used to denote religious festivals and services (e.g. *Allhallowtide*, *Christtide*, *Eastertide*, *Lammastide*, *Shrovetide*, *Whitsuntide*, etc.), and was used even for occasions which were short in duration (e.g. saints' days, festivals which lasted for one day a year: *St. Andrew's tide*, *St. Botulf's tide*, etc.). There is evidence that in Old English, *tide* also came to be used to denote discrete 'points' in the day, such as *noon-tide*. Clearly, the use of *tide* to lexicalise noon, which cannot be construed as an interval, suggests that a reanalysis of *tide*, from prompting for an interval reading to that of the Moment Sense, must have taken place. It is only once *tide/time* had developed a conventional 'moment' meaning that other non-durational divisions (e.g. noon) of a particular interval, such as a day, could be lexicalised by *tide* and *time*.

(c) The horse managed to clear the jump 5 times in a row.

(d) They bought the cashmere scarves at £50 a time.

4.2.1 *The Meaning Criterion*

In each of the sentences in (23), *time* references a particular instance (i.e. occurrence) of an event or activity, rather than an interval or a moment. For example, in (23a), if we attempt to construct a 'moment' reading for *time*, we find that *time* does not mean, for instance, that Devine improved for a fourth consecutive moment, or that he improved on the fourth moment of trying. In terms of a possible 'duration' reading, *time* does not mean that the improvement lasted for a period of four moments. Rather, it means that there were four distinct instances of improvement, each instance representing an improvement on a previous improvement. Clearly, this adds meaning not apparent in the two senses considered so far. Thus, in view of the first criterion for identifying distinct senses, the 'instance' reading would appear to relate to a distinct lexical concept.

4.2.2 *The Concept Elaboration Criterion*

For a particular reading to count as a distinct lexical concept it must also satisfy either the Concept Elaboration Criterion or the Grammatical Criterion. Due to the semantics associated with this lexical concept – it relates to an entity which constitutes an instance of something else – the 'instance' reading has little in the way of distinctive content ascribed to it. Hence, there are no salient or striking patterns of concept elaboration specifically associated with this lexical concept. Consequently, in so far as this lexical concept cannot be elaborated in terms of some of the more striking content ascribed to previously considered lexical concepts, and this is distinct, the 'instance' reading appears to relate to a distinct lexical concept.

4.2.3 *The Grammatical Criterion*

In terms of the third criterion, the Instance Sense is highly distinctive. Like the Moment Sense, the Instance Sense is formalised as a count noun. However, unlike the Moment Sense (and the Duration Sense), the Instance Sense can be pre-modified by both ordinal numbers (23a) and cardinal numbers (23c). This follows as the Instance Sense relates to distinct occurrences of the same or similar kind of event or activity, and hence can be iterated. This contrasts with temporal 'moments' and 'intervals' which are unique instances of temporal substrate, and hence are unlikely to be modified in this way. Thus, the Grammatical Criterion provides further evidence that an 'instance' reading does constitute a distinct lexical concept.

4.2.4 *Derivation of the Instance Sense*

A plausible motivation for the derivation of the Instance Sense relates to the fact that the various intervals embedded within larger intervals such as a day and a year were enumerable. As already noted, in the Middle Ages a day was divided into the seven canonical hours. Given that each of these divisions came to be analysed as a distinct point embedded within an interval, these divisions are themselves instances, instances of the division of the day. That is, they constitute particular instances which can be enumerated, by virtue of not being unique. Similarly, as months of the year are particular instances of divisions in the year, the practice of suffixing the name of the month with *tide* in late Old English may have given rise to the implicature that each month was a particular instance of a certain kind of activity, namely dividing up the year. Hence, each month constitutes a particular instance of a division. This implicature, through pragmatic strengthening, may have become reanalysed as distinct from the particular contexts in which it originally occurred, and thus become conventionally associated with *time* in semantic memory.

4.3 *The Event Sense* (*2.2*)

In the Event Sense, *time* prompts for a conceptualisation in which a specific event is referenced. An event constitutes an occurrence of some type. An occurrence is characterised by certain features or characteristics which mark the occurrence as distinct from background experience. One way in which this can be achieved is by being temporally discrete. Hence, in the same way that the Moment Sense references a 'temporal point' in the temporal event-sequence, the Event Sense references an 'experiential point' in the experiential event-sequence. That is, an event is embedded in ongoing experience, just as temporal moments are embedded in larger temporal intervals.

Interestingly, the linguistic evidence for an Event Sense for *time* relates to boundary events, that is, events which constitute beginnings or endings. Consider the examples in (24).

(24) (a) The young woman's time [=labour] approached.
    (b) Arsenal saved face with an Ian Wright leveller five minutes from time after having a jaded, end-of-season look.

