A Puzzle About The Fixity of the Past

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Abstract: It is a widely held principle that no one is able to do something that would require the past to have been different from how it actually is. This principle of the *fixity of the past* has been presented in numerous ways, playing a crucial role in arguments for logical and theological fatalism, and for the incompatibility of causal determinism and the ability to do otherwise. I will argue that, assuming bivalence, this principle is in conflict with standard views about knowledge and the semantics for 'actually'. I also consider many possible responses to the argument.

1. Introduction

It is widely held that an agent S is able to perform an action only if it is possible for S to perform it. In other words, S is able to ϕ only if there is a possible world in which S ϕ-s. This much is philosophical orthodoxy. But not any possible world will do to bear witness to the claim that S is able to ϕ. A number of philosophers also contend that in order for S to be able to ϕ, say, in the actual world, a possible world bearing witness to this claim must be exactly like the actual world until the very moment, or a bit before, S ϕ-s. For, despite all the things one is able to do in a given situation, no one is able to do something that would require the past to have been different from how it actually is.

This principle of the *fixity of the past* has been articulated and defended by philosophers in various ways, playing a crucial role in arguments for logical and theological fatalism, and for the incompatibility of causal determinism and the ability to do otherwise. One among many ways of formulating this principle more precisely is as follows:

(FP) For any action ϕ, agent S, times t and t' (where $t \leq t'$) and possible world w, S is able at t to ϕ at t' in w only if there is a possible world w' with the same past as that of w up to t in which S ϕ-s at t'.[1]

I will argue that (FP) is at odds with standard views about knowledge and the semantics for 'actually'. The principle of bivalence, according to which every proposition is either true or false, will be assumed throughout the argument.

2. *The argument*

First, a lemma is required. Let '$\Box$', 'A' and 'K' stand for 'necessarily', 'actually' and 'it was, is, or will be known that', respectively, while '$\supset$' is the material conditional. Then:

(1) $q \supset ((q \supset p) \supset p)$

(2) $Ap \supset \Box Ap$

(3) $\Box (Kp \supset p)$

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(4) $Ap \supset \Box(K(Ap \supset p) \supset p)$

(1) is a tautology in classical propositional logic, (2) is an axiom of standard modal logics of 'actually' and (3) is the orthodox principle that knowledge is necessarily factive. From (1) one can derive $\Box(q \supset ((q \supset p) \supset p))$ by the rule of necessitation, from which $\Box q \supset \Box((q \supset p) \supset p)$ follows by the modal axiom **K** and modus ponens, and so $\Box Ap \supset \Box((Ap \supset p) \supset p)$ follows by substituting 'Ap' for 'q'. From this and (2) one can derive $Ap \supset \Box((Ap \supset p) \supset p)$ by truth-functional reasoning, and from (3) one can derive $Ap \supset \Box(K(Ap \supset p) \supset (Ap \supset p))$ by truth-functional reasoning and substitution of '$(Ap \supset p)$' for 'p'. The conclusion, (4), follows from the previous two claims in the modal logic **K**.

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[1]For different presentations, defences and applications of the idea that the past is fixed, see Pike 1977, Ginet 1990: 102–3, Fischer 1994, 2016 and Holliday 2012, to name a few.

For the main argument assume the following three premises, all of which are evaluated at the actual world, where $t \leq t' \leq t''$:

(5) S actually ϕ-s at t''.

(6) S is able at t' to not ϕ at t''.

(7) It was known that (S actually ϕ-s at t'' only if S ϕ-s at t'') at t.

Premise (5) requires only that S ϕ-s at a certain time in the actual world, while premise (6) requires, additionally, that S was able to do otherwise. Say I have just raised my hand. Then I have actually raised my hand. But I was able to do otherwise. For example, I was able to put my hand down instead. So it is true that I have actually raised my hand and that I was able to do otherwise. This is enough in order to satisfy (5) and (6). Now, say that the day before I raised my hand you came to know the following: Fabio will actually raise his hand tomorrow only if he will raise his hand tomorrow. Of course, you were able to know this in advance, and irrespective of whether I actually did end up raising my hand or not. For if p is the contingent truth that Fabio will raise his hand tomorrow, what you came to know is the conditional $Ap \supset p$, a contingent but a priori truth. You could have come to know this, for instance, by simply thinking about semantics, while using my raising my hand as an example. This is enough in order to satisfy (7). Now, given the formalism introduced before, (8) follows from (4) and (5):

(8) Necessarily, if it was, is, or will be known that (S actually ϕ-s at t'' only if S ϕ-s at t''), then S ϕ-s at t''.

