

## PRESENTISM AND ONTOLOGICAL SYMMETRY

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### Introduction

Presentism tells us that since only the present exists, the past and future are equally unreal. But presentism is also *motivated*, just as any A-Theory of time is, by the common sense intuition that the past is fixed and the future not. It is, in part, this belief in a robust asymmetry of fixity that makes the A-Theory distinctive. But are these two doctrines—that of ontological symmetry and asymmetry of fixity—compatible, or do they represent inconsistencies in the presentist’s theory? In this paper, I will argue that there is indeed an inconsistency between the two doctrines, and that the presentist is unable to account for the temporal asymmetry that is so fundamentally a part of her theory. In Section I, I will briefly outline a recent defense of presentism due to Craig. In the course of this defense, Craig attempts to draw out the analogy between modal actualism, on the one hand, and presentism, on the other, by formulating a tensed possible worlds semantics on the model of the tenseless possible worlds semantics endorsed by the modal actualist. I will argue that Craig’s tensed semantics, which I will refer to as actualist presentism (AP), are *not* strictly analogous to the tenseless ones, and that this disanalogy highlights the tension between the presentist’s doctrines of ontological symmetry and asymmetry of fixity. In Section II, I will undertake an investigation, on the presentist’s behalf, in order to determine whether she is capable of reconciling these two doctrines. The investigation, based on a suggestion from Craig, will involve considering different asymmetries, other than that of ontology, which might be said *fundamentally* to constitute

temporal asymmetry. The successful candidate for this role must not only provide a ground for the directional asymmetries, but crucially for the A-Theorist, must also provide a ground for the asymmetry of fixity. In Section III, I will consider whether the presentist is able to avail herself of some of the standard B-Theoretic accounts of the asymmetry of fixity, and will argue that she cannot. Finally, I will conclude that the asymmetry of fixity, which the presentist heartily endorses as an objective feature of reality, cannot be accounted for other than through the postulation of an ontological asymmetry.

### I. Craig's AP—The Problem Highlighted

Craig [2001] begins his presentation of AP by citing Wolterstorff [1979] and Plantinga [1974] as sources. He adopts Plantinga's possible worlds semantics, whereby a possible world is conceived as a maximal possible state of affairs. A state of affairs  $S$  is maximal if for every state of affairs  $S'$ ,  $S$  includes  $S'$  or  $S$  precludes  $S'$  [Craig 2001: 36]. Such worlds and states of affairs have naturally been thought of as tenseless; but, taking Wolterstorff's lead, Craig suggests that we still require tensed states of affairs, in addition to the tenseless ones, in order to account for tensed facts. The maximality of such states of affairs would be temporally indexed to a stipulated temporal location and duration, as opposed to the absolute maximality of tenseless states of affairs. So he defines a tensed possible world as a 'maximal possible state of affairs at some time  $t$  of arbitrarily stipulated duration' [ibid.]. All tensed possible worlds that obtain, whether past, present, or future ones, are tensed actual worlds. So the world that obtains presently is the tensed actual world, and the world that obtains at some time  $t$  is the tensed actual world that obtains when  $t$  is present.

Craig sees a tight analogy between tenseless and tensed possible worlds semantics, and tries to show that the analogy fits nicely with a presentist approach to tensed possible worlds. For example, in tenseless possible worlds semantics, we say that Socrates has in  $W$  the property of being snub-nosed if and only if Socrates would have (tenselessly) the property of being snub-nosed were  $W$  to be actual. The analogous truth conditions in tensed possible worlds semantics for saying that Socrates has the property of being snub-nosed in a tensed possible world  $W^t$ , are that Socrates would have (present-tense) the property of being snub-nosed were  $W^t$  to be actual. Similarly, just as each tenseless possible world exists in each such world, so each *tensed* possible world exists in each such world. The tenseless actual world  $\alpha$  is the only one that obtains, but each tenseless possible world  $W$  exists in  $\alpha$  and is actual in or at itself.  $\alpha$  is also actual in itself, but the difference is that ‘ $\alpha$  is not merely actual in  $\alpha$ , but also actual *simpliciter*’, and is therefore unique [ibid.]. In the same manner, although the tensed actual world  $v$  is the only one that is actual *simpliciter*, because it obtains (present-tense); nevertheless, each tensed possible world  $W^t$  which does not obtain still exists and is actual in itself, and those that are not *merely* possible, but also tensed actual worlds (i.e.  $W^{t\alpha}$ ), either have been or will be actual *simpliciter* when they obtain in the present.

As I understand Craig, he wishes to maintain that in the tensed case possible worlds may fall into one of three different categories: i) those that are merely possible (whether past, present, or future) and so never actually obtain; ii) those that are actual but do not (yet/anymore) obtain (i.e. future and past tensed actual worlds); and iii) *the* actual world that also obtains (i.e. the present tensed actual world). I also take it that those that fall under categories i) and ii), above, are actual in or at themselves, but not actual

*simpliciter*. But is this account of tensed possible worlds really analogous to that of tenseless possible worlds? Craig's preferred account of the latter has it that possible worlds only fall into *two* different categories: i) those that are merely possible, though actual in themselves; and ii) *the* tenseless possible world that is also actual *simpliciter*. The disanalogy seems to lie in the fact that Craig moves from tenseless merely possible worlds which are not actual *simpliciter*, to tensed possible worlds which, though not actual *simpliciter*, have a more robust ontology than do tensed *merely* possible worlds. *All* tenseless possible worlds that are actual in themselves, but not actual *simpliciter*, are merely possible worlds; whereas *some* tensed possible worlds that are actual in themselves but not actual *simpliciter* (yet/anymore), either will obtain or have obtained, and so are *not merely* possible.

