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Bert Cappelle

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1 author:

Bert Cappelle
Université de Lille
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The TIME IS SPACE metaphor:
Some linguistic evidence that its end is near

Bert Cappelle
K.U.Leuven Campus Kortrijk

Abstract

In this paper the author deals with what he believes is something of a misconception, namely that there is a contemporarily viable TIME IS SPACE metaphor which allows spatial expressions to be interpreted as conveying temporal or aspectual notions. These latter notions have become too routinized to be still considered the outcome of such an 'online' mapping operation. Taking verbal particles with aspectual meanings as his material, the author argues that these meanings cannot obviously be treated as being metaphorically linked to the spatial meanings of these particles and that, moreover, the temporal uses have syntactic properties that their spatial counterparts do not have, necessitating their separate storage in the lexicon. These linguistic arguments complement some recent psycholinguistic and neurolinguistic findings about the distinctness of spatial and temporal language items.

According to an influential conceptualist theory put forward by Lakoff and Johnson (1980, 1999), our ability to reason about time is mediated via a metaphorical mapping from basic concepts associated with our spatial experience onto the more abstract domain of temporal understanding. This mapping, commonly referred to as the TIME-IS-SPACE metaphor, has been argued to be at work cross-linguistically and ties in with the way spatial terms acquire temporal senses diachronically (e.g. Haspelmath 1997; Traugott 1974).

While the use of identical words for both spatial and temporal notions is so pervasive that we hardly notice we are using spatial terms when we are talking about events taking place (!) in time, the validity of the TIME-IS-SPACE metaphor (as an 'online' cognitive device which derives temporal usages from basically spatial terms) is being put into question. Sally Rice and colleagues (1999) tested the strength of the space-to-time mapping that is supposed to underlie the temporal uses of prepositions, such as *in the weekend*, *at midnight*, etc. Using a battery of experiments, they were not able to find evidence that present-day speakers of Dutch and English actually access a time-is-space metaphor. That is, they found no proof that there is a psychologically real connection between spatial and temporal uses of prepositions. Similarly, on the basis of other psycholinguistic experiments, Boroditsky (2000) concluded that spatial schemas may shape the way language users think about time, but that with frequent use, these schemas may no longer be accessed when the domain of time is being reasoned about. In other words, the more frequently we set up a metaphorical mapping between space and time, the more chance there is that the result of this mapping becomes stored so that we no longer have to perform this mapping anew each time we need to think about an event in time. More recently, Kemmerer (2005) found that brain damage can selectively impair the spatial or the temporal senses of English prepositions, which suggests that "although the spatial and temporal meanings of prepositions are historically linked by virtue of the TIME IS SPACE metaphor, they can be (and may normally be) represented and processed independently of each other in the brains of modern adults" (p. 797).

This paper will adduce some purely linguistic arguments backing up these findings, thus corroborating the claim that the TIME IS SPACE metaphor is not the powerful interpretative and coding mechanism one might expect it to be, given its ubiquity in language. We may think of spatial schemas as the solid rocket boosters and the fuel tank that are required to bring a spacecraft into orbit, in temporal outer space as it were. Once the spacecraft has reached a sufficient altitude, it can function autonomously and the tank and the rockets can be discarded

because they are no longer needed. Or we may liken the mature use of temporal expressions as the acquisition of standard multiplication: while 4 times 7 is the result of the addition 7 + 7 + 7 + 7, children learn to retrieve the result '28' directly from arithmetic memory without having to carry out the hidden maths on each encounter of the equation '4 times 7'.

My arguments will centre on the use of English particles like *around*, *away*, *on*, etc. to express special kinds of verbal aspect (i.e. special kinds of information on the way an event unfolds through time), as in *mess around*, *ask away* and *dream on*.

1. More on the TIME IS SPACE metaphor

While I ascribe the notion of the 'TIME IS SPACE metaphor' to Lakoff and Johnson, this term was not used as such in their 1980 and 1999 books in which they presented their theory of conceptual metaphors. According to this theory, people use concepts referring to concrete, physical experiences to understand and express concepts referring to more abstract conceptual domains. The 'TIME IS SPACE metaphor' (or the 'TIME AS SPACE metaphor') later came to be used as a cover term for a number of more specific conceptual metaphors by which the hard-to-grasp notion of time is treated as if it were a more tangible spatial phenomenon.

