

METAPHOR-BASED CLUSTER MODELS AND CONCEPTUAL INTERACTION: THE CASE OF 'TIME'¹

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Lakoff (1987) put forward the notion of cluster model in order to account for certain concepts which cannot be defined in terms of necessary and sufficient conditions. According to Lakoff (1987: 74), a number of propositional cognitive models may be combined to form a complex cluster that is 'psychologically more basic than the models taken individually'. Nevertheless, in spite of its relevance for the theory of knowledge organisation, the notion of cluster models has not been developed much further (cf. Taylor 1995: 86-87). Cluster models have been regarded as a matter of propositional knowledge. This paper argues for the existence of metaphorical cluster models. We study the concept of 'time' as a clear case of this kind of model. It is argued that, unlike propositional cluster models, those based on metaphors neither function as a source of prototype effects, nor give rise to radial extensions. We further note that the converging metaphorical models are particularly sensitive to involvement in complex types of conceptual interaction with other kinds of models, whether metaphorical, metonymic, image-schematic, or propositional.

1. INTRODUCTION

Over a decade ago, George Lakoff (1987) provided evidence to support the fact that some concepts cannot be defined in terms of necessary and sufficient conditions. He illustrated his views by analysing some notions, like radial categories, stereotypes, and what he called cluster models. A cluster model is a convergence of idealised propositional cognitive models or ICMs. A clear case, according to Lakoff, is the notion of 'mother' which he explains in terms of the convergence of five models, the birth, genetic, nurturance, marital, and genealogical models, each of which is the basis of the different extended senses of 'mother'.

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The existence of cluster models as a principle of knowledge organisation has since been generally taken for granted in the Cognitive Linguistics community (for critical views, however, see Ruiz de Mendoza 1996, and Santibáñez 1999), although barely elaborated on. In the present paper, it is argued that the notion of cluster model should be further refined and extended to include those cases in which the mental structures that converge are metaphorical instead of propositional. This proposal finds preliminary support in the description of the cognitive structure of 'time'. As has already been noted in Lakoff and Johnson (1980: ch. 2), Lakoff (1987: 209-10), and Lakoff and Johnson (1999:137-ff), our understanding of this abstract concept is based on a number of metaphorical mappings which have other concrete notions and/or image schemas as their source domains.² We shall argue that the converging metaphorical models may be additionally organised in hierarchies of dependency. Thus, we propose the existence of a cluster including four generic metaphors (TIME-IS-SPACE, TIME-IS-AN-OBJECT, TIME-IS-A-CONTAINER, and TIME-IS-A-FORCE), each of which may include more specific mappings. By way of illustration, the generic TIME-IS-SPACE metaphor comprises at least three specific subtypes, namely, TIME-IS-A-LOCATION, TIME-IS A-PATH, and TIME-IS-AN-AREA.

Our proposal of metaphor-based cluster models is complementary to the one made by Lakoff (1987) in relation to proposition-based clusters. The analysis of our data reveals two major differences between propositional and metaphorical cluster models. In those cases in which the converging models are metaphorical, (1) it is impossible to find further extended senses based on each of the models which make up the cluster and (2) the cluster is not a source of prototype effects.

Moreover, we find that it is usually the case that the metaphors which underlie the conceptualisation of 'time' cannot on their own explain the meaning of certain common expressions like *She can't keep up with the times*. In this example, we find 'time' conceptualised metaphorically as a moving object. This metaphorical mapping alone, however, does not account for the presence of the plural form 'times' rather than the singular 'time', and it does not explain why the phrasal verb 'to keep up with', which conveys the idea of 'competition', is used by the speaker. Following and elaborating on the proposals found in Ruiz de Mendoza (1997, 1999a), we attempt to provide an explanation of how a full understanding of those expressions is reached in terms of the *conceptual interaction* of more than one type of mental construct (i.e. metaphors, metonymies, image-schemas, and/or propositional models). By way of illustration, in the example above, the use of the plural form 'times' is possible due to the existence of a further underlying metonymy of the MASS-FOR-COLLECTION type, and the phrasal verb 'to keep up with' is the linguistic exploitation of an

² Studies on the metaphorical basis of 'time' have also been carried out from a typological perspective. Hapelmath (1997) shows that the metaphorical understanding of temporal notions in terms of 'space' is extremely widespread in the world's languages. He draws cross-linguistic evidence from the analysis of NP-based time adverbials in a sample of 53 languages. In a similar vein, Alverson's (1994) work shows how space functions as a source domain for metaphors of time in four languages as diverse as English, Mandarin, Hindi, and Sesotho.

additional metaphor such as TIME-IS-A-COMPETITOR IN A RACE, which is a specific subcase of the generic metaphor TIME-IS-A-MOVING OBJECT.³

The paper is organised as follows. Section 2 includes a description of time as a complex cluster of converging metaphorical models. The analysis is based on data drawn from a corpus of over 200 expressions of time. In section 3, the main differences between propositional and metaphorical cluster models are presented and discussed. Finally, section 4 includes several instances of conceptual interaction in the expression of time.

