Time Travel, Foreknowledge, and Dependence: A Response to Cyr

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Abstract: The dependence solution claims that God’s foreknowledge is no threat to our freedom because God’s foreknowledge depends (in a relevant sense) on our actions. The assumption here is that those parts of the world which depend on our actions are no threat to the freedom of those actions. Recently, Taylor Cyr has presented a case which challenges this assumption. Moreover, since the case is analogous to the case of God’s foreknowledge, it would seem to establish that, even if God’s foreknowledge somehow depends on our actions, our freedom is still threatened. This paper defends the dependence solution, first, by offering an error theory for the intuitions that drive Cyr’s case and, second, by pointing out some arguably mysterious implications of accepting those intuitions. These points taken in conjunction show that Cyr’s case, although quite fascinating, is not as challenging as it might at first seem.

*Introduction*

If God (infallibly) believed, 1,000 years ago, that you would finish reading this paper today, are you nonetheless able to put the paper down and finish it some other time? That is, is divine foreknowledge compatible with our being free to do otherwise? Dependence theorists answer in the affirmative or, at the very least, claim that divine foreknowledge is no threat to freedom. The basic rationale is this: if God believed, 1,000 years ago, that you would finish this paper today, that is precisely *because* you will in fact do so. But facts that obtain *because* of your actions are no threat to the freedom of those actions.

To put it more precisely, the dependence theorist endorses (at least) the following two claims:

Divine Dependence: The fact that, at time *t*1, God believes agent *S* will perform action *X* at later time *t*2 is dependent (in the right way) on the fact that *S* performs action *X* at *t*2.

Dependence Principle: If a fact, *F*, is dependent (in the right way) on the fact that *S* performs action *X* at *t*, then *F* is not (necessarily) fixed in evaluating what *S* is free to do at *t*.[[1]](#endnote-1)

The plausibility of these claims will be determined, in large part, by what sense of “dependence” one has in mind. For our purposes, it will suffice to invoke the notion of *explanatory dependence*: a fact, *F*, is explanatorily dependent on another fact, *G*, just in case (i) had *G* not obtained, then *F* would not have obtained, and (ii) this counterfactual relation obtains because *G* at least partly explains *F*.[[2]](#endnote-2) And while there may be many ways one fact can explain another, most of the arguments we’ll be concerned with only require that *causal explanation* is one such way and, hence, we’ll focus on that sense primarily.

It is crucial to note that this response to the problem of divine foreknowledge and freedom—call it the *dependence solution*—has a striking implication: the past, contrary to commonsense, isn’t *necessarily* “fixed,” “over and done with,” or “settled.” If a fact about the past is *not* dependent on any fact about our current actions—as is surely the case in ordinary affairs—then yes, that fact is presumably fixed. But if there were some bizarre, *extra*ordinary case where part of the past did depend on our current actions, then that part of the past may very well be under our control. Maybe there is some use in crying over spilled milk.[[3]](#endnote-3)

 In his paper, “Dependence and the Freedom to Do Otherwise,” Taylor Cyr presents a challenge to the dependence solution, particularly the Dependence Principle. Cyr offers a case where a fact about the past clearly depends on an agent’s (present) action and yet that past fact still seems to be fixed for the agent. Moreover, the case seems analogous in all relevant respects to the case of divine foreknowledge and freedom. Hence, the dependence solution, particularly the Dependence Principle, is mistaken: even if facts about God’s past beliefs somehow depend on facts about our current actions, such facts are still fixed in evaluating what we are free to do now.

 In what follows, I present Cyr’s argument and then consider some natural, but ultimately unsuccessful objections. I then propose an error theory for the intuitions behind Cyr’s argument and note some of the unwelcome implications of accepting those intuitions. I will thereby conclude that not only can the dependence theorist answer Cyr’s challenge, but when compared to the implications Cyr seems forced to accept, the dependence solution, or at least the Dependence Principle in conjunction with the proposed error theory, is preferable.

*Cyr’s Challenge*

Cyr’s challenge centers around a case of time travel:

At time *t*1, Artemis asks Bernie for the combination to the lock on his time machine, and Bernie is torn about whether to lie (by giving the wrong combination) or whether to tell the truth. After some deliberation, Bernie tells the truth at a later time, *t*2. Later on, at time *t*3, Artemis uses the combination to unlock the time machine and uses the machine to go back to *t*1. From a distance, she observes Bernie’s process of deliberation, and, as *t*2 rolls around, she observes Bernie telling the truth. And this is just as Artemis expects, for she was absolutely certain that Bernie would tell the truth.[[4]](#endnote-4)

Let’s suppose that Bernie’s decision to tell the truth meets any condition the dependence theorist might deem relevant to freedom: his decision isn’t coerced, manipulated, causally determined, etc. Cyr makes two claims about the case. First, that at *t*1, Older Artemis needn’t be worried whatsoever about the possibility of Bernie lying to Younger Artemis at *t*2. After all, not only has she “already” seen what will happen, but her mere presence is proof enough that Bernie will tell the truth. Second, that Older Artemis should admit that Bernie is nonetheless free to lie to Younger Artemis at *t*2, at least if she accepts the Dependence Principle. That’s because Older Artemis’s presence at *t*1 is dependent on Bernie’s decision to tell the truth at *t*2—Older Artemis’s presence and all her memories are *caused* (at least ancestrally) by Bernie’s decision. (In addition, Cyr stipulates that Older Artemis is watching from far enough away to ensure her presence can exhibit no causal influence on Bernie’s decision.) Thus, according to the Dependence Principle, her presence isn’t fixed in evaluating what Bernie is free to do at *t*2. But if her presence isn’t fixed, then there’s no reason to think that Bernie *must* tell the truth at *t*2. So, if Older Artemis is a dependence theorist, she ought to admit that it is a real possibility that Bernie will lie to Younger Artemis at *t*2*.*

When spoken in the same breath, these two claims are puzzling at least, inconsistent at worst. To bring out the tension, Cyr has us imagine having the following conversation with Older Artemis at *t*1 as she watches Bernie struggle over whether to tell Younger Artemis the code:

Us: Artemis, isn’t it important to you that Bernie tells the truth at *t*2?

