Till Death Do Us Part: On the Moral Problems Raised by Cohabitation with Personites
Alternative Title: On the Moral Problems Raised by Personites

Abstract

According to the worm theory, persons are (maximal) aggregates of person-stages existing at different times. Personites, on the other hand, are non-maximal aggregates of stages that are nonetheless very much like persons. Their existence appears to make instances of prudential self-sacrifice morally problematic: the personites that exist at the time of the sacrifice but not at the time of the reward seem to be unfairly exploited. Instances of punishment appear to give rise to a similar problem. We argue that these impressions arise from a mistaken assumption about which beings are the primary bearers of properties such as *suffering*, *receiving compensation (in the future)* and *having (previously) committed a crime*. According to the worm theory, stages, rather than persons or personites, possess these properties. Persons and personites have these properties only in a derivative sense. As we show, once this clarification and related ones are made, the apparent moral problems raised by the existence of personites dissolve.

Keywords: four-dimensionalism; worm theory; personites; temporary properties; temporal properties.

Introduction

Suppose that persons are four-dimensional beings. This means that you are composed of many temporal parts that are just like you in many important ways, except that they exist for shorter periods of time. Some of them exist for just a few seconds; others exist for years, long enough to develop a personality, values, interests and so on. Call the latter *personites* (Johnston 2016: 2017). Accepting the existence of personites seems to have problematic moral implications. Suppose that at some point you decide to make a rather unpleasant short-term sacrifice, reasonably believing that it will lead to greater anticipated benefits in the long run. For example, you enroll in a one-month tedious workshop for the sake of career advancement. It

seems that your decision is deeply unfair to the personites that cohabit with you during the workshop but no longer do when you get the promotion. This decision, it seems, completely disregards the interests of these personites, which are being exploited without ever receiving any compensating benefits. Hence, contrary to commonsense, prudential self-sacrifice appears to be morally problematic. Similarly, it would seem that punishing you for a past wrong would be unfair, since many of the personites that currently overlap with you did not exist when you performed the wrong deed.

In this essay, we argue that these appearances are misleading. The existence of personites does not introduce any special moral problems. In §1, we explain four-dimensionalism and present the alleged moral problems posed by the existence of personites. To properly address these problems, we need to clarify what the primary bearers of temporary and temporal properties are in a four-dimensionalist framework. This is what we do in §2. In §3, we apply this account of properties to the moral problems of personites. We show that once we get clear about how we should understand claims about what *will happen* and what *happened* to a personite, the moral problems vanish. Finally, in §4, we consider various objections to our solution and provide responses.

§1 The Moral Problems of Personites

According to *the worm theory*, one version of four-dimensionalism, persons are spacetime "worms," which are aggregates or fusions of temporal parts existing at various times. More specifically, according to David Lewis, "*Something is a continuant person if and only if it is a maximal R-interrelated aggregate of person-stages*. That is: if and only if it is an aggregate of

person-stages, each of which is R-related to all the rest (and to itself), and it is a proper part of no other such aggregate" (1983: 60). The R-relation is supposed to preserve what matters in survival. For vividness, we may assume that the R-relation is psychological continuity, but we need not settle this question here. A person-stage is a physical object, just as a person is, but, according to Lewis, it has a brief temporal duration: "It begins to exist abruptly, and it abruptly ceases to exist soon after" (Lewis 1983: 76). Some four-dimensionalists (Hawley 2002; Sider 1996, 2001) take person-stages to be *instantaneous* temporal parts. For the purpose of this essay, it will not be necessary to settle this dispute about the temporal extent of person-stages. For convenience, we will write that a person-stage "exists at time *t*," leaving open the question whether it may also exist slightly before *t* and slightly after *t*.

Worm theorists typically accept *unrestricted composition*. This means that in addition to persons and their person-stages, the worm theorist is also committed to the existence of *person-segments*, or *non-maximal* R-interrelated aggregates of person-stages. As we shall use the term here, person-segments are temporally longer than person-stages, being the aggregate of two or more of such stages. Eric Olson (2010) and, more recently, A. P. Taylor (2013) and Mark Johnston (2016, 2017) have argued that the existence of person-segments is in deep tension with our ordinary conception of ethics and practical rationality. Since person-segments are not maximal under the R-relation, they are not persons; nonetheless, they appear to be morally considerable beings, beings who have interests that ought to be considered in our moral and practical deliberations. As Johnston emphasizes, it is very hard to see how maximality could be crucial to having moral status. Following Johnston, let us restrict our attention to those person-segments whose temporal extent is long enough to "exhibit a developing personality" and call these longish

person-segments *personites* (Johnston 2016: 200). Personites are "shorter-lived very person-like things that extended across part, but not the whole, of a person's life" (2016: 199).

