



The Meaning of khrónos in Ancient Greek: A Diachronic Perspective

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The present paper deals with the semantics of the polysemous lexeme khrónos across various stages in Ancient Greek. By endorsing a Principled Polysemy approach to lexical meaning, we investigate the emergence of the first attested meaning of khrónos and the ensuing development of its other senses to be distinguished on the grounds of a set of criteria (i.e., meaning extension, grammatical features and concept elaboration). The data used in the study stem from a tailor-made special-purpose historical corpus constructed by the authors and cover three different stages of Greek, from Homeric to the 1st c. B.C. The methodology used is both quantitative and qualitative. The findings of the corpus analysis suggest that there is an association between the diachronic stage and the occurrence of khrónos. As expected, our data show that the increase in the frequency of the lexeme under examination seems to correlate with the diffusion of its meanings, which appear to increase abruptly from the first stage to the second. Furthermore, the findings of the qualitative analysis of khrónos indicate that its earliest attested meaning is Duration from which all other meanings are historically derived. This finding lends support from a diachronic perspective to Duration being the Sanctioning Sense of khrónos in the Greek language. Finally, a crucial finding of this study is that in the early stages of Greek, unlike Modern Greek, Duration instantiated equally two distinct but parallel lexical patterns, which manifest a conceptualization of Duration either as distance or as quantity. In conceptual terms, this entails that initially Ancient Greek afforded two equivalent mental representations of Duration.

Keywords: Semantics of time, principled polysemy, semantic extension, Ancient Greek

1. Introduction

Recent findings in lexical semantics suggest that time is synchronically a polysemous lexeme that encompasses a set of distinct but related senses (see Evans 2004a, 2004b, 2005 for English; Marmaridou 2008, Haralambopoulou 2010 for Modern Greek). Viewed in the context of the Theory of Lexical Concepts and Cognitive Models (hereafter LCCM Theory; Evans 2009),

polysemy is principled; that is to say, the various senses of any polysemous lexeme are distinguished on the basis of semantic, grammatical and syntagmatic criteria and form a radial network that originates in a central, or prototypical, sense, the so-called Sanctioning Sense. Along these lines, for a sense to count as the Sanctioning Sense of a given lexeme it has to conform to the following criteria: (a) it has to be the historically earliest attested meaningⁱ; (b) it has to be the synchronically dominant sense in terms of type-frequency; (c) all other senses have to be naturally derived from it, and (d) it has to be related to lived human experience. Given that, it has been proposed that *time* in English is such a polysemous lexeme and that it consists of eight distinct but related senses, namely Duration, Moment, Instance, Event, Matrix, Agent, Measurement-system and Commodity (for a discussion of the senses see section 2). Moreover, among the various senses of *time*, it is Duration (i.e., time as a bounded interval) that conforms to all four criteria (namely, historical priority, frequency, predictability of other senses and experiential grounding) and therefore constitutes its Sanctioning Sense (Evans 2004b, pp. 44-45). Similarly, in Modern Greek (hereafter MG) eight distinct senses have also been proposed for *xrónos* ‘time’. However, MG differs from English in that it does not instantiate the Instance Sense. Instead, Marmaridou (2008) adds another meaning to the network of *xrónos*, namely the Grammatical Sense, according to which *xrónos* bears the meaning of ‘tense’. In the same spirit, Duration is also considered as the Sanctioning Sense of *xrónos* (Marmaridou 2008; Haralambopoulou 2010).

In light of this, the present paper aims to shed some light on the semantics of the Ancient Greek noun *khrónos*ⁱⁱ from a diachronic perspective and, in particular, on the emergence of the senses of *khrónos* across various stages in the early history of Greek, namely in Ancient Greek (hereafter AG). Given that the various senses of *khrónos* are expected to diffuse gradually along the history of Greek, our aims are three-fold:

- a) to test the frequency of *khrónos* along the various stages of AG since it is hypothesized that an increase in the frequency of a lexeme correlates with an increase in its meanings;
- b) to explore whether the synchronically prototypical sense (i.e., Duration) is also the historically earliest attested meaning from which all other senses are naturally derived; although assumed in the literature (see Marmaridou 2008; Haralambopoulou 2010), this has never been tested empirically in a diachronic corpus; and
- c) to compare the semantic network of *khrónos* in Ancient and Modern Greek and, more specifically, to investigate if all the synchronically attested meanings of *xrónos* are also found in AG and, in light of this, how their lexicalization evolves in time.

In doing so, we will argue in empirical grounds that the polysemy of *khrónos* historically derives from the meaning of Duration, from which all other senses have subsequently arisen. This lends further support to Duration as being the synchronically prototypical sense of *khrónos* in Greek around which a radial network is structured. Moreover, our research findings suggest that AG manifests a double lexicalization of Duration both in terms of a linear distance and quantity, unlike MG whereby the latter dominates in the semantics of

khronos. Since different patterns for lexicalizing duration correspond to distinct mental representations, this finding is particularly important since it suggests that a language may afford two different but parallel conceptualizations of one and the same concept in a certain period when two lexical patterns equally co-exist. Ultimately, however, one pattern prevails over the other, as research findings in Greek suggest.