I am not concerned, here, with whether this disanalogy between modal actualism and AP is a real problem for Craig's semantics. What I am concerned with is the tension the disanalogy highlights between the presentist's belief in ontological symmetry and in her belief in the *asymmetry* of fixity. Given the former, Craig must claim that there is no ontological distinction between past and future tensed possible worlds that actually have obtained/will obtain. How, then, should he characterize them? If he wishes to maintain a strict analogy with tenseless possible worlds semantics, he should claim that such worlds are merely possible (since they're not actual *simpliciter*). But then he would not be able to distinguish between past possible worlds that have obtained, and those that might have obtained though did not. In other words, he cannot account for a fixed yet contingent past. It is for this reason, I take it, that he introduces the disanalogous class of tensed possible worlds which, though actual in themselves (as are all possible worlds), are

neither actual *simpliciter* nor merely possible. These are the worlds that have obtained and will obtain. But now he faces a problem that goes beyond the disanalogy, because in positing the existence of future tensed possible worlds that are not *merely* possible, how can he account for the *non*-fixity of the future? If such worlds *exist now* and are more than just mere possibilities, but are those possibilities that *will become* actual in the present; then in what sense is the future open? Craig's AP tells us that future tensed possible worlds *presently* have the same degree of actuality as past tensed possible worlds, and this runs counter to the A-Theorist's intuitions about the asymmetry of fixity.<sup>1</sup>

## II. Presentism and the Asymmetry of Fixity

### A. A Hierarchical Account

So how does the presentist intend to reconcile this tension between ontological symmetry and the asymmetry of fixity? Unfortunately, most presentists are rather silent on the issue. The literature is occupied more with discussions about language and tense than about ontology and modality. Craig is one of the few presentists who has tried to develop a thoroughgoing presentist metaphysic, and he acknowledges that the presentist owes an account of why—though past and future are equally unreal—‘the past is actualized while the future is merely potential’ [Craig 1991: 152].<sup>2</sup> Further, he acknowledges that this account must go beyond the ‘mere tautology’ that ‘past events are different from future

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<sup>1</sup> I do not wish to exaggerate the force of this argument. There are, no doubt, things that Craig could say in his defense. But, of course, I have more things to say as well. It is enough for my present purposes if the A-Theorist's eyebrows are at least raised.

<sup>2</sup> I take Craig's acknowledgment of the asymmetry of fixity here as a justification for my challenge to the presentist. I also take it that for the presentist, as well as for any A-Theorist, the asymmetry is going to be a thoroughgoing one, according to which *all* past events are fixed and *all* future contingent events are not. This is so in spite of the possibility that a future event's probability might be enormously enhanced by the present occurrence of an appropriately linked causal event; since it is surely possible, however improbable, that such a causal chain be disrupted.

events because only past events have actually occurred' [ibid.]. I will, therefore, take Craig's suggestion as to what fundamentally constitutes temporal asymmetry as the starting point of my investigation. He claims that the 'asymmetry between past and future lies not in their ontological status, but in the fact that in the present there are traces only of the past, and this fact is rooted in the impossibility of backwards causation, which is founded, in turn, upon the objective reality of temporal becoming' [Craig 2001: 34n10]. He describes the presentist conception of objective temporal becoming as one of continual 'creation/annihilation', as opposed to a species of change [ibid.: 44]. So the passage of time is an objective feature of reality, and it is this feature that accounts for the unidirectionality of causation, and thus for temporal asymmetry. Objective temporal becoming involves the coming into being and the going out of being of present events, and there is no ontological difference between that which is prior to the creation (the future) and that which is subsequent to the annihilation (the past)—they are equally unreal.

This appears to be a hierarchical account of temporal asymmetry: although it is fundamentally constituted by objective temporal becoming, present traces of past (but not future) events and causal unidirectionality also contribute to the asymmetry. So let us examine these temporal features in turn, and determine to what extent they can account for the asymmetry of fixity.

### *B. Traces of the Past*

First, we will consider present traces of past events. At first glance, one wonders whether the mere observable phenomena of past traces could really serve as a ground for the temporal asymmetry of a fixed past and non-fixed future, or whether such phenomena are

simply manifestations of the asymmetry in question. The claim that the past is fixed is a claim *about* the past. But the observation that the present contains traces of the past is *not* a claim about the past—or at least not an intrinsic claim about the past—it is a claim about the present. Of course, the presentist will not be embarrassed by this, since, from her perspective, it will come as no surprise that non-entities such as the past and future lack intrinsic properties of any sort. But the presentist *does* want to acknowledge the fixity (i.e. actuality) of the past, as contrasted with the non-fixity (i.e. potentiality) of the future, and it is unclear that the reduction to *present* traces (of the past) can account for an asymmetry that is meant to hold between *past* and *future*.

Setting this concern aside, however, let us adopt the following, presumably plausible, definition of intrinsic fixity:

$E$  is intrinsically fixed =<sub>df</sub>  $E$  is fixed and  $E$  is not fixed in virtue of its relation to anything else

If fixity *is* an intrinsic feature of the past, then given our definition it clearly cannot be reduced to a feature of the present (e.g., traces). But, assuming that a non-existent event could only be fixed in virtue of something that does exist, the presentist must deny that the past is intrinsically fixed. Simultaneously, however, she must assert that fixity is a real, mind-independent property in the world. This follows from her endorsement of objective temporal becoming, a notion that implies that the actual/potential distinction between past and future is equally objective: that which has not yet come into being is merely potential (non-fixed), and that which has come into being is actual (fixed). So if fixity is a real property, then the presentist must acknowledge that it is a property of something real; and if not of the past, then of what? I think there are only two *possible* answers to this last question, neither of which is very *plausible*. The first is that it is a

property of traces of the past, rather than a property of the past itself; the second is that it is a property of the present. Let us consider these possibilities.