And (9) follows from (FP) and (6):

(9) There is a possible world w' with the same past as that of the actual world up to t' in which S does not ϕ at t''.

Obviously, though, given (9), (10) also holds:

(10) It is not the case that S ϕ-s at t'' in w'.

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But since w' and the actual world share *the same past* up to t', (11) follows from (7) and (9):

(11) It was known that (S actually ϕ-s at t'' only if S ϕ-s at t'') at t in w'.

Now (12) clearly follows from (11):

(12) It was, is, or will be known that (S actually ϕ-s at t'' only if S ϕ-s at t'') in w'.

However, (13) follows from (8) and (12), contradicting (10):

(13) S ϕ-s at t'' in w'.

We have thus arrived at a contradiction given (FP), (4) and the trio (5), (6) and (7). It is therefore not possible for all of them to be true. What could have gone wrong? The argument does not appear to have any logical flaws; hence, to avoid the above contradiction, it seems that one will have to deny at least one of the premises. But which one?

Before examining some possible responses to the argument, let us consider a more informal version of it that should make its counter-intuitive consequences more pronounced. Consider, then, the following scenario:

> Smith and Jones have both applied for a certain job and a decision is yet to be made. Smith knows that he will actually be offered the job only if he will be offered the job, though this trifling piece of knowledge has no effect on his nerves. The final decision on who gets offered the job is entirely up to Alice, the company's CEO. A week later, after careful consideration, Alice thinks both candidates are equally strong, competent and appropriate for the job, though she must now make a choice: she must offer the job to either Smith or Jones. And because Alice thinks the candidates are too similar, she decides to choose between them at random.

Say Alice is about to make her choice. Is she able to offer Smith the job? Intuitively, yes. Is she able to offer Jones the job? Likewise, the answer appears to be yes. So, whatever she is about to do, she is now able to do otherwise. Suppose, then, that Alice will *actually* offer Smith the job. If

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she was indeed able to do otherwise, given (FP), there is a possible world w' with the same past as that of the actual world up to t, say, the moment in which Alice makes her choice, in which she does not offer Smith the job – say, she offers it to Jones instead. And since she will *actually* offer Smith the job it follows from (4) that necessarily, *if* Smith knows that he will actually be offered the job only if he will be offered the job, *then* he will be offered the job. But Smith came to know this *before* t, and so w' is a world in which Smith knows that he will actually be offered the job only if he will be offered the job, from which it follows that w' is also a world in which he will be offered the job. Contradiction. Therefore, there is no possible world w' with the same past as that of the actual world up to t in which Alice does not offer Smith the job. A similar argument can be made if we suppose instead that Alice will actually offer Jones the job and the scenario is modified accordingly so that Jones is now the one who gets to know the relevant a priori truth.

Taken as an argument against (6), for instance, the present argument tells us that if anyone knew in advance that actually p only if p, where p is any true-in-the-actual-world proposition 'about' a future action of S, S is not able to do otherwise. But this is unacceptable. It might well be that, tomorrow, Biden will actually have ice cream for lunch. But he surely has the ability to do otherwise, even if I know, today, that he will actually have ice cream for lunch tomorrow only if he will do just so. To put it plainly: whatever Biden is able to do tomorrow does not depend on what I can know today *from the armchair*. In light of such consequences, one does well in examining multiple ways of responding to this argument.

3. Possible responses

Let us first take a closer look at some of the premises in the 'knowledge lemma' leading to (4). (1) is a tautology, and as such it is unimpeachable. Some may object to (2) by arguing that 'actually' does not display the required *rigidifying* reading in natural language. All the same, there is clearly a well-known philosophical reading of 'actually' that is modeled in the usual possible-worlds semantics with an *operator* that satisfies (2).

With respect to (3), its rejection appears to be implausible. Of course, it might well be that

what is indicated by the present argument is that there could be knowledge of falsehoods. But this would be difficult to motivate, as there would have to be significant reasons for denying (3) instead of (FP), for instance. Moreover, the main argument can be reformulated with different verbs that are likewise plausibly factive, such as 'establishes', and the premises would have been just as compelling.