<div align="right">(British National Corpus: CH3 3819)</div>

    (c) The man had every caution given him not a minute before to be careful with the gun, but his time was come as his poor shipmates say and with that they console themselves.

<div align="right">(British National Corpus: HRB 912)</div>

    (d) The barman called time.

4.3.1 *The Meaning Criterion*

In (24a) *time* prompts for a particular boundary event, namely the beginning of child-birth. In (24b) *time* prompts for the end of a soccer match in which the London team Arsenal equalised five minutes from the close of play. In (24c) *time* prompts for the event of death, which constitutes life's outer boundary, while in (24d) the barman signals the end of licensing hours (the period during which patrons may consume alcohol in a particular establishment) by calling 'time'. The event in each example is apparent by virtue of the transition made salient by the boundary. The boundary constitutes the beginning or ending of an interval of duration, what I have elsewhere termed the temporal ONSET and OFFSET (Evans 2004). For instance, in (24a) it is actually the onset of labour which is being signalled by *time*. In (24b) *time* references the offset of a football match. In (24c) the offset of life is signalled, while in (24d) the offset of licensing hours is prompted for. In this sense, then, and in view of the Meaning Criterion, *time* signals a particular boundary event, namely the event which delimits a particular interval.

4.3.2 *The Concept Elaboration Criterion*

A consequence of the similarity of the Event Sense to the Moment Sense is that the Event Sense is elaborated in a way similar to the Moment Sense. That is, temporal Events are elaborated in terms of deictic motion. The pair of examples in (25) is indicative.

(25) (a) His time [=death] has come/arrived.
    (b) His time is approaching/getting closer.

Moreover, like the Moment Sense, the Event Sense cannot be elaborated in terms of just any kind of motion event, as (26) illustrates.

(26)   ?His time [=death] has flown/moved/crept/sailed/stood still.
    (Intended reading: Event Sense)

4.3.3 *The Grammatical Criterion*

Unlike the previous senses considered, including the Moment Sense, the Event Sense does not undergo determination by the definite or indefinite articles. This is shown by (24b) and (24d), where no articles are present. In this, the Event Sense appears to be behaving akin to a proper noun. However, unlike proper nouns, the Matrix Sense of *time* (see section 4.4 below), or the Agentive Sense (which appears to resemble a proper noun closely; see section 4.5), the Event Sense is unable to constitute a bare nominal in subject position (in active sentences). In this position it must be pre-modified by a possessive noun phrase (NP), such as a genitive NP with

possessive enclitic -*'s*, as in (24a), or an attributive possessive pronoun, as in (24c). Thus, although the Event Sense cannot be distinguished from the Moment Sense in terms of concept elaboration, it does manifest distinct grammatical behaviour. This constitutes evidence that we should consider it to be an independent lexical concept associated with *time*.

4.3.4 *Derivation of the Event Sense*

The Event Sense, like the previous senses considered, was also lexicalised by the form *tide*, and thus has been present in the language for a relatively long time. A plausible motivation for this sense may have been the correlation between a particular moment (the onset or offset of a temporal interval) and the event which takes place at that moment. Put another way, since events happen at specific moments, a particular moment implicates a particular event with which it is correlated. As the Event Sense appears to relate to interval boundaries, and as an interval boundary correlates with the occurrence of a new event, prominent onsets or offsets (i.e. specific temporal moments) could, through pragmatic strengthening, have come to prompt for the event which correlates with the interval boundary (the temporal moment), especially as the lexeme *time* already referenced the concept of a temporal Moment.

4.4 *The Matrix Sense (3)*

In the Matrix Sense, *time* prompts for an entity which is unbounded, in the sense that it has an infinite elapse, and thus subsumes all other events. It is for this reason that I employ the label 'matrix'. Accordingly, the Matrix Sense prompts for an entity which, rather than being an attribute of other events and entities, is conceived of as an independent entity itself, a reality apart from the events it subsumes. This sense is present in the examples in (27).

(27) (a) [T]ime, of itself, and from its own nature, flows equably without relation to anything external.

        (Newton's view of 'absolute time', cited in Turetzky 1998: 73)

    (b) Time flows/runs/goes on forever.

    (c) Time has no end.

    (d) The unending elapse of time.

4.4.1 *The Meaning Criterion*

In the examples in (27) it appears that *time* prompts for a 'temporal matrix', which serves as the backdrop for the occurrence of other events. That is, these examples fail to prompt for a conceptualisation invoking the notion of

an interval (which presupposes boundedness), and so could not be due to the Duration Sense. This is particularly clear with the example in (27a). This example is drawn from Newton's *Principia Mathematica*,[16] in which the notion of ABSOLUTE TIME was famously propounded. According to Newton, 'absolute time' constitutes an entity unrelated to external events, and against which the rate of change of events can be measured. Hence, on this view time is a manifold, which means that it 'contains' events and is independent of events. As this manifold is conceived as being in the world 'out there', the 'passage' of time represents an infinite entity which subsumes all other events.