Suppose that in the case we will call *Learning Hungarian*, Mark has been invited to Budapest for a period of three months. He recognizes that it would be a great benefit to him were he to learn the local language before travelling there. However, learning Hungarian comes with significant costs: the language will be very unpleasant for Mark to learn. Nonetheless, he judges that, overall, he should learn Hungarian because the expected benefits from knowing the language will outweigh the expected costs suffered while learning it. Mark decides to learn Hungarian and, as he reasonably expected, the language was agonizing to learn but his time in Budapest is much better than it otherwise would have been. The costs he suffered were unquestionably worth it.

Ordinarily, we think there is nothing morally problematic about prudential self-sacrifices of the sort Mark makes in *Learning Hungarian*. A person choosing to suffer costs in the short-term to receive benefits later on "seems to be the backbone of any minimally well-ordered life" (Johnston 2017: 623). This judgment appears to be jeopardized by the existence of personites. Consider one of Mark's personites, *Mark-minus*, who cohabits with Mark before the trip and thus shares all of his temporal parts during that period of time, but has no temporal parts during or after the trip. Mark-minus suffers all of the same costs that Mark does. But it will not receive any compensating benefits, since it has no temporal parts during or after the three-month stay in Budapest. (Following [Kovacs forthcoming], we will use the pronoun 'it' to refer to stages and personites. No moral presupposition should be read into this usage.) And, of course, Mark-minus is not the only personite that cohabits with Mark during the agony of learning Hungarian: very

many other personites also suffer those costs and are not around at the time of the benefit.[1]

Mark's self-sacrifice involves "pressing all those personites into a scheme which significantly

benefits [him], but imposes a real cost on them [...] for which they are not compensated by way

of any subsequent benefit" (Johnston 2017: 624). The worm theory thus seems to imply that

persons have a moral duty to be *feckless*. As Olson puts it, "I ought to live a life that is fairly

pleasant at all times and forego benefits that I can achieve only at the cost of great sacrifice [...]

Moral duty would compel us to be comfortable and unambitious" (2010: 265). Following (Kovacs

forthcoming), call this the *forward-looking* moral problem of personites.

The worm theory faces another moral problem. Suppose that in the case we'll call

Imprisoned, Billy commits a crime and is subsequently incarcerated for it. Let us assume that this

punishment is fair. Now, consider one of Billy's personites, *Billy-minus*, who cohabits with Billy

during incarceration but has no temporal parts before or during the performance of the misdeed.

Since Billy-minus has not done anything wrong, it seems wrong to punish it. As Johnston says,

punishing a morally considerable being "who did not exist when the wrong in question was

committed is undeniably unjust" (2016: 209). Of course, Billy-minus is not the only personite who

does not exist at the time of the crime but who nevertheless gets punished. What seemed to be

an ordinary case of just, fair punishment turns out to be a case of "collective punishment" of the

"guilty and innocent alike" (Johnston ibid). Given the existence of personites, it is difficult to see

how our ordinary practice of punishing wrongdoers could ever be morally justified. Following

(Kovacs forthcoming), call this is the *backward-looking* moral problem of personites.

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[1] Perhaps infinitely many if time is dense or continuous. See (Hawley 2002: 51) and (Johnston 2017: 637–41).

To avoid these problems, worm theorists could reject the existence of personites, by denying the existence of all *non-maximal* aggregates of person-stages. After all, unrestricted composition is not a mandatory feature of their view (see [Eklund 2020] for a useful discussion). Another option is to accept the existence of personites but deny their moral status (Kowalczyk 2022). Worm theorists could also follow a suggestion made by Hawley (2002: 40–1), according to which only *maximal* aggregates can satisfy non-sortal predicates such as 'suffers a cost at *t*' and 'is compensated at *t*'.' This move would dissolve the moral problems, since these arise only if personites can be said to suffer a cost and lack future compensation. We will not invoke any of these solutions. In other words, we will grant that personites exist, have a moral status comparable to that of persons, and, just like persons, satisfy non-sortal predicates.[2] In our view, a proper treatment of the moral problems of personites is not possible without first clarifying what properties stages, persons and personites may have. This is the task we undertake in §2.