The data on which the present study is based are derived from two general corpora of the history of Greek, namely Perseus and TLGⁱⁱⁱ. Our text sample consists of texts that belong to different genres and is divided into three stages: (a) Stage A corresponds to the 8th c. B.C. and includes the Homeric poems, as well as the works of Hesiod; (b) Stage B extends from 6th c. B.C. to 4th c. B.C. and involves the works of the three tragedians (Aeschylus, Sophocles, Euripides), Plato's *Republic*, *Timaeus* and *Cratylus* and Aristotle's *Nicomachean Ethics*; and (c) Stage C amounts to the 1st c. B.C., namely the works of Diodorus and Strabo. Moreover, in order to explore the emergence of the Grammatical Sense in Greek, we also examined the first extant grammar of Greek, namely *Ars Grammatica* by Dionysius Thrax, which belongs to the 2nd c. B.C. Along with the corpus data, the Liddell-Scott Great Dictionary of the Greek Language (1907) is also implemented as a complementary tool for determining more accurately the meanings of *khronos*.

The structure of the paper is as follows; in section 2, the basic tenets of the Principled Polysemy approach and its application in the semantics of time will be presented. Section 3 deals with the data analysis; 3.1 is concerned with a quantitative analysis of the frequency of *khronos* across the various stages of AG and 3.2 with the qualitative analysis, which comprises the three stages under examination. For every stage the senses attested in the corpus are discussed on the basis of illustrating examples and when a new sense is introduced the criteria for distinguishing between the senses are applied. Finally, a table of the senses of *khronos* in every stage of AG is given. The paper concludes in section 4 with a summary of the findings and some concluding remarks and implications for future research.

2. The Framework: Time and Principled Polysemy

In recent work in lexical semantics words are analyzed by adopting a Principled Polysemy approach (Evans 2004a, 2004b, 2005). The Principled Polysemy approach was originally developed by Tyler and Evans (2003) in order to provide an adequate analysis of the prepositional meanings in English. Evans (2004a) applied this approach to another lexical class, namely nouns. In particular, he examines the polysemy associated with the abstract noun *time*. Evans, drawing upon evidence from English, proposes an account of temporal cognition on the basis of lexical concepts and cognitive models for time (however, for a metaphor-based approach to the concept of time see Lakoff and Johnson 1980, 1999; Lakoff 1993).

Principled Polysemy emphasizes the dynamic nature of lexical concepts, as well as of meaning extension. Its basic tenets can be summarized as follows (Evans 2004a, pp. 79-81):

- a) a word has a number of distinct senses independently stored in semantic memory;
- b) these senses derive from a historically earlier sense (or senses);
- c) at the synchronic level the distinct senses can be analyzed as being related by virtue of a semantic network;
- d) the senses are organized with respect to a central sense, namely the Sanctioning sense.

A decisive role in the development of new senses is played by the mechanisms of experiential correlation and perceptual resemblance (analogy). Tight correlations in experience and the mechanism of analogy often give rise to contextually derived meanings, which can eventually become instantiated in the conceptual system as distinct concepts associated with a particular lexical form via use and pragmatic strengthening (Evans 2004a: 46-48).

In short, Principled Polysemy differs both from the homonymy and the monosemy approach, in that it claims that distinct senses are motivated (against the homonymy approach) and that there are senses which are not context-dependent uses (against the monosemy approach) (for a detailed critique see Evans 2004a: 87-91). However, not all usages constitute distinct conventionalized senses; in some cases contextual knowledge is required in order to predict the meanings derived. To avoid attributing to the word what instead belongs to the context, i.e. to avoid committing the polysemy fallacy (see Sandra 1998), Evans (2004a) proposed three criteria for determining which instance of the lexeme *time* counts as a distinct sense. Given this set of criteria (i.e. the Meaning criterion, the Grammatical criterion and the Concept Elaboration criterion), *time* is found to consist of eight distinct lexical concepts. According to the Meaning criterion, for a sense to be considered distinct it has to introduce additional meaning, not apparent in any of the other senses of *time*. The Grammatical criterion predicts that a distinct sense appears in unique grammatical constructions; in the case of *time* this applies to whether the nominal is a count noun, a mass noun or a proper noun. Finally, the Concept Elaboration criterion refers to the syntagmatic relations of the lexeme *time*, i.e. its patterns of modification and the verb phrase it collocates with. Next, we will briefly discuss all senses of *time* and their instantiations in English and MG.

2.1 Duration Sense

The Duration Sense is defined as ‘an interval bounded by two ‘boundary’ events, i.e. the beginning and ending of the interval’ (Evans 2004a, 108). It results from experiencing two or more events as being successive. Duration experientially correlates with motion, given that motion (i.e. the translocation of an entity from a starting point A to a final point B) takes some time to happen. Consequently, it is no surprise that the Duration Sense collocates with motion verbs, as evidenced in examples (1) – (4):

- (1) The relationship lasted **a long/ short time**.
- (2) It was **some time** ago that they met. (from Evans 2004b: 48)

- (3) Pérase polis/ líγos xrónos apó tin teleftéa sinádisi.
(A long/ a short (literally: much/ little) time has passed since our last meeting.)
- (4) Me to pérasma tu xrónu to théma ksehástice.
(With the passage of time the issue was forgotten.)