With regard to the first, it should be clear that if the past is not real and therefore not intrinsically fixed, then neither are traces of the past. Any given trace of a past event is only present for an instant, after which time that trace becomes past itself.

Alternatively, we can think of the trace as having duration, in which case it is only present while it continues, becoming past upon its completion (and perhaps giving rise to a new trace). The point can be made in either case, but it is simpler to speak of instantaneous events and traces. Thus, an event  $E$  which occurs at  $t_0$ , and for which there is then a trace  $a$  at  $t_1$ , may also have a trace  $b$  at  $t_2$ , but for the presentist  $b$  cannot be the same as its immediate predecessor  $a$ , since the latter no longer exists. Therefore  $b$  is either a trace of  $a$ , or both  $a$  and  $b$  are different traces of the same event  $E$ . On either reading,  $a$  is *not* intrinsically fixed, since it is only fixed in virtue of  $b$ 's being present at  $t_2$ . Of course, the presentist might try to argue that any series of traces all having the same event origin, and differentiated only by the times at which they are present, can be thought of as intrinsically fixed and thus as providing the ground for the claim that any individual member of the series is fixed. So, a given series of traces  $a, b, c, \dots$ , all initiated by the same event  $E$ , would be thought of as intrinsically fixed, and this collective intrinsic fixity would bestow fixity upon the particular past trace  $a$  in virtue of the latter's membership in the series. I cannot, however, see that this proposal would avail the presentist either; for if it is the entire series of traces that is temporally fixed, then the theory begins to look very B-Theory-ish—an obviously unacceptable consequence for the presentist.

The other possible candidate for intrinsic fixity is simply the present. After all, according to the presentist, events (temporally) *become* fixed *in the present*. So it is just as intuitive to call the present fixed as it is the past (Aristotle [1967] certainly held this view, though he spoke of ‘necessity’ rather than ‘fixity’). Furthermore, the presentist maintains that though the past and future do not exist *simpliciter*, they do exist derivatively and in virtue of the present (as in Craig’s past and future tensed actual worlds which, though existent, do not presently obtain, and therefore do not exist *simpliciter*). So it would seem that the presentist could claim that it is really the present that is intrinsically fixed, and that the past is fixed *in virtue of* the fixity of the present. Upon closer inspection, however, we see that the analogy between derivative existence and derivative fixity does not hold; since (for the presentist) time is symmetrical with respect to the former but not the latter, and the asymmetry of the latter is what we are trying to account for. In other words, if the past is fixed in virtue of the fixity of the present, in virtue of what is the future *not* fixed? This is equivalent to the question with which we began, namely, that if all that exists is the present, then what could possibly constitute the difference between past and future? We do not seem to be any closer to an acceptable answer.

Perhaps, however, this is the wrong way to go about evaluating present traces of the past as a ground for the asymmetry of fixity. Another thought might be that present traces *determine* the past, in the same way that causal determinists believe the present state of the universe determines a future one. On this view, a fixed past is simply a determined one, and all that need exist in order to account for the fixity of the past is the bit of reality that does the determining, i.e. present traces. Of course, in order to maintain

the asymmetry, the presentist is going to have to deny that the present state of the universe determines a future one, and she is going to have to offer an account of *why* the determinism is only pastwards directed. But perhaps this would not prove too difficult, since it is open to the presentist to appeal to agential control as allowing for an indeterminate future—whereas there is no pastwards directed agential control.

Unfortunately for the presentist, however, one can argue against forwards determinism in a way that does not involve an appeal to agential control, nor to any phenomenon that exhibits temporal asymmetry. I am speaking here of the quantum mechanical argument against determinism, which tells against determinism as obtaining in *either* temporal direction.

According to forwards determinism, given the present state of the universe  $S$  and a future time  $t_f$ , there is only one possible state of the universe at  $t_f$  that is compatible both with the laws of nature *and*  $S$ 's being the present state. The quantum mechanical argument against this view involves noting that one wavefunction (described by  $S$ , say) can subsequently collapse into one of two different position eigenstates (at  $t_f$ , say), in which case, there are two states of the world at  $t_f$  that are compossible with  $S$ . This counterexample to forwards determinism can also be adjusted to count against backwards determinism. According to the latter, given the present state of the universe  $S$  and a past time  $t_p$ , there is only one possible state of the universe at  $t_p$  compatible both with the laws of nature *and*  $S$ 's being the present state. But, again, quantum mechanics theorizes that two different wavefunctions, either one of which might be described by the state of the universe at  $t_p$ , can collapse into one and the same position eigenstate described, say, by  $S$ . So  $S$  does not determine which wavefunction obtains at  $t_p$ . Of course, conclusions about

determinism from quantum mechanics are controversial, but if the presentist is going to deny the argument's application to determinism, and yet maintain that forwards determinism is false, then she is going to have to present an even less controversial argument for that conclusion; and it is not clear that an appeal to agential control, or any other temporally asymmetric notion, is going to provide such an argument.

