**Surviving, to Some Degree**[[1]](#footnote-2)

In this paper we argue that reflection on the patterns of practical concern that agents like us exhibit strongly suggests that the same person relation (SP-relation) comes in continuous degrees rather than being an all or nothing matter. We call this the SP-degree thesis. Though the SP-degree thesis is consistent with a range of views about personal-identity, we argue that combining *desire-first* approaches to personal-identity with the SP-degree thesis better explains our patterns of practical concern, and hence gives us reason to endorse such an approach. We then argue that the combination of the SP-degree thesis and the desire-first approach are best modelled by a stage-theoretic view of persistence according to which temporal counterpart relations are non-symmetric relations that come in continuous degrees. Ultimately, we think that the overall appeal of this package of views provides reason to accept the package: reasons that outstrip the reasons we have to endorse any particular member of the package.

### Introduction

Either the poison will kill me, so I will not survive to any degree at all, or I'll survive, and survive to degree 1. Survival, that is to say, is an *all-or-nothing* affair: I can’t survive to some degree or other, less than 1, and more than 0. It seems to be pretty much common sense that survival is an all-or-nothing matter. There’s nothing that can happen to me, which results in a healthy person who is only, say, two-thirds me. This paper argues against this common sense contention. It argues that the **same person relation**(henceforth SP-relation) comes in degrees; so for example Annie at t1 might be the same person as Annie at t7 to some degree other than 0 or 1.

We’ll start by clarifying two things: first, exactly what we mean by talk of the SP-relation and second, the connection between this relation and the factors relevant to whether it holds.

We intend the SP-relation to be, in the first instance, a very metaphysically neutral notion. It’s what corresponds to same-person judgements that people form. Consider this question: “That women you had coffee with this afternoon (t2). Is she the same person as Annie, whom I met last week (t1)?”  If the answer is yes, then the SP-relation holds between Annie at t1 and Annie at t2. You might think that it follows from this that the SP-relation is a numerical identity relation. That’s not our view. Nor is our view that it *isn’t* a numerical identity relation. Rather, it’s *whatever* kind of relation it is which (sometimes, when things go well) makes judgements of this kind true. And that, of course, depends on the right metaphysics of personal-identity. Indeed, if you think that talk of the personal-identity relation is metaphysically neutral in this way—that is, if you think what we have just characterised *is* the relation of personal-identity, then for you, talk of the SP-relation just is talk of the personal-identity relation.[[2]](#footnote-3) That would of course entail that the phrase “personal-identity relation” might not pick out a numerical identity relation.

If the SP-relation is a numerical identity relation, then the SP-relation holds between a person at one time, and a person at another time, in virtue of the former being numerically identical with the latter. In that case the SP-degree thesis entails something rather controversial: that the numerical identity relation comes in degrees. We consider this possibility in §4. By contrast, if worm theoretic perdurantism is true, then the SP-relation holds between person-stages in virtue of those stages being *parts* of the same person[[3]](#footnote-4). If the stage-theory (i.e. exdurantism) is correct, then the SP-relation holds in virtue of one person-stage being a temporal person-counterpart of the other, and so on. We consider these views in §4. Although ultimately we will argue that our view is best modelled by the last of these options (exdurantism) we think it is consistent with any of these views. Hence, in what follows we will typically talk of the SP-relation obtaining between *person-phases* p1 and p2*.* As we use the term, ‘person-phase’ is neutral between picking out a person at a time, and picking out a person-stage at a time. Hence talk of the SP-relation obtaining between person-phases p1 and p2, is metaphysically neutral between p1 and p2 being numerically identical—they are ‘phases’ of an enduring person—and p1 and p2 being numerically distinct person-*stages* that are either parts of the same perduring person (in the case of four-dimensionalism) or bear same-person temporal counterpart relations to one another (in the case of exdurantism)[[4]](#footnote-5).

We argue that the SP-relation comes in degrees. But of course, many people accept that the factors that are relevant to same-person judgements come in degrees. Perhaps psychological continuity comes in degrees: certainly psychological similarity comes in degrees, and perhaps continuity inherits this graded structure. Or perhaps psychological continuity is an all or nothing matter, but whether psychological continuity obtains, in turn, depends on further relations that come in degrees such as there being overlapping chains of direct psychological connection.[[5]](#footnote-6) But the orthodoxy is that however graded the factors that contribute to the SP-relation are, the relation itself is not graded. Worm theorists think that it’s an all-or-nothing matter whether two person-stages are part of the same worm.[[6]](#footnote-7) Likewise, stage-theorists think that it’s an all-or-nothing matter whether a person-stage is a temporal person-counterpart of another..[[7]](#footnote-8) And those who believe in enduring entities think that it’s an all-or-nothing matter whether a person at one time is numerically identical to a person at another time, however graded the factors that we use to assess whether such an identity holds. Just how this transition from partially graded contributory factors to ungraded facts about the SP-relation proceeds is something we discuss in §3. Typically though, it is supposed that there is some kind of threshold: there needs to be *enough* of these graded relations for the SP-relation to obtain.[[8]](#footnote-9)

So the gradedness of the factors relevant to the obtaining of the SP-relation ought not be controversial. We argue that degrees of concern with respect to these factors also comes in degrees: you might care about psychological continuity, or bodily continuity, or similarity of life goals, and so on, to different degrees. But that too is not, we hope, controversial. The novelty in our view is that we argue that the SP-relation inherits the gradedness of the contributory factors more or less directly. We argue that this is so because it makes sense of the kinds of decisions we might make (§2), and it’s metaphysically parsimonious (§3). We think that those who share our intuitions about the kinds of decisions agents like us will be inclined to make, and who share our preference for views of personal-identity that are metaphysically parsimonious in an important respect, ought find the package of views that combines the SP-degree thesis with the metaphysically parsimonious *desire-first* approach to personal-identity very pleasing.