Grammatically, it seems to be a mass noun both in English and MG since it cannot be pluralized but it can be preceded by modifiers and quantifiers. As already noted in the introduction, there is converging linguistic evidence that points to Duration as the central sense around which the semantic network is structured (Evans 2004a: 96-98).

2.2 Moment Sense

Given the Moment Sense, *time* amounts to a punctual, discrete point of an interval, without reference to its duration and therefore it differs from the Duration Sense (Evans 2004b: 53). It necessarily has a deictic centre and in MG it is preceded by the definite article and is often modified by a genitive NP, as exemplified in (7):

- (5) The time for a decision has come.
- (6) Doctors had warned that Daniel... could die at any time. (from Evans 2004b: 48)
- (7) O xrónos ton eksetáseon plisiázi. (from Marmaridou 2008: 65)
(The time of the exams is approaching.)

2.3 Instance Sense

In this sense, *time* refers to a particular instance of an event, process or state, and therefore it can be enumerated, as in *The horse managed to clear the jump **five times** in a row* (Evans 2004b: 55-56). In MG, however, this sense is not available.

2.4 Event Sense

Under this sense, *time* relates to boundary events, i.e. events having a beginning and an ending. The Event Sense, like the Moment Sense, is elaborated in terms of deictic motion. In MG, in particular, it is preceded by the definite article and is often modified by a genitive NP, as exemplified in (9) and (10):

- (8) ...life was hard for the poor **during the Victorian times**. (from Evans 2004a: 139)
- (9) O xrónos tis eksétasis arxízi apó tóra.
(The time of the exam begins from now on.)
- (10) O xrónos tu taksiðjú íne ðío 24ora. (from Marmaridou 2008: 64-65)

(The time of the journey is two days.)

However, the Event Sense differs from the Moment Sense in that the latter does not collocate with verbs denoting a beginning or an end. Under the Event Sense, *xrónos* stands for the event it denotes (e.g. *o xrónos tu taksiðjú* ‘the time of the journey’ instead of *to taksiði* ‘the journey’).

The senses outlined so far are considered to be primary lexical concepts, i.e. core senses, contrary to the following ones which are thought of as secondary lexical concepts.

2.5 Matrix Sense

The Matrix Sense conceptualizes *time* as an unbounded entity which flows infinitely and is independent of any particular events (Evans 2004b: 59), as instantiated below:

- (11) Time flows/ runs/ goes on forever.
- (12) The unending elapse of time. (from Evans 2004b: 59)
- (13) *O xrónos tréçi.*
(Time flies (literally: runs).)
- (14) *O xrónos févvi ce ðen stamatá.* (from Marmaridou 2008: 62)
(Time goes on and never stops.)

In terms of concept elaboration, the Matrix Sense collocates with motion verbs, however it differs from the Duration Sense in that no deictic motion is assumed in the Matrix Sense. Grammatically, it is a mass noun and cannot be preceded by the indefinite article or certain quantifiers. In MG, it is always preceded by the definite article which is a marker of reference *par excellence* (Marmaridou 2008: 63).

2.6 Agentive Sense

As illustrated below, *time* may also appear as an agent, especially a human agent, who has the ability to bring about a particular change to an entity (Evans 2004b: 63):

- (15) Time, the avenger! (Lord Byron)
- (16) Time has aged me. (from Evans 2004b: 63)
- (17) *O xrónos epulóni plijés, íne o kalíteros jatrós.*
(Time heals all wounds, he is the best healer.)
- (18) *O xrónos ðen se periméni.* (from Marmaridou 2008: 63)
(Time does not wait for you.)

In MG, the Agentive Sense is always preceded by the definite article, which indicates that grammatically it is a proper noun.

2.7 Measurement-system Sense

The Measurement-system Sense is clearly illustrated in MG whereby *xrónos* also bears the meaning of ‘year’, i.e. the bounded interval of 12 months, as exemplified in (19) and (20):

(19) *O xrónos pu pérase ítan jemátos ekplíksis.*
(Last year was full of surprises.)

(20) *Ého na ton ðo (káti) xrónja.* (from Marmaridou 2008: 66)
(I haven’t seen him for (some) years.)

Grammatically, this sense can be pluralized, whereas syntagmatically it can be modified by quantifiers and numerics. The Measurement-system Sense has an additional meaning in MG that refers to age (e.g. *o jos tus íne ðéka xrónon/xronón* ‘their son is ten years old’).

2.8 Commodity Sense

Under the Commodity Sense, *time* prompts for a conceptualization as a valuable entity, especially time that can be used, limited, managed, invested, exchanged etc. (Evans 2004b: 68-69).

(21) Remember that **time is money**.

(22) **She’s invested a lot of time** in that relationship. (from Evans 2004a: 177)

(23) *Éçis xróno ja kafé?*
(Do you have time for a coffee?)

(24) *Me tis anoisíes su xásame polítimo xróno.* (from Marmaridou 2008: 64)
(With your nonsense we lost some valuable time.)

This sense collocates with verbs that prototypically apply to resources and money, and in terms of its grammatical constructions it may be accompanied by the definite article, quantifiers, possessive modifiers, sentence complements etc. (Marmaridou 2008: 64).