2. THE COGNITIVE STRUCTURE OF 'TIME': A METAPHOR-BASED CLUSTER MODEL

The present section is based on the analysis of a sample of over 200 citations containing expressions of time, all of which have been extracted from the British National Corpus (henceforth BNC).⁴ The analysis of this collection of examples reveals that the understanding of time very often involves a metaphorical mapping which has either an image-schema or some concrete notion as its source domain. Some of the conceptual metaphors involved in the conceptualisation of time have already been identified and may be found in the index of metaphors compiled at the Cognitive Science Institute of the University of Berkeley.⁵ They are listed below together with some examples of linguistic expressions which exploit the underlying metaphors:

- Time is something moving towards you. E.g., *Three o'clock is approaching.*
- Time is a changer. E.g., *Time will make you forget.*
- Time is a pursuer. E.g., *Time will catch up with him.*
- Time is a landscape we move through. E.g., *Thanksgiving is looming on the horizon.*
- Time is money. E.g., *She spends her time unwisely.*
- Time is a resource. E.g., *We are almost out of time.*
- Time is a container. E.g., *He did it in three minutes.*

More recently, Lakoff and Johnson (1999: 137-ff) have put forward a metaphor system for time in English, which consists of three basic metaphors:

1. THE TIME ORIENTATION METAPHOR

Location of the observer → The present

Space in front of the observer → The future

Space behind the observer → The past

³ The metaphor TIME-IS-A-COMPETITOR underlies other expressions like I am ahead/behind of schedule and He is ahead of his time, as shown in Fauconnier and Turner (1994).

⁴ For a discussion of the advantages and disadvantages of corpus-based studies of metaphor, see Deignan (1999).

⁵ The index of metaphors can be accessed through the Internet at the Metaphor HomePage (<http://cogsci.berkeley.edu/metaphors>).

E.g., *He has a great future in front of him. That's all behind us now*, etc.

2. THE MOVING TIME METAPHOR

Objects → Times

The motion of objects past the observer → The 'passage' of time

E.g., *The time will come when there will be no more typewriters. The deadline is approaching*, etc.

3. THE MOVING OBSERVER METAPHOR

Locations on observer's path of motion → Times

Motion of the observer → The 'passage' of time

Distance moved by the observer → Amount of time 'passed'

E.g., *We're halfway though September. We've reached June already*, etc.

In addition to these three basic metaphors, Lakoff and Johnson (1999: 158, 161-ff) also refer to some other isolated metaphors of time such as *time is a resource*, *time is money*, and *time is a flowing river*.

The analysis of our collection of examples reveals that the number of metaphors underlying the concept of time is actually bigger than that included in the aforementioned index of metaphors and in Lakoff and Johnson's taxonomy. Furthermore, it suggests that it is possible to distinguish four general time metaphors and then establish a hierarchy of dependency of other more specific instances of each of them. This hierarchical description of the metaphor system of time in English easily accommodates those metaphors of time which appeared as isolated and unrelated mappings both in the index of metaphors, and in Lakoff and Johnson's account (i.e. *time as a landscape*, *time as a resource*, *time as money*, *time as a flowing river*, etc.). Thus, by way of illustration, the TIME-IS-A-LANDSCAPE metaphor is regarded as an instantiation of the more generic TIME-IS-AN-AREA metaphor, which in turn is a subcase of the high-level TIME-IS-SPACE metaphor. Our own findings regarding the metaphorical cognitive structure of 'time' are summarised below. Each metaphor is accompanied by some corresponding linguistic instantiations:

1. TIME IS SPACE

1.1. Time is a location (a point in space): e.g., *At the time of the investigation...; From time to time; It was around that time; By the time of the election*, etc.

1.1.1 Time is a landmark: e.g., *We are approaching the time of the opening; We will reach the right moment*, etc.

1.2. Time is a path (one-dimensional space) or a section of a path: e.g., *For a short time...; It's been a long day; I can't do it any longer*, etc.

1.2.1. Time is a hole, a tunnel: e.g., *Through time; I wished I could stay through an entire English winter; All through 1970, he had travelled around the country*, etc.

1.3. Time is an area (two-dimensional space): e.g., *It will become more intense over time; To be on time; We should look ahead to the future*, etc.

