SPACETIME IN LANGUAGE

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The aim of this talk is to present a new line of research that explores the connections between spacetime and language. The main purpose is to shed light on basic questions of linguistics by taking advantage of science and philosophy of spacetime.
The fact that natural languages encode spatiotemporal notions is a very well established phenomenon that has been studied since Aristotle and that has been recently labelled as "aspect" (Vendler 1957; Kenny 1963; Comrie 1976; et seq.). Nowadays, linguists agree that language encodes two kinds of spatiotemporal information:

1. Spatiotemporal notions that are encoded in predicates (i.e., in words). This information distinguishes among eventuality types described by words and it is known as "inner" aspect.
2. Spatiotemporal notions that inform about when, where and how a specific eventuality takes place in the world. This information is referred to as "outer", and it is typically encoded in grammatical categories such as tense and grammatical aspect, which operate as relators by locating the eventualities described by words in the world.

Despite this common knowledge, the nature of these specific notions and the way they interact at the two different levels is still a central enigma in linguistic theory. In particular, we can focus on two main unknowns:

Question 1:
As regards inner aspect, which is the primitive notion that is encoded in predicates and that is responsible for the basic distinction between states (a) and events (b)?
a) *to be tall*, *to love*, *to know*...
b) *to walk*, *to eat*, *to sing*...

Question 2:
As regards the outer information, where do we actually locate eventualities? What is the nature of the world to which language refers?

In this talk I address these two fundamental enigmas, and I propose that the answer is found in spacetime. I argue that the idea of a 4D spacetime continuum, which takes space and time as interwoven dimensions (Einstein 1905a; 1905b; 1916a; 1916b; Minkowski 1908; 1909; 1915) can shed light on spatial and temporal notions represented in language. On these basis, contrary to recent proposals that suggest that natural languages encode spatial and temporal information as separated modules (Guerón 2005; Zagona 2012; 2015), I put forward the notion of "linguistic spacetime", and I promote a distinction between "inner spacetime" (i.e., the spatiotemporal notions encoded in predicates) and "outer spacetime" (i.e., the world where we locate eventualities through language).
With respect to question 1, based on empirical evidences from English and other Romance languages, such as Spanish, Italian and French, I suggest studying linguistic events as physical events, that is, as spacetime points. Therefore, I argue that the basic component of inner spacetime is a spacetime point (generalization 1).

Generalization 1:
The primitive of inner spacetime is a spacetime point.

This means that predicates that describe an event encode a spacetime point, contrary to states, which lack any spatiotemporal notion. This proposal not only solves the

fundamental linguistic unknown on the state/event distinction, but also promotes a better and more reliable understanding of previous self-feeding philosophical concepts related to events, such as the "event argument" (Davidson 1967; 1980), "locations" (Gawron 1986) or "properties of spatiotemporal regions" (Lewis 1986).
With respect to question 2, I take into account substantivalist and idealist approaches to the ontology of "physical" spacetime (cf. Dieks 2006; 2008; Petkov 2009; among others) and the flow of time (Barbour 2000; Maudlin 2002; Barrow et al. 2004; Zeh 2007; Eagleman 2009; Mersini-Houghton and Vaas 2012; among others), and I link them to linguistic data. I conclude that whatever theory we adopt on the ontology of spacetime, we use language to refer not a real, but to an ideal outer spacetime, which is a by-product of our consciousness (generalization 2).

Generalization 2:
(Linguistic) outer spacetime is ideal.

The present research constitutes a starting point for future resolution of more specific questions regarding the relation between linguistic spacetimes and the "physical" spacetime, as well as the understanding of long-debated spatiotemporal linguistic criteria, such as "duration". Moreover, this approach paves the way for a connection between natural and cognitive sciences that could hopefully benefit research in both directions.

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