One such more specific conceptual metaphor is TIMES ARE OBJECTS MOVING TOWARDS YOU, in which the person experiencing time is conceived as a stationary entity, observing times approach and pass by, from the future (ahead of the observer) to the past (behind the observer). This metaphorical mapping is also known as the 'moving time' metaphor. The sentences in (1) could be given as illustrations of this metaphor:

(1) **[if these examples can't be translated while retaining an element of motion; it's probably better to leave them in English]**
a. The end of the academic year is getting closer.
b. This week has just whizzed by in a blur.
c. The time for action has arrived.
d. The best part of the show is coming up.

Another specific conceptual metaphor is the exact figure-ground reversal of the one just mentioned: TIMES ARE LOCATIONS IN A LANDSCAPE OVER WHICH YOU MOVE. Hence the shorthand 'moving ego' term for this metaphor. Here, times are conceived as stationary points and the person experiencing time is conceived as moving relative to these locations, leaving past times behind and progressing towards future times. Examples of this metaphor, then, are given in (2):

(2)
a. We're fast approaching the end of the year
b. She didn't make it to Christmas.
c. We're coming up on the fifth anniversary of our company.
d. He is quick to move away from the past and point the way to the future. (www)

Similarly, when we speak of a *short* or a *long* period of time, or when we say *within* the next few days or *on* Sunday, we are said to be using the TIMES ARE LOCATIONS metaphor, though not actually the 'moving ego' metaphor, since there is no dynamicity involved. The 'moving time' and 'moving ego' metaphors are seen as two distinct realizations of what is sometimes referred to as the 'TIME IS MOTION' metaphor (cf. Lakoff and Johnson 1999: 149).

In fact, one might also consider the conceptual metaphor EVENTS ARE MOVING OBJECTS (e.g. *Negotiations are running smoothly* and *His speech dragged on and on*) to belong to the general TIME IS SPACE metaphor, and not just to the family of so-called event-structure metaphors, which also has members like CHANGE IS MOTION (e.g. *He slipped into a depression*), CAUSES ARE FORCES (e.g. *You're driving me insane*), PURPOSES ARE DESTINATIONS (e.g. *She's reached her goal*), DIFFICULTIES ARE IMPEDIMENTS TO MOTION (e.g. *I've been trying to find a way around this problem*), etc. The reason why one can classify the EVENTS ARE MOVING OBJECTS metaphor as a kind of TIME IS SPACE metaphor is, quite simply, that events can only be defined as involving a temporal dimension, and that to describe events as moving entities therefore involves the organization of time in terms of space. The EVENTS ARE MOVING OBJECTS metaphor will play a round further down in this study.

All the conceptual metaphors mentioned above have been proposed to account for the observation that in language after language, spatial terms and expressions are used to express temporal ideas. While I have only given a handful of examples from English **[I assume the**

examples have not been translated], similar examples could be given for other languages. Indeed, the Conceptual Metaphor Theory predicts that *all* languages make use of TIME IS SPACE metaphors of some kind, since an abstract, conceptually elusive category like time is only knowable to our embodied mind via our more concrete experiences in physical space.

2. Mapping in the mind?

The question to be asked, however, is whether the space-to-time mapping is actually represented in the mind of speakers, or whether this mapping is just something that played a role in language evolution—and perhaps also in the acquisition of language by individuals. Let's consider the preposition *in*, which can be used in a spatial sense (as in *in the cupboard*) and in a temporal sense (as in *in the weekend*). Suppose now that speakers have a mental representation of the TIMES ARE LOCATIONS metaphor, then they would in principle only need to store the spatial sense of *in*. The temporal sense of *in* could then be 'computed' or 'constructed' on the basis of a mentally represented metaphorical rule. If, on the other hand, they also store the temporal sense of *in*, then this sense does not have to be derived 'in real time' from the spatial sense of *in*. In fact, there is no need then for speakers to perceive a metaphorical link between the spatial and the temporal use at all.

Of course, some people *can* access a metaphorical mapping in that case, but they *need* not do so. As Croft (1998: 168) remarks, "Speakers do not necessarily make the relevant generalizations, even if clever linguists can. Cognitive linguists, like other theoretical linguists, must be aware of this fallacy". So, just because linguists perceive a general mapping between two domains, this does not mean that such a mapping is also always activated or even represented in the mind of the language user.