Artemis: Yes.

Us: You realize that he’s currently deliberating about doing just that? And that he’s feeling awfully torn about what to do?

Artemis: Yes.

Us: And didn’t you say that it’s up to Bernie whether to lie or tell the truth? That is, didn’t you say that it would be up to him which to do?

Artemis: Yes.

Us: Well, if it is really up to him, aren’t you in the least bit worried that he’s in fact going to lie?

Artemis: No.

Us: Why on earth not?

Artemis: Because I am entirely certain that he will tell the truth.

Us: But I thought you took him to have free will—so couldn’t he refrain?

Artemis: He does have free will, and yes, he has the power to refrain. But I’m entirely certain that he won’t.

Us: What, do you have a crystal ball or something?

Artemis: No, I don’t have a crystal ball. And I have no magical powers of prevision. And nor am I somehow “outside time.” I’m just a time traveler, not God.

Us: Then how can you be so certain that Bernie’s going to tell the truth, if he has the power to do otherwise and has a reason to lie?

Artemis: Because someone can be free not to do something, even if doing otherwise would require a time-traveler’s knowledge of what he will do to be false. And that’s what is happening here. Bernie is going to tell the truth—I know for certain, given that I’ve just heard him tell the truth when I was a bit younger—but he is perfectly free not to. Isn’t that amazing?[[5]](#endnote-5)

There seems to be something incoherent in Artemis’s answers. If she really believes that Bernie is free to refrain from lying, then she ought to be at least *somewhat* nervous about that possibility. But since Artemis knows that Bernie will in fact tell the truth at *t*2, she needn’t be nervous whatsoever. The upshot, so says Cyr, is that Bernie isn’t really free to refrain from lying: that Artemis’s non-nervousness is a “sign” that whatever freedom Bernie has, it isn’t the freedom to do otherwise. But if he isn’t free do to otherwise, then the Dependence Principle is mistaken: it must be that Older Artemis’s presence at *t*1 is fixed in evaluating what Bernie is free to do at *t*2 even thoughher presence depends on Bernie’s actions at *t*2.

Even worse for the dependence theorist, this case seems relevantly similar to the case of divine foreknowledge. If God knew, 1,000 years ago, that you would finish reading this paper today, then God needn’t be nervous whatsoever about the possibility of you putting the paper down halfway through. God’s lack of nerves is a sign that you aren’t free to do otherwise. And all of this is true even if facts about God’s past beliefs somehow depend on your current actions. As Cyr puts it:

But what the time travel case shows is that even dependent facts about the past should be held fixed when assessing an agent’s present freedom, for a fact can be dependent on what an agent does (as Artemis’s knowledge of what Bernie does is dependent on his doing it) and yet still constrain the agent’s freedom. So even if God’s beliefs are dependent, in the right way, on what we do, we do not have reason to ignore those beliefs when assessing what we are free to do.[[6]](#endnote-6)

In summary, Cyr believes we can learn (at least) two things from the case of Artemis and Bernie. First, it shows that the dependence theorist is forced to say something incoherent, as expressed in the dialogue with Artemis. Second, it shows us something about the “fixity of the past,” namely, that the past is fixed *regardless* of whether the past is in any way dependent on our present or future actions. Obviously, both claims are of interest to dependence theorists, but anyone interested in how to make sense of the “fixity of the past” will be especially interested in the second.

While an important challenge, I’ll argue that we ought to reject both of Cyr’s lessons. I’ll argue that there is nothing incoherent in Older Artemis’s answers and that it would be a mistake, or at least somewhat strange, to think that the dependent past can constrain our actions in the way Cyr claims. To get there, I’ll first anticipate some objections to Cyr’s challenge that, at least in my view, the dependence theorist ought to reject. I’ll then propose an error theory for the claim that Artemis’s answers are incoherent, one that is compatible with the claims of the dependence solution. Finally, I’ll argue that, if we take Cyr’s claim that “even dependent facts about the past ought to be held fixed when assessing an agent’s present freedom,” we are led to a mysterious place, one that the dependence solution does not lead. All else being equal, we thus have good reason to reject both of Cyr’s lessons.

*Some Initial Objections*

Admittedly, it’s puzzling when Older Artemis claims both that Bernie is free to do otherwise and that she is not nervous whatsoever about that possibility, claims which the dependence theorist would seem to allow. More carefully, the dependence solution appears committed to these four seemingly inconsistent claims:

1. Bernie is free to refrain from giving Younger Artemis the code.
2. If Bernie is free to so refrain, then it is possible for Bernie to so refrain.
3. If it is possible for Bernie to so refrain, then Older Artemis ought to be at least somewhat nervous about that possibility.
4. Older Artemis needn’t be nervous whatsoever about that possibility.

Let’s consider a few objections that, as I’ll argue, the dependence theorist ought not be satisfied with.[[7]](#endnote-7)

 First, one might dismiss the metaphysical possibility of time travel altogether. Sure, so the thought goes, there is something incoherent going on, as expressed by claims (1)-(4), but what do you expect when considering metaphysically impossible scenarios?