1.3.1. Time is a landscape: e.g., *Thanksgiving is looming on the horizon; We are coming up on Christmas*, etc.

2. TIME IS AN OBJECT

2.1. Time is a possession.

2.1.1. Time is a positive possession: e.g., *I had a great time*.

2.1.1.1. Time is a resource: e.g., *They are giving time to an area of the curriculum which is not important; the lack of time; He had not much time left; He's running out of time; A time-consuming activity*, etc.

2.1.1.1.1. Time is money: e.g., *Don't waste your time; He spends his spare time fishing*, etc.

2.1.1.1.2. Time is a commodity: e.g., *Buy me some time; My time will cost you \$300*, etc.

2.1.2. Time is a negative possession: e.g., *He gave me a hard time; I had a rough time*, etc.

2.2. Time is a moving object

2.2.1. Time is a moving object coming towards you: e.g., *When the time comes...; Sunday will be here soon...*, etc.

2.2.2. Time is a moving object going away from you: e.g., *Time flies away; Our last hour together went away all too quickly; Your time is ticking away*, etc.

2.2.3. Time is a moving object following you (a pursuer): e.g., *Time will catch up with him; Hurry up or time will get you*, etc.

2.2.4. Time is a moving object which is being followed by someone (a competitor): e.g., *I lost track of time; I can't keep up with the times*, etc.

2.2.5. Time is a moving object along which you move: e.g., *You have to move with the times; He goes along with the times*, etc.

3. TIME IS A CONTAINER (a three-dimensional space): e.g., *In 1977...; In mediaeval times; I'll be there in time; A family in times of difficulty; A government in times of crisis*, etc.

4. TIME IS A FORCE: e.g., *Due to time pressure; Time is pressing*, etc.

4.1. Time is a changer:⁶ e.g., *Time had made her look old; Time will make you forget; All that time spent on her own had turned her into a wicked old woman*, etc.

4.1.1. Time is a healer: e.g., *Time heals all wounds; Time will take away the pain*, etc.

⁶ I only include in this description the most well-known subtype of the 'time is a changer' metaphor, namely, 'time is a healer'. I am not listing all the special cases, which occur mainly in poetry, and which are discussed in Lakoff and Turner (1989).

This summary of the metaphorical models of 'time' shows that, with the exception of the 'time is a container' metaphor, the rest of the mappings included in the index of metaphors are just particular subcases of each of the four general metaphors described above. The cluster of converging metaphorical models underlying our conceptualisation of time is schematised in Figure 1:

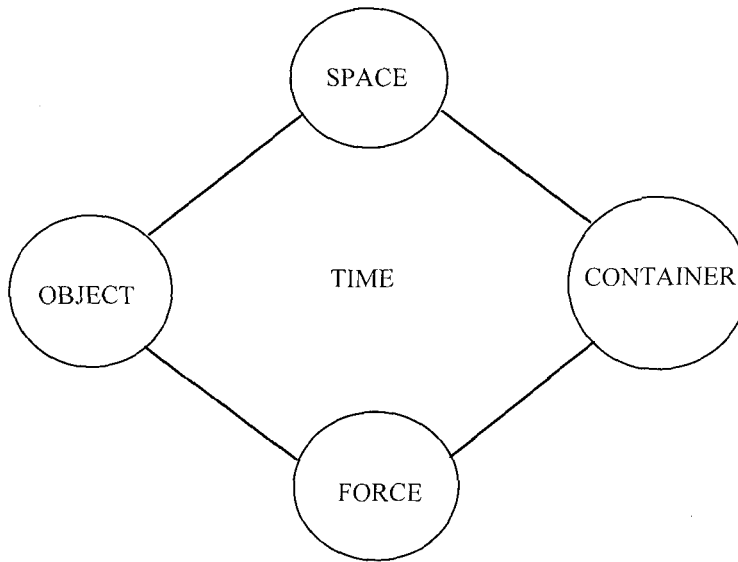


Figure 1. The metaphor-based cluster model of time

Some observations are in order. First, as pointed out by Lakoff (1993) and Lakoff and Johnson (1999: 139-53), the metaphors underlying our understanding of time are not arbitrary. Their experiential basis is linked to some biological characteristics of the human race. Thus, our visual systems are provided with detectors for motion and detectors for objects and locations, but we lack detectors for time itself. Therefore, it is only natural that time should be understood in terms of those other concepts. Second, our description of the cognitive structure of time differs slightly from the one put forward by Lakoff and Johnson (1999) in terms of three basic metaphorical mappings: the time orientation, moving time, and moving observer metaphors. To begin with, we have introduced a hierarchical perspective into our description, which is preferable from the point of view of cognitive economy. Thus, one of the conceptual metaphors of time proposed by Lakoff and Johnson (1999), namely the 'moving time' or 'time is a moving object' mapping, can be seen as just a specific subcase of the more general 'time is an object' metaphor, which in turn includes other mappings like 'time is a possession' (either positive, such as money, a resource or a commodity; or negative). Furthermore, in a passing reference to the metaphorical understanding of time as a container, Lakoff and Johnson (1999) suggest that this is part of the 'moving observer' metaphor. Thus,