 Of course, not everyone will share our intuitions and predictions about cases, and not everyone will share our views about the desirability of a certain kind of metaphysical parsimony. Those who do not may not be convinced by the arguments of this paper: they may, and possibly should, resist the SP-degree thesis. We will be happy if we convince those who share some of our background sentiments that the SP-degree thesis should at least be taken seriously.

### 2. Motivating the SP-degree thesis

In what follows (§2.1) we motivate the SP-degree thesis. To do this, we describe a number of thought experiments in which agents somewhat like you and I make certain decisions. We then argue that the SP-degree thesis is the best explanation for these decisions. Of course, we don’t know what decisions agents like you and I would in fact make under somewhat different conditions from those we in fact face: that’s an empirical matter. Our description of these cases is supposed to make it plausible that some agents, who don’t seem psychologically foreign to us, will make the kinds of decisions we describe. What we hope is that when you read these cases you think: yes, I can imagine someone not that unlike me, responding in this way. We don’t claim that *everyone* would respond as we describe; nor do we require anything this strong. Our claim is simply that the agents we describe won't seem psychologically foreign, nor will they strike us as flagrantly irrational in their preferences: they are just one way that agents like you and I might be under the circumstances described. And their being that way is, we argue, best explained by the SP-degree thesis. Having set out these thought experiments we will then move on to consider a number of objections. According to the first objection (§2.2) supposing the SP-relation to come in degrees yields implausible and unattractive consequences, and hence should be rejected. According to the second and third objections, (§2.3 and §2.4) the best explanation for the patterns of practical concern that we describe in §2.1 does not involve positing continuous degrees of SP-relatedness.

### 2.1 Backing yourself up

Why think that the SP-relation comes in degrees? Suppose it is possible to ‘backup’ the minds of person-phases. Perhaps backups might work like this: the mind of the person-phase is scanned at some time, and a ‘copy’ of all the person-phase’s mental and physical properties is kept on file: that is, sufficient information is retained to allow a machine to create a qualitative duplicate of those mental states and physical properties. Call this copy a backup. There is no question of the backup *itself* being conscious in the format in which it is stored. Backups only become conscious when they are activated, and we will suppose that this is only done when a new body is created which is a physical and mental duplicate of the person-phase thus backed up. We call the resulting entity an *embodied backup*. Embodied backups are only created after the person-phase that was backed up, or some later person-phase that bears the SP-relation to that person phase, has been destroyed. Only once there is bodily death of the person-phase backed up, or of some person-phase that is SP-related to that backed-up person-phase, does an embodied backup go live. We call this process *rebooting.*

It’s worth noting that an embodied backup of a person-phase will fail, strictly speaking, to be continuous (either physically or psychologically) with that phase except in the very rare case in which somehow the machine doing the backing up actually causes the person-phase in question to cease to exist at the end of the process. That is because there are no direct causal connection between an embodied backup and the person-phase of which it is a backup. Instead, the causal relation between these entities is one of common cause. In what follows we assume that the SP-relation can, nevertheless, obtain between person-phases and embodied backups. We will not argue for this claim. Instead, we hope that the scenarios we spell out make this plausible. Finally, it is worth clarifying that although rebooting bears some similarity to fission, we consider these cases to be distinct. To be sure, both share a common-cause structure. But rebooting cases differ from fission cases in that the common cause only produces (at a time) a single person-phase, whereas fission cases are ones in which the common cause produces (at a time) more than one person-phase. We return to briefly consider fission cases in §2.3.

Suppose that the process of backing up is relatively common; employers typically offer employees who work in dangerous conditions a backup service, since this tends to result in employees being more willing to take risks that will profit the company. Employers have discovered that this is because if the employee’s brain/body is destroyed in a work place accident and an embodied backup has been created, then only a few memories will be lost when the embodied reboot is brought into existence: namely those memories made during the short period after the backup is made, and before the brain and body are destroyed. Employers have discovered that many employees are quite happy to take considerable risks under these conditions. Remember: we are not suggesting that all employees would be happy to take considerable risks under these circumstances; we are merely telling what we take to be a plausible story in which many are.

Consider a particular case in which an employee, Freddie, works for a dangerous mining operation, The Dangerous Mining Conglomerate, DMC. The DMC backs up employees before they go out to mine each day, and many of these employees take considerable risk in their mining endeavours. Still, though Freddie is prepared to take significant risk, we might wonder whether he takes *exactly* the same risks he would take, were he to be, say immortal, such that a mining collapse would have no effect on his brain and body. The answer might well be no: perhaps Freddie will take substantial risks given the presence of the backup, but not as many risks as he would take, were he to be given a guarantee (via immortality) of being undamaged by any mining collapse. Let’s suppose Freddie is like this.