To put it most sharply, if we want to describe how people understand the temporal senses of expressions that also have spatial meanings, we can choose between a single-entry derivation model and a homonymy model. In a single-entry model, the preposition *in* is stored as having one sense only, namely a spatial sense, which is the sense corresponding to the source domain of the metaphor. The temporal sense is then an extension derived online by means of the time-is-space metaphor. In a homonymy model, there are two separate entries for the preposition *in*, one for the spatial use and another for the temporal use. The two uses are not felt to be

related by the language user. In between these two models, and compromising between them, is a polysemy model, in which there are also two stored entries, but here they are felt to be related to each other via the conceptual metaphor. The two senses are then two interconnected nodes, as in a polysemy network.

I do not believe that the single-entry model, involving the active use of the TIME IS SPACE metaphor, is psychologically valid. The idea that our conception of time is shaped by our conception of space may be important to show how temporal (including aspectual) expressions historically derive from spatial ones (and perhaps also enable children grasp temporal notions), but the historical/developmental reality of spatial-temporal links does not necessarily imply a psychological reality for today's adult speakers. It is in fact more likely that the homonymy model is the correct one, in other words, that adult speakers store the conventional spatial and temporal/aspectual usages of prepositions and particles separately, without perceiving any link between the two. Justification for this claim is based on recent findings in psycholinguistic and neurolinguistic research, as we have seen. In what follows, I will adduce some more purely linguistic evidence. Before I do so, I need to present the verb-particle construction in English, on which my argumentation will be based.

3. Verb-particle constructions

In the field of lexical semantics, many attempts have been made by cognitive linguists to demonstrate that the choice of certain verbal particles, even in seemingly idiomatic combinations, is far from arbitrary and that non-directional meanings are metaphorical extensions from the 'basic image schemata' (Lakoff and Johnson 1980) expressed by particles (e.g. *out* makes reference to the idea of a 'container', *up* to the idea of 'positive verticality', etc.). Most of the ideas presented in this plethora of studies (e.g. Lindner 1981; Brugman 1988; Talmy 1991: 490; Morgan 1997; Hampe 2000, 2005; Lee 2001: 30-52; Rudzka-Ostyn 2003; Tyler and Evans 2003; see Dirven 2001: 39, note 2 for more references) seem uncontroversial. To cite Rice (1999):

> Signalling aspect isn't such a strange or unexpected function for [particles] to have, considering that their aspectual meanings seem to be natural extensions of certain spatial meanings. Just as they can modulate the location of an entity in space or highlight the

> relevant contours or topography of a landmark object, so too can they modulate or reshape the contours of an event. (Rice 1999: 228)

Accordingly, the intuition that the directional meanings of particles are the source of metaphorical extensions into the aspectual realm can be found in grammar textbooks and reference grammars:

> The particle *out* is often added to verbs to denote *removal—yank* versus *yank out*, *pull* versus *pull out*, *pry* versus *pry out*, *tear* versus *tear out*. But *out* has lost its prepositional [i.e. directional—B. C.] meaning in *I can't figure out this problem* and *I found out her secret*. Even when a particle loses its literal prepositional meaning, however, it is often possible to see a metaphorical connection between the original preposition and the current particle. (Berk 1999: 126; underlining replaced by italics)

> There is also a conceptual link between the notion of exit from a landmark and that of change from a normal to an abnormal state, such as from consciousness into unconsciousness, or from self-control into lack of control. Hence the use of *out* in an extensive and growing set of verb + preposition idioms, such as *black out*, *bomb out*, *fade out*, *flip out*, *freak out*, *knock out*, *lash out*, *pass out*, *pig out*, *psych out*, *space out*, *tune out*, *wig out*, *zone out*. (Pullum and Huddleston 2002: 652 [excerpt from a much larger passage similar in content])

The view that the aspectual/idiomatic and directional uses of particles are connected can be traced back to (at least) Bolinger, who expressed a conceptual mapping view *avant la lettre* in the following observation: "There is a deep-seated relationship between notions of action, state, progression, inception, completion, and the like, on the one hand and notions of direction and position on the other—a kind of geometry of semantics" (Bolinger 1971:110). It will be immediately obvious that this observation prefigures the postulation of such conceptual metaphors as EVENTS ARE OBJECTS IN MOTION and STATES ARE LOCATIONS.