This view of the entity prompted for by *time* as being something infinite, eternal and independent of all other events (a reality apart from all other events) is apparent in the other examples in (27). In each, *time* prompts for an entity whose passage is unaffected by external events and indeed within whose frame events unfold and states persist. In the sentences in (27b–d), *time* prompts for an entity which is infinite. These examples no longer provide a reading of an interval holding between or correlating with salient events, and thus of bounded duration, as in the Sanctioning Sense; rather, they provide a reading of an entity which is independent of external events, unbounded and infinite. We must conclude, therefore, that the first criterion for determining whether this counts as a distinct sense is satisfied. In these examples new meaning is provided, not apparent in the Duration Sense.

4.4.2 *The Concept Elaboration Criterion*

One extremely common way for the Matrix Sense to be elaborated is in terms of motion. (For a discussion of other ways in which this sense is elaborated, see Evans 2004.) As we saw in the previous section, Newton in his exposition of 'absolute time' seems to have shared this view of time as a template, which he suggested 'flows equably without relation to anything external'. It serves to reveal change, and hence to manifest events, by virtue of its 'equable' motion, which forms the backdrop, or reference frame, against which all else can be measured. Accordingly, by conceptualising the Matrix Sense as an entity undergoing constant and uniform motion, it can be construed as acting as a 'template', measuring and revealing change.

The Matrix Sense is commonly elaborated in terms of the motion event described by the lexeme *flow*, as demonstrated by the ubiquity with which it is likened to bodies of water such as streams or rivers, which prototypically 'flow'. Consider the following examples, which demonstrate this elaboration. The sentence in (28c) is due to Marcus Aurelius (Roman Emperor in

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[16] Newton (1642–1727) enshrined his view of mechanics in his great work *Principia Mathematica*. Classical mechanics stood firm until the advent of Einstein's work on special and general relativity at the beginning of the twentieth century.

161–180 AD and an influential Stoic philosopher), revealing the antiquity of this imagery.

(28) (a) Time, like an ever-rolling stream,
      Bears all its sons away   (Isaac Watts, 'Psalms cx')
   (b) A wanderer is man from his birth,
      He was born in a ship
      On the breast of the river of Time (Matthew Arnold, 'The future')
   (c) Time is like a river made up of the events which happen
                          (Marcus Aurelius, Meditations, IV. 43)
   (d) Time is but the stream I go a-fishing in
       (H. D. Thoreau, *Walden*, 'Where I lived, and what I lived for')

Motion events which do not relate to salient characteristics of the Matrix Sense, notably unboundedness, fail to elaborate it appropriately; consider (29), for instance.

(29) (a) ?Time creeps past. (Intended reading: Matrix Sense)
   (b) ?Time stood still.   (Intended reading: Matrix Sense)
   (c) ?Time whizzed by. (Intended reading: Matrix Sense)
   (d) ?Time has arrived. (Intended reading: Matrix Sense)

As none of the kinds of motion employed in (29) relate to the ongoing and infinite nature of the Matrix Sense, but rather imperceptible motion in (29a), stationariness in (29b), rapid motion in (29c) and deictic motion in (29d) – in other words, the way in which the Duration, Moment and Event Senses are elaborated in terms of motion events – these lexemes produce semantically anomalous sentences if a Matrix Sense reading is intended. Accordingly, we see that the way in which previously considered lexical concepts for time are elaborated is incompatible with the Matrix Sense. This suggests that the Matrix Sense has a distinct pattern of concept elaboration. This satisfies the Concept Elaboration Criterion, suggesting that the Matrix Sense is indeed a distinct lexical concept for *time*.

4.4.3 *The Grammatical Criterion*

The Matrix Sense of *time* is formally a mass noun. The reason for thinking this is that it cannot be determined by the indefinite article. In this it follows the Duration Sense. In addition, unlike the Duration Sense, the Matrix Sense cannot be determined by the definite article. This is likely to be because the Matrix Sense already has unique reference (it refers to a single unbounded entity subsuming all other events), which renders the use of the definite article redundant.

As the Matrix Sense involves a single entity which is unbounded in nature, it is very difficult to find examples of the operation which I identified earlier, following Talmy (2000), as portion-excerpting or bounding (see section 3.2).

Such an operation can be illustrated by the use of quantifiers such as *some*. While such an operation applies to the Duration Sense, as attested by examples such as (30), it is less clear that it can apply to the Matrix Sense.

(30) They lived together for (quite) some time.

The use of *time* here applies to the Duration Sense, and not the Matrix Sense, as it concerns duration, rather than an entity which is identified as an unbounded and infinite elapse, the event subsuming all others. However, this is not to say that quantifiers are not compatible with the Matrix Sense; (31) show that they are.

