

Experience, the Present, and Four Dimensionalism

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Abstract

The four dimensional theory of ontology known as eternalism is an attempt to deal with the philosophical problems posed by the nature of time. One form of this theory, motivated by modern physics, is considered and the question of its compatibility with our experience of time as a process is posed. To answer the question, our experiences of history, as well as certain thought-experiments, are used. The definition of the present itself is also reconsidered. It is concluded that under this ontological theory, this notion should be understood in a radically new manner. Furthermore, whether or not a certain causal sequence is experienced as a process must depend upon one's viewpoint: from within the sequence is experienced as a process, but from without it is possible to see the whole sequence simultaneously. With such provisions, it is found that the ontology under consideration is in fact compatible with our experience of time.

I. INTRODUCTION

Our goal is to explore one possible ontological theory, and to examine whether or not it is compatible with our experiences of time. In particular, we will consider a form of ontology known as *eternalism* (Sider, 2004), which may briefly be described as a theory in which all that was, is, or will be, is ontologically the same, and that in fact there may be certain things which exist outside of any reasonable definition of time (for this reason, the theory is called *timeless*). For this ontological theory, the question of compatibility with our experience of time is quite salient and in no way obvious, as we will discuss.

The four-dimensional timeless theory of ontology, eternalism, which we will consider is a

very old one. An early occurrence of it may be found in a work by Boethius (2002), wherein the early Christian philosopher proposes it as a solution to the problem of the compatibility of the foreknowledge of God with the free will of mankind. The theory has since seen wide support from philosophers and physicists alike, particularly in light of the development of the theory of relativity (Einstein 1905, 1916; Minkowski 1908). Let us begin by defining this theory precisely.

II. ETERNALISM DESCRIBED

Herein, we will work with the assumptions about timeless ontology which seem to accord best with the original motivations of Boethius and with the modern theory of general relativity (Wald 1984). According to this theory, the past, the future, and the present, are all the same from the purely ontological viewpoint, and if an object endures from one time to another, this is because its different parts of it are spread out through time, the way parts of objects may be spread through space. The Battle of Waterloo exists in exactly the same way as the city of Paris, which both exist in the same sense that tomorrow's breakfast does (assuming there will in fact be a tomorrow's breakfast). This does not mean, of course, that there are not causal relations between various occasions. When a hockey stick knocks a puck across the ice, according to this timeless view, we must consider the occasions: stick-moving, stick-hitting-puck, puck-moving, but this last occasion is *caused* by the previous occasion. Thus, the collection of all actual occasions is a partially ordered set, with the partial order induced

by causal relations. This is important, because even from the timeless perspective, certain occasions are in fact caused by other occasions. Similarly, occasions involving the exercise of (libertarian) free will are in fact such occasions, occurring with partial independence of those occasions which are prior to them in the partial ordering (Boethius 2002; Lewis 2001). Indeed, it was this which attracted Boethius to the theory, since here he had combined freedom of the will with a theory granting equal ontological status to the past, present, and future, thereby solving the problem of logical determinism, God's foreknowledge, and free will. Specifically, on his theory, God sees the future as we see a person walking in the present: our seeing them walk means that one may logically deduce that they are walking with necessity, and therefore they must be walking, but we only see them walking because they voluntarily choose to walk. Similarly he claimed that God sees the future, and from this knowledge the future follows of necessity, but this knowledge is derived from the future itself, which involves our free choices (his own language on these points was somewhat confused, but he was at a disadvantage since he was among the first, if not the first, to explicitly formulate this theory). It is worth mentioning that there are other variations of four dimensionalism. This form of four dimensional, timeless ontology is often called *eternalism* (Sider, 2004).

This brings us to consider one of the most important notions of time, at least in terms of physical science: the ordering induced by causal relations. In general relativity, these

relations are shown not to follow a simple pattern, as they did in Newtonian physics (Einstein 1916; Wald 1984). On the other hand, quantum theory, particularly the Einstein-Podolsky-Rosen effect (1935), tested by Aspect et al (1982), forces us to consider whether perhaps relativity does not give us proper partial ordering. Nonetheless, it is necessary to observe that quantum theory generally suggests an even more complex ordering than relativity on its own, since the quantum effect noted above requires that there be some curious sort of causation occurring which is not permitted by relativity, while at the same time restricting us to communications which are permitted by relativity (Eberhard 1978). In any case these orderings, whatever they may be, are, for logical reasons, generally required to be a partial order, and we will assume this throughout.