§2 Temporal Predication and Temporary Properties

Since we are dealing with properties such as *suffering*, *receiving compensation (in the future)* and *having (previously) committed a crime*, we need to figure out what entities may have them. Let us start with the simple property of *currently sitting*. As Lewis remarks, "My shapes [e.g., *being bent*] belong in the first instance to my stages, and in a derivative, relational way to the whole of me" (1988: 66; see also his 2002: 1). Since *sitting* is a temporary property, it would be incorrect to say that a person, a whole spacetime worm, has it, simpliciter. However, as Lewis

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[2] Kovacs's (forthcoming) solution to the moral problems invokes what he calls the *diachronic self-making view*. On this view, 'I' always refers to a person, even when used by a personite. We lack the space to discuss this intriguing solution and the associated debate about the reference of 'I.'

suggests, we can say that a person has that property derivatively. Following (Hawley 2002: 37–40) and (Sider 2008: 244–6), we will write that a person has the time-indexed property of *sitting-at-t*, or more simply is *sitting-at-t*. This should not be understood as implying that at *t*, the person is sitting. There is no time at which the person, a spacetime worm, is sitting, simpliciter. The individual who is sitting is a person-stage; it has the property of *sitting* "in the first instance," as Lewis puts it.

Assuming that 'Lucia' refers to a person, a whole spacetime worm, whereas 'Lucia-now' refers to Lucia's current stage existing at the present time *t*, it is not the case that Lucia is sitting; rather, it is Lucia-now that is sitting. Nevertheless, Lucia is sitting derivatively, in the sense that she has the indexed property of *sitting-at-t*. Lucia has this property in virtue of Lucia-now having the property of *sitting*, simpliciter. Generally speaking, then, a spacetime worm can possess the temporary property of *being F* only in a derivative, or relational, sense; that is, by having the indexed property of *being F-at-t*. Moreover, a worm possesses this indexed property in virtue of having a stage existing at *t* that has the property of *being F*, simpliciter.[3]

Let us now turn to past and future predication. We may say, of an individual who is currently sitting, that she was previously standing. As we've just explained, a person does not possess the temporary properties of *currently sitting* and *previously standing*; instead, she possesses indexed properties such as *sitting-at-t* and *standing-at-t'*. The individual that is currently sitting and was previously standing is a stage. In other words, a stage possesses the properties of *currently sitting* and *previously standing*. But this creates a puzzle, given that stages

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[3] However, none of this is meant to suggest that spacetime worms cannot have properties non-derivatively. For example, a worm possesses the property of *being four-dimensional*, simpliciter.

are either instantaneous or have a very brief existence. If stage *S* is the currently sitting individual,

how is it possible for that very stage to have been standing at a time at which it does not exist?

How can an individual who exists only now, or very briefly, have any past properties? Here, the

worm theorist can take a page from the *stage theorist*.

Like the worm theory, the stage theory is a brand of four-dimensionalism (Hawley 2002;

Sider 1996, 2001). Moreover, its proponents typically accept unrestricted composition. The main

difference between the two views concerns persons and ordinary objects. Worm theorists hold

that they are spacetime worms, while stage theorists insist that they are stages. The stage theory

faces a puzzle similar to the one we just described. If I am a stage, how can it be true that I once

was a child? Sider's solution is to analyze *de re* temporal predication using *temporal counterpart*

theory.[4] I can truly say that I once was a child, since I have a past temporal counterpart that is

(tenselessly) a child. More specifically, a sentence such as 'Lucia was once a child' means (roughly)

that there is some past person-stage *x* such that *x* is a child and *x* is R-related to Lucia. Note that

according to the stage theorist, 'Lucia' refers to a stage. However, the R-relation invoked by the

stage theorist is the same relation used by the worm theorist. Worm theorists may appeal to the

same temporal counterpart analysis to solve the puzzle they face. Although stage *S* is (currently)

sitting, it was previously standing at an earlier time *t'* because there is some past stage *S'* existing

at *t'* such that *S'* is standing and *S'* is R-related to *S*.

