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Killing Baby Suzy

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Abstract In her (1996) Kadri Vihvelin argues that autoinfanticide is nomologically impossible and so that there is no sense in which time travelers are able to commit it. In response, Theodore Sider (2002) defends the original Lewisian verdict (Lewis 1976) whereby, on a common understanding of ability, time travelers are able to kill their earlier selves and their failure to do so is merely coincidental. This paper constitutes a critical note on arguments put forward by both Sider and Vihvelin. I argue that although Sider's criticism starts out promisingly he doesn't succeed in establishing that Vihvelin's analysis fails, because (a) he neglects to rule out a class of counterfactuals to which Vihvelin's sample-case may belong; and (b) (together with Lewis) he is wrong to suggest that future facts are irrelevant in the evaluation of time travelers' abilities. I show instead that Vihvelin's argument is viciously circular, indicating that even if there are nomological constraints on autoinfanticide these cannot be established a priori.

Keywords Discussion piece · Time traveler's abilities · Autoinfanticide · Counterfactuals · Nomological constraints · Kadri Vihvelin · Theodore Sider · David Lewis

1 Introduction

David Lewis (1976) famously argued that on our common understanding of ability, there is a sense in which time travelers are able to kill their earlier selves; it's just that whenever they try, they happen to fail. This more or less established view has been challenged by Kadri Vihvelin (1996) who argues that autoinfanticide in particular is nomologically

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impossible, and hence that there is no sense in which time travelers are able to commit it. In response, Theodore Sider (2002) has defended the Lewisian verdict. In this paper I aim to show that although Sider's criticism of Vihvelin starts out promisingly it fails to undermine her position. I then offer a more effective criticism of Vihvelin. In section 1 I set the scene; in section 2 I present Sider's arguments aiming to show that they are flawed; and in section 3 I identify the real flaw in Vihvelin's position.

2 The scene: paradox and disagreement

Here is a classic instance of the autoinfanticide paradox of time travel. Suzy hates herself and everything about her life.[1] She finds her past experience intolerable and wishes none of it had ever happened. Upon learning that she can travel back in time, she steps into the time machine intending to kill herself when she was still a baby. As she stands in front of Baby Suzy in her cot, it seems perfectly plausible that Suzy *can* kill the helpless baby in front of her. She has what it takes—her weapon of choice, her strong intent—and no supernatural forces seem to be there to stop her. But it is also true that Suzy is now alive and hence that presumably she was not killed as a baby. So it appears that Suzy *cannot* really kill Baby Suzy, for then contradictions would ensue: Suzy both would and wouldn't have been killed in her babyhood, and she both would and wouldn't be alive later to step into the time machine, go back in time and kill her baby self. So, we have a paradox: Suzy both can and can't kill her baby self.[2]

According to the traditional solution due to Lewis, the ability-paradox we are faced with is only apparent. This is because ''can'' is used equivocally when we say that Suzy both can and cannot kill Baby Suzy. Suzy *can* kill Baby Suzy relative to one set of facts (including her strangling abilities, proximity to the victim etc), and she *cannot* relative to a more inclusive set of facts, crucially, the *known* fact that the intended victim survived and grew up to be Suzy. But we cannot within a single context say that she both can and can't kill Baby. Furthermore, Lewis argues that the more inclusive context is usually *irrelevant* in evaluating ability because it takes *future* facts into account. (Lewis 1976: 77–79) If such facts were relevant then the same apparently paradoxical conclusion could be drawn regarding our ability to do anything we don't in fact do. If it is the case that I will die in 2045, then on pain of contradiction I cannot (permanently) kill myself in 2036.[3] But from the fact that I happen to suffer some mishap and fail in my suicide attempt in 2036 it doesn't follow that I was *unable* to succeed. To conclude from the fact that something will not happen that I am therefore *unable* to do it is to commit what is often called the fatalist's mistake.[4] It is to regard the *actual* outcome of my attempt at an action (which is often also due to luck or lack thereof (Lewis 1976: 76)) as relevant to my ability to perform the action in question successfully. Moreover, in a context including such a wider set of facts, the fact that Suzy cannot kill Baby is just an instance of the general fact that no one can kill anybody before their death—the identity of killer and victim is merely a dramatic twist.

