Processes and the instant of change

Philipp Blum, November 20, 2015

The problem of the instant of change

One version of the problem of the instant of change is the following, where s_1 is the state of a's being F and s_2 is the state of a's not being F and a is in both states for more than an instant:

(a) If the last instant of s_1 is identical with the first instant of s_2, then the principle of non-contradiction is violated.

(b) If every instant of s_1 precedes the first instant of s_2 (or every instant of s_2 follows the last instant of s_1) and time is not continuous, then there are instants at which a is neither in s_1 nor in s_2, violating the principle of the excluded middle.

(c) If every instant of s_1 precedes the first instant of s_2 (or every instant of s_2 follows the last instant of s_1) and time is continuous, then s_1 (or s_2) has no temporal boundary and there is no answer to the question when a ceased to be in s_1 (or started to be in s_2).

The problem of temporary intrinsics

A supposedly inconsistent quatuor:

1. If there is change, it is in respect to one and the same thing.
2. If there is change, it is in respect to one and the same property.
3. There is change.
4. Nothing both has and lacks the same property.

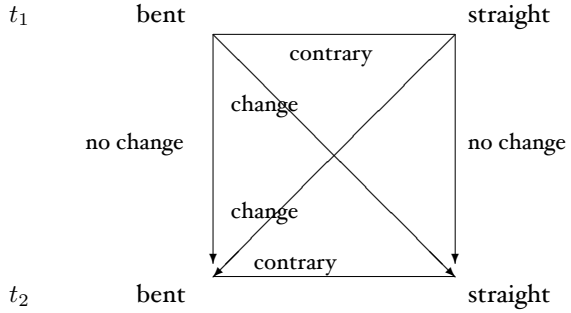
Three versions of the view denying (2):

(i) *being bent at* t is a relation between an object and a time;

(ii) *being bent at* t is a relational property of an object, derived from a relation of that thing to a time;

(iii) *being bent at* t is a monadic property of objects.

Task: explain the differences and similarities in



Adverbialism and its problems

(1) For any a and t, aF^*t $:\Longleftrightarrow$ "a is F" is true at t

(2) For any a and t, aF^*t $\Longleftrightarrow$ a is F-at-t

(3) For any a and t, aF^*t $\Longleftrightarrow$ a has a temporal part at t which is F

(4) For any a and t, aF^*t $\Longleftrightarrow$ "a is F" is true-at-t

(5) For any a and t, aF^*t $\Longleftrightarrow$ a is t-ly F

(6) For any a and t, aF^*t $\Longleftrightarrow$ $\exists e$ (e is at t and e makes it a fact that a is F)

Perdurance and unfolding

an object o *perdures* $:\Longleftrightarrow$ o persists during interval I in virtue of being such that there exists intrinsically, at every instant t of I, a thing which is, at t, a part of o.

Perdurance is to be contrasted with another way for temporally extended things to take up time, which I stipulate to be characteristic of processes:

an object o *unfolds* $:\Longleftrightarrow$ o persists during interval I in virtue of being such that it a-temporally has parts which extrinsically exist at every instant t of I.

Perdurance and unfolding, so defined, differ in two crucial respects:

- temporal vs. atemporal having of temporal parts: Temporal parts, as defined by Sider, are short-lived entities which at the time of their existence are part of the temporally extended whole the persistence of which they ground. Their parthood relation being time-indexed allows the perdurantist to have 'temporary intrinsics', i.e. allows for the intrinsic exemplification of temporary properties. Suppose object o is red at t_1, but not red at t_2. To give a non-contradictory account of this situation, it is not enough for the perdurantist to postulate two different temporal parts, only one of which is (timelessly) red, but it is furthermore required that these things are not part of the persisting object o *at the same time*. Unfolding things such as processes are different in this respect: they have their temporal parts *simpliciter*, as well as at some given time.
- intrinsic vs. extrinsic temporal existence: To play their rôle in the 'solution' (or rather dissolution) of the problem of temporary intrinsics, the temporal parts of the perdurantist are "loose and separate" – their existence at their time does not depend on, nor does it somehow else 'involve', the existence of other temporal parts at other times. While it is difficult to cash out this notion of temporal intrinsicness, at least their existence must be intrinsic to perdurantist temporal parts if they are to play their rôle as fundamental bearers of (existence-entailing) temporary properties. Processes, on the other hand, have extrinsically existing, top-down or 'holistically' determined temporal parts, which are parts, but also *mere* parts, of their unfolding.

Let us take grief as an example. According to Goldie, grief is a process where "the unfolding pattern of the emotion over time is explanatorily prior to how/what the emotion is at a time". The explanatory priority of the pattern implies, but is not exhausted by, grief's being essentially temporally extended: it also means that the process of grieving does not happen during, or at, its total temporal extent, but rather takes up time in a different way. According to Goldie, the existence, at a certain time, of grief is also temporally extrinsic: "Any chosen state or event will not be sufficient to determine that ...grieving is taking place"Surprise is temporally extrinsic in this way.Even if ongoing processes are continuants, they're not ordinary continuants. Ordinary continuants are such that whether or not they have, at a time, a temporary part, depends only on how they are at that time (ie ordinary continuants are those material objects we believe in independently of crazy solutions to some of the puzzles of material composition): but whether or not my talking through section 1 is a proper or an improper part of my giving the talk depends on whether I will make it to section 2.

Processes and change

Three ways of having temporal parts:

Substances *produce* their temporal parts by persisting: at every instant of the existence of substance s, there is a temporal part, s-at-t, that derives its existence, its essence and its character from s.

Events *consist* of their temporal parts: the event e occuring at t is (identical with) its temporal part at t: e-at-t_1 and e-at-t_2 is the same event, multiply located.

Processes *are produced* by their temporal parts: process p is produced by a succession of events and derives its existence, its essence and its character from them.

How does this help with change? Processes *are* changes, their temporal parts are events, ordered and mutually incompatible with each other (as the case may be) in virtue of the nature of the process in question. This may sound disappointing, but I think it's the best we can have (or, at least, the best I can give you) (or, at least, the best I can give you right now).