Using our proposed terminology, we can write, for example, that Lucia-now is sitting but

was previously standing. This implies that Lucia possesses the indexed property of *sitting-at-t* and

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[4] Sider's inspiration is Lewis's (1968, 1971) counterpart theory of *de re* modality.

also the indexed property of *previously-standing-at-t*: she has the latter property in virtue of the fact that Lucia-now, a stage of Lucia who exists at *t*, was previously standing. The proposed temporal counterpart analysis also applies to future properties. Lucia may possess the indexed property of *futurely-standing-at-t* in virtue of the fact that Lucia-now will be standing.[5] And Lucia-now will be standing just in case there is some stage *S'* that exists at a later time *t'* such that *S'* is standing and Lucia-now is R-related to *S'*.

Now, a lot of what we have said about persons is also true of personites. Like a person, a personite may possess a temporary property such as *sitting*, but only in a derivative sense. For instance, consider Lucia-minus, one of Lucia's personites who includes Lucia-now, the currently sitting stage. Just like Lucia, Lucia-minus is sitting derivatively, in the sense that it has the indexed property of *sitting-at-t* and it has this property because Lucia-now is sitting. Similar points apply to the past and future properties of personites. Lucia-minus was previously standing but only derivatively, in the sense that it has the indexed property of *previously-standing-at-t*, and it has this property because Lucia-now was previously standing. Likewise, Lucia-minus has the indexed property of *futurely-standing-at-t* because Lucia-now will be standing.

We need to draw attention to a noteworthy aspect of a personite's past and future properties. On the above account, Lucia-minus has the property of *futurely-standing-at-t* in virtue of the fact that Lucia-now will be standing. And Lucia-now will be standing in virtue of the fact that Lucia-now is R-related to a stage, call it *Lucia-later*, that exists at a later time *t'* and is

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[5] This claim would have to be modified to accommodate cases of fission. In such cases, a person may lack the property of *futurely-being-F-at-t*, even though it has a stage at *t* that has the temporal property of *futurely being F*. Cases of fusion generate similar problems with respect to the property of *previously-being-F-at-t*. In what follows, we will ignore the complications raised by cases of fusion and fission.

standing. However, Lucia-later need not to be a temporal part of Lucia-minus. This possibility arises because Lucia-minus, a personite, is not a maximal R-interrelated aggregate of person-stages. Given this, the R-relation extends beyond Lucia-minus's temporal boundaries. Now, suppose that Lucia-minus's first stage exists at time t_1, after Lucia's birth, and its last stage exists at time t_2, before Lucia's death. Since all the stages of Lucia-minus are also stages of Lucia, any given stage of Lucia-minus has exactly the same properties as a stage of Lucia, including its past and future properties. Since the stage of Lucia that exists at t_2 has many future properties, then so does Lucia-minus's last stage, given that it is the very same stage. Suppose that time t_3 is later than t_2, and the stage of Lucia that exists at t_3 is standing. Then, it is true at t_2 that Lucia-now will be standing. Since Lucia-now is a stage of both Lucia and Lucia-minus, both Lucia and Lucia-minus have the indexed property of *futurely-standing-at-t_2*. Generally speaking, if it is true that Lucia is futurely-*F*-at-t_2, so is Lucia-minus. Similarly, if it is true that Lucia is previously-*F*-at-t_1, so is Lucia-minus. We will return to this important point in the next two sections.

§3 Solving the Moral Problems of Personites

We can now present our solution to the moral problems of personites. Informally, in *Learning Hungarian*, Mark chooses to suffer short-term costs in order to receive benefits later on. The problem is that there are many personites cohabiting with him that experience the misery of learning Hungarian but have no stages at the times when Mark reaps the rewards of his hard work. Hence, contrary to commonsense, Mark's prudential self-sacrifice appears morally wrong.

Let us first see how, as trained worm theorists, we should describe the situation. One of the lessons of the previous section is that the individuals who are suffering and will receive compensation are stages rather than persons or personites. The latter have the properties of *suffering* and *futurely-receiving-compensation* only derivatively. Consider a time *t* at which we would say, informally, that Mark undergoes the agony of learning Hungarian but will eventually be compensated for his efforts. Strictly speaking, worm theorists would insist, Mark-now, the stage of Mark that exists at *t*, is the individual who is suffering and will receive compensation. (Recall that Mark-now will receive compensation because there is some stage, call it *Mark-later*, that exists at a later time *t'* such that Mark-later receives compensation and Mark-now is R-related to Mark-later.) Mark can be said to be suffering-at-*t* and to futurely-receive-compensation-at-*t*. Since by assumption, the compensation is worth the agony, the worm theory can explain why Mark's prudential self-sacrifice is reasonable, by invoking the temporal properties of his stages and the properties Mark derives from those.