they argue that in utterances like *He ate in 15 minutes*, or *I'll be there in 5 minutes*, which indicate a fixed duration, time is conceptualised as a bounded region on a path along which an observer moves. Nevertheless, it is far from evident that the understanding of temporal expressions which make use of the preposition *in* should involve the idea of a 'moving observer' or in Lakoff's own words, of an observer moving along a path where each location is mapped onto a point in time. Consider the following examples from our corpus:

1. In medieval times...
2. *In 1789*...
3. A family *in times of crisis*...
4. It is freezing cold here *in winter*.
5. She finished her speech *in ten minutes*.

In none of these examples is it necessary to activate a path schema or movement along it, in order to understand the meaning of the time expressions in italics. The mapping of the source image-schema of a container onto the target domain of time serves one main purpose which is to make it possible for us to think and speak of time as being limited. Just as a container is held within its boundary, so time is bounded: it has a beginning and an end. Whether the observer is moving is not relevant for the interpretation of these examples. Because of this, and in contrast to what Lakoff and Johnson (1999) postulate, we have preferred to include a fourth independent mapping (i.e. 'time is a container') in our description of the metaphor-based cluster model of time. As will be shown below, this metaphor can occasionally, but need not necessarily, be combined with others in order to give rise to more complex time expressions.

3. PROPOSITIONAL VS. METAPHORICAL CLUSTER MODELS

Lakoff (1987: 74) defines a cluster model as one "in which a number of individual cognitive models combine". By way of illustration, he refers to the concept of 'mother', which is based on the following individual models:

- The birth model: The person who gives birth is the *mother*.
- The genetic model: The female who contributes the genetic material is the *mother*.
- The nurturance model: The female adult who nurtures and raises a child is the *mother* of that child.
- The marital model: The wife of the father is the *mother*.
- The genealogical model: The closest female ancestor is the *mother*.

Cluster models are a source of prototype effects. Lakoff (1987: 75) points out that "more than one of these models contributes to the characterisation of a real mother, and any of them may be absent from such a characterisation". The activation of the five models results in a prototypical instance of 'mother'. On the other hand, in those cases in which not all the submodels apply, we find less prototypical members of the category of 'mother'. For instance, an *adoptive mother* (i.e. one that didn't give

birth or supply the genes, but who provides nurturance) or an *unwed mother* (i.e. one who gives birth to the child and provides nurturance, but is not married to the father of the child).

Furthermore, cluster models are a powerful means of knowledge organisation, because they lie at the basis of 'radial categories'. As Lakoff (1987: 91) explains, the cluster of converging models defines a 'central' subcategory which determines the possibilities for further extensions. Thus, noncentral instances of the category (e.g., adoptive mother, foster mother, surrogate mother, etc.) are extended from the central subcategory by convention. Furthermore, each of the original converging models also functions as the basis of different extended metaphorical senses of 'mother'. The birth model, for instance, underlies the metaphorical sense in *Necessity is the mother of invention*.

As shown in section 2, our understanding of 'time' also involves a cluster of converging cognitive models. Nevertheless, unlike 'mother', which is a concrete concept and can be described propositionally, 'time' is abstract in nature, which motivates a metaphorical conceptualisation and imposes several constraints on its cognitive structure. The remainder of this section will be devoted to showing the peculiarities of metaphor-based cluster models.

To begin with, the metaphorical models which converge to form the category of time (i.e. time is space, time is an object, time is a container, and time is a force) do not constitute specific types of 'time'. In the case of proposition-based radial categories, like 'mother', each of the converging subcategories was a less central type of 'mother' (e.g., surrogate, adoptive, genetic mother). In contrast, the submodels involved in the conceptualisation of time do not represent a 'type' of time. In the case of metaphor-based radial categories, each submodel represents just one way of conceptualising time. In other words, each metaphorical model focuses on a particular aspect of the meaning of time and helps us to make sense of it by establishing a correspondence with a non-abstract (i.e. space, object) or experiential (i.e. container, force) concept. This leads us to establish the first main difference between metaphor and proposition-based clusters. First, proposition-based clusters are just a means of organising our knowledge about a concept in a systematic way. On the other hand, metaphor-based clusters not only contain organised knowledge about a concept, but most importantly, each of the models they consist of constitutes a conceptual tool that enables us to reason and speak about a concept which, due to its abstract nature, cannot be propositionally described. Second, as advanced above, proposition-based clusters are a source of prototype effects: the most prototypical member of the category is that in which all the models converge and the absence of one or more submodels results in less central cases of the category. On the contrary, metaphor-based clusters do not give rise to different degrees of membership. English speakers need all four models described above in order to be able to think and talk about time on different occasions, but they do not need to activate the four models at the same time in order to instantiate the most prototypical sense of time. As a matter of fact, the simultaneous activation of all the metaphorical models of time is neither

possible, nor does it give rise to a better example of 'time'. Consider the following examples:

6. We have to cope with a large number of losses *in a short time*
7. I *spent* a *long* time thinking what to do next
8. All that time *spent* on her own had *turned her into* a wicked old woman
9. *He became more and more obnoxious *in over* time

Examples 6 to 8 each make use of two metaphorical models of time. Example 6 activates the 'time is a container' and the 'time is a section of a path' metaphors by means of the preposition *in* and the adjective *short* respectively. Example 7 instantiates the 'time is money' and the 'time is a section of a path' metaphors through the use of the verb *spent* and the adjective *long*. And finally, example 8 combines the 'time is money' with the 'time is a changer' metaphors as shown by the words in italics. In these three cases, the combination of two metaphorical models is possible because they activate distinct, but compatible, aspects of the meaning of time. Example 7, for instance, focuses on two defining features of time: 'duration', which is expressed by means of the path metaphor and its 'importance', which is conveyed by comparing it to money. In contrast, example 9 combines two metaphorical models which focus on two incompatible aspects of the semantics of time: the fact that it can be perceived as something limitless (*over*) and the fact that it can also be understood as a bounded entity with a beginning and an end (*in*). In essence, time is an endless continuum. However, humans have cut it into manageable units which do have a beginning and an end. We may conceptualise time from either of these perspectives depending on our communicative purposes on different occasions, but we cannot combine both metaphorical models in the same sentence as is the case in example 9.

To summarise our argument so far, unlike proposition-based clusters, those which make use of operational cognitive models,⁷ like conceptual metaphors, are not sources of prototype effects. On the contrary, their main purpose is to function as conceptualising tools which enable the speaker to reason and talk about abstract concepts.

There is still one major difference to be considered between propositional and metaphorical complex clusters. Lakoff (1987: 76) states that the different models of the 'mother' cluster are used as the basis of different extended senses of this concept. He provides the following examples:

⁷ The distinction between operational and non-operational ICMs has been made by Ruiz de Mendoza (1996, 1999b). Non-operational ICMs (i.e. propositional ICMs and image-schemas) are static in nature and consist of stored information. Operational ICMs (i.e. metaphorical and metonymic ICMs) are dynamic and work on the basis of the information provided by non-operational ICMs. Since operational models could not exist without non-operational ICMs (metaphoric and metonymic mappings are based on propositional or image-schematic ICMs), non-operational models could be regarded as more central to the organisation of conceptual systems. Nevertheless, as Ruiz de Mendoza (1999b: 10-14) remarks, the conventional nature of many metaphors and metonymies usually grants both kinds of model a similarly essential status within the theory of knowledge organisation.

10. Necessity is the *mother* of invention
 11. He wants his girlfriend to *mother* him

In sentence 10, the birth model is the basis of the metaphorical sense of mother, while in example 11, it is the nurturance model that is responsible for the metaphorical use of the verb 'to mother'.

If we turn to our complex metaphor-founded category of time, we find that it is not possible to find further extended senses based on the models that make up the cluster. This is only to be expected since the source domain of metaphorical mappings needs to be a cognitive model of the non-operational type (i.e. propositional model or image-schema).⁸

4. CONCEPTUAL INTERACTION IN THE UNDERSTANDING OF 'TIME'

As argued in section 3, the converging metaphorical models of the category of time cannot possibly be the source domain of further metaphorical extensions of this concept. Nevertheless, the cluster of metaphors which enable our understanding of time may be involved in other types of conceptual interaction which play a significant role in the conceptualisation and expression of the concept under consideration. In examples 6 to 8, it was observed that more than one metaphorical model may be combined in order to communicate time-related ideas. In this section, we shall discuss several other time expressions which illustrate some instances of more complex conceptual interaction.