Yet another response would involve rejecting what Chalmers (2011: 413) calls the *face-value view* of 'actually'. Consider the proposition expressed by 'Ap', where p is any proposition. According to the face-value view of 'actually', that proposition was, is, or will be known just in case what is expressed by 'KAp' is true, and it is necessary just in case what is expressed by '$\Box Ap$' is true. By rejecting the face-value view, one could block the knowledge lemma without allowing for counterexamples to (3). Chalmers 2011: 416–17 sketches various alternative treatments of 'actually' for those who may want to reject the face-value view, including an ambiguity analysis on which 'Ap' expresses distinct propositions in epistemic and modal contexts, and a pluralist view on which different readings of 'actually' may satisfy different premises of the argument. I will neither repeat nor discuss those alternatives any further, though some may be live options for those who would like to hold on to (3) and (FP). Notwithstanding, all that is needed here is one reading of 'actually' on which the argument is sound. A philosophical reading that suggests itself is, for instance, 'in this very world'.[2]

Perhaps instead of rejecting one or more premises from the knowledge lemma, defenders of (FP) might target some step of the main argument, thereby holding on to the standard semantics for 'actually' and the assumption that knowledge is necessarily factive.

Premise (5) says that S actually ϕ-s at t'', where 'actually' is formalized with 'A'. As such, (5) appears unobjectionable. But, given (6), the argument also requires that S be able at t' to refrain from ϕ-ing at t'' (recall that $t \leq t' \leq t''$). And some might adhere to a strong indeterministic view according to which S is able at t' to refrain from ϕ-ing at t'' only if it is not *yet* true that S will ϕ at t''. A case in point: Alice is able to offer Jones the job only if it is not yet true that she will

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[2]This reading is also suggested by Chalmers (2011: 417).

actually offer Smith the job. A view of this sort would require the future to be *open* in a very strong sense, according to which some propositions about the future are neither true nor false. To be sure, this view is not standard among defenders of arguments for logical or theological fatalism, nor is it standard among defenders of arguments for the incompatibility of causal determinism and the ability to do otherwise; and those are arguments in which (FP) plays a prominent role. Nevertheless, this strong indeterministic view does provide a way out of some of those arguments. For instance, if it is not (yet) true that Alice will offer Smith the job, then God does not foreknow this, hence Alice may still be able to do otherwise.

Are there plausible responses to the argument that do not require a denial of bivalence? One could reject (6) by claiming that human beings do not have the ability to do otherwise. One could do that, for instance, by arguing that causal determinism is incompatible with the ability to do otherwise, while arguing further that causal determinism is true. Alternatively, one could endorse theological fatalism, arguing that the existence of an omniscient God who foreknows the future is incompatible with human beings possessing the ability to do otherwise, while arguing further that an omniscient God does in fact exist. Still, this does not diminish the strength of the present argument. Once more, principles like (FP) play a prominent role in the arguments just mentioned. But, more importantly, the present argument assumes neither causal determinism nor the existence of an omniscient God. Thus the argument should be puzzling even for those who already reject (6): if S was not able to do otherwise, it surely is not because someone already knew a triviality such as what is involved in (7).

A rejection of (7) is, furthermore, difficult to motivate in light of the standard reading of 'actually'. It is widely believed that many propositions such as $Ap \supset p$ can be known a priori, even when they are only contingently true. An expected response from defenders of principles like (FP) would consist in denying (11) instead. The defender of (FP) might contend that the fact that it was known that (S actually ϕ-s at t'' only if S ϕ-s at t'') at t is past relative to t' at most in a qualified sense, according to which it should not be held fixed by (FP).

One of the well-known responses for the problem of theological fatalism involves the adoption

of a twofold distinction between facts. This is the distinction originally inspired by William of Ockham, between *hard* and *soft* facts about times. A hard fact about a time is a temporally intrinsic fact about that time, and so it is genuinely and strictly about that time. By contrast, a soft fact about a time is a relational fact about that time, and so it is also about some other time. An Ockhamist will contend that hard facts about past times are always held fixed in evaluating what an agent is able to do in a given situation, and that soft facts about past times need not, in general, be fixed.[3]

It is controversial whether any adequate and precise characterization of the distinction between temporally intrinsic and temporally relational facts about times has ever been offered. But it might be useful to think of soft facts about the past as facts that somehow *depend* on the future in order to obtain; hard facts about the past, by contrast, display no such dependence (see Todd 2013: 832). For instance, while (h) is a hard fact about 1980, (s) is only a soft fact about 1980, as it depends on the future (relative to 1980) in order to obtain:

(h) John Lennon was shot in 1980.