In view of the close metaphorical relation between the aspectual and the directional senses of particles, one may wish to refrain from treating these senses as the meanings of two distinct lexemes, choosing instead for an approach in which there is just one lexeme (with a spatial sense) and in which aspectual interpretations are derived by invoking (an instance of) the

TIME IS SPACE metaphor. For example, one might ask whether it is legitimate to distinguish two separate lexemes for *around*, one expressing a circuitous, twisting path in space (as in *move around*) and another highlighting the circuitousness and indirectness of an non-motional action (as in *stammer around*), or whether one had better consider the aspectual sense as derived from the spatial sense, which is the basic sense of a single lexeme *around.*

An important proposal along the latter line is offered by McIntyre (2004), who argues that the paths expressed by particles can apply either to a real moving entity or to an event, which is then metaphorically conceptualized as if it *were* a moving entity. For example, the particle *around* can express a path which lacks an intended goal, whether this path is predicated over an entity (as in *walk around*) or over an event (as in *{play / joke / experiment} around*). In the first case, the entity literally moves in no particular direction; in the second case, the event is aimless as well—it "'gets nowhere', so to speak" (McIntyre 2004: 531). McIntyre argues that it cannot be sheer coincidence that both this purely directional and this aspectual meaning can be expressed by the same word. If it were coincidence, why then would the unrelated German word *(he)rum* display the same senses, and why would other particles, too, if you come to think of it, have directional and aspectual uses that are equally closely related to each other? For example, the notion of 'parallel path' can be discerned both in *Mary walked along the wall* and in *John played guitar and Mary sang along*, the sole difference being that in the first sentence, the path followed by Mary is parallel to an extended object, while in the second, the path followed by Mary's singing is parallel to an extended event (viz. John's guitar-playing).

In sum, there seems to be a very compelling case against assuming homonymy (i.e. positing two different lexical entries) for particles with both a directional and an aspectual meaning. The aspectual meaning of such particles can be argued to be linked to the directional meaning by a conceptual metaphor according to which events can 'move'. Yet, as I will show in the following section, there are linguistic arguments to maintain a clear distinction between the spatial and the aspectual uses of particles, that is, to consider the aspectual use as something that exists in its own right, independent of the spatial use.

4. Linguistic evidence for the distinctness of aspectual particle uses

In this section, I will provide two arguments against treating the aspectual uses of particles (e.g. the temporal progress sense of *on* as in *talk on*) as mere metaphorical extensions of the spatial uses of particles (e.g. the spatial progress sense of on as in *walk on*). The first argument makes use of tests which 'judges' the metaphoricity of aspectual uses, while the second argument is based on an idiosyncratic property of phrasal verbs with an aspectual particle.

4. 1. First linguistic argument

As a first argument against the single-entry metaphor-based model, we can use Jackendoff and Aaron's (1991) congruity test, which measures the degree to which a putatively abstract concept (such as temporal progress) is understood in terms of a more concrete concept (such as progress in the spatial domain). Insofar as Jackendoff and Aaron's test appeals to the introspection of the linguist, who after all has to judge the acceptability of the result, this argument is in fact also of a partly psycholinguistic nature, but it does not involve an elaborate experimental set-up. Their diagnostic is a particular sentence template which is used to check whether a metaphorical mapping between two fundamentally different concepts (say, relationships on the one hand and moving objects on the other) motivates an expression which purportedly draws on such a mapping (say, *their marriage has really gone off the track*). The sentence template consists of two parts; in the first part, it is granted that the two poles of the assumedly motivating metaphor are not compatible (they should not be—otherwise, there would not be any need to invoke a metaphorical mapping); in the second part, the two incompatible concepts are mapped all the same in order to 'make sense' of the metaphorical expression. For example:

(3)
Of course, a relationship isn't a moving object—but if it were, you might say that their marriage has really gone off the track.

The fact that this sentence sounds quite fine indicates that *going off the track*, when said of a relationship, is a genuine piece of imagery that is motivated by the conceptual metaphor A

RELATIONSHIP IS A MOVING OBJECT (belonging to the more general LOVE IS A JOURNEY group of metaphors).