### *C. Causation*

#### 1. Waterlow's Account of Causation

In light of these considerations, we had better rule out the appeal to traces, and investigate whether the presentist's appeal to the unidirectionality of causation will prove a more satisfactory ground for the asymmetry of fixity. In order to determine whether this is so, we must first consider what account of causation the presentist should avail herself of. In one passage from Craig [1991: 152], he recommends Waterlow's [1974] account, in which Waterlow uses her conclusions about the nature of forwards causation to argue against the possibility of backwards causation. Her account of forwards causation is based upon the nature of forwards temporal continuing. She argues that a causal relationship can only exist between two events if those events are temporally continuous. Specifically, the cause must continue up to and during the initial occurrence of the effect. A cause does not immediately produce a *later* effect; rather, an occurrence of a cause is *simultaneous* with its effect. One can see how this proposal would appeal to the presentist, since we need not think of the earlier cause as existing in order to account for its later effects, which are detected in the present. There is, I take it, an instant of time when both a particular effect *and* its immediate predecessor temporally overlap, and so exist presently. This account allows the presentist to claim that the past is not exerting

any causal power on the present; instead, each successive effect and its immediate cause partially overlap, and so events exert their causal powers *in* the present.

Given that this account of causation and temporal continuing accords well with presentism, and given that we want to allow the presentist the best chance of reconciling what I claim are her inconsistent doctrines, I will take Craig's recommendation and adopt Waterlow's account for the time being. Before proceeding, however, it will assist our investigation if we consider how Waterlow intends for her account of causation to tell against the possibility of backwards causation. Given the dependency of causation upon continuing, she argues that if backwards continuing is impossible, so is backwards causation. In order to rule out the former, Waterlow first argues that the continuation of events is inherently directional, and then argues that this directionality is necessarily from earlier to later (at least for beings such as ourselves). With respect to the first point, she claims that mere (directionless) temporal extension cannot yield the continuing required for a causal relationship, since some causes temporally extend in either direction from their effects ('as in the case of the heat wave that turns the milk and persists after its turning'); and we would not call these relations cases of both forwards *and* backwards causation [Waterlow 1974: 382]. Such *bi*-directional causal relations would merely dissolve into *non*-directional ones. If we are going to speak of causation as having direction, then we must also affirm the directionality of temporal continuing. So, in the case of forwards causation, it is not enough that the cause *merely extends* to the pastward side of the effect, but the extension must be one of continuing *from* the cause and up to the effect. And, similarly, in the case of backwards causation, it must not only be the

case that the cause lies to the future side of the effect, but it must also continue to the time of the earlier effect *from* the later cause.

So continuing is directional, but is it necessarily unidirectional (from earlier to later)? According to Waterlow, given the structure of our temporal knowledge and experience, the concept of backwards continuing is, for us, unintelligible. She argues that it logically follows from the assertion that an event *E* is now (forwards) continuing ‘that for some time *before* now, *E* was occurring’, whereas such an assertion ‘leaves it open whether *after* now, *E* will or will not be occurring’ [ibid.: 384]. So, in order for it to be the case that *E* continue backwards in time, an assertion of *E*’s continuing must imply that *E* will be occurring for some time after now, but that it is open whether *E* has occurred for any time before now. And, since we take ourselves to have (in principle) certainty about the past, but not about the future, it would be meaningless for us to make an assertion that implied a lack of (in principle) certainty about the past, and the possession of certainty about the future. Therefore, given the meaninglessness of backwards continuing in time, the meaninglessness of backwards causation follows.

So Waterlow wants to show, among other things, that the unidirectionality of temporal continuing determines the unidirectionality of causation. The question before us, however, is whether these unidirectionalitys fundamentally constitute and determine temporal asymmetry, as in Craig’s suggested hierarchy. If they do, then they must also account for the asymmetry of fixity. But the problem with taking Waterlow’s conclusions about unidirectionality and suggesting that they provide us with a foundation for the asymmetry of fixity, is that she argued *from* the asymmetry between past and future *to* the unidirectionality of continuing and causation. Her conclusion that

backwards continuing is unintelligible was based on the idea that the past could, in principle, be known with certainty, and that the future could not be so known. And, although she refrains from basing this epistemological asymmetry on any metaphysical asymmetry, the latter is implied by an analogy she offers of water spreading from north to south [ibid.]. The analogy tells us that an assertion of the water's (now) spreading made at any point implies that water lies to the north of the point but leaves it open whether or not water lies to the south. This imagery seems to paint a perfect picture of the fixity/closedness/actuality of the past (water to the north), and the non-fixity/openness/potentiality of the future (indeterminate to the south). So Waterlow's conclusions about unidirectionality are not available for the presentist to use as a foundation for the asymmetry of fixity, given that Waterlow (rightly, I think) reverses the dependence. This is why, at one point in the argument, she acknowledges the presupposition of temporal asymmetry in arguing for the unidirectionality. But the presentist needs to demonstrate that her ontology can account—in virtue of the unidirectionality of continuing and causation—for this key tenet of the A-Theory, and Waterlow's arguments do not avail the presentist in that respect. I take this point as merely an instance of the following more general point: any account of temporal continuing and causation that coheres with an A-Theory of time is going to have to presuppose the asymmetry of fixity; in which case, the former cannot ground the latter.

## 2. Sorabji's Circular Time

Is there some other consideration, which might allow the presentist to claim that temporal asymmetry is founded upon, and so determined by, the unidirectionality of temporal continuing and causation? In her defense, one might wonder whether we could even

conceive of a world temporally ordered such that time was unidirectional but not asymmetric with regard to fixity. In fact, at first glance, if one thinks of temporal continuing in the way that Waterlow does, then it would seem that we could not. If temporal continuing is not only directional, but necessarily unidirectional (for beings such as ourselves), then it would seem that any unidirectional temporal order would require the fixity of events in the direction from which time has continued, and the non-fixity of events in the direction towards which time will continue. This conceptual difficulty, however, can be dissolved by considering an imaginary situation discussed by Sorabji [1988].