What about Mark-minus? (Recall that Mark-minus is a personite that cohabits with Mark during the agony of learning Hungarian but ceases to exist before the trip.) Everything we've just said about Mark is also true of Mark-minus. Given that Mark-now is a stage of Mark-minus, it is also true that Mark-minus is suffering-at-*t* and futurely-receives-compensation-at-*t*. Just like Mark, Mark-minus has these indexed properties in virtue of the fact that Mark-now is suffering and will receive compensation. Again, it is the fact that Mark-later *receives* compensation that explains why Mark-now *will* receive compensation and therefore why Mark-minus futurely-receives-compensation-at-*t*. And this is so despite the fact that Mark-later is *not* a temporal part of Mark-minus. Hence, Mark's choice imposes no uncompensated costs on Mark-minus. Both are

futurely-compensated in exactly the same sense: since every stage of Mark-minus is a stage of Mark, it would be inconsistent to hold that Mark will be compensated (derivatively), but Mark-minus will not. The same is true of all the other personites who undergo the agony of learning Hungarian. Therefore, Mark's prudential self-sacrifice is just as morally unproblematic as we ordinarily think it is.

Let us now turn to the backward-looking moral problem. In *Imprisoned*, Billy commits a crime for which he is later on incarcerated. The problem is that there are very many personites who are punished along with Billy but have no stages at the time the misdeed was perpetrated. Hence, contrary to what we ordinarily believe, punishing Billy appears morally wrong since it involves punishing morally considerable beings who are innocent of any wrongdoing.

The backward-looking moral problem is handled in the same way as the forward-looking problem. Consider a time t where we would say, informally, that Billy is being punished for a crime he previously committed. Strictly speaking, the worm theorist would insist, it is Billy-now, the person-stage that exists at t, rather than Billy, who is being punished and previously committed a crime. And Billy-now previously committed a crime because there is some stage, call it *Billy-earlier*, that exists at an earlier time t' such that Billy-earlier commits a crime and Billy-now is R-related to Billy-earlier. What is true of Billy is that he is being-punished-at-t and previously-committed-a-crime-at-t. By assumption, this punishment is fair.

Let's turn to Billy-minus. Recall that Billy-minus is a personite that comes to existence only after the crime is committed and cohabits with Billy during the imprisonment. Given that, Billy-now is a stage of Billy-minus. This implies that just like Billy, Billy-minus is being-punished-at-t

and previously-committed-a-crime-at-*t*. Billy-minus and Billy have these indexed properties for exactly the same reasons. And contrary to Johnston's (2016: 209) contention, the fact that Billy-earlier is not a temporal part of Billy-minus does not negate the fact that Billy-minus previously-committed-a-crime-at-*t*. We should thus resist the inclination to consider Billy-minus innocent. Billy-minus is guilty in the same sense Billy is: the stages Billy-minus and Billy share during incarceration are all R-related to Billy-earlier, the stage that commits the crime at *t'*. What goes for Billy-minus goes for any other personite that includes Billy-now as a stage and exists during the incarceration. Therefore, Billy's punishment is as fair as we ordinarily take it to be.

It is useful to compare *Imprisoned* with a case of unfair punishment. Suppose, informally, that Billy has been incarcerated for a crime committed by another person, Bobby. This is a clear case of punishing the innocent. Why? Billy-now, the current stage of Billy that exists during incarceration is not R-related to any stage that commits a crime at an earlier time. *Bobby-earlier* is the stage that commits the crime at an earlier time. Bobby-earlier is R-related to *Bobby-now*, the current stage of Bobby. Even though neither Billy-now nor Bobby-now is identical with Bobby-earlier, Bobby-now, but not Billy-now, previously committed the crime. This is because Bobby-now, but not Billy-now, is R-related to Bobby-earlier. Similar points apply to currently existing personites of Billy and Bobby, such as Billy-minus and Bobby-minus, that do not exist at the time of the crime. Billy-minus is unfairly-punished-at-*t*, because it's false that Billy-minus previously-committed-a-crime-at-*t*; Bobby-minus previously-committed-a-crime-at-*t*.