 There are three reasons dependence theorists ought to be (or at least might be) wary of this objection. Most obviously, if a dependence theorist accepts the metaphysical possibility of time travel (as I do), then this objection is unavailable. Second, several dependence theorists invoke cases of time travel to argue *in favor* of the dependence solution, particularly the Dependence Principle. It’s not hard to see why: time travel cases are perhaps the clearest cases where a past fact depends, in a relevant way, on facts about an agent’s future actions, thereby providing test cases for the Dependence Principle.[[8]](#endnote-8) This objection would therefore come at a dialectical cost for such theorists. Finally, it’s not clear that time travel is essential to Cyr’s challenge. Consider not a time traveler but a prophet who has been given knowledge from an infallible crystal ball (or an infallible God!) regarding Bernie’s future decision. Just as Artemis need not be nervous about the future, so neither should the prophet. And if the images in the crystal ball can be dependent on Bernie’s future decision, then Cyr’s more general challenge need not rely on the possibility of time travel.

 As a second objection, one might insist that, while time travel is metaphysically possible, whenever one travels backward in time, one creates alternative “branches” of time, or travels to a distinct “hypertime.”[[9]](#endnote-9) If so, then when Older Artemis travels back to watch Bernie deliberate, she is watching an event at a branch or hypertime distinct from the one she originally came from. And if that’s right, then claim (4) is false: Older Artemis *should* be nervous about the possibility of Bernie lying. Even if her evidence tells her what Bernie does at the original branch or hypertime, it doesn’t tell her what will happen at this one.

 The same three reasons to be wary of the first objection apply here as well. Obviously, if one accepts the metaphysical possibility of time travel along a “single timeline” (as I do), then this objection is unavailable. Second, several proponents of the dependence solution invoke cases of time travel along a single timeline to motivate the the Dependence Principle. Finally, it’s not clear that time travel is necessary for Cyr’s more general challenge in the first place, as illustrated by the example of the prophet.[[10]](#endnote-10)

 Our third and final objection is the most interesting. While I believe it fails, it will nonetheless help pave the way for the error theory I’ll develop momentarily. So, it will be worthwhile to spend some time on it.

The objection draws on a general epistemic principle, David Lewis’s famous “Principal Principle” (PP). Very roughly, PP states that, given that one only has admissible evidence, one’s credence that an event occurs at *t* ought to match the objective probability (or chance) one assigns to the event’s occurrence at *t*. For instance, suppose you are about to flip what I know to be a fair coin at time *t*, meaning I know that the chance of the coin landing heads at *t* is 50%. What should my credence be that it will do so? PP says that itought to be 50% as well. If, on the other hand, I know that the coin isn’t fair, but favors heads 70% of the time, then my credence ought to be 70% instead.[[11]](#endnote-11)

 How might this undermine Cyr’s challenge? Consider what Older Artemis would assign as the objective probability of Bernie’s telling the truth at *t*2. Given the setup of the case, there’s nothing that causallynecessitates Bernie’s telling the truth—for simplicity, let’s stipulate that, given only the causal influences on Bernie’s action, the probability of him telling the truth is no better than a coin flip. If we assume that objective probabilities track (or just are) causal propensities, even Older Artemis should admit that the objective probability of Bernie telling the truth is roughly 50%. It might be claimed that PP therefore implies that Older Artemis’s credence that Bernie will tell the truth ought to be 50% as well. But if her credence is merely 50%—far below anything approaching certainty—then she should be nervous, contrary to what (4) claims.

 This objection might seem quite promising for the dependence theorist since it draws on an eminently plausible principle while still allowing for the metaphysical possibility of time travel along a single timeline. But there are two reasons the dependence theorist should not pursue this objection, the first dialectical and the second substantive in nature. Dialectically, if this objection shows that Artemis ought to be nervous about the future, it would seem to show that God should be nervous about the future, too. If PP demands that Older Artemis’s credences match objective probabilities, why wouldn’t it demand the same of God? There’s a danger that the dependence theorist would be answering Cyr by effectively giving up on the possibility of divine foreknowledge.

 Fortunately for the dependence theorist—and here is the substantive issue—there is good reason to think PP makes no such demand of Older Artemis. That’s because PP, on standard interpretations, concerns conditionalizing only on “admissible” evidence, whereas Older Artemis is conditionalizing on “inadmissible” evidence. What is “inadmissible” evidence? Giving precise conditions is a matter of debate, but propositions about the future, relative to *t*, are standard examples.[[12]](#endnote-12) Return to the coin case. Suppose you flip the fair coin and I witness it land heads at *t*. *Now that t has passed*, what should my credencebethat it lands head at *t*? Considering this question, Lewis says:

Not 50%, but something not far short of 100%. . . We can only say that degrees of belief about outcomes that are based on certainty about chances are resilient under *admissible* evidence. The previous question gave examples of admissible evidence; this question gave examples of inadmissible evidence.[[13]](#endnote-13)

While propositions concerning times after *t* constitute standard examples of inadmissible evidence, Lewis goes on to note that even propositions about events which occur *earlier* than *t* might be inadmissible, time travel providing one such motivation. He writes:

And if the past contains seers with foreknowledge of what chance will bring, or time travelers who have witnessed the outcome of coin tosses to come, then patches of the past are enough tainted with futurity so that historical information about them may well seem inadmissible. That is why I qualified my claim that historical information is admissible, saying only that it is so “as a rule.” Perhaps it is fair to ignore this problem in building a case that the Principal Principle captures our common opinions about chance, since those opinions may rest on a naïve faith that past and future cannot possibly get mixed up. Any serious physicist, if he remains at least open-minded both about the shape of the cosmos and about the existence of chance processes, ought to do better.[[14]](#endnote-14)

It should now be clear why the dependence theorist cannot rely on PP to reject (4). First, Older Artemis’s memories at *t*1concern propositions about future times, such as Bernie’s telling the truth at *t*2. Second, the fact of her mere presence at *t*1, while perhaps “historical” information relative to *t*2, is nonetheless “tainted with futurity.” Both constitute inadmissible evidence. So, her credence that Bernie will tell the truth need not—arguably should not—match the objective probability she assigns to his telling the truth.[[15]](#endnote-15) Just as my credence that the coin *did* land heads should be “not far short of 100%,” so should Artemis’s credence that Bernie *will* tell the truth.