[1] Suzy is Vihvelin's character (1996). I like the sound of the name.

[2] The type of time travel supposedly threatened by this paradox is one involving lots of time travelers filled with the desire to kill their younger selves in a world sufficiently similar to ours, and, one assumes, without forward or backward branching.

[3] The relevant contradiction here could be thought of as follows: supposing the existence of timeless tensed facts, either p is true of some moment in time or ¬p is true. Either it is true that I died at *t* or that I did not—not both.

[4] This discussion proceeds on the assumption that this kind of fatalism is mistaken. It is at most true that *necessarily* (if I survive in 2036, then I survive in 2036), but it is not true that if I survive in 2036, then *necessarily* I survive in 2036 i.e. I *cannot* do otherwise. I will not challenge that assumption here.

Vihvelin (1996) disagrees with Lewis on this last point. She argues that time travelers are *unable* to kill their earlier selves, and crucial to their inability to do so—*contra* Lewis—is the identity between killer and victim. Vihvelin latches onto the thought that, given this identity and our natural laws, Baby Suzy *must* survive for Suzy to be able to even make her murderous attempt. And so that Suzy's failure, rather than being coincidental, seems to be in some sense nomologically necessitated. It does seem intuitively plausible to suppose that laws would prevent self-defeating casual chains, such as those which would be exhibited by autoinfanticide scenarios. And, however narrow a scope one may take in evaluating ability (e.g. with respect to facts pertaining to training, talent or opportunity), it seems reasonable to suppose that in its widest scope, ability should at least always fall within the limits what is nomologically possible. Based on this idea, together with the thought that laws typically sustain counterfactuals, Vihvelin proposes the following necessary condition as a general basis for the evaluation of ability:

> ''We should agree that someone can do something in the *relevant* sense, only if it's true that if she tried to do it, she would or at least might succeed. And everyone should agree that if someone would fail to do something, no matter how hard or how many times she tried, then she cannot do it.'' (1996: 318)

Let us summarise this as (V):

- (V) *S* can do *x only if*, if *S* tried to do *x*, *S* would or at least might succeed.

Supposing that something like the Stalnaker–Lewis treatment of counterfactuals holds, the truth value of the right-hand counterfactual is assessed by considering what happens at the closest relevant worlds where its antecedent is true. (Stalnaker 1968, Lewis 1973) And given Vihvelin's intention, the *relevant* worlds here are the nomologically possible ones.

As it stands (V) is not very convincing as an ability principle. For starters the following objection can be brought against (V). Say, I want to evaluate my ability to ride a horse, but there are no horses around. If I tried to ride a horse (holding the absence of horses *fixed*) I would invariably fail. But this doesn't seem to capture facts about my *ability* to ride a horse.[5] So, (V) should be understood as a principle of ability, *given the opportunity* to perform an action. And in order to give Vihvelin's proposal a chance we should allow that the closest relevant worlds in (V)'s counterfactual be those nomologically possible worlds where the relevant contingent conditions for my attempt's success are favourable. The contrast Vihvelin has in mind is that between, say, riding a horse and running faster than the speed of light, where the former is nomologically possible (given the existence of horses), and the latter isn't. (1996: 318) Let us follow this line of thought.

Vihvelin proceeds to apply her principle to the time travel case. (V) dictates that:

- (P): 'Suzy can kill Baby Suzy'

only if

- (KV): 'If Suzy tried to kill baby Suzy, she would or at least might succeed'

Vihvelin's point is that even the most distant nomologically similar worlds do not vindicate (KV), given the identity between Suzy and Baby. Instead (KV) is false, i.e.