§4 Objections and Responses

By way of defense and further elaboration of our solution to the moral problems of personites, we will now consider a series of objections and offer our responses.

Objection 1: Suppose that Mark-minus and Mark begin their existence at time t_1. However, Mark-minus's last stage exists at time t_2, well before Mark's last stage, and before the trip to Hungary. Since, on your account, it is true that Mark-minus will receive some compensation after t_2, then it is also true that Mark-minus will be alive after t_2. This implies that Mark-minus exists after t_2, contrary to the initial assumption. Your account is thus inconsistent.

Response: Once we get clear about which properties are possessed by Mark-minus and which are possessed by his stages, the apparent inconsistency vanishes. Let us start with the tenseless claim that Mark-minus does not exist after t_2. This claim is true because Mark-minus has no stages after t_2. Call *Mark-now* the stage of Mark-minus that exists at t_2. Despite the fact that Mark-now is the last stage of Mark-minus, we can truly say, at t_2, that Mark-now will continue to live and will receive compensation. After all, Mark-now is also a stage of Mark, and Mark does have stages (R-related to Mark-now) that exist at times later than t_2, and some of these stages do receive compensation. Now, as we have made clear, it would be incorrect to say at t_2 that Mark-minus will continue to live and will receive compensation. Mark-minus does not have these future properties, simpliciter. Instead, we should say that Mark-minus futurely-lives-at-t_2 and futurely-receives-compensation-at-t_2. The fact that Mark-minus has these time-indexed properties does not entail that Mark-minus exists after t_2.

Objection 2: Your solution to the moral problems of personites is anticipated by Johnston, who considers what he calls a *principle of extended compensation*, according to which a "being

that was harmed can be compensated by appropriately benefiting a stage that is R-related to the stages of the being that was harmed" (2016: 213). But this principle, Johnston writes, has highly counterintuitive consequences: "It follows from that principle and the four-dimensionalist conception of persons that a person can only be compensated by experiencing or otherwise receiving the benefit in question; whereas a personite can be compensated by *another being* experiencing or otherwise receiving the benefit in question" (2016: 214). Surely, a being is *genuinely* compensated for a harm only if this being exists both at the time the suffering occurs and at the time compensation is received.

Response: First, recall that strictly speaking, stages, rather than persons or personites, are compensated. Hence, it is always a being other than a person or personite that experiences or otherwise receives the benefit in question. Persons and personites receive compensation only in a derivative sense. Using the stipulations we introduced in our response to Objection 1, both Mark and Mark-minus futurely-receive-compensation-at-t_2. This is because at t_2, Mark-now, a stage Mark and Mark-minus share, will receive compensation. And Mark-now will receive compensation in virtue of the fact that Mark-now is R-related to a stage, call it *Mark-later*, that exists at a later time t_3 and receives compensation. This means that although it is true at t_2 that Mark-now will receive compensation, the compensation is received by a being other than Mark-now, since Mark-later is not identical to Mark-now. Mark-later is a temporal counterpart of Mark-now. Hence, in every instance of prudential self-sacrifice such as *Learning Hungarian*, the stages that receive compensation are distinct from the stages that bear the cost. We thus reject the principle that in order for a being to be genuinely compensated for a harm, this being must exist both at the time the harm occurs and at the time the compensation is received.

Before moving to the next objection, three related points are worth making. First, one should refrain from importing three-dimensionalist assumptions when assessing our solution to the moral problems of personites. According to three-dimensionalism, a person is wholly present at any time at which she exists. This means that the very same person may have different temporary properties at different times.[6] The three-dimensionalist would take it as obvious that in a successful instance of prudential self-sacrifice, the person receiving compensation is numerically identical to the person performing the sacrifice. However, as we have made clear, worm theorists reject these assumptions about temporary properties and persistence through time.

Secondly, our account implies that Mark-now will be compensated in part in virtue of something that happens to a distinct being. However, when we say that Mark-now will be compensated, we are not talking about what will happen to some other being; we are talking about Mark-now and what will happen to it. Specifically, we are attributing the temporal property of *futurely-receiving-compensation* to Mark-now. And Mark-now does possess that temporal property, because it is R-related to some stage that exists at a later time and receives compensation.[7]

The third point concerns an objection Taylor (2013: 1104–06) raises against a solution similar to ours. Taylor remarks that if compensation requires not that a future stage (Mark-later)

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[6] We are merely providing the barebones of the three-dimensionalist account here. There are several different ways for three-dimensionalists to expand on this account. See (Hawley 2002) and (Sider 2001) for useful overviews.