Finally, Marmaridou (2008: 67) adds one more meaning of *xrónos* in MG, that of ‘tense’, which she dubs the ‘Grammatical Sense’ (e.g. *i xróni tu rímatos* ‘the tenses of the verb’, *parelθodikós/ melodikós xrónos* ‘past/ future tense’ etc.).

3. Data Analysis

3.1 Quantitative Analysis

The investigation of the corpus employed in this study shows that in the course of time the number of the meanings of *khrónos* increases abruptly from the first to the second period (only 1 in Stage A and 6 in Stage B) and it is stabilized, as expected, in the passing from Stage B to Stage C (6 senses in

Stage C)^{iv}. Figure 1 presents the frequencies of the lexeme *khronos* in the text sample. The relevant finding is the increase in the frequency of the lexeme in the two later diachronic stages. This lexeme occurs at a frequency of 2‰ in Stage A ($n = 215198$), but it occurs at a higher frequency level in the second stage (10, 7‰, $n = 1117989$). The third stage manifests a slight increase in the frequency (13, 56‰, $n = 336628$). A chi-square test on these frequencies revealed that the differences between the first two stages (A & B) and between Stage B and Stage C (B & C) are statistically significant (A & B: $\chi^2(1) = 142,907$, $p < .001$; B & C: $\chi^2(1) = 53,888$, $p < .001$). We take a highly significant result, which indicates that there is an association between the diachronic stage and the times that the lexeme occurs. What is meant by an association is that the proportion of the instances of the lexeme that occur in the examined texts to the proportion of the instances of the lexeme that did not occur is significantly different. Therefore, we may conclude that the variable STAGE influences the variable FREQUENCY.

As the type-frequency increases (i.e. for example *time* collocates with more verbs), the token frequency (i.e. the frequency of occurrence of the lexeme *time* in texts) increases too. The examination of the texts from Stage B and C reveals that the lexeme *khronos* expands the range of contexts in which it can occur. For example, it can collocate with motion verbs and with verbs indicating a change of state in another person (e.g., *didáskei*, *therapeúei*).

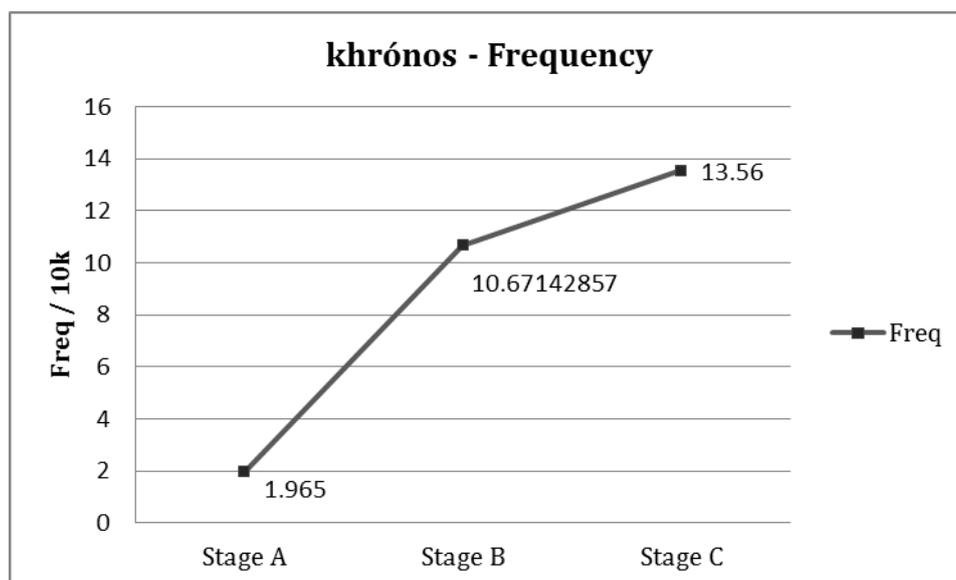


Figure 1. Frequency of *khronos* in the three examined stages

3.2 Qualitative Analysis

This section sets out the meanings of the lexeme *khronos* diachronically. All synchronic meanings of *khronos* are attested in AG, apart from the Measurement-system meaning which is expected to appear later in the history of Greek.

3.2.1 Stage A

The Duration Sense constitutes the earliest attested meaning and, what is more, the only one in Homer and Hesiod, which lends evidence to Duration being the Sanctioning Sense of *khrónos*. This linguistic type of evidence could be a useful tool for establishing the core sense in MG (see Marmaridou 2008), since the historically earliest sense is the best candidate for the Sanctioning Sense. Moreover, the subsequent senses (i.e. those that occur in later stages) naturally derive from the Duration Sense via cognitive mechanisms (cf. Evans 2004a; Marmaridou 2008). The sense in question plays an important role in giving rise to the development of new meanings. This fact further strengthens the view that Duration is the prototypical sense of *khrónos*. Finally, the fact that *khrónos* more frequently denotes Duration than any other sense at various diachronic stages corroborates our semantic description which attributes prototypical status to the Duration sense.^{v, vi}