- (KV*): 'If Suzy tried to kill Baby Suzy, she would fail'

[5] I thank philosophy staff and students at the University of St. Andrews for discussion on this point.

is invariably true. Hence (P) comes out false. The crucial claim here is that not only all actual attempts of Suzy to kill Baby fail, but that so do all possible attempts in worlds with the same (or nearly the same) laws of nature as ours. So, according to (V) there is no sense in which Suzy is able to kill Baby.[6] (1996: 319–322)

3 Sider's response and its flaws

Vihvelin's argument goes as follows: (V) dictates that [(P) –> (KV)], but (KV) is false, so (P) is false. Sider objects that this argument fails because (V) is true only under an evaluation which renders (KV) true (and (KV*) false). So, either (V) is false, or it is true, but then so is (P). His idea is that given the constraints Vihvelin imposes on her counterfactual evaluation either through over-specifying the action in question or by using the wrong similarity metric to evaluate (KV), she is guilty of what Sider calls *selective attention to would-counterfactuals of coincidence*, and then (V) is false. If on the other hand, she were to avoid those errors, then (V) would survive, but (KV) would come out true and then (P) would also survive.

Here is the set-up: According to Sider, *would-counterfactuals of coincidence* are true would-counterfactuals ''whose antecedents describe circumstances that can only come about by an ''unlikely coincidence''.'' (2002: 123) But such counterfactuals cannot be used to establish inability. Take Tom for instance: It is not true that if Tom tried to get married, a coincidence *would* happen, say, he would mortally slip on a banana peel on his way to the altar. It is true at most that he *might* slip on a banana peel. Now build Tom's failure into the antecedent: if Tom tried to get married *but subsequently failed*, he *would* mortally slip on a banana peel on his way to the altar, or get hit by a car, or contract some terrible virus, or... But Tom's counterfactual failure here implies nothing about his ability to marry; a coincidence is all that's needed to prevent someone who fails to marry from marrying. Sider's point is that when we selectively attend to would-counterfactuals of coincidence, we cannot, from their uniform truth, infer the existence of disabling mechanisms or the absence of enabling mechanisms, and therefore we cannot infer anything about the abilities of the agents involved. (2002: 134–135). I fully agree with Sider so far. What he fails to establish is that Vihvelin's (KV) and (KV*) are would-counterfactuals of coincidence.

I shall present his two arguments and reject them in turn.[7]

[6] Lewis (1979) classes small-miracle-worlds as closer than nomologically possible worlds, but (a) we don't have to think of the worlds deterministically here as in Lewis's main treatment, (b) as noted so far, Vihvelin is only interested in nomologically possible worlds for the evaluation of (KV), and (c) presumably it would take a big miracle for Baby Suzy to get resurrected after death to allow Suzy to make her attempt. (see also Vihvelin 1996: 329, note 2).

[7] Sider also argues that Vihvelin's conclusion gives new force to the autoinfanticide paradox, because if Vihvelin is right, then either time travelers are strangely shackled by strange metaphysical add-ons, or, again, we cannot see what stops them from killing their younger selves. (2002: 121). But this complaint by Sider shows that he not taking Vihvelin's conclusion seriously. He holds onto the original intuition that time travelers *can* kill their earlier selves and then he wonders afresh what would stop them. But Vihvelin's argument is that there is no sense in which time travelers can kill their younger selves; discard the intuition, end of story. Sider now complains that if so, then time travelers seem shackled by metaphysical forces in implausible ways. But Vihvelin argues that travelers' abilities are subject to certain *nomological* constraints. The fact that Sider cannot imagine how such nomological constraints would actually work constitutes no argument that such constraints are supernatural. Here is an analogy: Imagine you are an inhabitant of a place with very low gravitational forces, where you can in fact float from place to place. Your ability to do this is

3.1 Ability is freedom to do an action simpliciter

Sider's indirect objection against Vihvelin is that ability to do an action ''at most requires that the agent possibly do the action *simpliciter*, not that the agent possibly do the action under a certain description'' (2002: 135).[8] Consider Tom again. We can build Tom's failure at wedlock *implicitly* in the antecedent by asking what would happen if Tom tried to get married *while being a permanent bachelor*, i.e. while belonging to a class of actual and possible individuals who as a matter of fact never marry. 'If Tom tried to get married *while being a permanent bachelor*, then he *would* slip on a banana peel, or get hit by a car, or contract some terrible virus, or...' is true since the antecedent selects only worlds where Tom's attempts at wedlock fail. Then the Vihvelian counterfactual,