One way to make sense of this datum is if we suppose that Freddie considers any embodied backup of himself as him, but somehow less than 100% him*.* After all, if the relevant person-phase of Freddie did not consider the embodied backup to be him *at all*—if he thought that the SP-relation fails to hold between himself and the embodied backup—then it would make little sense for Freddie to take the additional risks he does in his mining activities. Equally though, if Freddie prefers, all things considered, that the mine does not collapse (even if its collapse is not itself associated with any negative experience (pain, fear etc.)) then this suggests that he does not consider the embodied backup to be 100% him. If the SP-relation obtains between the relevant person-phase of Freddie, and the embodied backup, but obtains to a degree less than 1, then this explains this datum. We turn, in §2.4 and §2.5 to consider whether this is the *best* explanation for this datum.

To more fully flesh out the explanatory power of the SP-degree thesis, let us imagine that the DMC, in a burst of cost cutting, decides to create backups much less frequently. Suppose that they now offer the service only annually. How would we expect this to affect the risk-taking behaviour of miners over the year? We expect that in many cases risk-taking behaviour will diminish the further away in time the backup was taken. Exactly what that rate of diminution will look like can be expected to vary from miner to miner. Suppose, for illustrative purposes, that risk-taking behaviour reduces continuously over the year post backup, so that as time passes, miners become less and less likely to take risks in their mining endeavours. What could explain this behaviour? Perhaps the fact that the degree to which an embodied backup is SP-related to the person-phase taking the risks, varies depending on how long ago the backup was taken. For instance, this data is consistent with it being the case that directly after the backup is taken, an embodied backup counts as bearing the SP-relation to the person-phase thus backed up to a degree very close to 1. So any accident directly after the backup will be such that the person-phase who undergoes the accident can truly say that he will survive the accident (despite brain and body death) to a degree very close to 1. But now consider the state of affairs 6 months after a backup has been taken. Then if there is a mining accident, perhaps the person-phase who undergoes the accident and is rebooted from the backup via an embodied backup will be SP-related to the person-phase whose brain and body died in the accident, to degree .5. That person will count as surviving the mine collapse to degree .5. And so it goes, as time passes.

Suppose that Freddie’s risk-taking behaviour reduces continuously over the year post backup in just this manner. Suppose, further, that the DMC offers Freddie a mining job whose reward is quite high, but where the job is very risky. Let’s say that there is a .8 chance of bodily death (i.e. an 80% chance that the body and brain will be destroyed in a mining collapse). The payout for undertaking this risk is 100: that is, some future person-phase of Freddie will get a 100 payout. We can think of the payout in terms of some utility for the person-phase who receives it. The utility could be received in the form of money, bearing in mind that there is no 1:1 mapping between money and utiles. If Freddie’s body/brain is destroyed, then the resulting embodied backup receives the 100 payout. Let us suppose that there are two possible states of the world: either the mine collapses or the mine does not collapse. Further, suppose that Freddie has two options: he can mine, or he can go for coffee. Let’s consider a case in which it is not long since Freddie was backed up. Suppose that Freddie regards the embodied backup, if there will be one, as bearing the SP-relation to him to degree .9. That is, he considers the embodied backup to be *him* to degree .9. Then suppose that Freddie is reasoning about what he ought do.

The following (table 1) is, we think, the decision matrix that Freddie might draw. Of course this is only an example. We hope that in thinking about Freddie’s options, and considering the decision table that he draws, you will conclude both that Freddie’s preferences are not foreign—he is not psychologically very much unlike you—and that Freddie is not monstrously irrational in some way: that is, Freddie represents one way someone like us, could be. But we think he represents only one way someone like us could be: we expect there to be significant differences in the ways that different persons-phases respond to these kinds of cases. Indeed, as we will see shortly, this is precisely something our account can accommodate. For instance, we can imagine Jemima, who is a friend of Freddie’s, who takes exactly the same risks regardless of when the backup was taken, since none of Jemima’s person-phases suppose an embodied backup to be SP-related to them to any degree at all. We think Jemima is also someone just like you and I: she strikes us as no more foreign than Freddie. But let’s return to Freddie.

 The matrix Freddie will draw is not a standard decision matrix in the following sense: rather than simply multiplying the probabilities of certain events by the utilities of those events, the matrix also multiplies the degree to which the person-phase who receives the payout is Freddie. So we begin by multiplying the 100 payout that will be received by the embodied backup if there is a mining collapse, by .9, since that person-phase is .9 Freddie. Then, in turn, we multiply that resulting figure by .8, since there is a .8 chance of the mine collapsing. By contrast, consider the case in which Freddie mines, and there is no collapse. The person-phase who receives the payment is, in that case, SP-related to Freddie to degree 1 (let us suppose. This is for simplicity. Perhaps in fact that person-phase is SP-related to Freddie to a degree slightly less than 1). So, in effect, Freddie gets the 100 payout. Since the probability of the mine not collapsing is .2, we multiply the 100 payout by 1, and then by .2. Alternatively, if Freddie decides, instead, to get coffee and not mine, then in each case the person-phase who receives the payout—in this case 50, since the coffee is very good indeed!—bears the SP-relation to Freddie to degree 1, and so both boxes look like a standard decision matrix (although we have included the degree to which the person-phase in question bears the SP-relation to Freddie, to make this clear). The resulting matrix is as follows:

The embodied backup person-phase bears the SP-relation to Freddie to degree .9.

The coffee drinking person-phase bears the SP-relation to Freddie to degree 1,

Probability of mine collapse = .8.

Payout for mining: 100.

Payout for coffee: 50.