III. THE EXPERIENCE OF CHANGE

Our goal is not to discuss the precise nature of this causal ordering, but rather the compatibility of this timeless ontology with our experiences. For experience is not timeless. This fact is apparent to anyone who will consult their own experiences. Change, flow or process is a definite component of our phenomenological findings. This results in the difficulty that timeless ontology does not a priori contain any sort of process-component. Without such an acknowledgment and description of our experiences, we must conclude that timeless ontology is an erroneous understanding of reality. Additionally, such a component must not be added in an arbitrary fashion, for we might then return to some form of

presentism (Sider 2004) with an extra dimension, with the process being included as a simple change in awareness. Rather we must retain the crucial point about four dimensionalism, which is the timeless aspect of its ontology. Our goal, then, is to determine the logical feasibility of defining a notion of 'process' which satisfies these requirements. For completeness, let us mention that presentism is the notion that that which will be and that which was are ontologically different from that which is present, and especially that there is a universal notion of the present which applies to all things. This is exactly what we would end up with if we added in the process in the manner of a flashlight moving along a series of objects (Broad, 1938), since the 'light' itself is then coming into existence in one place and then going out of existence in that place; the flashlight is still a process, and this process is seen as being an absolute process which is procedural for everyone. Therefore, this analogy must not be the whole of the matter. Furthermore, the situation becomes even worse if we wish to have free will as a part of our ontology, for this flashlight analogy is incompatible with our notion of free will, at least if that usually involves our awareness of the present and the past having some effect upon the future, as it usually does. But in the flashlight analogy, our awareness simply flows along to a predetermined future, and there is no room for free will. Whether we wish to include free will or not, however, we have observed that the flashlight analogy is inadequate. We must seek another solution to this problem, if we are not to do away with four dimensionalism entirely.

Let us begin by asking a slightly different, but related, question: under our everyday experience of time, what do we mean by the term 'present'? In other words, when a person says, on a certain occasion, some other person is 'present,' what is their meaning? It seems clear that what they mean is that this other person is located with them, in the sense that they are capable of communicating with one another, influencing one another, and generally prehending one another, to borrow Whitehead's (1978) term for general apprehension and influence. Of course, this meaning of 'presence' has more to do with *space* than with *time*. But we contend that, if ontological timelessness expresses a fundamental truth, then the two meanings should not be taken to be so different.

In particular, let us consider what we mean by speaking of 'the present' as it regards time. Now, in special relativity, 'the present' was found to depend upon the observer (Einstein 1905). However, in general relativity, the matter becomes even more severe: there are 'spacelike hypersurfaces,' but none of these is *preferred*. In special relativity, the present is a geometrical object, namely a spacelike hypersurface with the properties of being flat and having a normal vector which is parallel to the tangent vector of the observer's worldline; the technical details are not relevant, as the main point is that there is a fashion in which we may define a preferred collection of occasions as the 'present.' However, in general relativity, there are not in general any flat hypersurfaces. The notion of a 'surface of simultaneity' which could be defined in special relativity is therefore lost in the general theory. The only

meaning which 'presence' is able to retain in such a context is 'that which is *directly present* to the observer.' This light which the observer sees, the surfaces with which they are in direct contact, and so on: these alone retain any right to be called 'present.' There is simply no meaning to calling other objects 'present.'

We therefore propose to modify the meaning of 'presence' as follows. We shall denote an occasion *A* as 'present' for occasion *B* if and only if *A* is prehended by *B*. Only this definition has any right to be denoted by 'presence,' by our above argument. This new definition will be helpful in deriving a solution to our problem, and as it will be seen, the solution itself also implies that this definition is the only possible one.

Now, we must observe that the occasion *A* might be present for many other occasions, perhaps for both *B* and *C*. Also, *A* itself will have a variety of occasions present to it, say *B'* and *C'*. Let us also suppose that *B'* and *C'* are occasions in the life of some observer, with *B'* being experienced prior to *C'*. What will this look like from the perspective of *A*?

In fact, it will look exactly like a process seen from the outside, that is, it will simply be what it is and will not be experienced as a process, as such, but rather like a still frame. On the other hand it will be seen that the observer is at that point experiencing the occasion as part of a process. The experience of this observer at *B'* and at *C'* will both be seen, and both

will look like exactly what was occurring for this observer on those occasions. If either of them are causally related, or involve some sort of exercise of free will, those aspects will appear as well. However, it will make no sense for us at *A* to ask 'what is that observer *now* experiencing?' For such a question may only be answered by specifying what is meant by 'now,' and to do so we must say which occasion along this route we mean, and once we have said so we have answered the question of what that observer experiences at that point. Simultaneity, then, is entirely a matter of perspective. Of course, if only one occasion of theirs was present to us, then there would be a specific occasion singled out for us to ask about, and this is the usual case for us throughout our lives interacting with others. But in this case, we may only say that *both* are 'now' happening, although each is, for that observer, only a momentary process. For a completely timeless observer, the whole of existence would be 'now happening,' (as all things *are* in the purely ontological sense) although of course each event for an observer experiencing a process would be only a momentary processional experience. In some sense this is also what we find when we consider history. It must be granted that the past is not present to us in the sense that we have given 'present' above, but it is still quite analogous to this situation wherein a sequence of occasions, which an observer experiences as a process, are seen by another observer at a single time.