- (KV1) 'If Tom tried to get married while being a permanent bachelor, he would or at least might succeed'

is invariably false; and the corresponding counterfactual,

- (KV1*) 'If Tom tried to get married while being a permanent bachelor he would fail'

is invariably true. But the falsity of (KV1) or the truth of (KV1*) here don't mean that Tom, and permanent bachelors in general are *unable* to get married. We have constrained the action so as to render it definitionally impossible. The idea seems to be that if Vihvelin's principle (V) asks whether Suzy can do X, where X is overly specified (say by insisting that the victim is the killer's earlier self), then would-counterfactuals of coincidence are invariably true simply because success is precluded by the description of the action in question. (2002: 123, 135)

Problem: Sider is right enough about permanent bachelors, but he fails to establish that Vihvelin's case parallels his own. First, as Vihvelin points out ''Suzy kills her baby self isn't false ''by definition'''' (1996: 323). There are *logically* possible worlds where Suzy kills Baby Suzy, where Baby is then resurrected, or where a duplicate replaces Baby Suzy after her death, but these worlds are not nomologically possible and hence not relevant for the evaluation of Suzy's ability to kill Baby Suzy. (1996: 321). I note further that it is simply not the case that *all* actual and counterfactual failure to do an action under a description that precludes success is coincidental and not sustained by a relevant law. *For all Sider has said*, there is an alternative class of cases to which Vihvelin's counterfactual evaluation might belong. These are cases where the description of an action imposes insurmountable constraints on performing it, thus rendering it inconsistent with our natural laws. And these actions seem to parallel Vihvelin's case in being logically possible, but nomologically impossible. Consider the following simple cases:

Footnote 7 continued
supported by the way the natural laws manifest at that particular bit of the spacetime fabric. If someone was to tell you that were you to come to earth then laws would not allow you to float from place to place, you might find it difficult to believe this—you might even find it preposterous, especially if you did not know why this was the case and had never heard of gravity in your life. You might even wonder—how else will I get from one place to another? But this does not mean that on earth you can float from one place to another or that a supernatural force prevents this.

[8] Sider often uses the term ''freedom'' instead ''ability'', setting the discussion in a wider context. (e.g. 2002: 127, 128, 130, 135) But I find this overly dramatic. If it turned out that Suzy was unable to kill Baby, it would be yet a further step to surmise that Suzy's freedom was thereby compromised. I am unable to turn a prince into a frog, but I wouldn't say that this compromises my freedom.

1. I can normally light a match, but I cannot light a match under water.
2. I can normally breathe freely, but I cannot breathe freely on the moon without special equipment.
3. I can normally float on water, but I cannot float on water with a two-ton weight tied around my waist.

Applying (V) to (1) we have:

- I can light a match under water *only if* were I to try and light a match under water, I would or at least might succeed.

The right-hand counterfactual is false in all worlds nomologically similar to ours, but not due to coincidence. Trying to light a match under water is not logically or analytically contradictory. Rather, it is the relevant laws which dictate that I cannot perform this action. Similarly with the others: It is not the case that were I to try hard and often enough I would or might succeed in breathing on the moon without any equipment, or floating whilst attached to a heavy weight. In fact, were I to try to do any of these things, in worlds with our laws of nature, I would invariably fail.[9] Since Sider says nothing which precludes that the action which Vihvelin evaluates belongs to this set, he fails to show that Vihvelin's evaluation parallels his own example and hence involves coincidence counterfactuals. For that I turn to his main argument.