(s) John Lennon was shot in 1980, 41 years before I typed this sentence in 2021.

Moreover, I was very much able to prevent (s) from having obtained until moments ago, as I was able to type a different sentence. So there is no reason to think (s) should have been held fixed in evaluating what I was able to do until shortly before I typed that sentence. Consequently, the Ockhamist will contend that the fixity of the past should be understood more properly as the fixity of the *hard* past, in which case (FP) should be reformulated accordingly:

(FPh)   For any action ϕ, agent S, times t and t' (where $t \leq t'$) and possible world w, S is able

at t to ϕ at t' in w only if there is a possible world w' with the same *hard* past as that of

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[3]This terminology comes from Pike (1966) and the characterization in terms of intrinsic and relational features is typically made by Fischer (cf. 1994: 112, 2016: 12). The traditional Ockhamist solution to the problem of theological fatalism then consists in arguing that facts about God's past beliefs about the future are soft *and* not fixed. Here I use 'Ockhamist' to refer to anyone who adopts the distinction between hard and soft facts about times. Some Ockhamists in *this* sense may still reject the original Ockhamist solution to the problem of theological fatalism, for instance, by arguing that facts about God's past beliefs must be held fixed under the relevant counterfactual circumstances. This view is in fact widespread among incompatibilists such as Pike, Fischer and others.

w up to *t* in which *S* ϕ-s at t'.[4]

This Ockhamist proposal is effective against the present argument provided the fact that it was known that (*S* actually ϕ-s at t'' only if *S* ϕ-s at t'') at *t* is only a soft fact about *t* that should not be held fixed in considering what *S* is able to do at t'.[5] Recall that (11) follows from (7) and (9), and that (9) follows from (FP) and (6). By adopting (FPh) instead of (FP), the Ockhamist will effectively reject (9), since (9) does not follow from (FPh) and (6). Rather, what follows from (FPh) and (6) is the following:

> ($9'$) There is a possible world w' with the same *hard* past as that of the actual world up to t' in which *S* does not ϕ at t''.

And if the fact that it was known that (*S* actually ϕ-s at t'' only if *S* ϕ-s at t'') at *t* is not a hard fact about *t*, (11) will not follow from (7) and ($9'$). The argument is blocked. So, what of the Ockhamist way out?

There seems to exist an important distinction between, say, *belief facts* and *knowledge facts*, when the *content* of the attitude in question is about the future. Consider the following facts about a time *t*:

> (14) Smith believes at *t* that Alice will offer him the job in a week.

> (15) Smith knows at *t* that Alice will offer him the job in a week.

It appears that (14) is a temporally intrinsic, hard fact about *t*. Even if Smith's belief is about the future, (14) does not seem to depend on it in order to obtain. But (15) tells us what (14) does and more, namely, that Smith *will* be offered the job in a week. Whether (15) is a fact at *t* depends on what happens at a time later than *t*, and so it appears to be a soft fact about *t*. Now consider the following fact about *t*:

> (16) Smith knows at *t* that Alice will actually offer him the job in a week only if she will offer him the job in a week.

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[4]This is roughly the principle offered in Fischer and Todd 2011: 103 *sans* the double time indexing, and which has been variously defended by Fischer in other works.

[5]To be sure, *some* soft facts about the past are plausibly fixed. See Fischer and Todd 2011: 107-108.

Does (16) depend on the future in order to obtain? It might seem so on the surface. Yet, on closer inspection, (16) tells us nothing about Smith's career prospects. Whether it is a fact that Smith knows that a priori truth at *t* does not depend on whether he gets offered the job or not. In contrast to (s) and (15), it is not in virtue of how the future turns out that (16) counts as a fact at the time in question, for Smith does not count as knowing that a priori truth at *t* in virtue of what happens at a later time. (16), therefore, seems to display no dependence on the future.

But one might object on the grounds that (16) does not wear its softness on its sleeve. According to the knowledge lemma, if Alice will actually offer Smith the job in a week then (16) strictly implies, or *entails*, the contingent truth that she will do just so, thus (16) should be counted as a soft fact about *t* after all. It depends on the future, as it entails something about it.