(31) The cycle of species evolving and becoming extinct has existed for **all** time.

The lexical item *all* is compatible with the Matrix Sense, as it is consistent with what this lexical concept expresses. That is, *all* does not serve to bound an entity which, by definition, cannot be bounded; rather, it serves to profile the entire unbounded elapse associated with the Matrix Sense.

   In so far as the Matrix Sense cannot be determined by the definite article and exhibits a distinct pattern as regards which quantifiers can precede it, this provides grammatical evidence that the Matrix Sense is distinct from the Duration Sense and other senses.

4.4.4 *Derivation of the Matrix Sense*

I suggest that the Matrix Sense could only have become associated with *time* if temporality is in some way reified. That is, it must be generalised away from the individual intervals from which it derives, and thus divorced conceptually from its bounded durational character, anchored to the subjective (and hence egocentric) awareness of the human experiencer. In the process, temporality has become conceptualised as no longer constitutive of the perceptual process, but instead is conceived of as an independent entity in terms of which on-going temporal experience is defined and situated. This process may have occurred due to our awareness of on-going temporal experience being correlated with our conscious experience of events, which are conceptualised as being external to us and so attributed to an objective world. That is, temporal experience correlates with putatively external experience. Due to this extremely tight correlation it is plausible that temporality came to be associated with 'external' events, processes, states and even objects. As such, temporality has come to be attributed to the external world itself which thus came to be conceptualised as possessing its own temporality independent of the subjective experience of time with which the external world is correlated.[17]

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[17] I suggest that by ascribing temporality to the external world, due to the correlation between internal temporality and a putatively external on-going world-state, this world-state, which

4.5 *The Agentive Sense* (*3.1*)

Consider the examples in (32), illustrating the Agentive Sense.

(32) (a) Time, the avenger!   (Lord Byron, *Childe Harold* IV, cxxx)
     (b) Time is the greatest innovator.
                          (Francis Bacon, *Essays*: 24, Of innovations)
     (c) Time is the great physician.
                          (Benjamin Disraeli, *Endymion*, book I, chapter 81)
     (d) Time has aged me.

In the sentences in (32), *time* prompts for an entity which has the ability to affect us and our environment. It can variously avenge, as in (32a), innovate, (32b), heal, (32c), and age us, (32d).

4.5.1 *The Meaning Criterion*

Given the sentences in (32), it seems fairly clear that these instances of *time* relate to a meaning distinct from those previously considered. Unlike the Duration Sense, for instance, the lexical concept indexed in these examples is capable of bringing about some effect. This contrasts with the Duration Sense, in which an interval of duration is prompted for. Similarly, the meaning prompted for by *time* in (32) adds meaning not apparent in the Matrix Sense. While in the Matrix Sense *time* prompts for an unbounded durational elapse which consequently serves as a background 'template' against which change can be measured, in the Agentive Sense *time* appears to be actively involved in the occurrence of specific events. This follows because the Agentive Sense is elaborated in terms of the agency associated with humans and animals, as will be discussed below. For instance, time can be a physician which heals (32c) or an innovator (32b). Equally, time can become a very human agent, manifesting volition and thus avenging as in (32a). Similarly, time can be modelled on animal agency, and devour (e.g. 'Time the devourer'). Indeed, the personification of the Agentive Sense reaches its apotheosis in the cultural model of Father Time, as exemplified in the iconic representations of a balding man carrying a scythe and an hourglass in Western art since mediaeval times (Lippincott et al. 1999).

4.5.2 *The Concept Elaboration Criterion*

It has already become apparent from the discussion so far that the Agentive Sense is elaborated in terms of acts which bring about a change of state. To make this explicit, consider the examples in (33).

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is conceptualised as anteceding and continuing beyond the finite egocentric experience, may have given rise to an implicature of extendedness in the sense of infinite duration associated with the lexeme *time* (see Evans 2004).

(33) (a) Time devours all.
    (b) Time reveals all.
    (c) Time heals all wounds.
    (d) Time had transformed him into an old man.

The result of being devoured is that the entity being acted upon is no longer a discrete entity and hence no longer exists; the result of being revealed is to be exposed or rendered visible; being healed results in becoming better or well; and being transformed results in a markedly different form and state. Each of the processes described in (33) is unlikely to occur unless there is an agent which performs the devouring, revealing, healing and transforming. Thus, such acts correlate with agents. Moreover, these kinds of acts typically require agents with a particular skill or facility. That is, the acts are not accidental or random, but are contingent in some way. For instance, *devour* conjures up images of a ferocious beast, *reveal* and *transform* evoke the image of a magician or sorcerer, while *heal* connotes some kind of healer such as a medic. In short, each of the agents evoked by these terms possesses special features or abilities which enable them to bring about a relatively rapid and marked change in state. This is a pattern of concept elaboration which is not evident in the other senses associated with *time*. Accordingly, application of the Concept Elaboration Criterion supports the view that there is a distinct Agentive Sense associated with *time*.