Sorabji considers what the world would be like if time were closed. By this, he does not mean an endlessly repeating *linear* time, where each repetition consists of an identical sequence of events. He rejects *this* conception as impossible purely on the basis of logical considerations: when we apply the principle of the identity of indiscernibles to times, there is nothing to distinguish the reoccurring events, nor the times at which they reoccur, from the initial time series. Thus, the notion of repeating time collapses, since no repetition has taken place. Instead, Sorabji proposes a notion of closed time according to which it is *circular*. In circular time, there would be no first and last event, rather the sequence of events would ‘appear to form a seamless, closed circle’ [Sorabji 1988: 165]. Sorabji sees this conception of closed time as avoiding the contradiction inherent in the notion of repeating time, since all events in the circular series occur only once (in the sense that ‘12 o’clock does not occur more than once on the clockface’ [ibid.]). Sorabji grants that closed time would require appropriate changes in the laws of physics, ones

that allowed for, say, a grown tree to shrink or disappear in time for it to grow again; but he claims that there is no conceptual obstacle to such a picture.

Now, let's consider what would be the ramifications for temporal directionality and asymmetry in closed time. As far as directionality is concerned, on Waterlow's definition of continuing, closed time would also involve (forwards) unidirectionality. The planting of a seed leads to the growing of a tree which leads to the shading of the house; events causally related continue in the same way they do in linear time. Of course, since the sequence of events is circular, and there is no detectable first and last event, one could plant a tree tomorrow in order to provide shade for the house yesterday. But Sorabji does not see this as a legitimate case of backwards causation, and nor should we if we are endorsing Waterlow's view. Although, in a sense, the shading yesterday does continue from the planting tomorrow, it does so in the forwards direction, not the backwards: the shading at  $t_2$  continues from the planting at  $t_4$  NOT through  $t_3$ , but through  $t_5, t_6, \dots, t_1$ . So, although planting the tree at  $t_4$  is a cause of something that comes before it in the circular series, the temporal continuing that grounds this causation does not run *towards* the earlier than direction. Another way to state this point is with Sorabji's clock analogy: if the ordering of  $t_1, \dots, t_6$  designates the 'clockwise' direction, then the temporal continuing in the above example does not run '*counter clockwise*'. Therefore there is no backwards continuing and thus, on Waterlow's account, no backwards causation.

What about asymmetry? It would seem that the only asymmetries exhibited by closed time are those just discussed, i.e. direction of continuing and direction of causation. As for fixity, since the sequence is closed and composed of a finite number of events, and since all events are equally past, the obvious judgment to make is that closed

time is symmetrically fixed. Sorabji disagrees with this judgment, but not in a way that questions the symmetry; rather, he questions the fixity (or inevitability, as he prefers to speak of it) of the symmetrical sets of events. That is to say, he argues that all events are *non-fixed*, and so closed time is symmetrically non-fixed. His initial point here is that we have as much reason to endorse the symmetry of fixity as we do that of non-fixity.

Though it is true that in closed time all events are past and the past is fixed, it is also true to say that all events are future and so not yet fixed. A middle aged man's birth would be just as much part of his future as it would be a part of his past. Sorabji uses other arguments which he says tip the balance in favor of a symmetry of non-fixity, and though I take issue with his conclusion, the disagreement is immaterial in the context of our present discussion. If, from the perspective of the present, we can view either direction in time as being both past and future, then clearly there is no asymmetry with regard to fixity/non-fixity. I conclude, therefore, that since we can conceive of time as being unidirectional in respect of continuing and causation, while also being symmetrical in respect of fixity, the asymmetry of fixity is not grounded in the former.

### 3. Tooley's Account of Causation

Thus far, my arguments against the presentist's attempt to ground the asymmetry of fixity in the unidirectionality of causation have been based upon Waterlow's account of the latter. But perhaps this has restricted the range of solutions the presentist might offer. *Must* the presentist endorse Waterlow's account of causation, according to which the direction of temporal continuing is more fundamental than the direction of causation? Or can the presentist claim that ultimately causation is the most fundamental aspect of time, and therefore a determinant of the asymmetry of fixity? We endorsed Waterlow's

account on the presentist's behalf because it allowed for simultaneous causation, and this accords well with the presentist ontology. But the presentist may wish to argue that causal relations between events can still obtain in the present, even though such relations are not determined by temporal continuing in the way suggested by Waterlow. It is one question whether the presentist *can* argue for such a position, it is another whether successfully doing so would yield a non-circular account of the asymmetry of fixity. We will treat these questions in turn.

With respect to the first question, if the direction of causation is to determine, rather than be determined by, the direction of temporal continuing, can the presentist still claim that events are simultaneously caused in the present? Waterlow's claim was that a cause must continue up to and during the initial occurrence of its effect in order for a genuine causal relation to obtain. She also argued that this claim implies that the direction of causation is determined by the direction of continuing. But surely there is room here for the presentist to resist this implication, while agreeing that causal relations are continuous in exactly the way described by Waterlow. As long as the presentist retains temporal continuing as a necessary condition for causation, she can avail herself of Waterlow's rendering of simultaneous causation; but from this, she need not infer that temporal continuing is more *fundamental* than causation. Just as it is perfectly plausible that for any  $P$  and  $Q$ ,  $Q$ 's being a necessary condition for  $P$  can *result from*  $P$ 's determining  $Q$ ; so, too, it is perfectly plausible that though the direction of temporal continuing is determined by the direction of causation, nevertheless, the obtaining of the causal relation necessarily requires temporal continuing between events.