It is crucial that languages differ with respect to the way they conceptualize time as duration (Casasanto *et al.* 2004); some languages show a preference for distance metaphors in order to refer to time (e.g., English, Indonesian), and some others for quantity metaphors (e.g., Greek, Spanish). For example, in English it is natural to talk about a *long time*, borrowing the structure and vocabulary of a spatial expression like a *long rope*, whereas in MG we typically speak of *polús xrónos* ‘much time’, mirroring the structure and vocabulary of a quantity expression like *polú aláti* ‘much salt’. In AG, however, time under the Duration Sense is conceptualized both as distance and as quantity (i.e., uni-dimensional and three-dimensional space) in rather equal terms. To illustrate both patterns, consider the examples below:^{vii}

(25) andròs apoikhoménoio **polùn khrónon**. (Homer, Od. 21. 68-70)
(since its master has long been gone.)^{viii}

(26) édē gār **dēròn^{ix} khrónon** allélōn apékhonta. (Homer, Il. 14. 206)
(since now for a long time’s space they hold aloof one from the other.)

Example (25) is elaborated in terms of what we refer to as quantity content, as suggested by the use of adjectives such as *much*. This is opposed to (26), which is termed length content following Evans (2005: 51), as evidenced by the use of adjectives such as *long*. Our examination of the Homeric poems suggests that the two patterns for lexicalizing Duration are equally pervasive in this stage (cf. Casasanto *et al.* 2004). However, given that in MG the quantity-based pattern dominates the semantic network of *xrónos*, evidence from AG suggests that it is possible for a language to evolve from a language type that uses both patterns for the lexicalization of *time* to a language type in which one strategy prevails over the other. This points to a challenging issue to be further explored in terms of the frequency of each pattern in various diachronic stages, as well as with respect to the factors motivating its emergence (i.e., linguistic vs. cultural).

The Duration Sense of *khrónos* can be found not only in collocations with adjectives like *polùn* and *dēron*, but also either in bare accusative, as in (27), or in prepositional phrases which govern the accusative, as in (28).

(27) all' epikélsantas meînai **khrónon** eis hó ke nautéōn thumos epotrúnēi kai epipneúsōsin aētai. (Homer, Od. 9. 138-139)
 (but one may beach one's ship and wait until the sailors' minds bid them put out, and the breezes blow fair.)

(28) eíē mèn nûn nôin **epì khrónon** ēmèn edōdē ēdè méthu glukeròn klisíēs éntosthen eoûsi. (Homer, Od. 14.193-194)
 (Would that now we two might have food and sweet wine for the while, to feast on in quiet here in thy hut.)

In (27) the accusative in the noun *khrónos* denotes duration over a stretch of time,^x and the same sense is expressed by means of the PP *epì hrónon* in (28) (see, e.g., Luraghi 2003: 307).

3.2.2 Stage B

During the second period of our corpus, the Duration Sense is still present and, what is more, stabilized in its lexicalization either as a linear distance or in terms of quantity, as shown in examples (29) and (30) respectively:

(29) kai toûd' apallagéntos **en khrónoī makrói**. (Soph. Ant. 422)
 (when, after a long while, this storm had passed.)

(30) ék te tôn toioútōn ouk àn génoito pálin eudaímōn **en holígōi khrónoī**. (Aristot. Nic. Eth. 1101a)
 (nor after such disasters will he become happy again quickly.)

Interestingly, *khrónos* under the Duration Sense collocates for the first time with motion verbs. In some occurrences, *khrónos* appears in subject position, which also seems to be an innovation of the second diachronic stage of our sample. Consider (31), whereby *khrónou* is the grammatical subject of the motion verb's participle *epióntos* ('proceeding'):

(31) kai kathistōntai mállon **epióntos toû khrónou**. (Plat. Tim. 44b)
 (becoming more stable as time proceeds.)

Moreover, in Stage B *khrónos* is modified by the quantifier *tina* 'some' and therefore we may safely assume that under the Duration Sense *khrónos* behaves like a mass noun, as in (32):

(32) hoi Athēnaíoi anagagómēnoi kai naumakhésantes hupèr toû liménos tôn Eretriōn **olígon mén tina khrónon** hómōs kai antéskhon. (Thuc., Hist., 8.95.5)
 (the Athenians, drawn out by this device and fighting before the haven of Eretria, made resistance nevertheless for a while.)

Note that all instantiations of *khrónos* under the Duration Sense appear in rather stereotypical, so-called entrenched constructions like in Stage A. Subsequently, the Duration Sense gives rise to the Matrix Sense, which yields a considerable number of instantiations:

- (33) *matheîn thesmoùs emoùs pólin te pâsan eis tôn aianē khrónon.* (Aesch. Eum. 571-572)
 ([it is good...] for my ordinances to be learned, by the whole city for everlasting time.)

In this example, *khrónos* prompts for an entity which is conceived of as having an infinite elapse. The adjective *aianê* is consistent with what the Matrix Sense expresses, i.e. the conceptualization of time as an unbounded entity which flows infinitely. Surprisingly, under the same sense, we found a single occurrence of time being construed as a flowing river, as evidenced in (34):

- (34) *houpirréōn gàr timióteros khrónos éstai polítais toîsde.* (Aesch. Eum. 853-854)
 (for time, flowing on, will bring greater honor to these citizens.)