4.5.3 *The Grammatical Criterion*

The Agentive Sense is unique in that its behaviour appears to be akin to that of a proper noun as opposed to a common noun (although see the discussion of the Measurement-system Sense in section 4.6 below). To be sure, the Agentive Sense also appears to show some grammatical features of mass nouns – notably, it cannot be pluralized. In this, the Agentive Sense behaves like the Duration Sense, notably in its 'protracted duration' and 'temporal compression' readings. However, the two Duration sub-senses have an article contrast between zero and 'the', as illustrated for 'temporal compression' in (34).

(34) (a) Time flies when you're having fun.
    (b) Looking back, the time we shared together on that dinner date
        seemed to have flown.

As the Agentive Sense has no such contrast, we can say that the Agentive Sense does not take an article, and as such cannot undergo determination by an article. In this it behaves like a proper noun (recall table 1).[18]

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[18] Note that the Agentive Sense is like the Event Sense in that it cannot be determined by an article. However, the Event Sense requires an NP modifier in subject position (e.g. *The young woman's time is approaching*), whereas the Agentive Sense does not.

One salient diagnostic of a mass noun is that it can be determined by quantifiers such as *some*. However, it appears that the Agentive Sense cannot be determined in this way:

(35)   *Some time reveals all.

This failure to co-occur with a lexeme such as *some*, combined with an inability to undergo determination by an article in subject position, suggests that the Agentive Sense behaves grammatically like a proper noun:

(36)   Time is a great healer.   Sid is a great healer.

Thus, the Agentive Sense, from the perspective of its grammatical properties, does indeed appear to be distinctive.

4.5.4 *Derivation of the Agentive Sense*

Now let's consider how the Agentive Sense may have come to be conventionalised as a distinct sense. By manifesting new events the Matrix Sense implicates agentivity. The temporal matrix 'brings' with it new events and thus correlates with – although it does not cause – a change in the world-state. Hence, the Agentive Sense may have arisen by virtue of a strengthening of this implicature of change and the role of temporality in manifesting change. This, in turn, may have given rise to the conception of time as an agent of change.

4.6 *The Measurement-system Sense* (*4*)

In this sense, *time* prompts for a lexical concept which represents a measurement system. Temporal measurement arises due to the correlation between periodic behaviour in the external world and our experience of duration. As periodic behaviour correlates with internal temporal experience, it can be employed to represent temporality. Bergson ([1922] 1999: 34) makes this point with the following example:

> If I draw my finger across a sheet of paper without looking at it, the motion I perform is, perceived from within, a continuity of consciousness … [which is to say] … duration. If I now open my eyes, I see that my finger is tracing on a sheet of paper a line that is preserved … Now, this line is divisible, measurable. In dividing and measuring it, I can then say, if it suits me, that I am dividing and measuring the duration of the motion that is tracing it out.

The point is that physical (i.e. visual and aural) symbols can be employed to represent (i.e. measure) the duration with which they are correlated. An example of this is periodicity. As some physical entities and events exhibit periodicity – a predictable cycle or rhythm of behaviour – such

entities and events are highly useful for 'measuring' the duration with which they are correlated. It is this principle which underpins the concept of a clock, for instance. Clocks serve to divide the day into equal parts, originally into hours signalled by bells (as in the canonical hours), and later into minutes and seconds with the advent of accurate pendulum clocks from 1656, and accurate spring-powered clocks from 1700 onwards (Whitrow 1988, Barnett 1998).

In the Measurement-system Sense, *time* prompts for an entity which constitutes a system for measuring duration. A temporal measurement-system is defined primarily in terms of its rate of periodicity, and in some time-measurement systems by its place of occurrence (as in time-reckoning, i.e. time as measured by clocks). In what follows I will restrict my discussion to time-reckoning. For other examples of measurement-systems lexicalised by *time* see Evans (2004: chapter 13).

(37) (a) In the 1850s Railway Time was introduced as standard.
     (b) Don't forget to move the clocks forward with the start of Summer Time.   (British English)
     (c) Eastern Standard Time is five hours behind Greenwich Mean Time.

4.6.1 *The Meaning Criterion*

In each of the examples above, *time* prompts for a system of measurement which serves to regulate and co-ordinate. Accordingly, the Measurement-system Sense adds meaning not apparent in any of the other senses. Thus, it satisfies the Meaning Criterion for counting as a distinct sense.

4.6.2 *The Concept Elaboration Criterion*

In addition to satisfying the Meaning Criterion, further evidence for the distinctiveness of the Measurement-system Sense comes from the nature of the conceptual content which serves to elaborate this lexical concept.