Now, can the expression *talk on* be similarly considered as metaphorical? That is, can it be considered as depending on a mapping between, specifically, events and moving objects, or between, more generally, time and space? The answer is negative, because in this case, the diagnostic yields a rather awkward result—the head clause of the second half sounds like a *non sequitur*. (The exclamation mark indicates nonsensicality.)

(4)
!Of course, an event isn't a moving object—but if it were, you might say that John talked on.

This suggests that speakers do not really perceive a metaphorical link between aspectual and directional *on*.

Goddard (2004), in an article on what he calls 'active metaphors', uses a somewhat similar diagnostic first proposed by Bogusławski (1994). This test, referred to as the 'metalinguistic tag test', hinges on the possible co-occurrence with phrases like *so to speak*, *as it were*, *if you like*, *metaphorically speaking*, and so on. Observe that this alternative test yields similar results, in that you can felicitously utter (5a) but not (5b):

(5)
a. They are, {so to speak / as it were / if you like / metaphorically speaking}, at a crossroads in their relationship
b. *He was talking, {so to speak / as it were / if you like / metaphorically speaking}, on.

The unacceptability of this insertion, it should be added, may of course also in part be due to the impossibility of splitting up a verb-particle combination with a parenthetical phrase.

A more fundamental problem with treating the temporal/aspectual domain as being the target of a conceptual metaphor whose source domain is motion (TIME IS MOTION; EVENTS ARE MOVING OBJECTS) is that this source domain is inextricably linked with the target domain, as has been pointed out by Jackendoff (personal communication). One cannot define motion without reference to time, that is, time is an indispensable dimension of motion. This means

that time and motion are not independent conceptual domains. Hence, they are in principle not eligible for being domains that are mapped by a metaphor, for a metaphor is precisely aimed at conceptualizing something in terms of something *completely different*.

4. 2. Second linguistic argument

A second argument against treating the temporal use of a particle as metaphorically derived from its spatial use is more clearly linguistic in nature, since it does not even the (introspective) judgment of a diagnostic sentence. The argument is based on an argument-structural oddity of (some) verb-particle combinations (cf. Cappelle to appear 2007). It goes as follows. Suppose that there is only one lexical entry for *on*, which can be used for both spatial and temporal progress, why then is it that the temporal (i.e. aspectual) use of *on* can never occur with a direct object (cf. (6a-c)), while spatial *on* can (cf. (6d))?

(6)
a. He drank (*his beer) on.
b. She sang (*the song) on.
c. I cried (*bitter tears) on.
d. She pushed the cart on.

In the absence of an explanation for this unpredictable argument-structural difference, we are forced to assume that both the spatial and the temporal usage have to be stored (cf. Croft 1998: 162): a separate entry for the aspectual use of on is needed to store the grammatical information that a direct object is not allowed. The idiosyncratic grammatical difference between *on* used for spatial continuation and *on* used for temporal continuation excludes the possibility that spatial *on* is basic and that aspectual *on* is merely an expected metaphorical extension that need not be stored in the mind.

Some linguists might point out that the pattern with aspectual *on* does not take a direct object because transitive patterns generally have a causative meaning and because causatives are necessarily telic. In other words, the aspectual meaning of the transitive grammatical structure and the meaning of the particle *on* (in its aspectual use) would clash. However, it has been shown by some other linguists that telicity is largely independent of causality (see Levin

2000: section 2.1 for some references). Moreover, German *weiter*, in its aspectual use, does allow an object (e.g. *Er trank sein Bier weiter*), which means that the presence of an object with atelic particles is at least in principle possible in English. The unpredictable fact that it is *not* possible is something which has to be stored, making it necessary to have a lexical entry to store this information *in*.

For completeness' sake, it should be noted that an explanation of this fact is actually provided by McIntyre (2004). His explanation is to be understood within the view, presented in section 3 above, that a structure like *She sang on* involves the conflation of the activity expressed by the verb *sing* with what is analyzed as a predication in which the particle expresses the extended path, metaphorically applied to the activity itself. Thus, *She sang on* is actually equivalent to 'She sang, and this singing went on (i.e. went on in time)'. The syntactic structure of this sentence is conjectured to contain two 'light verbs' (i.e. meaningful but phonologically inaudible elements), the first of which (dubbed 'INIT') forms a morphological compound with the verb root and the second of which ('CHANGE') takes the particle as its complement. INIT projects a phrase within which the CHANGEP is embedded. With respect to McIntyre's example *Fred scrubbed (*floors) on*, this can be represented as follows, using his formal semantic and syntactic notations ((7a) and (7b), respectively):