Table 1: Freddie’s Decision Matrix

|  |  |  |
| --- | --- | --- |
|  | Mine collapse | No collapse |
| Mine | 100 \* .9 (=90) \*.8=72 | 100 \* 1 (100) \*.2 = 20 |
| Coffee | 50 \* 1 (=50) \* .8 =40 | 50\* 1 (=50) \*.2 = 10 |

 Given this, the expected value of mining is 92 (72 + 20) and the expected value of coffee is 50 (40+ 10). Thus Freddie ought to mine in a situation in which the embodied backup is .9 SP-related to him. And this is what Freddie in fact does.

But suppose that 9 months have passed since Freddie was backed up, and he regards any embodied backup as bearing the SP-relation to him of only 0.25 (that is, he regards himself as having survived to degree .25 if his brain and body are destroyed). Then the decision table we construct looks rather different (see table 2 below).

The embodied backup person-phase bears the SP-relation to Freddie to degree .25.

The coffee drinking person-phase bears the SP-relation to Freddie to degree 1.

Probability of mine collapse = .8.

Payout for mining: 100.

Payout for coffee: 50.

Table 2: Freddie’s Decision Matrix 9 months After Backup

|  |  |  |
| --- | --- | --- |
|  | Mining Collapse | No Collapse |
| Mine | 100 \* .25 (=25) \* .8 = 20 | 100\* 1 (=100) .2 = 20 |
| Coffee | 50 \* 1 (=50) \*.8 = 40 | 50 \* 1 (=50) \* .2 = 10 |

In this scenario the expected value of mining is 40 (20 +20) and the expected value of having coffee is 50 (40 + 10). So Freddie ought decline to mine. This, in fact, is what he does.

These decision tables seem to us to rationalise exactly the sorts of behaviours one might expect amongst some agents very much like some of us, in a world in which there are annual backups and greedy mining companies. We turn to views according to which these decisions are not, or *may* not be, rational in §3. There, we argue that it is a virtue of the SP-degree thesis, in combination with a desire-first view, that it can both explain a wide range of patterns of practical concern such as those we see here, as well as rationalise those patterns of concern, and further, can do so in a metaphysically parsimonious manner.

On the assumption that these decisions are rational, we can make good sense of them, and their rationality, if we suppose that the SP-relation comes in degrees. We think that this provides at least *prima facie* reason to accept the SP-degree thesis. At least, it does so unless there is some other, better, explanation of the patterns of practical concern that we see exemplified in the decision matrices above. In what follows we consider four objections to the SP-degree thesis. The first attempts to show that the SP-degree thesis issues in absurd consequences. The second suggests that fission cases are problematic for the SP-degree thesis, and the remaining two offer alternative explanations for these patterns of practical concern, and hence attempt to undermine our claim that the SP-degree thesis is the best explanation for these patterns.

**2.2 Surviving, to a very low degree**

Suppose the SP-relation comes in degrees. Consider the following alleged consequences, which seen highly implausible. Consider Annie and some potential embodied backup A, to whom Annie would be SP-related to a *very* low degree. Now consider some potential future person-phase, A\*, that is SP-related to Annie to a very high degree. We can now jigger the payouts afforded to A\* and A in such a way that we make the payout that A gets (if it comes into being) sufficiently high, that it would be rational for Annie to kill her brain/body in order that A comes into existence to get that payout. In effect, this makes it rational for Annie to ‘reboot by suicide’ even though the embodied backup of her is only SP-related to her to an extremely low degree. But that is absurd. No matter how much you pay something that is Annie to degree 0.000000001, Annie ought not choose to kill her body/brain in order that a person-phase that is her to such a small degree gets a massive payout.

We think the intuition in this case is right, and in a moment we will say how our view vindicates that intuition. First, however, it’s worth comparing the case of Annie with the case of Jenny. For we do think that decision procedures such as the one outlined in the previous section can serve to show why it is *sometimes* rational for a person to kill their own brain/body.

To see why, suppose that Jenny (i.e. her present person-phase) is extremely unhappy. She is evaluating two courses of action. On the first, a person-phase—J—that is SP-related to her present phase to degree 1, goes and has coffee. J’s utility for having coffee is 5. On the second, a person-phase—J\*—comes into existence when Jenny uses a gun to destroy her current body and brain and an embodied backup is brought into existence, and J\* goes and gets coffee. Since the backup of Jenny was taken some time back, J\* is only SP-related to the present phase of Jenny to degree .1. Nevertheless, many very unfortunate things have befallen Jenny since the backup was made, which is why J will only get 5 utiles if she goes out for coffee tomorrow. By contrast, the embodied backup, J\*, that comes to exist if Jenny kills her body/brain, will get 100 utiles when she goes for coffee, since the backup of Jenny occurred at a time when she was quite happy. So J\* gets considerably more utiles from the coffee she gets, than J does for the same coffee that she gets.

 Even though Jenny thinks that J\* is only her to degree .1, it is still rational for her to kill her body/brain. If she does so the resulting utility will be 10 (namely 100 x .1) rather than 5. We represent this decision matrix below (see table 3)

J’s utility for having coffee: 5.

J\*’s utility for having coffee: 100.

Degree to which J\* is SP-related to Jenny’s present person-phase: 0.1.

Degree to which J is SP-related to Jenny’s present person-phase: 1.