 To be sure, there are alternative ways the dependence theorist might invoke PP to try and answer Cyr, but they strike me as even less promising. For instance, some may argue that the Principal Principle shows that cases like Artemis’s and Bernie’s are absolutely impossible. The thought is that Older Artemis’s presence *entails* that Bernie will tell the truth and, hence, the objective probability of him doing so is 100%, contradicting our initial assumption.[[16]](#endnote-16) Taken this way, the Principal Principle would show not that (4) is false, but that Cyr’s case is incoherent.

The dependence theorist shouldn’t pursue this line of reasoning either. First, there’s again the danger that it would show that any case of foreknowledge—even of the divine variety—is incoherent. But more substantially, this line of reasoning assumes that objective probabilities track *logical* relations, like entailment, rather than *causal* ones. That is a deeply controversial assumption that many theorists (myself included) deny.[[17]](#endnote-17) And finally, even if we accept this assumption, it is presumably causal relations rather than mere logical relations that are more directly relevant to freedom, as many have argued.[[18]](#endnote-18) If that’s right, then even if we stipulate that it is “objectively” certain that Bernie will tell the truth, that won’t tell us anything (directly) about Bernie’s freedom. We’ll have chased a red herring.

This, of course, isn’t the end of the discussion regarding PP.[[19]](#endnote-19) Moreover, there are other, entirely independent, objections we might consider.[[20]](#endnote-20) But I believe the foregoing is sufficient to show that Cyr’s case cannot be easily dismissed by the dependence theorist. The dependence theorist’s best answer, I believe, is to construct an error theory for our intuitions regarding Cyr’s case, something I’ll do now.

*An Error Theory: Nervousness and Possibilities*

According to the error theory I’ll develop, the seeming inconsistency between claims (1)-(4) is just that: a mere seeming. The trouble lies over the sense (or restriction) of “possibility” at stake in claims (2) and (3). In short, claim (2) is most plausible when understood in terms of *agential* possibility, whereas claim (3) is most plausible when understood in terms of *epistemic* possibility. Since agential possibility doesn’t entail epistemic possibility, nor vice versa, the inconsistency between these four claims is merely apparent. With this distinction in hand, Older Artemis’s answers are perfectly coherent; we are only tricked into thinking otherwise when we blur the distinction.

 To get at the distinction between epistemic and agential possibilities, consider the following case:

**Called In**:Your partner is on call very early tomorrow morning, so you know there’s a chance she’ll be called in while you are still asleep. When you wake up, your partner isn’t home, her car is gone, and there’s a note on the counter which reads “I’ll be home for dinner.” When your child then asks where your partner is, you say “She must’ve gone to work.” Your child looks distraught. “She *must have* gone to work? Oh no, who forced her to? Should we call the police?”

The child’s mistake involves conflating two restrictions of possibility. Yes, given the evidence, it looks as if your partner *must have* been called in to work. But that’s not to say that your partner was *forced* or *coerced* into going to work—there’s no reason to think your partner wasn’t free to have done otherwise. In our terminology, the evidence renders it *epistemically* impossible (or near enough) for your partner to have not gone to work this morning, but that doesn’t imply that it was *agentially* impossible for her to have not done so.

 I cannot offer a full account of epistemic and agential possibilities here, but I take the basic idea to be clear enough: epistemic possibilities concern those possibilities consistent with one’s evidence, whereas agential possibilities concern those possibilities consistent with the agent’s relevant intrinsic and extrinsic features—whether the agent was of sound mind, had reasons for the relevant action, was in an environment conducive to performing that action, wasn’t causally determined, etc. While your evidence in **Called In** may be sufficient to rule out the possibility of your partner having refrained from going into work, there is no reason to think your partner lacked the relevant intrinsic or extrinsic features necessary to so refrain. And although we don’t necessarily need PP to explicate the distinction, our reflections may help make this distinction more precise: the credence you ought to assign to your partner having gone into work this morning may be close to 100%, but the objective probability—the probability given all of the relevant causal factors at the earlier time—need not be so high. The mismatch is a result of the fact that you have inadmissible evidence, namely, evidence about times after which your partner was faced with the decision, like the fact that her car is gone or that there’s a note on the counter. Insofar as agential possibilities more closely track objective (or causal) probabilities rather than credences, we can make sense of the fact that your partner’s doing otherwise is (or was) agentially possible but not epistemically.

 With this distinction, we can offer an error theory for the intuitions behind Cyr’s case. When Older Artemis says she isn’t the least bit worried about what Bernie will do at *t2,* her judgment is tracking what is *epistemically* possible for Bernie to do at *t*2. Given Older Artemis’s evidence—her memories of what happens at *t*2 and her presence at *t*1—it does seem epistemically impossible for Bernie to lie at *t*2. However, when Artemis claims Bernie is nonetheless free to lie at *t*2—that it is entirely *possible* for him to lie—she is instead tracking what is *agentially* possible for Bernie to do at *t*2. And given only the facts about Bernie’s relevant intrinsic and extrinsic properties—the fact that he is of sound mind, has reasons to both tell the truth and lie, is in an environment conducive to both actions, is not causally determined to tell the truth, etc.—it seems perfectly possible for Bernie to lie at *t*2. Artemis’s answers only sound incoherent because we slide between agential and epistemic possibilities.