Time-reckoning is the practice of measuring physical periodic behaviour, which happens to correlate with our phenomenological experience of time. That is, it is the periodic behaviour of a physical entity (substance or device) which is being measured rather than the phenomenological experience itself. A typical idiomatic usage illustrating this sense is given in (38), in which a child might be being addressed by an adult.

(38)   Have you learnt to tell the time yet?

In (38) the lexeme *time* refers to a system of measuring daily intervals. Evidence that this is so comes from the use of *tell*, which elaborates the process of 'reading' a time-reckoning device. For the uninitiated or the young, learning how to 'interpret' such devices is an important part of

becoming acculturated. The periodic behaviour of 'clocks', i.e. time-reckoning devices, is presented to the time-reckoner via an interface such as a clock 'face' or a digital reading. A time-reckoning device serves to subdivide the interval of a day, based upon a localised time-measurement system such as Greenwich Mean Time, into two sets of 12 hours, or 24 hours, each hour further subdivided into 60 minutes, and each minute subdivided into 60 seconds. A time-reckoner must acquire the skill of being able to interpret the information provided by the time-reckoning device, as elaborated by the lexical concept referenced by *tell*, hence, *tell the time* in (38).

Another way in which time-reckoning can be elaborated is in terms of motion content, illustrated by (39).

(39)   The time is approaching noon.

There is a long tradition of time-reckoning in which clocks have manifested motion. One of the most salient forms of motion manifested is the motion of the clock 'hands' across a circular analogue clock or watch 'face'. As the literal motion of the hour hand towards the numeral 12 (symbolising noon) correlates with the on-going function of the measurement process, this may have motivated the elaboration of the Measurement-system Sense in terms of Motion.

Given the correlation between the actual motion associated with clocks and the phenomenological experience of time, and the kind of motion clocks most saliently manifest in order to represent their periodic behaviour (e.g. the motion of 'hands' clockwise around a 'face' towards (and past) particular calibrations), it is this which determines the nature of the motion concepts which can serve to elaborate the Measurement-system Sense. For instance, the Measurement-system Sense is typically elaborated in terms of deictic motion, as exemplified by lexemes such as *approach*, *moving towards*, etc., and as implied by the prepositions which identify the location of clock hands against a conceptual frame of 'clockwise' (as opposed to 'anti-clockwise') motion:

(40) (a) We're moving towards bed-time.
     (b) The time is approaching 11 p.m.
(41) (a) The time is (a) quarter to eight.
     (b) The time is (a) quarter past eight.

Other kinds of motion concepts cannot be productively employed, as they do not match up with the behaviour associated with the motion of hands around a clock-face. Thus, the nature of the motion content which serves to elaborate the Measurement-system Sense, while oriented with respect to a deictic centre, is distinct from the motion which elaborates the Moment and Event Senses considered earlier. In those earlier lexical concepts, the motion

which serves to elaborate is oriented, at least implicitly, with respect to an animate deictic centre, e.g. *The time for a decision is moving closer* (*to us*); *His time* [=*death*] *is approaching* (*him*). In the Measurement-system Sense, the deictic centre with respect to which the motion is oriented constitutes an inanimate landmark, typically a particular calibration on the clock 'face', as in (40b), or a particular temporal moment which metonymically represents a particular calibration with which it correlates, as in the use of *noon* in (39), which stands for the numeral 12.

4.6.3 *The Grammatical Criterion*

Grammatically, the Measurement-system Sense is distinct in that it can take either the form of a mass noun or a proper noun. No other sense associated with *time* appears to have such flexibility. For instance, while the examples in (38) and (39) are mass nouns, the examples in (37) are formally akin to proper nouns. In other words, *time* can refer either to a specific kind of measurement-system, e.g. *Eastern Standard Time* versus *Greenwich Mean Time*, or to a particular value within a measurement-system, e.g. *What time is it?* The former variant is encoded as a proper noun and the latter as a mass noun. As with the Duration Sense and its variants, the two measurement-system variants might be considered to be related sub-senses.

4.6.4 *Derivation of the Measurement-system Sense*

It is probable that the Measurement-system Sense developed from the Duration Sense by employing periodic behaviour to measure duration. As there is a correlation between periodic behaviour and a temporal interval, and as periodic behaviour is iterative in a predictable way, the iterations can be counted, yielding a physical and thus inter-subjective symbolisation of duration. In this way, periodicity can be employed to measure duration. Measurement is particularly useful for time-reckoning, and for co-ordinating other kinds of interpersonal activities such as marching, dancing, music, etc. (see Evans 2004).

4.7 *The Commodity Sense* (5)

We now turn to the final sense to be considered. *Time*, in the Commodity Sense, refers to an entity which is valuable, and hence can be exchanged, traded, acquired, etc., as the examples in (42) show.

(42) (a) Remember that time is money.