As noted by Ruiz de Mendoza (1997: 288), conceptual interaction 'is a principle-regulated phenomenon'.⁹ Lakoff (1990) posited that one kind of constraint which works on conceptual projection is the one captured by the Invariance Principle, according to which metaphoric mappings should preserve the image-schematic structure of the source domain without violating the inherent structure of the target domain. Another type of restriction on conceptual projection is of pragmatic nature and has to do with the general Principle of Relevance (Sperber and Wilson 1995), which leads the speaker to choose those projections which may potentially convey the highest number of contextual effects in a certain context. More recently, Ruiz de Mendoza (1997: 289-291), in an attempt to provide a systematic account of the constraints working on conceptual projection, distinguished two types of interaction, which restrict the number and nature of projection possibilities:

⁸ Langacker (1987: 147-ff) describes 'time' as a basic domain, which cannot be reduced to another domain. This may explain the impossibility of dealing with time in a non-metaphorical way, which, in turn, precludes the existence of further metaphorical extensions of the category. It may also be the reason why the category of 'time' is not liable to show prototype effects (i.e. there are no better or worse examples of 'time').

⁹ Interaction between idealised cognitive models is a current issue of discussion. The interaction between metonymic and metaphoric models has been dealt with in a fairly unsystematic way by Goossens (1990). The metonymic basis of metaphor has been considered in Taylor (1995: 139) and Barcelona (1997). The most comprehensive and systematic treatment of this subject up to date, however, may be found in Ruiz de Mendoza (1997), where this author puts forward a classification of interaction types.

1. Interactions based on a generic model (*i.e. image-schema*). According to Ruiz de Mendoza (1997: 289), image-schemas provide the basic blueprint for the projection and combination of information from other non-generic ICMs in the sense that conceptual projection needs to obey the basic structure and logic of the image-schema. By way of illustration, a metaphorical projection based on an image-schema would include two input spaces: the source domain (image-schema) and the target domain (the specific situation to which the expression under consideration applies). Together with the two input spaces, there would be a generic space whose conceptual structure and logic would be determined by that of the image-schema which functions as source domain. The resulting conceptual projection or blend would have to be consistent with the structure and logic of the generic space.¹⁰

2. Interactions between non-generic models. When the interaction is between non-generic models (*i.e. propositional models*), it is either a metaphoric or metonymic mapping which regulates the projection from other input spaces.¹¹ Furthermore, input spaces may be combined by building a metonymy into either the source or the target of a metaphor. As Ruiz de Mendoza (1997: 294) notes, these choices are not random, but have important communicative effects, since they determine the nature of potential inferences.

Several everyday life time expressions can only be made sense of by considering one of these types of conceptual interaction. Let us consider some examples:

12. I am behind time.¹²

The two input spaces underlying this metaphorical expression are the following: the source domain, which is based on the image-schema of path (two entities, 'speaker' and 'time', which occupy two relative locations along a path) and

¹⁰ As can be observed, Ruiz de Mendoza's (1997) principled account of conceptual interaction partially accepts the many-space model of conceptual projection put forward by Turner and Fauconnier (1995) and Fauconnier and Turner (1996). In contrast to the two-domain model (Lakoff 1993), the many-space model states that conceptual projection requires (at least) two input spaces, a source and a target, and two middle spaces, a generic space and a blended space. The structure contained in the generic space applies to both input spaces. The blend integrates information from the input spaces and develops its own structure, which may be different and even inconsistent with that of the input spaces. Ruiz de Mendoza (1997) accepts the existence of these four mental spaces, but rejects the idea that the blend may be inconsistent with the structure of the input and generic spaces. In this connection, he provides arguments which demonstrate that this would go against the principle of cognitive economy which regulates human reasoning and communication.

¹¹ Conceptual metaphors and metonymies differ as to the number of domains involved in the mapping. Conceptual metaphors establish correspondences between two domains. The first of them (source), which is more easily apprehensible, lends its conceptual structure to the second domain (target), which is usually of an abstract nature. Metonymic mappings take place within one single domain. A subdomain of the matrix domain may function as either the source or the target of the metonymy. For further discussion of the differences between metaphors and metonymies, see Ruiz de Mendoza (1999b).

¹² Ruiz de Mendoza's (1998) analysis of related examples (*e.g.*, I'm getting ahead of myself) has inspired the present discussion. This author offers a cognitive explanation of expressions of this kind in which 'ahead of' is said to invoke the path-schema. Furthermore, this schema is found to interact with The Divided Person metaphor and the propositional ICM of Control in the understanding of I'm getting ahead of myself.

the target domain, which is the specific situation to which the expression applies (a person who is late). The metaphoric mapping is constrained by a third mental space, the generic space, whose structure and logic is that of the path-schema. Johnson's (1989: 113-14) description of the path schema includes the information summarised below:

PATH SCHEMA

Internal Structure:

- (1) A source, or starting point
- (2) A goal, or end-point
- (3) A sequence of contiguous locations connecting the source with the goal.