3.2 The relevant similarity metric

Sider's central argument against Vihvelin is that she uses the wrong similarity metric for her evaluation of the counterfactual (KV). He notes that if we hold someone's status as a permanent bachelor implicitly fixed in the similarity metric we use to counterfactually evaluate their ability to marry then we accomplish the same effect as we would by explicitly including the predicate in the counterfactual's antecedent. (2002: 130) And he continues:

> ''...Vihvelin's principle seems to fail under similarity metrics that hold constant facts about agents that occur in the *future* of the actions in question. Someone's status as a permanent bachelor, for example, concerns in part what occurs in the future of an attempt to marry and correspondingly cannot be held constant in evaluating counterfactuals if Vihvelin's principle is to be true.'' (2002: 130)

Sider is enforcing Lewis's original point here, that future facts are typically irrelevant in the counterfactual evaluation of a person's abilities. And Suzy's identity with Baby is a fact which is exhibited by the causal link between Suzy and Baby which runs partly *after* the attempt in question.[10] In short, Vihvelin is guilty of selective attention to would-counterfactuals of coincidence because she chooses a *future similarity metric* for the evaluation of (KV) and (KV*) by holding the identity between Suzy and Baby fixed.

Problem: Although on the right track, Sider here ends up over-generalising and missing his mark. We can sum up his core argument against Vihvelin as follows:

[9] Unless of course some further clause was added which rendered the action nomologically possible again, e.g. I could breathe on the moon with the help of technology. But then the counterfactual question would be whether I can do the action in question under *this* description instead.

[10] I shall assume a perdurance theory of objects here as Sider's core argument runs on that.

a. (V) is vindicated and (KV) is rendered false ((KV*) true) only if facts in the *future* of the attempt are *relevant* in establishing ability
b. But facts in the *future* of the attempt are *irrelevant* in establishing ability
c. Therefore either (KV) is true ((KV*) false) or (V) fails.

The problem with this argument is that—*pace* Sider *and* Lewis—premise (b) is actually false when it comes to time-travel. Here is the flaw: Lewis himself notes that there are two *key* presuppositions without which no discussion of time travel can get off the ground (Lewis 1976).

1. A distinction between Personal and External Time: Say Suzy travels fifty years into the past, her journey takes one year, and she then dies shortly after her arrival. We don't want to say that she both died one year after her departure and fifty years before her departure. Along with Lewis we must distinguish two temporal frames of reference—external time and personal time: External time is our usual perspective of time. Personal time is the experience of time from Suzy's point of view, such as her watch or the aging of her body would measure. We can now make sense of the story: Suzy's death is fifty years before her departure in external time and one year after it in personal time. (1976: 69)
2. Time travel necessarily involves backward causation: I pull a lever on my time machine in 2007, which causes me to pop into place in 1974. So, before I even lift a finger in 1974, we have a cause appearing chronologically after its effect from our usual temporal perspective. Time travel discussions cannot even get off the ground without backward causation. The moment the time traveler takes a trip back in time, the causal chain which identifies her as a person turns and runs from future to past in external time. We must accept that the chain is not interrupted. (1976: 73)

Now, if discussions about time travel can only proceed by assuming backward causation and a distinction between personal and external time, then these presuppositions must be taken seriously when evaluating the truth of various propositions in such scenarios. But if they are, it is not at all clear that we shouldn't evaluate time travelers' abilities while taking future facts into account. In backward time travel especially, it is usually the case that certain events lie *both* in the external future and in the personal past of a point at which the time traveler is located. Lewis claims that this merely leads to confusion on our part as to which facts are the relevant facts (1976: 78). But I beg to differ. In particular, many of the time-travelers more *narrowly* determined abilities can only be read off from personal past facts, which are often in the external future of the moment in time in which the time traveler finds herself. Consider:

I may learn French in 2007 enabling me to converse with a French farmer during my trip back in time to 1782. Or I may learn to play cembalo in 2007, enabling me to give a concert in 1888. The fact that I learned to play cembalo (or speak French) in 2007 should be held fixed when evaluating my counterfactual success in giving a cembalo concert in 1888 (or holding a conversation in French in 1782). These future facts are not only unproblematic, but fully relevant to the evaluation of my counterfactual success in performing those actions. Similarly, if I had an accident losing my legs in 2007 and then travelled back in time, it is not the case that I would or might succeed if I tried to run a marathon in 1998, no matter how hard I tried. As long as backward causation holds, external future facts which belong to my personal past are relevant in the counterfactual evaluation of my abilities. The opposite is also true. External past facts that are *not* part of my personal past are *not* relevant in the counterfactual evaluation of my abilities. Consider a future time travel case: Imagine that I travel to 2250, where everyone born since 2210 has

been equipped with gills that enable them to breathe underwater. But this past fact is surely irrelevant in evaluating *my* ability to breathe underwater in 2250. So, *contra* Lewis and Sider, a sharp distinction between future and past facts simply won't do.[11] And Suzy's identity with Baby Suzy as exhibited in her personal timeline is one such personal past fact about her even if it lies in the external future of the time at which she encounters Baby.