                            (Benjamin Franklin, Advice to Young Tradesmen)

(b) Time has become a scarce commodity. Everyone wants more of it.
    (*The Observer* on-line, The mad rush to save time, 3 October 1999;
                www.newsunlimited.co.uk/observer/focus/story)
(c) Self-assessment tax and finding a stakeholder pension are both
    examples of the state taxing our time.   (ibid.)
(d) They sold/bought more advertising time.

4.7.1 *The Meaning Criterion*

In the Commodity Sense, *time* prompts for an entity which is inherently
valuable. As such, *time* constitutes a commodity which can be bought and
sold. In this sense *time* prompts for the conceptualisation of an investment
which yields returns, and which can be taxed. Clearly, this sense adds
meaning not apparent in the other senses considered. After all, without
knowing that *time* is conventionally associated with a 'commodity' meaning,
there would be no way of predicting that it can be bought and sold, given
that it is an abstract entity.

4.7.2 *The Concept Elaboration Criterion*

As the central characteristic of this sense is of an entity which is valuable,
content pertaining to other entities conceived as valuable, such as com-
modities, can serve to elaborate the Commodity Sense. In this it is distinctive
from any other lexical concept lexicalised by *time*.

   A salient example of a valuable commodity is money, and just as we can
'spend', 'invest', 'borrow' and 'budget' money, so too we can 'spend',
'invest', 'borrow' and 'budget' time. Other entities which are valuable, in-
cluding resources, can also serve to elaborate the Commodity Sense. Content
relating to valuable resources such as personnel, natural resources such as
forests, water, minerals, etc., and manufactured products can all serve to
elaborate the Commodity Sense. For instance, we 'manage' people, and
other resources and commodities, and so too can 'manage' time. Prospectors
'find' oil, gold, silver, etc., and so too we can 'find' the time to do something.
Manufactured products are 'made', and so too we can 'make' time for tasks,
for others and for ourselves.

4.7.3 *The Grammatical Criterion*

In terms of the third criterion, the Commodity Sense of *time*, like the Matrix
and Duration Senses, is a mass noun. Evidence for this comes from the fact
that the Commodity Sense undergoes the operation of portion-excerpting, in
which a mass noun can be bounded. For instance, in sentences such as: *Can
you spare me some time?* the Commodity Sense is determined by the quan-
tifier *some*. It will be recalled from table 1 that determination of this kind is
one of the formal indices of a mass noun.

To see how the Commodity Sense is formally distinct from the Matrix and Duration Senses consider the examples in (43).

(43) (a) Can you spare me some of your time?
    (b) How much time do you have/can you spare?

In (43a) the Commodity Sense is being pre-modified by the attributive possessive pronoun *your*. This serves to distinguish this sense from the Matrix Sense. The Commodity Sense is distinct from the Duration Sense in that it can appear in interrogative constructions employing the phrase *how much?*, as in (43b). This sentence relates to time as a commodity or resource which can be quantified, since it is conceived, in this sense, as having physical substance, and thus, amount. This contrasts with the Duration Sense, which, in its canonical usage, relates to the duration associated with entities and events – recall the examples in (11) above. That is, the Duration Sense serves as an assessment of the temporal magnitude of events, rather than conceptualising temporality as having substance in its own right. Consequently, it would be ungrammatical to ask: **How much time did the relationship last?* (cf. *How long did the relationship last?*).

4.7.4 *Derivation of the Commodity Sense*

I suggested earlier that the Commodity Sense derives via strengthening of an implicature of finiteness whose provenance is the Duration Sense. Rather than repeating the argument here, I refer the reader to section 2.2.4 above.

5. IMPLICATIONS FOR A THEORY OF WORD-MEANING

I now briefly address two implications of the present study for a theory of word-meaning. It has been suggested to me that one objection to the present study might be that some of the senses I have argued for as being distinct might simply be due to metaphor (Dominiek Sandra, personal communication). After all, if there is a conceptual metaphor such as TIME IS SPACE, then such entrenched conceptual mappings, in the sense of Lakoff & Johnson (1980, 1999), might account for many of the senses I have argued for, without needing to assume that they constitute distinct lexical concepts stored in long-term memory. The problem with this perspective, however, is that the differential patterns of concept elaboration uncovered in the present study are not predictable by such schematic mappings. That is, positing a conceptual metaphor such as TIME IS MOTION fails to predict that a 'matrix' meaning associated with *time* collocates with very different verbs of motion, for instance, than the 'temporal compression' or 'protracted duration' variants of a 'duration' meaning. Moreover, each of these meanings patterns in a very