Now, assuming that we have painted an intelligible picture here on behalf of the presentist, can it provide a non-circular account of the asymmetry of fixity? If the presentist were to wed this causal account of the unidirectionality of temporal continuing with a non-reductive, singularist account of causation—according to which causal relations are analytically basic—then perhaps she would be within her logical rights to claim that the impossibility of backwards causation, and, in turn, the asymmetry of fixity, simply result from this conception of causation. The idea would be to claim that *E*'s causing *F* is just a primitive relation that does not admit of further analysis, and that, as a matter of fact, in our world causes always precede their effects. So there is no backwards causation, and it is in virtue of this fact that the past is fixed. This approach, however, is not a very philosophically satisfying one. We have already seen that it is difficult to argue for the impossibility of backwards causation without presupposing temporal asymmetry. That difficulty is not removed by simply stipulating that it is a brute fact about causation that causes always precede their effects. Granted, empirical evidence strongly suggests that we live in a world where causation is (whether necessarily or contingently) unidirectional. But simply to define 'the future' as that half of the time line that is subject to causal influence from the present does not provide a *ground* for the asymmetry, it simply describes an aspect of it. Furthermore, given our conclusions based on the conceptual possibility of circular time, it is far from clear that the unidirectionality of causation is a sufficient condition for the non-fixity of the future. Nevertheless, the suggestion outlined above does point to a more sophisticated approach, one that also involves endorsing a singularist account of causation, but one on which the concept of causation does call for further analysis.

The approach I have in mind is that taken by Tooley [1997]. If correct, it is one that would prove false my earlier claim that any account of causation that coheres with the A-Theory of time must presuppose the asymmetry of fixity. Although Tooley does acknowledge that one cannot establish the impossibility of backwards causation without presupposing a dynamic conception of time, he offers a singularist account of causation that purports to show that that relation can only obtain on a dynamic conception of time.<sup>3</sup> So for Tooley, causation is fundamental to time, and determines both its direction and asymmetry. Unlike other singularists about causation, however, he does not believe that the relation is analytically basic. It requires an analysis, but the analysis need not be a reductive one, nor need it presuppose causal laws. He goes on to argue, however, that *if there are* laws involving the causal relation (which he takes it that there are), then those laws must satisfy certain postulates. These postulates, in turn, are ones that can only obtain in a dynamic world.

So will this approach work for the presentist? According to Tooley, the most likely type of dynamic world in which his postulates can obtain is one in which both the past and present exist, but the future does not. This, however, seems a more contentious claim than the claim that his postulates require *some* type of dynamic world, and since I think there is a more fundamental worry for Tooley's approach anyway, I will consider it as a potential solution for the presentist, in spite of its alleged inconsistency with a presentist ontology. The more fundamental worry is that Tooley's postulates, upon which his analysis of causation and his account of temporal asymmetry are based, might

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<sup>3</sup> Tooley uses 'dynamic' as opposed to 'A-Theory' in designating his conception of time. This is because his conception is a hybrid one that involves aspects of both the A- and B-Theory. Nevertheless, I will adopt his terminology in discussing his approach to causation, since the asymmetry that I am claiming is vital to the A-Theory is every bit as vital to his dynamic conception.

themselves presuppose temporal asymmetry. I believe that they do, and thus that the presentist is unable to avail herself of Tooley's approach in attempting to provide a non-circular account of the asymmetry of fixity. In what follows, I will first outline Tooley's postulates and his defense of the claim that they can only obtain in a dynamic world; I will then argue that his postulates actually presuppose a dynamic world.

Tooley's postulates are formulated in terms of the probabilities that causes transmit to their effects—a formulation that is supposed to be neutral with respect to whether time is static or dynamic. The 'crucial content' of the four postulates can be expressed by the following two claims:

- (P1) The posterior probability of a cause is equal to its prior probability, and does not depend upon the prior probability of its effect.
- (P2) The posterior probability of an effect depends upon the prior (and posterior) probability of its cause.<sup>4</sup>

[Tooley 1997: 61, 107-8]

According to Tooley, (P1) and (P2) 'entail that, if a type of event with a very low prior probability turns out to be caused by a type of event with a much higher prior probability, then the former type of event must be assigned a posterior probability that is at least as high as the prior (and also posterior) probability of the type of event that is its cause' [ibid.: 105]. So, for example, before an event occurs that involves drops of water, randomly scattered throughout the atmosphere, all moving in the same direction towards the surface of the earth, the probability of such an event seems very small. But after the occurrence of this event, when we consider its cause in light of the laws of gravity and acceleration, then we must acknowledge that the posterior probability of the event is no

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<sup>4</sup> My (P1) and (P2) are paraphrases of Tooley's (C<sub>1</sub>) and (C<sub>4</sub>), respectively.

lower than the initial probability of an event that is causally sufficient to bring about the movement of water drops in the same direction. So effects are the recipients of the probabilities of their sufficient causes—probabilities which they do not have prior, but only posterior, to the obtaining of their causes.

Tooley goes on to argue that this picture cannot obtain in a temporally static world. This is because a static world is one in which events do not *become* actual as of a certain time; rather, events are either actual or not—*simpliciter*. According to Tooley, it might initially be thought that in such a world (P2) could still be justified, since there seems to be nothing inherently dynamic about the probability of a cause (at least partially) determining the probability of its effect. To see this point<sup>5</sup>, suppose that *E* occurs at time  $t_1$ , and *E* is causally sufficient to subsequently bring about *F*'s occurrence at  $t_2$ . Even if *E* and *F* occur in a static world and are therefore actual *simpliciter* (and so eternally actual), this does not bar one from endorsing the highly intuitive claim that the posterior probability of *F* depends upon the prior probability of *E*. But the problem, Tooley argues, is that it does not look as if (P1) can be justified, and this does not bode well for (P2).