 There’s independent reason to think that this slide has occurred. Consider again Cyr’s claim that Artemis’s non-nervousness is a sign that Bernie isn’t actually free. The problem with this claim is that (non-)nervousness seems to track epistemic possibilities more closely than agential ones. There are all sorts of events which we may be rightfully nervous about but that we lack any control over, e.g., natural disasters. Likewise, there are all sorts of events which we have some control over but that we are rightfully not nervous about, e.g., whether I, or a loved one (of sound mind), will douse my home in gasoline. Of course, there are some events we are rightfully nervous about and that we have some control over them, e.g., whether I will pass tomorrow’s test. But the point is that nervousness, in all of these cases, seems to be tracking *epistemic* possibilities rather than *agential* ones. We are nervous about tomorrow’s hurricane and tomorrow’s test because, for all we know, something undesirable will occur; we aren’t nervous (hopefully!) about our loved ones dousing our homes in gasoline because we know they *would* never do that, even if it is in their *power* to do so. So, when Cyr has us focus on Artemis’s lack of nerves, he is implicitly drawing our attention to what is *epistemically* possible, but then having us infer something about what is *agentially* possible. That’s the mistake.[[21]](#endnote-21)

 Of course, there is a difference between cases like **Called In** and Artemis’s: in **Called In**, your evidence concerns what your partner *did*, whereas Artemis’s evidence concerns what Bernie *will do*. It is unclear to me *how* this makes a difference to what is agentially possible for Bernie. Just as we shouldn’t conflate what an agent *did* with what an agent *had the power to do*, so we shouldn’t conflate what an agent *will do* with what an agent *has the power to do*. But this more general issue of the asymmetries between past and future brings us to our next topic, namely, the somewhat mysterious implications of Cyr’s challenge, particularly his second claim that the dependent past can undermine our freedom. Once these implications have been noticed, the error theory developed here becomes all the more attractive, or so I will argue.

*Past, Future, and Constraints on Freedom*

As we saw, Cyr not only claims that Artemis’s answers are incoherent, but that Bernie isn’t free—that Bernie *must* give Younger Artemis the codes. This is what leads Cyr to the more general claim that even the dependent past can constrain an agent’s freedom. If we accept the claim that Bernie *must*, in the agential sense, give Younger Artemis the code, we are led to a mysterious place though. Consider a slight variation on the case: everything happens as before but, at the last second, Younger Artemis decides to not use the time machine and so no time travel ever occurs. In this variation, is there any reason to think Bernie wasn’t free to refrain from giving Younger Artemis the code? Presumably not. Bernie meets every condition relevant to freedom and there are no pesky time travelers to foreknow what he will decide. If anyone is ever free to do otherwise, Bernie is. But if Bernie is free to do otherwise in this variation and not the original, as Cyr would have us believe, whence the difference? The only possible answer, so it seems, is that Older Artemis is present at *t*1 in the original but not in this variation. Thus, it must be that Older Artemis’s mere presence at *t*1 constrains or undermines Bernie’s abilities at *t*2*­*. To quote Cyr again:

It is plausible that, since the past is “over and done with,” we cannot do anything that would require the past to have been different. Dependence theorists reject the fixity of the past, opting for some related principle about the fixity of the *independent* past. . . But the case of Artemis and Bernie suggests that even the *dependent* past can restrict our freedom to do otherwise, and this is a problem for dependence theorists.[[22]](#endnote-22)

Why is this result—that Older Artemis’s presence at *t*1constrains Bernie’s behavior at *t*2—a mysterious result? Recall that Older Artemis’s presence at *t*1 in no way influences, or even could influence, Bernie’s behavior at *t*2. The direction of influence goes the other way: Bernie’s behavior at *t*2 influences Older Artemis’s presence at *t*1 since Bernie’s decision is causally responsible (at least ancestrally) for her presence. So, on Cyr’s view, we have a fact, *F*, that constrains Bernie’s behavior at *t*2 despite the fact that (i) *F* cannot influence Bernie’s behavior at *t*2 in any way and (ii) Bernie’s behavior at *t*2 influences *F*.

Every paradigm case where an agent has been constrained in some way has exactly the *opposite* structure. When someone cannot stand up because they are strapped to a chair and lack any means to cut the straps, or cannot leave the room because the door is locked and they don’t have the key, their behavior is constrained by some fact that influences, or at least could influence, their behavior and that they have no influence over themselves. When the agent tries to stand up, the straps pull her down; when she tries to push open the door, the door pushes back. And without a knife, the key to the door, stronger muscles, etc., the presence of these constraining factors is not influenced by her behavior whatsoever. That is, these paradigm cases involve some fact, *F*, that constrains an agent’s behavior and is such that (iii) *F* influences, or could influence, the agent’s behavior and (iv) the agent’s behavior has no influence, nor could have any influence, on *F*.[[23]](#endnote-23)

 In light of this, how could Artemis’s presence constrain Bernie’s behavior in any way? That would be analogous to saying that the straps constrain the agent in the chair, even though the straps are too flimsy to have any influence on the agent’s behavior and that, if anything, the straps are only present because the agent has decided to remain seated. How could that be? Without an explanation as to how Artemis’s presence could constrain Bernie’s behavior, despite the fact that Bernie’s behavior influences Artemis’s presence and not the other way around, we are left with a mysterious result.