From the Matrix Sense a new sense emerges, namely the Agentive Sense, which is attested almost exclusively in nominative case, i.e. in subject position. Similarly to MG, the Agentive Sense appears to be behaving like a proper noun. This is exemplified below:

- (35) *khrónos kathaîrei pánta gēraskōn homoû.* (Aesch. Eum. 286)
 (Time purges all things, aging with them.)

During this period, there are a few rare instances of the Moment Sense. This usage of *time* is evidenced in the following example in which *khrónos* modified by *tetagnênōi* prompts for a conceptualization of a discrete or punctual point or moment without reference to its duration.

- (36) *mēlá t' euthenoûnta Pân ksùn diploîsin embrúois tréphoi khrónōi tetagnênōi.* (Aesch. Eum. 943-945)
 (may the earth nurture the thriving flocks with twin offspring at the appointed time.)

Regarding its grammatical properties, the Moment Sense behaves like a count noun, since it can be pluralized (consider *katá tinas khrónous taktoūs*, [Arist. H.A. 599^b]).

At this stage, the Event Sense appears for the first time, albeit rarely, in constructions like the following one, which prompts for a conceptualization of time as a bounded event. The use of the preposition *en* ('in'), which conceptualizes space as a container with distinct boundaries, further enhances the notion of boundedness:

- (37) *oudèn eidótes oúte tôn têide oúte tôn par' humîn, hósá ên en toîs palaióis khrónois.* (Plat. Tim. 23b)
 (with no knowledge of all that happened in old times in this land or in your own.)

The Event Sense is formalized as a count noun, as suggested by its ability to be pluralized (i.e. *toîs palaióis khrónois*).

Surprisingly, during this period two unique instantiations of the Commodity Sense are attested:

(38) *tōi khrónōi dè kerdaneîs*. (Eur. Orest. 789)
(and you will gain time.)

(39) *mêter, ou lógōn éth' hagón, all' analoútai khrónos* houn mésōi mátēn, peraínei d' oudèn hē prothumía. (Eur. Phoen. 588-589)
(mother, it is no longer a contest of words; the time we still delay is idle waste.)

Therefore, evidence suggests that the conceptualization of time as a valuable resource or as money is not a loan translation from English and French, as it has been proposed for the derivation of this sense of *khrónos* in MG (Babinotis 2002). Note that it may not be a coincidence that the new sense first appears in a poetic text as a novel metaphor, i.e. as a contextually derived meaning, that later expands to other environments. Grammatically, the Commodity Sense of *khrónos* seems to be a mass noun, since we did not find any evidence of *khrónos* being pluralized under this sense.

3.2.3 Stage C

During Stage C, almost all previously attested senses of *khrónos* are repeated manifesting similar lexical patterns and therefore it can be quite safely assumed that they get stabilized in its semantic network. E.g., similarly to the previous stage, the Duration Sense seems to collocate with motion verbs as shown in (40):

(40) *toû dè khrónou diekselthóntos*. (Diod. Libr. 11.40.3)
(but time had passed.)

Moreover, the two parallel patterns for lexicalizing Duration are attested, namely as distance and as quantity, as exemplified below:

(41) *kai dè kai légetai hupò tôn hústeron epì khrónon sukhnòn* hē oíkēsis tôn Ainiánōn en tōi Dōtíōi genésthai pedíōi. (Strab. Geogr. 9.5.22)
(and in fact we are told by the writers of later times that for a long time the habitation of the Aenianians was in the Dotian Plain.)

(42) *epì polùn khrónon isórropos ên hē mákhē*. (Diod. Libr. 11.7.2)
(for a considerable time the battle was equally balanced.)

Interestingly, the Matrix Sense is not attested in Stage C in the corpus under examination. A tentative explanation relates to the genre of texts that were included in our corpus of Stage C, namely history and geography, which would not favour the conceptualization of time as an abstract, unbounded entity.

Unlike Matrix, the Agentive Sense is regularly attested in examples like those given under (43) and (44):

- (43) hápasi gàr sunephónēsen **ho khrónos**. (Diod. Libr. 9.21.1)
(for all these writers agree as to the date.)
- (44) hoútō sunéstēken hōste mēdemían hautōi phthorán te kai diálusin gennēsai **tòn poluetē khrónon**. (Diod. Libr. 10.10.2)
(which is of such a nature that the long passage of time works it no damage or destruction.)

The Moment sense is scarcely found in Stage C as in (45), where *khronois* refers to a punctual point in the time-span:

- (45) phóros d' ên tò epitrépein **taktoís tisi khronois** tēn khóran katatrékhein kai phéresthai leían. (Strab. Geogr. 11.8.3)
(and the tribute was to allow the invaders at certain appointed times to overrun the country and carry off booty.)

Instead, construals of time as bounded events are widely found in the historical texts of Diodorus, as exemplified in (46):

- (46) istéon hóti ho men Sólōn egéneto **epì tôn khronōn tôn turánnōn** en taís Athénais prò tôn Persikōn khronōn. (Diod. Libr. 9.17.1)
(it should be known that Solon lived in Athens in the period of the tyrants before the Persian wars.)

Interestingly, here *khronos* can be followed by a modifying expression in the genitive case, as is the case in MG (cf. *o xronos ton tiranon* 'the time of the tyrants').