[7] These remarks echo Lewis's (1971: 196) response to the so-called *Humphrey objection* Kripke (1980: 45, n. 13) raises against the modal counterpart theory. See (Sider 1996: 437–9; unpublished) for useful discussions.

be identical to an earlier stage (Mark-now), but merely that the two stages be R-related, then our solution abandons the thesis, explicitly endorsed by Lewis (1983), that identity matters. However, Lewis's thesis concerns *personal* identity, rather than identity among stages or personites. Although Mark-later is not identical Mark-now, they are parts of the *same* person, because they are R-related (Lewis 1983: 59). This is why we can say that the very same person, Mark, both suffers-at-t_2 and receives-compensation-at-t_3. Hence, emphasizing the importance of the R-relation does not undercut the thesis that personal identity matters. We will return to this point in our response to the next objection.

Objection 3: It seems that you are simply displacing the problem. Suppose that all Mark-now experiences during its (brief or instantaneous) existence is the sheer agony of struggling with a subtle aspect of Hungarian grammar. Mark-later, on the other hand, is joyfully conversing with Hungarian folks about, say, the local food specialty. Mark-now and Mark-later are distinct beings. The latter has a great time thanks to the sacrifice of the former. Isn't this unfair? Aren't Mark-now and the other Mark-stages that exist at nearby times being exploited for the benefit of Mark-later and other Mark-stages that have a great time chatting with Hungarians (Brink 1997: 111)? We seem to be back to our original moral problem, except that it now involves stages rather than personites.

Response: It is worth noting that this objection also targets the stage theory. Recall that on that view, persons are stages. Very plausibly, this position implies that a stage has a significant moral status. Hence, if it turned out that instances of ordinary prudential self-sacrifice involve the unfair exploitation of stages, that would spell trouble for the stage theory. Although we

respond to the objection on behalf of the worm theory, our response can easily be adopted by stage theorists.

The central problem with the objection is that it ignores the fact that all of the stages under consideration are R-interrelated. Recall that by assumption, the R-relation preserves what matters in survival. This means that although Mark-now *is not* Mark-later, Mark-now *will be* Mark-later. Put differently, Mark-now and Mark-later are parts of the *same* person. As Lewis (1983: 59) maintains, the R-relation is the *I-relation*, that is, the relation that holds among the stages of a single continuant person. This is why no problematic exploitation occurs here, since the earlier stages that suffer and the future stages that benefit from that suffering are all parts of the same person. Informally, we would say that although Mark suffers now, this is no problem because he will benefit from his sacrifice later. In a language acceptable to the worm theorist, this would translate as: although Mark suffers-at-t_2, this is no problem because Mark futurely-benefits-at-t_2.

Objection 4: Still, there is a difference between persons and personites that you ought to acknowledge. Consider the "unfortunate" personites who exist while the agony of learning Hungarian occurs but cease to exist before the trip to Hungary. Johnston writes that these unfortunate personites "*are* compensated for learning Hungarian; it is just that they are compensated after they ceased to exist, and even though they never get to speak Hungarian" (2016: 212). That seems problematic.

Response: Although we would not put things exactly the way he does here, Johnston's point is worth considering. Suppose once again that Mark-later, a stage that exists at time t_3,

during the trip in Hungary, receives some compensation. Although Mark-minus futurely-receives-compensation-at-t_2, it does not receive-compensation-at-t_3, since Mark-later is not a stage of Mark-minus. By contrast, Mark both futurely-receives-compensation-at-t_2 and receives-compensation-at-t_3. Hence, unlike Mark, Mark-minus does not receive compensation, even derivatively. We thus grant Johnston's point: there is a sense in which Mark is compensated while he exists, but Mark-minus is compensated after it ceases to exist. Mark and Mark-minus do not have the same time-indexed properties. This is because only Mark is a *maximal* aggregate: there are no stages that are R-interrelated to Mark's stages but not themselves parts of Mark.[8] This means that maximality or the lack thereof does have moral significance. If Mark ceases to exist at, say, time t_4, it is not the case that Mark futurely-lives-at-t_4. By contrast, Mark-minus futurely-lives-at-t_2, even though Mark-minus ceases to exist at t_2.