 There are explanations Cyr could offer, but they make Cyr’s view less plausible. For instance, Cyr could invoke a line of reasoning common to (naïve) “fatalist” and “open future” views. According to such views, if it is already a fact that you will finish reading this paper today, then, since no one is able to make a true proposition false, you are not able to put the paper down and finish it another day.[[24]](#endnote-24) Likewise, Cyr could insist that Artemis’s presence constrains Bernie’s behavior simply because *it is a fact* that Artemis is present at *t*1, and Bernie’s lying at *t*2 would make that proposition false.

 This line of reasoning, though, is widely rejected precisely because it conflates what is *actually* true with what is *necessarily* true.[[25]](#endnote-25) If Cyr adopts this line of reasoning, he may have an explanation for how Artemis’s mere presence constrains Bernie, but not a compelling one.[[26]](#endnote-26)

An alternative explanation might be to invoke the idea of a fact being “now-necessary” (or “accidentally necessary”). On this view, even if it is a fact that you will finish reading this paper today, it is not “now-necessary” that you will, which leaves room for your ability to finish it tomorrow. But the fact that you didn’t finish reading this paper *yesterday*, say, is “now-necessary,” which precludes your ability to finish reading it yesterday. More generally, every fact about the past is “now-necessary” but not every fact about the future. And just as no one can perform an action that would require a *logically* necessary fact to be false, so no one can perform an action that would require a “now-necessary” fact to be false. Bernie’s lying at *t*2 would seem to require just that since it would require it to be false that Artemis is present at *t*1 which, relative to *t*2, is “now-necessary.”[[27]](#endnote-27)

This problem with this alternative is that it is simply a restatement, not an explanation, of the view that every fact about the past, but not the future, is fixed in evaluating what an agent is free to do. The notion of “now-necessity” is almost always explicated in terms of agential abilities: if a fact is “now-necessary,” then it is “settled” or “over and done with” for the agent, or “beyond the agent’s control.”[[28]](#endnote-28) Whereas the notion of *logical* necessity, say, can be analyzed without any reference to agential abilities—a fact is logically necessary just in case it is an axiom or a theorem of logic—the notion of “now-necessity” has no independent analysis. If so, then one cannot explain Bernie’s lack of ability at *t*2 in terms of Artemis’s presence at *t*1 being “now-necessary” relative to *t*2: to say that Artemis’s presence at *t*1 is “now-necessary” at *t*2 just is to say that Artemis’s presence at *t*1 is fixed for everyone, including Bernie, at *t*2.

The last option I’ll consider is the one I believe Cyr should adopt. In my view, Cyr should claim that Artemis’s presence at *t*1 constrains Bernie’s behavior at *t*2 simply because Artemis’s presence is *in the temporal past* relative to *t*2. On this view, even if a fact, *F*, doesn’t have the right causal (or explanatory) relation to an agent’s behavior, so long as *F* has the right *temporal* relation, it constrains the agent’s behavior. If anything, I suspect Cyr would insist that this is the more general lesson of the case of Artemis and Bernie: it’s not just that *dependence* is irrelevant to whether a past fact is fixed; *nothing* is relevant to whether a past fact is fixed since *all* past facts are fixed. That would be an important and significant result.

I can only speak for myself, but I find this view deeply unsatisfactory. First, it implies that no time traveler is free *to do anything* other than what they actually do. Suppose you have constructed a time machine and have the dial set to a long time ago, in a galaxy far, far away. The laws and initial conditions are such that, if you were to push the button, your journey would succeed. Moreover, your decision to push or not push the button meets every compatibilist condition relevant to freedom and is not *causally* determined by the past and laws (the events of the galaxy long ago being too far away to have any causal influence over your decision). On the view being considered here, either you *must* push the button or you *cannot* push it since it is either a fact that you did appear long ago in a galaxy far, far away or it is a fact that you did not. Even the most ardent defenders of the fixity of the past are seldom willing to go that far.[[29]](#endnote-29)

Second, and more generally, this view has a whiff of metaphysical arbitrariness. As an analogy, no one holds that *spatial* relations themselves are relevant to fixity. Simply because an event occurs *to the west* does not imply anything as to whether that event is fixed for us. We can imagine cases where its being to the west is *indirectly* relevant—imagine living on a planet where the western hemisphere is too harsh to set foot on. But in such cases, it is not the spatial relation *itself* that is relevant to fixity; it is instead *causal* relations that are directly relevant.

Likewise with temporal relations. It would appear metaphysically arbitrary to insist that temporal relations themselves are relevant to fixity—that simply because an event lies in a certain *temporal* direction, it is relevant to what we are free to do. We can imagine cases where its being in a certain temporal direction is indirectly relevant—imagine living in a world, difficult as it might be, where one temporal direction is completely beyond our causal reach. But again, this doesn’t mean the temporal relation *itself* is what generates the fixity. Both spatial and temporal relations themselves only tell us about the way the world *is*, not how it *must be*. In contrast, causal relations, being those (in)famous “necessary connections,” tell us how the world *must* be and, hence, can *themselves* berelevant to the possibility of doing otherwise.

I concede that neither of these difficulties presents anything like a knock-down objection to this final alternative. Cyr could insist that the intuitions behind the case of Artemis and Bernie are so strong that we ought to perform a *modus ponens* rather than a *modus tollens* here. But at this point in the dialectic, the question is whether we have more reason to embrace Cyr’s claims and their implications or the error theory presented above. In my view, given that (i) we have independent reason to distinguish between epistemic and agential possibilities, and that (ii) the dependence solution—or at least the Dependence Principle—can offer an *explanation* for why facts about the past are *generally* but not *always* fixed, it seems to me that the dependence theorist is in a better position. But strictly speaking, this claim is not needed to overcome Cyr’s challenge dialectically: it need only be that, on balance, we have no reason to prefer Cyr’s claims rather than the error theory sketched above.