(P1) is problematic because, given the symmetry of actuality in a static world, the non-actuality of an effect guarantees the non-actuality of its sufficient cause, just as much as the actuality of a sufficient cause guarantees the actuality of its effect. Thus, contrary to (P1), in a static world the posterior probability of a cause *does* depend upon the prior probability of its effect. Tooley's point is that the time at which one considers what is actual is irrelevant. So, in a static world, the probability of *E*'s being actual at  $t_1$  *does* depend upon the probability of *F*'s being actual at  $t_2$ , and this dependence obtains

regardless of the time at which we consider it. Whereas, in a dynamic world,  $F$  is not actual until it occurs at  $t_2$ , so the prior probability at, say,  $t_0$ , of its occurrence at  $t_2$  does not affect the posterior probability at, say,  $t_3$ , of  $E$ 's having occurred at  $t_1$ . And, given our inability to justify (P1) on a static conception of time, Tooley claims that (P2) also cannot be justified; since the latter is only justified if we assume that the posterior probability of a cause is equal to its prior probability—an assumption that is effectively ruled out by our inability to justify (P1).

But notice how trivially Tooley's postulates, by his own lights, imply a dynamic conception of time. Doesn't this suggest that, rather than proving that the world is a dynamic one, they must presuppose that it is? Certainly, if I were a B-Theorist, this is the tack I would take in arguing against Tooley. Consider that, inasmuch as (P1) and (P2) claim that the relation between posterior and prior probabilities differs for causes and effects, there is an asymmetry built into the postulates: posterior probabilities of effects depend upon prior (and posterior) probabilities of causes, but posterior probabilities of causes do not depend upon the prior probabilities of effects. Perhaps, however, this objection is an unfair one, since the proponent of a static theory of time does acknowledge a limited temporal asymmetry. So as long as (P1) and (P2) only presuppose a limited asymmetry, such as could happily be acknowledged by the proponent of a static world, then Tooley's postulates would remain neutral with respect to different conceptions of time.

But a further consideration will demonstrate that this response will not spare (P1) and (P2) from the charge that they presuppose a dynamic world. Tooley, in addition to characterizing a dynamic world in terms of actuality at a time (as I have done above), is

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<sup>5</sup> Though the point is Tooley's, the example here is mine.

also fond of characterizing it as one in which what facts there are depends upon what time it is. Here, facts are to be thought of as states of affairs that function as truthmakers for true propositions. Now, this seems a fair characterization—certainly one that any A-Theorist should agree does capture the nature of a dynamic world; but, in light of it, consider that built into (P1) and (P2) is the idea that the probability of the occurrence of an effect differs according to whether we consider it prior or posterior to the occurrence of its cause. In other words, the facts about what probabilities there are depend upon *what time it is*. Thus, (P1) and (P2) presuppose a dynamic world according to which there is a robust temporal asymmetry as to what is actual, and therefore they are not available for the presentist to use as a ground for the asymmetry of fixity. And so I stand by my claim that any account of causation that coheres with the A-Theory of time must presuppose the asymmetry of fixity.<sup>6</sup>

### III. Presentism and the Asymmetry of Fixity—Continued

#### A. *B-Theoretic Accounts*

In Section II we tried, but failed, to vindicate the hierarchy of dependence that Craig has suggested grounds the asymmetry of fixity. Given our lack of success in making Craig's suggestion work, perhaps we should consider another class of solutions. Although presentists (other than Craig) do not seem to have given much thought to providing an account of the asymmetry of fixity, B-Theorists have been more forthcoming in recognizing that their doctrine of ontological symmetry demands such an account. Suggestions that have been offered, to name but a few, include the asymmetry of

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<sup>6</sup> It is worth noting here, that Tooley interprets the asymmetry of actuality that he sees following from his postulates, as involving an asymmetry of ontology. This is why he thinks his account rules out a presentist ontology. But since it is the purpose of this paper to *demonstrate* that an asymmetry of actuality (or fixity)

counterfactual dependence [Lewis 1979], the asymmetry of entropy [Horwich 1987: Ch. 4]<sup>7</sup>, and, of course, the asymmetry of causation [Mellor 1998: Chs. 10-11]. Would any of these B-Theoretic accounts be of use to the presentist? There is a fundamental reason why I think they would not: ultimately, these accounts are incompatible with the A-Theory. This incompatibility, however, is not immediately obvious, so I will have to elaborate.

Although the majority of both A-Theorists and B-Theorists believe that the past is fixed and the future is not, the sense in which they intend this asymmetry is very different. For the A-Theorist, it is a robust one, according to which there is an *objective* openness and potency about the future, as contrasted with the present (and the past, if you are a non-presentist A-Theorist). This is most often cashed out in terms of either a non-existent/non-actual future, or an existent future of multiple possibilities, only one of which will be actual (for the latter type of account, see [McCall 1994]). On either account, the ontological status of what was once the future changes, or becomes something else, in the present. It is this objective temporal becoming of the future in the present that imparts to the A-Theorist's notion of temporal asymmetry its robustness. Thus it is the combination of objective temporal becoming *plus* the asymmetry of fixity that makes the A-Theory distinctive. This is precisely why Craig claims that the asymmetry is ultimately grounded in objective temporal becoming. Contrast this with the B-Theorist's notion of the non-fixity of the future, and we find a much more limited sense in which the future differs from the present and the past. It is not an ontological

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is grounded upon an asymmetry of ontology, I have refrained in the foregoing discussion from endorsing Tooley's assumption that it does.

difference, but merely a modal difference: all events on the timeline are actual *simpliciter*, but future events are not temporally necessary in the way that present and past events are [Mellor 1998: 20, 34-5]. For the generic A-Theorist, however, the modal difference between the future and the present can only obtain if there is an ontological difference: for an event to be actual just is for it to be temporally necessary. This view arises directly out of a belief in objective temporal becoming, a belief that the B-Theorist rejects. So if some aspect of temporal asymmetry is meant to ground the asymmetry of fixity independently of an affirmation of objective temporal becoming, then the distinctiveness of the A-Theory is lost. It is for this reason that I believe that A-Theorists cannot make use of the B-Theoretic attempts to ground the asymmetry of fixity.