This point about maximality is worth examining further. In §1, we granted that the fact that personites lack maximality does not deprive them of the moral status persons possess. However, the lack of maximality is relevant to *some* moral questions. The fact that a personite is non-maximal means that the end of its existence is not morally significant, unless it coincides with the death of the person it overlaps with. This entails that time t_2 is not a morally significant boundary for Mark's stages. This matters, because stages are the primary bearers of morally relevant properties such as *suffering* and *receiving compensation*. To reiterate, the fact that Mark-minus ceases to exist at t_2 does not in any way affect the future properties it has derivatively. This is because Mark-now, Mark-minus's last stage, is R-related to stages that exist

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[8] Again, we are setting aside cases of fusion and fission.

after t_2. Since, by assumption, the R-relation preserves what matters in survival, it ensures that that Mark-minus futurely-lives-at-t_2. Again, Mark-minus futurely-lives-at-t_2, because at t_2, Mark-now will continue to live. Although time t_2 is end of Mark-minus's existence, Mark-minus has as much of a future-at-t_2 as Mark does: if it is true that Mark is futurely-F-at-t_2, then it is also true that Mark-minus is futurely-F-at-t_2. Therefore, the end of Mark-minus's existence is not something worth mourning or grieving.

To better appreciate this point, consider the fact that Mark-minus *could* have been a person. There is a possible world in which Mark*, a being that is intrinsically just like Mark-minus, is a person. Unlike Mark-minus, Mark* is maximal. Hence, there are no stages existing after t_2 that are R-related to Mark*'s stages. Johnston (2016: 203-5; 2017: 619-20) invokes this kind of possibility to argue that personites have the same moral status as persons. We do not dispute this argument. However, we reject Johnston's (2016: 210) further contention that Mark-minus's death is morally equivalent to Mark*'s death.

Suppose, for vividness, that the R-relation is psychological continuity. Hence, there are many stages existing after t_2 that have the memories, beliefs, character traits, and so on, of Mark-minus's last stages. Moreover, many of these future stages can be said to satisfy the desires of Mark-minus's last stages to have valuable experiences in the future. For example, by joyfully chatting with the locals, Mark-later realizes Mark-now's desire to have this experience. This is why Mark-minus's ceasing to exist does not affect what matters in survival; it does not frustrate its interest in futurely existing. By contrast, there are no future stages which have the memories, beliefs, character traits, and so on, of Mark*'s last stages. Moreover, no future stage can be said to fulfill the plans of Mark*s last stages. For this reason, it makes sense to hold that Mark*'s

desires and interests are frustrated. Hence, unlike Mark-minus's death, Mark*'s death is something worth mourning.

§5 Conclusion

Suppose you undergo a painful medical treatment, reasonably believing that this will considerably improve your long-term quality of life. You-now, your current stage, incurs a substantive cost, while you-later reaps the benefits. There is nothing unfair about this situation, for the simple reason that you-now and you-later are R-related, and are thus parts of the same person. As Lewis puts it, "If you wonder whether you will survive the [medical treatment], you are wondering whether any of the stages that will exist afterward is R-related to you-now, the stage that is doing the wondering" (1983: 58). Since the R-relation preserves what matters in survival, it preserves, among other things, you-now's interests. Although you-now is suffering, you-now will feel much better later. You-now's interests are thus not frustrated. Therefore, there is nothing exploitative about the fact that you-now is in pain for the sake of you-later, a distinct being.

These points apply to your personites as well, except that personites suffer and receive compensation only in a derivative sense. Some of the personites that cohabit with you while you undergo the painful treatment appear to make an uncompensated sacrifice. However, as we have argued, these appearances are mistaken. To understand why, we need to focus on the stages of these "unfortunate" personites. Although just like you-now, many of these stages are in pain, their interests are not frustrated for the sake of future stages. The fact that they are R-related to these future stages implies that they, just like you-now, will enjoy a good quality of life

later. Similarly, your "unfortunate" personites will enjoy a better quality of life, in a derivative sense. The fact that your stages are all R-interrelated guarantees that if your self-sacrifice is rewarded, then none of your personites are exploited nor do they suffer uncompensated costs.

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