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WHEN IS 'NOW'?

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RESUMEN

Ofrezco al lector una elucidación del concepto de “presente” desde una perspectiva ontológica.

PALABRAS CLAVE TIEMPO; ONTOLOGÍA; PRESENTE; CEREBRO; ETERNALISMO

ABSTRACT

I offer a brief elucidation of the concept of ‘present’ from an ontological point of view.

KEY WORDS TIME; ONTOLOGY; PRESENT; BRAIN; ETERNALISM

If the present is an instant of time instead of a thing, then the question of “which instant is present?” follows. One possible answer is “now”. But then...when is ‘now’?

‘Now’, like ‘here’, is an indexical word. To say that I exist now gives no information on when I exist. Similarly, to say that I am here, gives no information on where I am. There is no particular moment of time with a property that might be called ‘an absolute now’.

I maintain that ‘nowness’ and ‘hereness’ emerge from the existence of perceiving self-conscious beings in a certain environment. What these beings perceive is not time, but changes in things, i.e. events (Bunge,1977). Similarly, they do not perceive space, but spatial relations among things. In particular, we do not perceive the passage of time. We perceive how our brain changes. I claim that there is no present *per se*, in the same way that there is no smell, no pain, no joy, no beauty, no noise; there are not secondary qualities at all that might exist independently of sentient beings. What we call “the present” is not in the world. It emerges from our interaction with the world.

We group various experienced inputs together as present; we are tempted to think that this grouping is done by the world, not by us. But this is just delusional. I maintain that tenses are not needed and in fact are not wanted by the natural sciences. This idea is clearly expressed by E. Pöppel on the basis of neurological research (Pöppel,1978):

[...] our brain furnishes an integrative mechanism that shapes sequences of events to unitary forms...that which is integrated is the unique content of consciousness which seems to us present. The integration, which itself objectively extends over time, is thus the basis of our experiencing a thing as present.

[...] The now, the subjective present, is nothing independently; rather it is an attribute of the content of consciousness. Every object of consciousness is necessarily always now -- hence the feeling of nowness.

The perception of motion gives an additional argument against the idea that the present is an instant of time. According to Le Poidevin (2009):

1. What we perceive, we perceive as present.
2. We perceive motion.
3. Motion occurs over an interval.

Therefore: What we perceive as present occurs over an interval.

Recent research in neurosciences lends strong support to these claims. Perception of events outside the brain and the construction of what we call time is a complex cluster of processes that involves different cortical and sub-cortical regions. Distortions in timing can be produced by narcotics, experimental manipulation, strong emotions, and by different brain disorders such as Alzheimer's disease, clearly indicating a dependence of temporal experience on brain processes. The involvement of sub-cortical areas in external change perception explains why extreme fear and other abnormal emotional states can modify the subjective experience of time (e.g. Stetson et al., 2007).

A very important breakthrough in neurological research of the timing mechanisms operating in the brain was made by Benjamin Libet and his collaborators (1964; 1973). In a series of now classical experiments, Libet demonstrated that there is a time delay of about 0.5 s between the starting of brain stimulation and the appearance of awareness of the stimulus. This shows that awareness of an event happens in the brain when the event is past: what we become aware of has already occurred about 0.5 s earlier. In Libet's words: "We are not conscious of the actual moment of the present. We are always a little late." (Libet, 2004).

The whole battery of sensory stimuli is manipulated by the brain to create a coherent representation of the external world in such a way that we are not aware of any time delay. The subjective 'present' is actually a construction made with a manifold of sensory information of events in the past. The motor system does not wait 0.5 s before making its decisions. These are done unconsciously and over spans as short as 10 milliseconds in some cases. Consciousness allows further interpretation and adjustments on the basis of later information (Eagelman et al., 2000). The actual span required to create a transient representation of the environment can vary from an individual to another, but it should take more than 0.1 seconds on average. In Eagelman's words:

This hypothesis –that the system waits to collect information over the window of time during which it streams in– applies not only to vision but more generally to all the other senses. Whereas we have measured a tenth-of-arcsecond window of post-diction in vision, the breadth of this window may be different for hearing or touch. If I touch your toe and your nose at the same time, you will feel those touches as simultaneous. This is surprising, because the signal from your nose reaches your brain well before the signal from your toe. Why didn't you feel the nose-touch when it first arrived? Did your brain wait to see what else might be

coming up in the pipeline of the spinal cord until it was sure it had waited long enough for the slower signal from the toe? Strange as that sounds, it may be correct. It may be that a unified polysensory perception of the world has to wait for the slowest overall information. Given conduction times along limbs, this leads to the bizarre but testable suggestion that tall people may live further in the past than short people. The consequence of waiting for temporally spread signals is that perception becomes something like the airing of a live television show. Such shows are not truly live but are delayed by a small window of time, in case editing becomes necessary. (2009)

Evidence from research in neuroscience points towards the hypothesis that ‘the present’ is a construction of the brain; a construction that is not instantaneous. We do not perceive time; we only are aware of events and can compare the event rate or their clustering in the external world with the rate of activity of our own brain (e.g. Karmarkar and Buonano, 2007).

Any tentative definition of ‘present’ compatible with modern neurobiology science must take into account the role of the perceiving and sentient individual. In the next section I offer some provisional definitions that meet this requirement and distinguish among the different meanings in which the word ‘present’ is used. Physical events are ordered by the relations ‘earlier than’ or ‘later than’, and ‘simultaneous with’ (Grünbaum, 1973). There is no ‘now’ or ‘present’ in the mathematical representation of the physical laws. What we call ‘present’ is not an intrinsic property of the events or an instant of time, much less a moving thing. ‘Present’ is a concept abstracted from the relation between a certain number of events and a self-conscious individual. I propose (Romero 2015):

PRESENT

Class of all events that are simultaneous with a given brain state.

To every brain state there is a corresponding present. The individual, notwithstanding, needs not to be aware of all events that form the present. The present, being a class of events, is an abstract object without any causal power.

PSYCHOLOGICAL PRESENT

Class of local events that are causally connected ¹ to a given brain state.

Notice that from a biological point of view only local events are relevant. These events are those that directly trigger neuro-chemical reactions in the brain. Such events are located in the immediate causal past of those brain events that define the corresponding state. The psychological present is a conceptual construction of the brain, based on abstraction from events belonging to an equivalence class. The present, then again, is not a thing or a change in a thing (an event). It is a construction of the brain; a fiction albeit a very useful one for survival. Yet, individuals are not necessarily aware of all events that are causally relevant for the construction of the psychological present.

E.R. Kelly (1882) introduced the concept of ‘specious present’, which William James elaborated as “the short duration of which we are immediately and incessantly sensible” (James, 1908). I propose to update this definition to:

SPECIOUS PRESENT

Length of the time-history of a brain process that is necessary to integrate all local events that are physically (causally) related to a given brain state.

The specious present, being related to brain processes, can be different for different individuals equipped with different brains. The integration of the specious present can be performed in different ways, depending on the structure of the brain. It is even possible to imagine integration systems that can produce more than one specious present or even systems that might ‘recall’ the future (see Hartle, 2005 for examples based on computers). If biological evolution has not produce such systems, it seems because of the existence of spacetime asymmetric boundary conditions that introduce a preferred direction for the occurrence of processes (Romero and Pérez, 2011).

Finally, I introduce a physical present.

¹ For a complete account of causality as a relation between events see Bunge (1979).

PHYSICAL PRESENT

Class of events that belong to a space-like hyper-surface in a smooth and continuous foliation of a time-orientable spacetime.

Since in the manifold model of spacetime every event is represented by an element of the manifold, the introduction of this class does not signal a special time identified with 'now'. Every space-like hyper-surface corresponds to a different time and none of them is an absolute present 'moving' into the future. Actually, naming 'the future' to a set of surfaces in the direction opposite to the so-called Bing Bang is purely conventional.

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Artículo

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