Internal Logic:¹³

- (1) Because the beginning and end points of a path are connected by a series of contiguous locations, it follows that, if you start at point A and move along a path to a further point B, then you have passed through all the intermediate points in between.
- (2) Human beings tend to experience paths as directional. That is, we move along a path from point A toward point B.
- (3) Paths can have temporal dimensions mapped onto them. I start at point A (the source) at time T1, and move to point B (the goal) at time T2. In this way, there is a time line mapped onto the path. It follows that, if point B is further down the path than point A, and I have reached point B in moving along the path, then I am at a later time than when I began.

Graphic representation of the path schema:

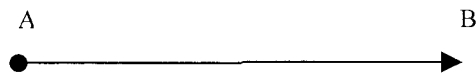


Figure 2. Path schema (from Johnson 1987: 113-14)

In sentence 12, the resulting metaphorical projection presents time as a 'moving landmark' (or 'competitor') on a path and the speaker as a person who is moving towards that 'moving landmark'. According to point 3 of the logic of the path schema, it follows that the speaker is later or slower than expected or needed to be. Figure 2 shows the image-schematic representation under consideration:

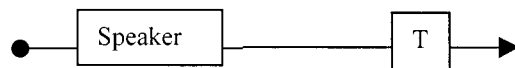


Figure 3. Image-schematic representation of example 12.

Sentence 13 below represents the opposite situation:

¹³ For an in-depth elaboration of the internal logic of the path schema, see Peña (1998).

13. I am ahead of time.

The speaker stands at a location which is further down the path than the slot occupied by the time-moving landmark. Therefore, the speaker is earlier than expected to be:

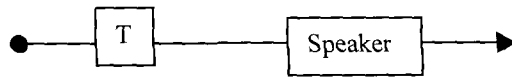


Figure 4. Image-schematic representation of example 13.

However, it may be argued that the situation is a bit more complicated. The meaning of sentences 12 and 13 is not just that the speaker is late and early respectively. In both cases it is implied that he is late or early in relation to something that needs to be done. In example 12, we understand that the speaker should have done something already (e.g., meet someone, finished his work, etc.). In contrast, the straightforward interpretation of example 13 is that the speaker has finished his work or arrived at his meeting before the scheduled time. In both cases, we find that 'time' metonymically stands for the activity that should be done at that time.¹⁴ That is to say, time functions as a 'matrix domain' and the activities that should be done within that particular time are seen as its 'subdomains'.¹⁵ Via a target-in-source metonymic mapping, the matrix domain stands for one of its subdomains as shown in Figure 5 (see next page).

Let us now consider a context in which the speaker has arranged to meet someone else at a certain time:

14. A: Where are you going?

B: I am meeting Greg at Market Square for a coffee, but I am behind time.

It is interesting to note that in this context, the utterance of a sentence like 'I am behind time' may become the source of inferences like 'the speaker is not going to arrive at the meeting on time', 'someone will have to wait for him', 'Greg is going to

¹⁴ In their study of 'time', Lakoff and Johnson (1999: 154) referred to the related 'event-for-Time' metonymy. In a sentence like *The Kronos Quartet Concert is approaching*, the event of the concert stands for the time of the concert and the time is conceptualised as approaching.

¹⁵ Ruiz de Mendoza (2000) has coined the term 'matrix domain' to refer to those domains upon which other subdomains are profiled. The term 'matrix' highlights its non-subordinate status and it conveys the idea that it consists of a combination of a number of domains. In the same paper, Ruiz de Mendoza contends that metonymic mappings may be of two types: one, in which the source is a subdomain of the target ('source-in-target' metonymies); another in which the target is a subdomain of the source ('target-in-source' metonymies). The labels source-in-target and target-in-source are not the same as the traditional part-for-whole and whole-for-part classification. Ruiz de Mendoza's formulation is more adequate in cognitive terms. First, the fact that metonymy is a matter of domain-subdomain relationships -not just part and whole relationships- is highlighted. There are many cases of metonymy where there is simply no such part for whole relationship, as in *Nixon bombed Hanoi*, where the army is not part of our concept of Nixon. See Ruiz de Mendoza (2000) for further details.

get angry', etc.¹⁶ The cognitive operations that make these inferences possible are the following. First, 'time' is conceptualised as a landmark on a path and the speaker as a person who is still trying to reach his destination. Second, 'time' metonymically stands for the activity that is supposed to take place at a certain time (i.e. meeting Greg). Third, there exists a propositional ICM of the 'social activity of meeting someone' which includes pieces of information like the following:

- One has to wait for the person one is going to meet
- People usually get upset when they have to wait for others