different way from the way in which, for instance, the 'event' meaning associated with *time* is elaborated. A further difficulty is that, according to Lakoff & Johnson, conceptual metaphors relate not to specific lexical concepts, the conventional meanings associated with lexical items, but rather to entire conceptual domains. This is problematic, since a conceptual metaphor, and its range of associated mappings, are not able to shed light on the particularities in terms of meaning or collocational patterns exhibited by the meanings conventionally associated with individual words (i.e. lexical concepts). Moreover, the fact that the meaning, elaboration and grammatical criteria converge on a view that there are distinct patterns in the semantics associated with the lexeme *time* suggests that something more specific is taking place at the level of conceptual structure. I argue in Evans (2004) that if very general conceptual mappings of the kind argued for by Lakoff & Johnson do exist at the conceptual level, they may be schemas derived from more localised mappings, or from distinct lexical concepts of the kind I have argued for here. Indeed, elaborations at this more specific level may, perhaps more plausibly, give rise to the more general abstractions in evidence in conceptual metaphor theory. From this perspective, conceptual metaphors such as the two main variants of TIME IS SPACE (i.e. TIME IS THE MOTION OF OBJECTS, and TIME IS (MOTION ALONG) A PATH) may be 'schemas' in the sense of Langacker (e.g. 1987), abstracted from more specific 'instances' (e.g. temporal lexical concepts). This then would not entail that the conceptual metaphors are more salient or more influential, conceptually, than the lexical concepts (and the localised patterns of concept elaboration) from which they are derived.

The second point I wish to address here relates to the distinction between relatively stable and relatively flexible aspects of word-meaning. As research in cognitive linguistics has progressed, it has become increasingly clear that word-senses are construed in context. That is, word-meaning is highly context-sensitive, and thus mutable (see Langacker 1987; Sinha & Kuteva 1995; Cruse 2000; Tyler & Evans 2001b, 2003; Croft & Cruse 2004; Evans 2004; Evans & Tyler 2004a, b). In this paper I have focused on those aspects of word-meaning which are relatively stable, what Cruse (e.g. 2000) terms 'autonomous'. I have introduced criteria for assessing what might count as a stable 'sense' with respect to the abstract noun *time*. However, a generalised theory of word-meaning will not only need to develop criteria for determining the stable aspects of the meanings associated with other kinds of nouns, and indeed other parts of speech, but also criteria for determining how such stable meanings are integrated in context in order to produce novel meanings. In other words, such a theory will need to attempt to understand how words mean. There have begun to be attempts to provide a model of how stability is integrated with flexibility (e.g. Pustejovsky 1995). However, future work will need additionally to integrate insights deriving from work in cognitive psychology and cognitive linguistics, including work

on the notion of frames, the encyclopaedic nature of meaning and human categorisation.

6. CONCLUSION

In this paper I have argued that the lexeme *time* constitutes a lexical category of distinct senses instantiated in semantic memory. The array of distinct senses constitutes a motivated semantic network organised with respect to a central Sanctioning Sense. The range of senses associated with *time* is derived by virtue of the interaction between the Sanctioning Sense, conceptual processing and structuring, and context. Hence, semantic representations, cognitive mechanisms, and situated language use are appealed to in accounting for the polysemy associated with *time*. The model adduced is termed principled polysemy. The conclusion which emerges, in keeping with studies in lexical semantics, most notably Lakoff (1987), Pustejovsky (1995) and Tyler & Evans (2003), is that the lexicon is not an arbitrary repository of unrelated lexemes; rather, the lexicon exhibits a significant degree of systematicity and productivity. In order to adduce what constitutes a distinct sense, I introduced three criteria: a Meaning Criterion, a Concept Elaboration Criterion and a Grammatical Criterion.

A further claim is that the lexicon exhibits significant redundancy. This position is at odds with 'single-meaning approaches' to polysemy which posit highly underspecified lexical meta-entries, such as the derivational approach of Pustejovsky (1995) or the monosemy approach of Ruhl (1989). That is, I propose that lexical items constitute highly granular categories of senses, which are encoded in semantic memory (=the lexicon). This necessitates a set of criteria for determining what counts as a distinct sense without deriving a proliferation of unwarranted senses, a criticism which has been levelled at some studies of word-meaning in cognitive linguistics (see Sandra's discussion of the 'polysemy fallacy', and criticisms of Lakoff 1987 in Tyler & Evans 2001b).

While the general position I have adopted is a consequence of assumptions that are widely supported and demonstrated within the framework of cognitive linguistics, namely that semantic structure derives from and reflects conceptual structure, most of the work on lexical polysemy within cognitive linguistics has focused on prepositions. As *time* both belongs to a different lexical class, and is a paragon example of an abstract (as opposed to a concrete spatial) concept, an examination of the polysemy of this lexeme sheds light on whether claims as to the motivated and systematic nature of the lexicon are well-founded. On the basis of the present study, it does appear that the criteria developed in Tyler & Evans (2001b, 2003) can be applied to analyse the lexeme *time*, and, moreover, that this lexeme shows the kinds of systematic relations between its senses found previously in studies of prepositions.

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