*Conclusion*

While I do not find Cyr’s challenge successful, I do find it fruitful. Beyond providing a puzzling case for the dependence solution, it forces us to ask the deeper question of *why* the past is (at least in general) fixed for agents like us. Is it because, in general, the past is not dependent on any agent’s current behavior, as the Dependence Principle suggests? Or is it a basic feature of the universe? And if it is a basic feature of our universe, it is a basic feature of *every* universe, even one where time travel occurs, or where God can “see” the future? These deeper questions need to be addressed if we are to better understand the relationship between divine foreknowledge and freedom. Insofar as Cyr’s challenge forces us to ask such questions, it provides an important contribution. But in light of the available error theory as well as the explanatory power of the dependence solution—particularly the Dependence Principle—the advocate of the dependence solution needn’t be any more nervous than Older Artemis.[[30]](#endnote-30)

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1. See Cyr and Law, “Freedom, Foreknowledge, and Dependence.” Note that the Dependence Principle only claims that dependent facts are not *necessarily* fixed. That’s because there may be cases where there is some other reason to think that a fact, even a dependent fact, is fixed for the individual at the relevant time. See Law, “The Dependence Response”; Wasserman, “The Independence Solution”; and unsurprisingly Law and Wasserman, “Lessons from Grandfather.” We’ll ignore this complication in what follows. [↑](#endnote-ref-1)
2. See Swenson, “Ability, Foreknowledge, and Explanatory Dependence”; Law, “From the Fixity of the Past” and “The Dependence Response”; and Wasserman, “Freedom, Foreknowledge, and Dependence.” To stave off a worry, this definition of “explanatory dependence” is not conceptually circular since it is not meant to be an account of explanation in general. Instead, it is meant to capture a sense of “dependence” which is strictly stronger than mere counterfactual dependence. (See Merricks, “Truth and Freedom.”) Thanks to an anonymous referee for raising this issue. [↑](#endnote-ref-2)
3. For various developments of the dependence solution, in addition to those mentioned in note 2, see Origen, *Commentary on the Epistle to the Romans*; Merricks, “Foreknowledge and Freedom”; McCall, “The Supervenience of Truth”; Westphal, “The Compatibility of Divine Foreknowledge and Free Will”; and Wasserman, “The Independence Solution.” The presentation here most closely follows Cyr and Law, “Freedom, Foreknowledge, and Dependence.” Some have suggested that the dependence solution is a version or “in the spirit” of the more familiar “Ockhamist” solution. (See Fischer and Todd, “The Truth About Freedom,” 107-112.) I’m inclined to think of the dependence solution instead as a version of so-called “multiple pasts compatibilism,” according to which some “hard” facts about the past aren’t necessarily fixed—a claim Ockhamists deny—but we needn’t settle the issue here. [↑](#endnote-ref-3)
4. “Dependence and the Freedom to Do Otherwise,” 540. [↑](#endnote-ref-4)
5. *Ibid*, 541. This dialogue is modeled on one given by Todd, “Manipulation Arguments and the Freedom to do Otherwise,” which in turn is modeled on one given by Mele, *Free Will and Luck*. Todd’s case involves a powerful goddess, Diana, who exploits her knowledge of the deterministic laws, putting in place a set of initial conditions that ensure another agent, Ernie, will tell a lie 30 years later. Whereas Cyr’s argument is aimed at compatibilism regarding foreknowledge and freedom, Todd’s targets compatibilism about determinism and freedom. For purposes of space, I won’t discuss Todd’s case, although see notes 15 and 21. [↑](#endnote-ref-5)
6. *Ibid*, 543. [↑](#endnote-ref-6)
7. Thank you to an anonymous referee for raising these objections. [↑](#endnote-ref-7)
8. See Swenson, “Ability, Foreknowledge, and Explanatory Dependence”; Law, “The Dependence Response”; and Wasserman, “Freedom, Foreknowledge, and Dependence.” [↑](#endnote-ref-8)
9. For discussion, see Wasserman, *Paradoxes of Time Travel*, ch. 3. [↑](#endnote-ref-9)
10. A referee has suggested that dependence theorists are *committed* to the possibility of at least informational backward time travel along a single timeline. If the dependence theorist understands God’s relevant past beliefs as being *caused* by the future (see Wasserman, “Freedom, Foreknowledge, and Dependence”), then that seems right, since backward time travel is often defined as the future *causing* the past (see Wasserman, *Paradoxes of Time Travel*, ch. 1). But some dependence theorists seem to deny this, instead preferring to understand God’s relevant past beliefs as being explained, in a *non-causal* way, by the future instead. (See Merricks, “Truth and Freedom”; and Swenson, “Ability, Foreknowledge, and Explanatory Dependence.”) [↑](#endnote-ref-10)
11. In his paper, “A Subjectivist’s Guide to Objective Chance,”Lewis formulates the principle like this:

Let *C* be any reasonable initial credence function. Let *t* be any time. Let *x* be any real number in the unit interval. Let *X* be the proposition that the chance, at time *t*, of *A*’s holding equals *x*. Let *E* be any proposition compatible with *X* that is admissible at time *t*. Then: *C(A/XE) = x*. (266)