Table 3: Jenny’s Decision Matrix

|  |  |
| --- | --- |
|  | Outcomes |
| Kill body, bring J\* into existence, J\* goes for coffee | 100 \* .1 = 10 |
| J goes for coffee  | 5 \* 1 = 5.  |

It seems to us that it is rational for Jenny to kill her body/brain in this situation (other things being equal). Jenny has been traumatised badly by something, and reboot from a pre-trauma backup is preferable to her having ‘smooth’ continuers even though J\*, the embodied backup, will be her to a much lower degree than J, the smooth continuer. The question, then, is why it would not be rational for Annie to act in a similar way, given that the two scenarios appear to be relevantly similar.

First, consider the case in which Annie could act to bring it about that she will be SP-related to some future person-phase, A, to a very low degree, where A will receive *extremely* high utility. Let’s suppose that A is relevantly like Annie (and A\*) in terms of her capacity to soak up utility. Plausibly, for beings like us, and Annie (and hence A) there is a cap on utility: there is only so much utility any human person-phase can soak up. So if A is relatively like Annie in this regard, then even if A would receive very high utility, the cap on the amount of utility she could use (as it were) would mean that it would not be rational for Annie to bring A into existence: A cannot, in fact, use enough utility to offset the fact that A is SP-related to Annie to such a low degree.

What, though, of beings who have person-phases who *can* use very large utilities? Well, we think it *would* be rational for person-phases of these beings to trade off degrees of SP-relatedness for larger payouts. But that raises a problem. Suppose Annie, who is not such a being, would be SP-related to a very low degree indeed, to a person-phase of a being of this kind—call that person-phase BU (big utility)—were she to kill her brain and body. Since BU can soak up huge amounts of utility, it seems that Annie ought kill her brain and body, since in doing so she maximises her future utility. But that is surely a mistake. We agree. Again though, we are imagining that Annie is very much like you and I, even though BU is not. Then even though degrees of SP-relatedness come in continuous degrees, for beings like us there will certainly be *differences* in degrees of SP-relatedness that are simply not detectable. The difference in SP-relatedness between, say, 0.01111 and 0.01112, for instance, is quite likely one that beings like you and I cannot detect. Given this, we should expect that along the continuum of degrees of SP-relatedness, there will be various thresholds between those SP-relations that are distinguishable from one another, and those that are not. Indeed, we should expect there to be thresholds between those SP-relations that obtain to a very low degree indeed but which are distinguishable from the absence of any SP-relation obtaining at all, and those SP-relations that obtain to such a low degree that they are not distinguishable from there being no SP-relation present at all. So we can expect that for beings like us, like Annie, then there will degrees of SP-relatedness that are not distinguishable from zero. If Annie is SP-related to BU to such a very low degree that that degree is not detectably different from zero, as far as Annie is concerned, then no amount of utility that BU receives will make it rational for Annie to bring it about that she is SP-related, to that very low degree, to BU.

2.3 Fission and the SP-degree Thesis

Here is another objection to the SP-degree thesis.[[9]](#footnote-10) We earlier introduced the idea of embodied backups. We stipulated that embodied backups only come into existence when the relevant brain and body is destroyed. But suppose that were not so: suppose that sometimes a backup becomes embodied while the relevant brain and body lives on. Then we have a case of (asymmetric) fission.

This presents a problem for the SP-degree theorist. If there are two fission products, X and Y, to which person-phase P is SP-related to some degree or other, then can the degree to which P is SP-related to X and Y, jointly, exceed 1? If it can, then in certain circumstances it will be rational for P to bring about massive amounts of fission since this will maximise P’s expected utility. But that seems wrong. On the other hand, if the degree to which X and Y are SP-related to P *cannot* exceed 1, then the degree to which either fission product is SP-related to P is, in part, a matter of whether some other fission product exists. In the absence of Y existing, X will be SP-related to P to a higher degree than if Y exists, and *mutatis* *mutandis* for X. But that might seem objectionable: the degree to which some future person-phase, X, is SP-related to a current phase, P, ought perhaps only be determined by features of X and the relation between X and P, not by the existence, or not of Y, for the same reasons as best deserver accounts of fission have seemed objectionable. So in either case the SP-degree theorist faces a problem.

 We think that the SP-degree theorist ought say that degrees of SP-relatedness between person-phase P, and any two or more fission products, cannot sum to more than 1. That is because we are conceiving of degrees of SP-relatedness as being intimately connected to our decision-making. Suppose person-phase P has $1000 and is deciding how to distribute it amongst fission products. If there are two products and they are SP-related to P to the same degree as each other, then it is natural for P to decide to distribute $500 to each product. This should be reflected in P being 0.5 SP-related to each fission product.

This means that the SP-degree theorist must concede that the degree to which some future person-phase, X, is SP-related to P, depends on to which other person-phases P is SP-related at the time at which exists. Hence the degree of SP-relatedness is not fixed entirely by the intrinsic properties of X and P and the (non-SP) relations that obtain between them. We think that when the SP-degree thesis is combined with a desire-first approach this consequence is in fact quite intuitive. So, again, we think that this pushes us towards the combination of these views. We will introduce desire-first accounts in detail in §3. For now, we need only note that on such views our patterns of practical concern in some way determine which relation that obtains between person-phases is the SP-relation. Suppose something like that is right, putting aside the details for now. Then we would *expect* these patterns of care to be sensitive to facts about which, and how many, person-phases exist at some future time and bear certain relations to a present person-phase.