One could object that the alleged future facts I presented so far are in fact *present* facts about me. But this move achieves little. First, Suzy's identity with her baby self, Baby, arguably is also a present fact about Suzy. It is knowledge of this fact that motivates Suzy in her attempt. Further, the same could be said of past facts in normal scenarios: Facts relevant to the counterfactual evaluation of my present abilities can be read off either from past training and events in my life, or from my present knowledge and bodily state. It is in virtue of this feature that past facts appear relevant in the evaluation of present ability. So it should be no surprise that future facts which are relevant to my abilities can also be read off from the present in time travel scenarios. The intuitive appeal of the distinction between past and future facts has its root on our normal perception of the direction of time and causation.[12] But once this has changed, it is not at all clear that we can hold onto our original intuition.

4 Where Vihvelin goes wrong

Sider's line of enquiry goes along the expected lines, but he over-generalises and misses his target. What Sider needs to establish in order to show that Vihvelin's analysis is flawed is that Vihvelin crucially keeps the *outcome* of Suzy's attempt fixed. For, even if the outcome lies in the personal past of Suzy, this is the single fact that cannot be held constant in the evaluation of (KV). Whether we are talking about time travel scenarios or normal cases, we surely cannot apply Vihvelin's ability principle to evaluate an agent's ability to do X by (implicitly) asking what would happen if she tried to do X *and failed*. Then, one of the things (amongst others) that would be the case if it was the case that S tried and failed to do X, is that S failed to do X. Let us say that a principle is nomologically informative if it dictates that an action is logically possible, but nomologically impossible. It is nomologically vacuous if it dictates that an action is logically impossible, hence *a fortiori* nomologically impossible. A principle such as the latter cannot establish nomological constraints on an action, and hence cannot help Vihvelin establish the kind of inability she is after. If Vihvelin holds the outcome of the action fixed, then (KV*) simply presents us with an instance of the logical truth: $\Box[(A \ B) \rightarrow B]$, rendering (V) nomologically vacuous; and (KV) with an instance of the logical impossibility: $\Box \neg[(A \ B) \rightarrow \neg B]$, equally rendering (V) nomologically vacuous.

4.1 The identity between Suzy and Baby Suzy

Vihvelin does in fact hold the outcome of the action fixed in her similarity metric. Even worse, her reasoning exhibits a vicious circularity: She argues that Suzy's attempt to kill

[11] Vihvelin in fact briefly comments along those lines (1996: 327).

[12] Lewis argues in his (1979) that future facts are generally irrelevant in determining the closest worlds for the evaluation of counterfactuals. But his proposed asymmetry of counterfactual dependence is due to *de facto* asymmetries in overdetermination. Plausibly then, if backward causation occurred, these asymmetries might change too, and so a future similarity metric in the evaluation of counterfactuals in peculiar cases like time travel might be appropriate (See also Lewis 1976: 73–74).

Baby Suzy *fails at all nomologically possible worlds* by assuming that if there is an attempt on Baby Suzy by Suzy at all, then it is part of the causal chain of events which lies in Suzy's personal past (given Suzy's identity with Baby). But to assume that the attempt lies in Suzy's personal past is to assume that the attempt *fails at all nomologically possible worlds* at which Suzy makes it. And since Vihvelin limits her attention to only nomologically possible worlds where Suzy tries to kill Baby, she limits her attention to worlds where it is already presupposed that the attempt in fact failed. Then Vihvelin is reduced to claiming that the attempt *must* fail because it *does* fail; the same modal fallacy which Lewis brings to attention—only on a grander scale—and exactly the single fact which Sider needs to accuse Vihvelin of selective attention to would-counterfactuals of coincidence.[13] What's curious is that Vihvelin actually explicitly states this: ''Suzy's failure to kill Baby Suzy is what makes Suzy's attempt possible. The relevant sense of possible is nomological; *given our laws, Suzy tries to kill Baby Suzy only if her attempt fails*.'' (1996: 327, (my italics)). She here admits in effect that the attempt can go ahead in the relevant worlds only given the fact of its failure in all these worlds. And if she cannot but evaluate each attempt in light of its failure, then she fails to present a good argument for nomological constraints on time travelers' abilities.