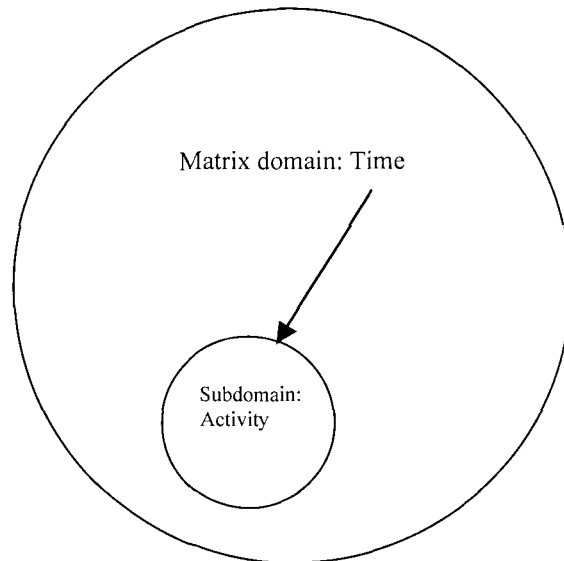


Figure 5. Representation of a target-in-source metonymy

This kind of knowledge is readily activated once the addressee understands that the speaker is going to be late upon hearing the expression *I am behind time*.

This 'time for activity' metonymy together with the metaphor 'time is a positive possession' would underlie our understanding of utterance 15:

15. I had a great time.

As was the case in samples 12 and 13, the word 'time' in 15 stands for the activities or events that were carried out during a given period of time. This metonymic mapping licenses contextual inferences such as 'the party was highly entertaining' or 'the lecture was very interesting' in contexts in which the participants are speaking about a party or a conference respectively.

¹⁶ It may be argued that these inferences are propositional. Nevertheless, it should be born in mind that the issue here is what motivates the inferences, not their nature. In the case under consideration, they are motivated by the basic internal logic of the path image-schema.

Other metonymies based on time are illustrated by examples 16 and 17 below:

16. The First World War took place before her time

17. I can't keep up with the times

In sample 16 the expression 'her time' involves a conceptual interaction between the metaphor 'time is a possession' (her) and the metonymy 'time during which a person lives-stands-for-a-person's-life'. Example 17 is even more interesting. We have a complex interaction between three metaphors and two metonymies. First, we find the use of the noun 'time' in the plural. This type of phenomenon has been described by Lakoff (1989) as an 'image-schema transformation' (i.e. mass-to-collection transformation). Nevertheless, as there exists a relationship of the 'stand for' type (the collection stands for the mass), it is also possible to explain this use of uncountable nouns in the plural as the output of a high-level metonymy (mass for collection).¹⁷ Second, we find that cultural tendencies and fashions occur during a certain period of time and, therefore, time can stand metonymically for them ('time at which a cultural tendency takes place-stands-for-the cultural tendency' target-in-source metonymy. E.g., *I was never able to understand the 60s*). Thus, the expression 'the times', in 17, stands for the collection of cultural tendencies of the society in which the speaker lives. Third, 'the times' are metaphorically conceptualised as an object moving along a path. Since the English conceptual system includes the metaphor 'change is motion',¹⁸ the movement of 'the times' along the path corresponds to the cultural changes that take place in the speaker's society. Finally, there exists a third metaphor in which time is conceptualised as a competitor (which is, moreover, a subtype of the generic 'time is a moving object' metaphor). Thus, the speaker presents himself as following 'the times' along a path and being unable to catch up with them.

5. CONCLUSION

In this paper, we have shown that the cognitive structure of the concept of time takes the form of a metaphor-based cluster model. Four main metaphors converge to enable the understanding of time expressions: time is space, time is an object, time is a container and time is a changer. Furthermore, we have argued that the converging metaphorical models can be organised in a hierarchy of dependency of other more specific instances of each of them.

The comparison of propositional and metaphorical models has revealed that, unlike the former, metaphorical cluster models (1) are not a source of prototype effects and (2) are not liable to have radial extensions, either propositional or metaphorical.

¹⁷ 'High-level' metonymies have been described by Kövecses y Radden (1998, 1999), Thornburg and Panther (1999), and Panther and Radden (1999) as those which result in grammatical effects like nominalizations, recategorization, causative/inchoative alternation, etc.

¹⁸ Other linguistic expressions, included in the Index of Metaphors, which exploit the 'change is motion' metaphor are, for instance, *His hair went grey*, *He went from laughing to crying*, *He came out of a coma*, etc.

Finally, it has been argued that each of the metaphorical models in the cluster may interact with one another or with further propositional, metaphorical, metonymic, and/or image-schematic structures in order to enable the production and understanding of more complex time expressions.

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