Consider fission products X and Y. My patterns of care towards each of these would be quite different from my patterns of care towards X, if Y did not exist. If I have $1000, I will give all of it to X, if Y does not exist: but if both exist, then perhaps I will split the money between them. If I know that X and Y will both come into existence, I might anticipate having the experiences of X, and I might anticipate having the experiences of Y, but I won’t anticipate having the experiences of *both* X and Y. This is thus to say that my current person-phase’s attitudes towards those future person-phases, and my attendant patterns of care, can be *expected* to be sensitive to facts that are extrinsic to the nature of those person-phases and their relation to my current person-phase. So if the SP-degree theorist embraces a desire-first account of personal-identity, she has independent reason to predict that such factors will make a difference to the degree of SP-relatedness of various future person-phases, which is, of course, just what we find.

**2.4 Compensation, or SP-relatedness by Degree?**

One might suggest[[10]](#footnote-11) there is a better explanation for the patterns of practical concern that we just described than to accept the SP-degree thesis. Here is that suggestion: we can make sense of these patterns entirely in terms of *compensation*. The idea is this. In each scenario Freddie’s embodied backup is him to degree 1 or 0. Let's suppose it’s him to degree 1 in both scenarios. In both scenarios if the embodied backup comes into existence them some bad things have happened to Freddie: his brain and body have been killed, and he has lost certain memories. How many memories he has lost depends on how long ago the backup was taken. In the first scenario if Freddie mines, and the mine collapses causing the embodied backup to come into existence, then Freddie ought be compensated for the fact that said embodied backup has lost some (but not many) of Freddie’s memories, and that Freddie’s body and brain have undergone death. But since most of Freddie’s memories are intact, that compensation package need not be very high. In fact, the payout that Freddie gets as a result of mining rather than going for coffee is more than enough compensation to make up for the risk of Freddie’s body/brain dying in a mining collapse and an embodied backup with some loss of memories coming into existence. In the second scenario, however, the embodied backup that would come into existence were the mine to collapse would be one that has lost a significant portion of Freddie’s memories. The compensation for that memory loss (and body/brain death) would need to be significant. But while mining does attract more of a payout than having coffee, it does not attract enough of an additional payout to make it rational for Freddie to mine, because the risk of memory loss is not adequately compensated. In general, then, the longer ago the backup was, the more compensation Freddie will need conditional on there being some risk of his coming to be rebooted. That will mean that Freddie’s decision matrix will look much as we say it looks, but not because Freddie’s embodied backup bears an SP-relation to Freddie to a degree less than 1.

We think that there are plausible patterns of concern that do not support this hypothesis. Suppose that Freddie is considering two possible ways the world could go (for all he knows) in six months time. One possibility is that Freddie will be rebooted from a backup taken close to the time of reboot, and the other possibility is that he will be rebooted from a backup that has just been made. Freddie doesn't know which of these will come to pass, though he supposes them equally likely, and he knows that one will. He is told that he must now decide how to allocate utility across these two future possible reboots. The compensation account predicts that Freddie will allocate a greater share of the utiles to the reboot from the oldest backup, as that reboot, if it comes to exist, is in need of a greater amount of compensation. But we predict that under this circumstance many individuals will allocate a greater share of the utility to the reboot from the more recent backup. It’s important to note, however, that even being indifferent to the allocation of utility between the two possible embodied backups will do for our purposes, since even this behaviour is inconsistent with the compensation hypothesis. Of course, again, this is a prediction about individuals’ preferences, and that prediction might be false. We think that there is scope, here, to empirically investigate what people will in fact say about these cases.[[11]](#footnote-12)

But we hope that consideration of such an individual—Freddie—choosing to distribute all, or most, (or even distributing 50/50) of his utiles to the possible backup that is least old will strike the reader as one plausible response to this decision. And that response is inconsistent with the compensation hypothesis. Hence we think that the SP-degree thesis better explains these patterns of concern. Moreover, as we will argue in §3, the SP-degree thesis is also consistent with the converse patterns of concern. That being said, it is better able to explain a range of patterns of practical concern, including those we might find actually.

That brings us to the second explanation of these patterns of practical concern that does not appeal to the SP-degree thesis.

2.5 Uncertainty

An alternative explanation for the various patterns of practical concern predicted is uncertainty over whether a particular reboot is you or not. On this view, any reboot is either you, or not, to degree 1 or 0. But there is uncertainty regarding whether some reboot is you. Anything we explain by appealing to degrees of SP-relatedness, then, can instead be explained by appealing to uncertainties about whether a reboot will be you. Perhaps this is true. If you are independently committed to the SP-relation being an all or nothing affair then you can explain the same data we can by appealing to uncertainties. As we noted in the introduction to this paper, our goal is not to convince everyone, regardless of their metaphysical starting point, that they ought accept the SP-degree thesis. Rather, it is to convince those who share (at least some of) our intuitions about cases, and who share our commitment to a sort of metaphysical parsimony according to which there are no additional metaphysical facts that outstrip facts about the various factors that contribute to the SP-relation, and facts about the conative states of person-phases. We will have much more to say about this in the following section. In particular, we will argue that in the absence of such additional metaphysical facts it is implausible to suppose that there are sharp cut-offs, or thresholds, in the SP-relation, given that the factors that contribute to that relation are graded. We concede that if one does not share this metaphysical commitment, then one may prefer to interpret the data we outlined earlier in terms of uncertainty over whether some person-phase will be you. Nevertheless, this strategy not only incurs costs to parsimony, but, we will argue, it does not have all of the explanatory benefits one might suppose since it can only explain patterns of practical concern by going via person-phases’ *beliefs* about the SP-relation.