4.2 No way to pose the question

We reach an impasse, from which it is no longer possible to argue a priori that nomological constraints prevent Suzy from killing Baby. Autoinfanticide may well be nomologically impossible for all we know. The problem is that an argument aiming to establish this a priori is a non-starter. There is simply no way in which we can enquire a priori whether laws prevent Suzy from killing Baby. An unsuccessful way to read the question is the following:

(1) Can Suzy kill Baby Suzy, holding fixed the fact that Suzy doesn't kill Baby Suzy?

Vihvelin's principle fails because in effect it evaluates this question. If we hold fixed that Suzy doesn't kill Baby, then it is *logically* impossible for her to kill Baby, because it is logically impossible for her to both kill and not kill Baby. But how does Vihvelin get there, when she starts with the following more interesting formulation?

(2) Can Suzy kill Baby Suzy, given that Suzy is now alive?

If we take it as given *only* that Suzy is alive now, it is not logically impossible for her to kill Baby. There are logically possible worlds where Suzy kills Baby, and then Baby is resurrected or replaced and grows up to be Suzy. But Vihvelin—albeit unsuccessfully—argues for the *nomological* impossibility of Suzy's killing Baby, given that she is alive now. This would translate to the following:

(3) Can Suzy kill Baby Suzy, (a) given that Suzy is now alive and (b) given our laws of nature?

This question looks deceptively interesting to start with. But Vihvelin's much desired nomological impossibility collapses. For the two suppositions, that (b) our laws of nature hold and (a) Suzy is now alive, *together* dictate that, as a matter of course, Suzy was not killed at any stage. Thus, question (3) collapses into question (1). The only way for (3) not to amount to (1) is to let go of Suzy's identity with Baby. But Vihvelin is not interested in whether the laws of nature allow Suzy, the entire person, to kill Baby Suzy, a *different*

[13] The issue is that Sider keeps tiptoeing around this fact without ever making it explicit. I don't see why, especially as Vihvelin is so outspoken about it.

person. She complains that we are ''changing the subject'' (1996: p. 323). This is a fair complaint, since we are considering autoinfanticide. But in holding the identity between Suzy and Baby fixed and then asking question (3) with its relevant constraints, Vihvelin renders her counterfactuals nomologically vacuous. The logical possibility she leaves open at first, in considering logically possible worlds where Suzy succeeds in killing Baby, is then indirectly taken away by her asking us effectively to evaluate the attempt in light of its failure. Sider tiptoes around just this matter, but he ends up shooting too wide and missing his mark.[14]

References

Lewis, D. K. (1979). Counterfactual dependence and time's arrow. *Noûs,* 13, 445–476. (Also with Postscripts in his (1986), *Philosophical Papers Volume II* (pp. 32–66). Oxford: Oxford University Press (page references to this volume).

Lewis, D. K. (1976). The paradoxes of time travel. *American Philosophical Quarterly,* 13, 145–152. (Also in his (1986). *Philosophical Papers Volume II* (pp. 67–80). Oxford: Oxford University Press (page references to this volume).

Lewis, D. K. (1973). *Counterfactuals*. Oxford: Blackwell.

Sider, T. (2002). Time travel, coincidences and counterfactuals. *Philosophical Studies, 110*, 115–138.

Stalnaker, R. (1968). A theory of conditionals. In N. Rescher (Ed.), *Studies in logical theory, American Philosophical Quarterly* Monograph, Series 2 (pp. 98–112). Oxford: Blackwell.

Vihvelin, K. (1996). What time travelers cannot do. *Philosophical Studies, 81*, 315–330.

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