Time is also uniquely instantiated as an entity that can be given, as in (47), therefore evoking the Commodity Sense:

- (47) pántōn dè suneudokēsántōn, kai **dothéntos hikanou khronou** eis tēn paraskeuēn tēs kríseōs, ho mēn Themistoklēs mathōn tēn Persída diálekton, kai taútēi khresámenos katà tēn apologían, apelíthi tôn egklímátōn. (Diod. Libr. 11.57.5)
(this decision was approved by all, and since a considerable time was given to make the preparations for the trial, Themistocles meanwhile learned the Persian language, and using it in his defence was acquitted of the charges.)

The Commodity Sense is not widely repeated in Stage C and this observation corroborates the idea that it is not yet entrenched in the semantic network of time in Greek.

Finally, during this stage, the Grammatical Sense appears for the first time in the work of Dionysius Thrax *Ars Grammatica*. Following Marmaridou (2008: 67), we suggest that the Grammatical Sense is derived metonymically from the Duration Sense. With respect to its grammatical features, this sense can be pluralized, as shown in the following example:

- (48) Parépetai dè tōi hrémati oktō, egklíseis, diathéseis, eídē, skhémata, arithmoí, prósōpa, **khrónoi**, suzugíai. [...] **Khrónoi** treís, enestós, parelēluthós, méllōn. (Dion., Ars Gram.)
 (the verb is characterized by eight features: moods, voices, types, forms, numbers, persons, tenses, conjugations. [...] There are three tenses: present, past, future.)

The Table below summarizes the occurrence of every sense of *khrónos* across the various stages of AG:

	Stage A	Stage B	Stage C
Duration	✓	✓	✓
Moment	–	✓	✓
Event	–	✓	✓
Matrix	–	✓	–
Agentive	–	✓	✓
Commodity	–	✓	✓
Measurement-system	–	–	–
Grammatical	–	–	✓

Table 1. The senses of *khrónos* in the diachrony of AG.

4. Conclusions

The present paper was concerned with the semantics of the polysemous lexeme *khrónos* across various stages in AG. More specifically, by endorsing a Principled Polysemy approach to lexical meaning, we embarked on investigating the emergence of the first attested meaning of *khrónos* and the ensuing development of its other senses. In doing so, we aimed to shed some light on the diachrony of *khrónos* along three stages, not previously explored in Greek. At the same time, the synchronic semantics of *khrónos* in MG would also be highlighted by providing historical evidence with respect to determining the Sanctioning Sense (i.e., the prototypical sense) of *khrónos* in Greek. Thus, in more general terms, the present paper points to a line of research in semantics in which the diachronic investigation of lexical concepts complements their synchronic study and vice versa.

To begin with, a quantitative analysis of the frequency of *khrónos* across the three examined stages of AG revealed an association between the diachronic stage and the occurrence of the lexeme under examination. In particular, *khrónos* was initially found to occur rather sparsely and in limited contexts whereas its instantiation seems to increase abruptly from Stage A to Stage B and it eventually reaches its peak in Stage C. Thus, as hypothesized, the increase in the frequency of the lexeme *khrónos* seems to correlate with the

diffusion of its meanings. That is to say, the more instances the lexeme *khronos* has, the more meanings it seems to instantiate.

Moreover, the qualitative analysis of *khronos* gave rise to a number of important findings. First, as expected, the earliest attested meaning of *khronos* is Duration from which all other meanings are historically derived. More precisely, during Stage A, namely in the works of Homer and Hesiod, Duration is the only attested meaning of *khronos* and therefore there is strong and compelling evidence in corroboration of Duration as the first sense of *khronos*. This finding lends support from a diachronic perspective to Duration being the Sanctioning Sense of *khronos* in the Greek language. This also corroborates the experiential grounding of linguistic meaning given that duration (i.e., the succession of bounded intervals) is considered to be the primary experience of time by humans (see Bergson 1960 on 'durée'). In the following stage (i.e., Stage B), the number of the attested meanings of *khronos* increases abruptly from only one in Stage A (i.e., Duration) to six, namely Duration, Moment, Event, Matrix, Agent and Commodity. First, in this stage, Duration is attested not only with the same patterns as in Stage A but new ones are introduced along with previous ones. Moreover, all primary senses of *khronos* in Greek are attested, as well as three secondary lexical concepts. Especially the Commodity Sense is surprisingly found in two unique instantiations in dramatic poetry. Given that a corresponding conceptualization of time as a valuable, non-renewable resource is hard to assume in this period, it seems more plausible that such a construal of time emerged as a novel, creative expression in the context of poetry. Finally, the Measurement-system Sense is not attested in our corpus. Although a formal system of dividing time into calendric units such as days, months, years etc. is already available (consider, e.g., *tòn poluetê khronon* 'time lasting many years'), the lexeme *khronos* does not seem to have acquired such a sense. Last, in Stage C, all previously attested senses are repeated and therefore it can be quite safely assumed that they get stabilized in the semantic network of *khronos*. The only sense not found in our corpus in this period is Matrix. However, this finding should not be viewed as evidence that the Matrix Sense does not belong to the semantics of *khronos* at the time. Rather, it may relate to the kind of texts included in the corpus during this stage, namely geography and history, which do not favour a conceptualization of time as an ever-flowing, unbounded entity. Instead, during this period the Grammatical Sense is to be found in the work of Dionysius Thrax, who attempted for the first time to put forward a grammatical system of Greek. All in all, the various meanings of *khronos* seem to be naturally derived from the Duration Sense, as predicted in LCCM theory. Figure 2 represents the radial structure of *khronos* as proposed in our analysis (cf. Evans 2004a: 120; Marmaridou 2008: 63):