3. Background Commitments: Metaphysics First vs Desire First

Suppose Martha cares very much about her physical continuity. She has no self-interested desires about a future in which she has no physical continuer, even though she has a psychological continuer. Let us suppose she would die in a teletransporter in which her physical, but not psychological, continuity ends. The usual story is that if this is so, it is because she sees that there is a metaphysical fact that personal-identity depends on physical continuity, and she dreads lack of continuity because it will result in death. These are views according to which there is a metaphysical fact of the matter regarding which relation is the SP-relation, a fact that obtains independently of any person-phase’s conative states. Call views that posit additional metaphysical facts of this kind, *metaphysics-first views.* According to such views, the appropriateness of certain of a person-phase’s conative states depends on the presence of these metaphysical facts: person-phases ought reason prudentially about the interests of just those person-stages to which they are SP-related. Metaphysics-first views disagree about which facts determine the SP-relation (psychological, physical, organismic, soul, brute, etc.) but they agree that there are such facts.

 We suggested earlier in the paper that metaphysics-first views are less parsimonious than views that do not posit these additional metaphysical facts. It is easy to see why this is so if we look at fairly standard versions of these views. On such views there is a gradable relation, or relations, that are relevant to determining the SP-relation (such as, say, psychological continuity) and there is some metaphysical fact regarding the cut-off between there being a sufficient degree of said relations present for the SP-relation to hold, and there failing to be a sufficient degree of said relations present. For simplicity, let’s call the relations that are relevant to determining the SP-relation *continuity relations,* leaving open which kind of continuity relations these are (physical, psychological, etc.)

On such views the presence of the gradable continuity relation fails to determine the presence (or not) of the non-gradable SP-relation. The additional metaphysical fact determines that cut-off. Such views are, therefore, less parsimonious than views that reduce the SP-relation to the presence of these gradable continuity relations alongside various conative states of the relevant person-phases, as desire-first approaches do.

 One might wonder, though, whether all metaphysics-first views are less parsimonious than their competitors. A defender of the metaphysics-first approach might contend that the SP-relation is not gradable, and nor are the relevant continuity relations that determine the SP-relation. Since neither relation is gradable, the latter reduces to the former with no cost to parsimony.

Let's set aside concerns one might have about the plausibility of such views, and focus only on the issue of parsimony. For we think there is something instructive to be learned by thinking about such views. To see this, let’s grant that continuity (of whatever kind) is not gradable. Still, the various properties that are relevant to determining continuity—similarity, etc.—are surely gradable. Consider some continuum of those gradable properties and relations. There must be some sharp cut-off regarding where, along that continuum, continuity obtains and where it does not. Perhaps it is a mere semantic matter where this cut-off is located: that is, perhaps we simply stipulate, or it is somehow part of what we mean by ‘continuity’, that the cut-off is *here*, rather than *there*. Such a view would not commit us to any additional metaphysical facts and hence would be no less parsimonious than a desire-first view. Still, this version of the view is surely quite unattractive. Had we meant something slightly different by ‘continuity’ the cut-off would have been elsewhere. That entails that whether someone survives some event or not will at least sometimes be entirely a matter of how *exactly* we decided to define/use ‘continuity’. But insofar as we care a good deal about survival, it hardly seems attractive to think that the difference between survival, or not, is a mere matter of usage of some pseudo-technical term. So if one thinks there is a sharp cut-off between surviving, and not, one should think that this difference is in some way metaphysically weighty: a difference that grounds our caring about some future person-phases in one case, and not the other.

On the second option, then, we introduce just such a metaphysical fact: a fact that determines where, along the continuum of gradable properties, continuity obtains, and where not. But notice that the only real difference between this view, and the view we earlier articulated, is *where* we find the additional metaphysical fact. The former view holds that the SP-relation is irreducible to any continuity relation because the former is non-gradable while the latter is gradable. The later view holds that the SP-relation is reducible to some continuity relation, because both are non-gradable: but the continuity relation is not reducible to any further gradable relations of similarity, causal connectedness, and so on. In either case, there is a cost to parsimony.

In what follows, for simplicity, we will focus on the version of the metaphysics-first view according to which continuity is gradable, and the SP-relation does not reduce to any such relation, but we think that everything we say can, *mutatis mutandis,* be applied to the view that the continuity relation itself is non-gradable, and irreducible to any gradable properties or relations.

 Let’s return to the thought that the patterns of practical concern outlined earlier are best explained by the SP-relation obtaining between person-phases to degree 1 or 0, and there being uncertainty regarding whether two person-phases are SP-related or not.

We’ve already noted that the factors relevant to the obtaining of the SP-relation (such as psychological connectedness and so on) are graded.

Those who think that there are metaphysical facts which determine whether the SP-relation obtains, and who think it obtains to degree 1 or 0, will think that there are metaphysical facts regarding to what degree the various factors relevant to the obtaining of the SP-relation need to hold in order for the SP-relation to hold. Imagine a continuum of cases in which the relevant factors (whatever you think they are) hold to varying degrees. Then on one version of this view the metaphysical fact determines a sharp cut-off between those cases in which the SP-relation holds to degree 1, and those cases in which it holds to degree 0. Alternatively, one might think that there are penumbra cases in which it is vague whether or not the SP-relation obtains, and that the metaphysical fact determines that this is so, and, further, determines that above this penumbra the SP-relation holds to degree 1, and below it, holds to degree 0. These, we think, are probably roughly the orthodoxy. Then the patterns of practical care that we saw earlier were simply the result of uncertainty about where these cut-offs lie.