Notice, too, that the foregoing discussion has pointed to a diagnosis of *why* a presentist ontology is incompatible with the asymmetry of fixity. All A-Theorists, presentists included, believe that there is a modal difference between, on the one hand, the present and the past, and, on the other, the future. They also all believe that there is an ontological difference between the present and the future. But, given the presentist's denial of past existence, she is unable to provide an account of the difference between past and future that *also* accounts for the difference between *present* and future. The only ground the presentist can offer for the latter is an ontological one, but then she must withdraw this ground in trying to account for the former difference. Thus she is unable to fully capture the asymmetry.

### *B. A Presentist Rejoinder*

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<sup>7</sup> Although Horwich does not think that time itself has any intrinsic asymmetry, he does think that our experience of asymmetry results from such irreversible processes as entropy, and that these processes, in turn, are explained by big bang cosmology.

There is one final response the presentist might make to this last objection. She might claim that though the past and future are unreal, propositions about past events admit of truth values, while propositions about future (contingent) events do not. The thought would be that an asymmetry in the application of bivalence to propositions about past and future events is what grounds the asymmetry of fixity. This solution would escape the above objection by providing the same ground *both* for the difference between past and future, *and* for the difference between present and future (given that propositions about the present are also bivalent). Of course, this move would not be open to Craig, since he endorses bivalence for all propositions [Craig 2001: 40-1]. Furthermore, I am unaware of any presentist who *would* endorse an asymmetry of bivalence in light of their endorsement of an ontological symmetry. Nevertheless, I had better explicitly say why the presentist should *not* endorse such a solution.

The suggested solution answers the question, ‘What grounds temporal asymmetry?’, by claiming that it is grounded in an asymmetry of bivalence: propositions about past events are bivalent, propositions about future (contingent) events are not. This answer, however, can be interpreted in three different ways. EITHER i) the asymmetry of bivalence fundamentally grounds temporal asymmetry independently of temporal becoming, OR ii) the asymmetry of bivalence is more fundamental than the asymmetry of fixity, but is itself ultimately grounded in temporal becoming, OR iii) the asymmetry of bivalence *just is* temporal becoming, that is, temporal becoming consists in non-bivalent propositions becoming (and remaining) bivalent. Unfortunately for the presentist, none of i) through iii) are satisfactory answers to the question. If i) is the correct interpretation, then the previous objection from Section III.A. applies (since, for the A-Theorist, the

asymmetry cannot be independent of temporal becoming). If ii) is the correct interpretation, then there is a glaring inconsistency in the suggested hierarchy of dependence. As we have seen, for the presentist, temporal becoming involves the continual creation and annihilation of events, so in order for temporal becoming to ground the application of bivalence in a logically consistent manner, only propositions *about the present* could be bivalent. And then, of course, we lose our asymmetry. Finally, and for similar reasons, if iii) is the correct interpretation then the inconsistency becomes an incoherence; since we are now asked to *identify* a temporally asymmetric notion (propositions becoming, and remaining, bivalent), with a temporally symmetric one (events becoming, but *not* remaining, real). Thus an asymmetry of bivalence would also fail to provide the presentist with a ground for temporal asymmetry.

#### Conclusion

Though we have been unsuccessful in vindicating the hierarchy of dependence that Craig offered us, surely there are some aspects of the hierarchy that we can salvage. None of the preceding conclusions have brought into question the dependence of past traces in the present on the unidirectionality of causation. Further, we have seen that it is an attractive, though not mandated, view for the A-Theorist to hold that the latter is dependent, in turn, on the unidirectionality of temporal continuing. Indeed, it is likely that these two temporal features are what constitute the unidirectionality of time itself. But, crucially, we have seen that none of these members of the hierarchy determine the asymmetry of fixity, and that it is more likely that the latter is what grounds all of them. What of temporal becoming? As we saw, Craig sees all these asymmetries as ultimately grounded in temporal becoming. But his conception of becoming, that of the continual creation and

annihilation of events, is one that is stipulated in order to accord with the presentist's doctrine of non-existent past and future. So this particular conception of temporal becoming is going to be just as unsuccessful in constituting the asymmetry of fixity as the other suggestions were.

I take our failure, here, to reconcile presentism with the intuition that the past is fixed and the future not, as a failure of presentism in general. For the A-Theorist, there must be some feature of time that can account for a robust asymmetry of fixity, and for the other asymmetries we have discussed, and the presentist cannot provide us with one. I would like to conclude with a suggestion as to what that feature might be. As I have indicated, I agree with Craig that the ultimate ground of temporal asymmetry must lie in the nature of objective temporal becoming, but surely the presentist's rendering of this concept is not the most intuitive one. The term 'becoming' implies only creation, not annihilation. A more satisfactory rendering would be that events *become* real in the present and remain real thereafter. Of course, once an event has ceased, it has ceased to exist *presently*; but it still exists to the extent that the property of being the event, or the property of being identical with the event—properties which up until the event's occurrence had *not* existed—continue to exist [Adams 1986]. This more natural conception of temporal becoming then provides us with the immediate ground for the asymmetry of fixity: the past is different from the future because the past exists and the future does not. So, *pace* the presentist, the difference between past and future *is* an

ontological one, and this difference, based as it is on a non-presentist conception of temporal becoming, fundamentally constitutes temporal asymmetry.<sup>8</sup>

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