To be clear, Lewis eventually abandoned PP in favor of the “New Principle” in his paper, “Humean Supervenience Debugged.” But this principle has proved more controversial. See Strevens, “A Closer Look at the ‘New’ Principle,” for a particularly insightful discussion. [↑](#endnote-ref-11)
12. For more on the admissibility constraint, see Lewis, “Humean Supervenience Debugged”; Thau, “Undermining and Admissibility”; Strevens, “A Closer Look at the ‘New’ Principle”; and Meachum, “Two Mistakes Regarding the Principal Principle.” [↑](#endnote-ref-12)
13. “A Subjectivist’s Guide,” 265; emphasis in the text. [↑](#endnote-ref-13)
14. *Ibid*, 274. [↑](#endnote-ref-14)
15. This is a significant difference between Cyr’s case and Todd’s original case which Cyr draws from. In that case, the counterpart of Older Artemis—Diana—only has *admissible* evidence that the counterpart of Bernie—Ernie—will act as she desires, her evidence being the initial conditions and the laws in a deterministic universe. So, her absolutely certainty that Ernie will act as he does seems to imply that it is objectively impossible for him to do otherwise. [↑](#endnote-ref-15)
16. See Meachum, “Two Mistakes Regarding the Principal Principle,” although Meachum’s arguments are directed at infallible crystal balls rather than time travel. (Meachum effectively sets aside time travel cases or worlds with “temporal abnormalities.”) [↑](#endnote-ref-16)
17. See Popper, “The Propensity Interpretation of Probability,” and the enormous literature it has inspired. [↑](#endnote-ref-17)
18. For a particularly lucid discussion, see Sartorio, “The Problem of Determinism and Free Will.” [↑](#endnote-ref-18)
19. For instance, a referee has suggested that Older Artemis’s evidence is “inadmissible” in that it is epistemically irrelevant—that Older Artemis’s credence shouldn’t be informed by such evidence. But this interpretation of PP looks problematic. On this view, Older Artemis should say: “Yes, I know that my memories are extremely reliable (perhaps even infallible!). And yes, I know that my memories predict that Bernie will tell the truth. But I’m 50-50.” That sounds irrational. At the very least, Older Artemis would make a lot more money betting on her inadmissible evidence. Thank you to Ryan Wasserman for helping me get clear on this issue. [↑](#endnote-ref-19)
20. For instance, one might reject (2) and insist that the ability to do otherwise doesn’t imply the possibility of doing otherwise. See Spencer, “Able to do the Impossible”; and Effingham, *Time Travel.* [↑](#endnote-ref-20)
21. Might the same error theory be given for Todd’s original case? Possibly, but to use the language of the Principal Principle, it depends on the connection between objective (or causal) possibilities and agential ones. In Todd’s case, there is presumably an objective probability—not just credence—of 1 that Ernie will not do otherwise. (See note 15.) The standard incompatibilist about determinism and freedom will insist that that means Ernie is not able to do otherwise. But the classical compatibilist will obviously disagree—they may even charge Todd with begging the question. In my view, the case does put some pressure on the compatibilist to provide at least a partial account of agential possibilities that “outstrips” objective (or causal) possibilities, even if they are already committed to this. In contrast, for Cyr’s case, one can grant that agential possibilities perfectly track objective (or causal) ones. [↑](#endnote-ref-21)
22. “Dependence and the Freedom to Do Otherwise,” 542; emphasis in the text. Or as Cyr put it via personal correspondence:

If we remove the time travel element of the story (and so the foreknowledge), I don’t see any threat to Bernie’s freedom. . . Maybe he wouldn’t be free in that case, and so maybe Artemis’s presence isn’t making the difference, but her presence in the original story is what seems incompatible with Bernie’s freedom, not some independent factor that’s making him unfree. [↑](#endnote-ref-22)
23. For more on this issue, particularly as applied to divine foreknowledge, see Todd, “Foreknowledge Requires Determinism.” For a critical response, see Fischer, “Foreknowledge and Causal Determinism.” [↑](#endnote-ref-23)
24. The *locus classicus* of such reasoning is exemplified in Richard Taylor’s defense of fatalism. He writes: “No power in heaven or earth can render false a statement that is true. It has never been done, and never will be.” (*Metaphysics*, 61) [↑](#endnote-ref-24)
25. For discussion, see Diekemper, “B-theory, Fixity, and Fatalism.” [↑](#endnote-ref-25)
26. More sophisticated versions of open future views license the inference from “will *p*” to “must *p*” without conflating the two, but these are even less helpful for Cyr’s purposes. For instance, in *The Open Future*, Todd presents a view where “will *p*” is true just in case *p* is causally necessitated by the present and the laws. If one is an incompatibilist, as dependence theorists usually are, then that would license the inference from “Bernie will tell the truth” to “Bernie is not free to lie.” But Cyr can’t invoke Todd’s view since it is stipulated that Bernie’s decision to tell the truth is not causally necessitated by the present and the laws, meaning it’s not true (in fact it is false on Todd’s view) that “Bernie will tell the truth.” [↑](#endnote-ref-26)
27. For an extended discussion of this kind of reasoning, see Zagzebski, *The Dilemma of Freedom and Foreknowledge*. [↑](#endnote-ref-27)
28. To give just one representative instance, in the SEP article, “Foreknowledge and Free Will,” authored by Hunt and Zagzebski, it is said: “To say that it is now-necessary that milk has been spilled is to say nobody can do anything now about the fact that the milk has been spilled.” [↑](#endnote-ref-28)
29. For further discussion, see Law and Wasserman, “Lessons from Grandfather.” [↑](#endnote-ref-29)
30. Thank you to Taylor Cyr, John Martin Fischer, Neal Tognazzini, Ryan Wasserman, and two referees at *Faith and Philosophy* for helpful comments on previous drafts. [↑](#endnote-ref-30)