IV. CONSEQUENCES OF OUR RESULT

Thus, our discussion reveals how timeless ontology is compatible with our experience. From

within a sequence of processes, we experience only a portion of the totality of existence as the process proceeds. The past and future are simply not present to us (although much of what would traditionally be called 'present' is also not present, in our understanding of the term). Furthermore, the part which lies in the causal future from where we now experience is in fact not fixed for us, thereby permitting libertarian free will. In the causal future the possibilities are open, unless of course we hold to a strict form of determinism, in which case they are fixed, albeit possibly not in a way that we are able to know. This open set of possibilities is not the result of a processional mode of experience, however. Any observer, in any mode of observation, who saw only our current position and whatever causally preceded it, would find that the causal future (those occasions which lie ahead in the partial order induced by causality) was only partially determined by those things they observed (unless strict determinism holds, in which case it would be completely determined). On the other hand from outside this sequence, another observer looking upon our lives might simply see the whole thing at once, depending upon what was present to them: only from within is it seen in the 'one frame at a time' process-fashion. Thus, this experience of time which we have, the experience of process, is purely *perspective*. Because it is only perspective, we have solved the earlier objection to the flashlight analogy. In the flashlight analogy, the motion of the flashlight was seen as an absolute occurrence, and therefore this motion was seen *as a process* by everyone. In our theory, the motion of the flashlight is seen as simply a static line, when viewed from outside, but as a process when viewed from the

flashlight itself (and also from many other perspectives which are themselves processes, and for whom different parts of the flashlight's motion come to presence and then leave - the point is that there is a *potential* viewpoint in which the whole of the flashlight's motion is seen at once, even if no one, such as God, were to actually have that viewpoint). But the fact that processes are relative to one's perspective does not make them unreal. On the contrary, even from outside, the observer sees us at each point experiencing the process at that particular point. However, the process itself is only available in a process-fashion from within itself, in that we experience a certain sequence as a process which from outside may be seen in its entirety at once. Therefore, each of us exists in a private time; these private times, however, are related to one another in that, as we become present to one another, we find that our experience of the process flows in the same direction as the other's. Thus, when two people converse, they each see the other at various moments along their processes, and they find that the two processes agree with one another. This is what gives the illusion of a single time flow holding for everyone. In fact, this assumption, though false if our position on timeless ontology is true, is fairly harmless, and in particular is 'a decent enough approximation' for everyday living; it is only when relativistic effects become important that we need really concern ourselves with its inaccuracy, and even then the two orders agree with each other *qua* orders, so it is still a decent approximation. It is really when we consider the perspective of God, or the notion of other universes whose times might be entirely separate from ours, though they might occasionally interact with ours, or when speaking of

pure ontology without perspective that we must explicitly use the timeless ontology and the relative nature of processes.

We find then that in our interactions with one another, we see one another enjoying certain points in our respective processes. It is in this sense that we may say 'she is now enjoying the wine' or 'he is now suffering a broken leg.' For this 'now' refers to the point in their processional experience which is now present to us at that particular point in our sequence which we processionally enjoy. As discussed, this occasion of the wine being enjoyed, or the pain being suffered, may be experienced by us for any length of our process (theoretically), but this does not change the fact that, for them, it is/was/will be merely a moment (it is unfortunately the case that our tenses do not handle these types of situations well). Similarly in one moment we may see many of their moments at once.

We must also note that aspects of our experience in a process may become part of the motivations for libertarian choices at later points through that process. This produces no paradoxes when we consider the process from inside or out, provided that the process is ordered in the same (general) order as is given by the causal ordering of events involved (note that the events in the procession may skip intermediary events, as is probably required by the Transactional interpretation of quantum mechanics, or they might have a partial but not total agreement) (Cramer, 1986). For from without, seen absolutely, what appears as

future from some point in the sequence only is what it is because of the choices which the individual in the sequence makes. Thus, the choice may itself be free in the libertarian sense, but from without one may see the motivations, the choice, and its consequences all at once, rather than in order; they all simply exist, the purely ontological sense, but the consequences are caused by the choice, while the choice is not caused by the motivations. The event of the libertarian choice is not determined by its causal predecessors; this fact is true in the pure ontological sense, regardless of perspective. Indeed one might possibly conceive of a being which made the choice while having an eternal perspective themselves, even. Thus, eternalism is compatible with libertarian free choices. The same essential reasoning solves the problem of logical determinism, since the future exists eternally, but it exists because of its past. Hence statements about the future are always true or false, but they are so by virtue of their agreement or disagreement with the future (as a corollary it may not be possible, from a sequential perspective, to determine the truth of statements about the future, although we do know automatically that they are true or false even now).