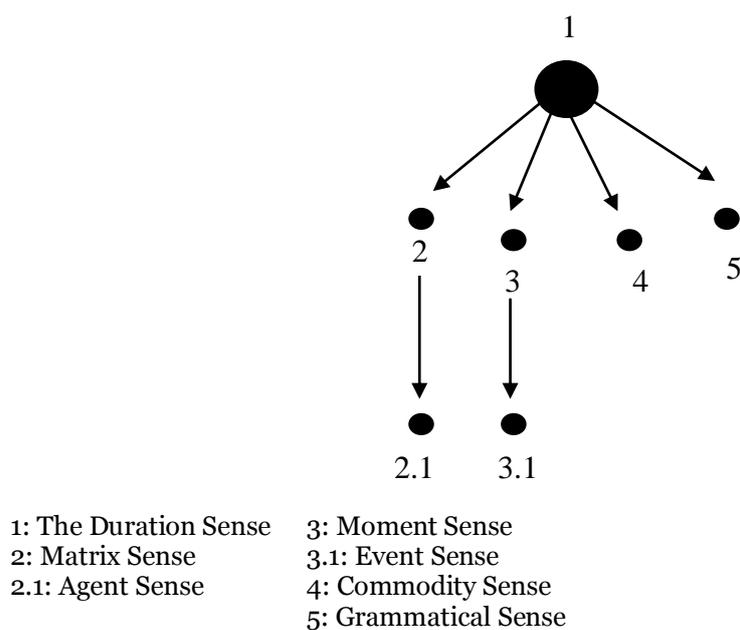


Figure 2. The radial structure of *khrónos* in AG.

Finally, a far-reaching finding of this study is that in the early stages of Greek, unlike MG, Duration instantiated equally two distinct but parallel lexical patterns, which manifest a conceptualization of Duration either as distance or as quantity. In conceptual terms, this entails that initially AG afforded two equivalent mental representations of Duration. However, evidence from the following stages in the AG corpus (i.e., Stage B and C) suggests that from 6th c. B.C. and thereafter the quantity-based pattern prevailed over the distance-based in terms of frequency, although a more thorough quantitative analysis is definitely called for. Both patterns are grounded on primary bodily experiences; the distance pattern derives from the correlation between time and the distance covered when traversing a path in the horizontal axis, whereas the quantity pattern originates in the correlation between time and the accumulation of a substance in the vertical axis. However, as Yu points out (1998: 43), “[b]odily experience can only tell what are possible metaphors. Whether these potential metaphors are actually selected in a given culture is largely dependent upon the cultural models shared by the individuals living in this culture”. Therefore, our intuition is that the predominance of the quantity pattern in the conceptualization of Duration over the history of Greek is probably a matter of cultural, rather than purely linguistic, motivation. Certainly, the issue calls for further research. Thus, in order to further explore the double pattern of lexicalizing Duration in AG, we suggest that synonymous lexemes of *khrónos* such as *hóra* ‘time of day, interval or lapse of time’ and *kairòs* ‘exact or critical time, season’ should be also investigated from a diachronic perspective.

Notes

- i For an alternative view on the diachronic criterion in polysemy networks see Michaelis (1996).
- ii The orthographic representation of the word is the same in both MG and AG, namely *χρόνος*. However, the pronunciation differs; in AG, it was pronounced with an aspirated plosive [kh] (*khrónos*), and in MG, it is pronounced with a fricative [x] (*xrónos*).
- iii Perseus: <http://www.perseus.tufts.edu/hopper/> (last accessed December 2010); TLG: <http://www.tlg.uci.edu/> (last accessed December 2010).
- iv The quantitative analysis is based on the Perseus corpus.
- v See Geeraerts (1997: 35, 39) for the role of frequency as a decisive factor for determining prototypicality in diachronic semantics.
- vi This finding relies on a general overview of the data. We did not measure the exact frequencies of the attested senses in the Greek diachrony.
- vii Compare in MG: *polús xrónos* (= much time) and *?makrúς xrónos* (= long time).
- viii Translations are mostly taken from the corpus of Perseus and from Loeb edition.
- ix The sense of *dēròn* in AG is that of 'long'.
- x Cf. the spatial uses of the accusative of extent (Smyth 1920, §1581).

Abbreviations

Ant.	Antigone	Il.	Ilias
Arist.	Aristotle	Libr.	Library
Ars Gram.	Ars Grammatica	Nic. Eth.	Nicomachean Ethics
Aesch.	Aeschylus	Od.	Odyssey
Diod.	Diodorus Siculus	Or.	Orestes
Dion.	Dionysius Thrax	Pl.	Plato
Eum.	Eumenides	Phoen.	Phoenissae
Eur.	Euripides	Soph.	Sophocles
Geogr.	Geography	Strab.	Strabo
H.A.	Historia Animalium	Thuc.	Thucydides
Hist.	Historiae	Tim.	Timaeus
Hom.	Homer		

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