(7)

a. $[\text{DO}(\text{FRED}, \text{SCRUB}(\text{FLOORS}))]_i \ \&_{\text{CONTEMP}} \ \text{GO}([\text{EVENT}]_i, \text{ON})$

b. $[_{\text{InitP}} [_{\text{DP}} \textit{Fred}] [_{\text{Init'}} [_{\text{Init}} \textit{scrub}+\text{INIT}] [_{\text{ChangeP}} \text{X} [_{\text{Change'}} [_{\text{Change}} \text{V}^{\text{GO}}] [_{\text{P(P)}} \textit{on}]]]]]$

The reason, now, why the verb cannot be used with an object is twofold, according to McIntyre. First, the verb cannot retain its arguments because it is not the head of the compound. Second, if the object appeared in the specifier position of the second light verb, it would be taken to be predicated over by the particle, that is, *Fred scrubbed the floors on* would inevitably provoke the reading in which the floors moved forward, rather than the intended reading in which the scrubbing of the floors continued.

For lack of space I cannot go into McIntyre's proposal in much detail. Suffice it to say that I see a potential problem in each of these proposed reasons for the verb's inability to contribute a direct object argument.

As regards the first reason, it is true that nonheads in compounds cannot keep their arguments (e.g. **a scrubwoman of floors*; **a crybaby of bitter tears*), but it is equally true that nonheads cannot be inflected (e.g. **a scrubbingwoman*; **a criedbaby*), so an extra explanation is needed to explain why inflectional endings can appear on the verb (e.g. *talk{-ing / -ed} on*). It may be objected that it is the INIT head (the first light verb) which carries the inflection, but this would entail complications for irregular verbs: how does this INIT head 'know' that, when it is compounded with, say, *sing*, it does not have to take *-ed* for the past tense but rather has to change the vowel of the nonhead verb root?

As regards the second reason, I can find no reason why the object could not in principle appear higher in the tree than within McIntyre's CHANGEP, so that it would stay out of the domain over which the path expressed by *on* has predicative power. Such a possibility becomes available as soon as we give up the already problematic view that the verb is a nonhead, because then it can again appear with its arguments. If the possibility of an object within the first part of the conflated structure exists *in principle*, the grammar simply has to state that this possibility is ruled out. In fact, as we have seen, German displays this possibility for *weiter*, which is otherwise the exact equivalent of English *on*. McIntyre admits that this fact is a potential problem for his theory. Stipulation, one way or another, cannot be avoided here. Without stipulation, it remains a mystery to me how in McIntyre's analysis, the 'empty' specifier position in the CHANGEP (labelled X in the syntactic structure) gets to be linked with the event expressed by the verb in the higher projection. For example, in *She sang on*, there is nothing which guarantees that what goes on is that very singing event; it might just as well be something entirely unrelated (e.g. 'She sang and the war went on'). McIntyre seems to solve this problem by coindexing the singing event in the first conjunct of the conflation with the 'event' that goes on in time in the second conjunct in the conceptual structure. But such a coindexing appears to me to be as much of a stipulation as simply saying that if *on* is used for the continuation of an event, the verb referring to this event cannot keep its object, if any.

5. Conclusion

I take the case of *on* to be exemplary of all particles that have spatial and aspectual meanings. We should not try to reduce the aspectual meanings as metaphorical extensions from the spatial meanings. It is safer to assume that speakers and hearers have direct access to the

aspectual meanings, which may well be stored quite separately from the spatial meanings. I have provided linguistic evidence in this paper that the TIME IS SPACE metaphor is dying, if not completely dead. While our familiarity with the tangible domain of space may have shaped our understanding of the more elusive domain time, diachronically and developmentally speaking, there is no reason to believe that a mapping between space and time is always at work whenever people process a temporal expression. On the contrary, we have considerable effort trying to see the (supposed) metaphorical nature of temporal expression afresh. The temporal and aspectual uses of spatial prepositions and particles are so well-established that they fail some simple tests for metaphoricity. Moreover, they may exhibit a grammatical property that they 'should not have' if they were mere interpretational variants of spatial expressions. This means that we should treat them as lexical units in their own right and not as the results of mapping operations in the minds of contemporary adults.

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