If entailing something about the future is indeed sufficient for the relevant notion of dependence then one may argue that (16) is a soft fact about *t*, and the same would apply for (7). However, this strategy faces several difficulties. First, note that the entailment in question is *conditional* on the fact that Alice will actually offer Smith the job in a week. That is, it does not obtain solely in virtue of the obtaining of (16). In this sense, (16) differs from (15), which alone entails something about the future; likewise, (s) alone entails something about the future relative to the time when John Lennon was shot. (16) thus seems to differ substantially from paradigmatic soft facts. Second, one would need to motivate the view that (16) depends on the future in case Alice actually offers Smith the job, but not, say, in case she picks Jones. After all, (16) only entails that Alice will offer Smith the job in case *she actually does so*, and there is no reason to think (16) depends on the future if it does not even entail something about it. Since, moreover, (16) may count as a fact at *t* regardless of whether Alice picks Jones or Smith, whether (16) entails something about the future under particular conditions would seem immaterial as to whether it is a fact. Third, and more importantly, whether the notion of entailment plays any determining role in the distinction between hard and soft facts is notoriously controversial. In fact, entailment criteria for soft facthood have been subject to intense criticism by many champions of (FPh). Proponents of arguments for logical and theological fatalism, and for the incompatibility of causal determinism

and the ability to do otherwise, in particular, have long denied that entailing something about the future should be sufficient for soft facthood.[6] There are multiple reasons, therefore, in support of the claim that (16) is plausibly a hard fact about t. By the same token, the fact that it was known that (S actually ϕ-s at t'' only if S ϕ-s at t'') at t seems to be a hard fact about t, so (11) appears to follow from (7) and (9′) after all. Endorsing (FPh) instead of (FP) thus seems to be ineffective against the present argument.

There may well be other interesting ways of rejecting one or other step of the present argument while holding on to either of (FP) or (FPh), though, under the assumption that every proposition is either true or false, those will seem to involve rejecting either the standard semantics for 'actually' or standard views about knowledge, such as that knowledge is necessarily factive and that one can know $Ap \supset p$ when p concerns what someone is about to do.[7]

4. Conclusion

I have argued that the principle of the fixity of the past is at odds with standard views about knowledge and the semantics for 'actually'. But this principle, or its restriction to the hard past, plays a crucial role in arguments for logical and theological fatalism, and arguments in favor of the incompatibility of causal determinism and the ability to do otherwise. Proponents of such arguments will have to reject standard views about knowledge, or the standard semantics for 'actually'. Alternatively, they might try to find a revised principle of the fixity of the (hard) past that avoids the present

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[6]Pike (1966), Fischer (1994, 2016), Fischer and Todd (2011), Todd (2013), among others, contend that facts about God's past beliefs concerning the future, for instance, should there be such facts, are not soft facts about the past, even though they do entail something about the future in virtue of God's infallibility. Todd in fact offers a non-modal, 'identity-dependence' account of soft facthood, in which, very roughly, something is a soft fact about t iff its identity depends on the future relative to t (see Todd 2013: 839). But it seems that neither (16) nor (7) count as being soft on this view. Since, for instance, (16) is a fact about knowledge, its identity might plausibly be thought to depend on whether the known proposition *is true*. And although the *modal status* of the known proposition in question may depend on whether its antecedent is true ($Ap \supset p$ is contingent if p is contingently true in the actual world, and necessary if p is false in the actual world), the mere fact that it is true would seem to exhibit no such dependence, as it is true regardless of whether or not p is actually true.

[7]One might think principles such as (FP) hold for ordinary, non-agential powers, too. Say an earthquake just happened, and a building is about to collapse. Then the building *cannot* remain standing if it collapses in every possible world which is exactly like ours until, say, shortly after the earthquake. The present arguments would seem just as effective with such generalized principles in place.

argument, and which is sufficiently strong for the formulation of their arguments for fatalism (logical or theological) and incompatibilism. As for those who would like to reject such arguments for fatalism (logical or theological) and incompatibilism, while accepting bivalence, they might do so by rejecting the principle of the fixity of the (hard) past and endorsing the aforementioned standard views about knowledge as well as the standard semantics for 'actually'.[8]

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