Now this understanding of processes as being relative to the viewpoint reveals why our earlier notion of the 'present' is the only one which remains meaningful under the timeless ontological theory. For there is now no sense in speaking of 'now,' except insofar as we mean to indicate a particular point along a sequence which we experience as a processes. Since there is no universal 'now,' those things which are present must be understood only as those

things which are prehended.

This processional experience itself also answers another issue which may be raised against timeless ontology. For it might be asked how we are to understand the notion of an 'enduring entity' in such an ontology, wherein the different occasions are simply different occasions related by, at most, some sort of prehension. That is, in timeless ontology, a given object at two different times is two ontologically distinct objects, and they are at best connected by some sort of relation, such as being parts of the same object spread through time. However, at least for conscious observers, the very processional route taken provides a relation which may be used to define this route as an enduring object. This does not work for non-conscious entities, of course; however, we will not attempt to find an answer for these here. We will only remark that 'endurance' is *irreducible*: it cannot be defined in terms of other notions (which are not equivalent to it). Our solution for conscious observers involves looking at the process itself, for example. Other types of endurance will likewise require looking at some special ontological notion, or perhaps introducing a new one. It may involve something akin to this process-experience; perhaps something analogous but without consciousness might be invoked. There are, for example, some notions from Whitehead (1978) about enduring entities which seem to perhaps be capable of being utilized in this fashion. The fact that endurance is an abstract irreducible concept in no way implies that it is an ill-defined concept, however. Ultimately, all concepts depend upon those irreducible concepts which

must simply be conceptualized directly. The notion of *redness*, for example, must be grasped directly, and cannot be defined in other terms. Likewise the notion of being(-in-itself) (in both the realist and the idealist senses) is irreducible (and quite abstract in both cases); claims that notions such as causation and libertarian free will are cannot be made well defined are also be the result of failing to realize that they are irreducible concepts which can only be grasped directly (Pink, 2004). All these examples (except redness, which is concrete) are cases of rather abstract notions which can only be grasped through direct conceptualization and not a reductive definition. Indeed being, as Berkeley argued, cannot even be defined ostensibly, but only through abstract conceptualization, (although he went further and restricted all concepts to ostensibly defined ones, then concluded the impossibility of conceiving realist being, not realizing that other forms of abstract conceptualization may enable its well-defined conception) (1977). Yet certainly all these concepts might possibly be well defined (although in some cases, a claim that a concept is well-defined in this way might be mistaken). The concept (or various concepts) of endurance is likely similar, and so we should not think that it cannot be defined simply because it is irreducible.

V. CONCLUSION

To summarize, then, we have concluded that the processional nature of time is experienced *privately*, but that the sequence itself may be seen from the outside as a whole (or parts of it

may be seen from different points of some other processional sequence). The fact of the processional nature of the experience is an ontological fact, but it is an eternal ontological fact. The sequence, seen from outside, may be seen as a timeless process-occurrence, and is only experienced in the mode of a process from the inside (although another process of experiences might see different parts of the process at different points along its own process). Each such sequence involves a different process-experience, and therefore there is no meaning to any sort of universal time, since only one given sequence is experienced by one observer in this process-fashion, and all things, including the processes, exist eternally and may be experienced (theoretically) simultaneously. Thus the nature of some event as a process is relative to the perspective, but purely ontologically, everything which is, is eternally. For this reason the names *eternalism* and *timeless ontology* are seen to be appropriate. However, the partial ordering induced by causality *is* universal. This may seem strange, but it is a direct consequence of our earlier discussions, and although it might seem to disagree with our common sense, there is nothing logically contradictory within it. It accords with our experiences, and it is compatible with timeless ontology. We have also shown that it is compatible with libertarian free choices, if we wish to involve those in our ontological theory. Of course, we have not herein discussed why one might prefer this position to any other interpretation, other than the original reasons of Boethius for pursuing it and its naturalness given modern physics. However, these reasons alone make the timeless ontological position quite worthy of consideration. Our goal, however, was only to show that

this position is compatible with our experience of time as a process, and we have accomplished that.

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