 We are sceptical of there being any metaphysical facts of this sort. Like some others, we find it plausible that once we specify the various non-identity involving relations that obtain between person-phases (similarity relations, causal connections, and so on) and specify the various psychological properties (particularly the cognitive and conative states of person-phases) then we have specified all that there is which can be relevant to settling which person-phases bear the SP-relation to which other phases. There are no further metaphysical facts that outstrip these properties and relations.

One class of views that contrast with metaphysics-first views are what we call *desire-first* views. Desire-first views are generally motivated by two thoughts. First, that in some sense what we believe, or what practices we engage in, or what conative states we have, play some important role in settling which things we *are* across time, and second, that there are no further metaphysical facts of the kind we just described. Hence desire-first theorists think that the conative states of person-phases are the best (and only) contender to settle between which person-phases the SP-relation obtains. So if, say, one person-phase bears the SP-relation to another person-phase in virtue of being psychologically continuous with that phase, then the fact that the relation of psychological continuity is the SP-relation must be settled by the conative states of those phases.

Our aim, in what follows, is not to argue for a desire-first approach to personal-identity. Instead, it is to argue that insofar as one shares the sorts of motivations that animate the desire-first theorist, one should accept the SP-degree thesis. We will begin by outlining a very broad characterisation of a desire-first account. Then we will show why, given such an account, the idea that the SP-relation is an all or nothing matter, even though the factors relevant to the obtaining of that relation are graded, is a very implausible view. We will then return to metaphysics-first views and evaluate the extent to which the uncertainty approach just outlined really can explain our patterns of practical concern.

3.1 A general schema of a desire-first account

Desire-first accounts come in various guises,[[12]](#footnote-13) but all agree that we ought invert the order of explanation when it comes to thinking about personal-identity. Rather than its being the case that you ought care about some future person-phase because that phase bears the SP-relation to some current person-phase, instead, such views hold that what makes it the case (*inter alia)* that the future phase bears the SP-relation to some current phase, is the current phase’s bearing certain attitudes towards the future phase (or towards the relation that that phase bears to the current phase).

According to the kind of desire-first view we have in mind, the conative attitudes that are relevant to determining the SP-relation are of least two kinds. The first is a set of desires for *extension* of oneself where these extensions bear certain sorts of similarities to the current person-phase and where one desires not just that such an extension exists but that it be treated in certain ways (has one’s possessions, is in similar relationships, is legally the ‘same person’ and so on). These are forward looking conative attitude. The second is a set of desires to have been *extended from* (i.e. to have as an *origin*), person-phases that bear certain sorts of similarities to the current person-phase (along with inheriting from them various social and legal statuses). These are backwards looking conative attitudes. In addition to these backwards and forwards looking conative attitudes there are what we have so far called factors relevant to the obtaining of the SP-relation: psychological similarity underwritten by appropriate causal relations; bodily continuity; organismic continuity, and some combination of these and, perhaps, some other relations entirely. In what follows we call these *candidate properties of conation* —CPCs. CPCs are *candidates* to be the SP-relation. They are the relations about which we can ask, relative to some person-phase P, whether P has the conative attitudes of extension and origin towards that relation. Can *any* relation around which a person-phase can organise its conative attitudes of extension and origin, be a CPC? We think not. We think that a relation counts as a CPC only if a person-phase could organise its conative attitudes of extension and origin around that relation under conditions of full rationality and relevant knowledge. We will have more to say about this shortly. But the idea is that if no person-phase could organise their attitudes around some relation R\* under conditions of full rationality and relevant knowledge, then R\* does not count as a CPC. We assume that each of the relations just listed is a CPC, since each is a relation around which person-phases can organise their conative attitudes under these conditions.

If a person-phase *does* desire to be extended by, say, the relation of psychological continuity, and desires to have come from person-phases connected by psychological continuity, we will say that that person-phase desires psychological continuity, and *mutatis mutandis* for other CPCs. Why do person-phases desire certain CPCs? Here is one part of the story we find plausible: there are primitive conative attitudes of *anticipation* and of *origin*: primitive attitudes of, on the one hand, anticipating the experiences of certain future person-phases and, on the other, of taking some past person-phases to be one’s origin. Here, again, there is something of an inversion of the order of explanation. Rather than its being the case that person-phases have attitudes of anticipation and origin towards other person-phases because those person-phases bear some particular relation (such as psychological continuity) to the person-phase in question, instead, it is the attitudes that are primitive, and some CPC, such as psychological continuity, is one that a person-phase cares about because the primitive attitudes are ones that in fact track that relation.

 So according to desire-first accounts, the SP-relation is the relation that holds between person-phases when some CPC obtains between those phases, and its obtaining is desired, or otherwise conatively relevant, in part in virtue of the presence of primitive attitudes of anticipation and origin.[[13]](#footnote-14) No doubt the desire-first theorist will want to say much more than we have here. But our aim is not to defend such a view. Instead, it is to show that if something roughly in this ballpark is right, then the idea that the SP-relation is an all or nothing matter, about whose cut-offs we are uncertain, is implausible.

3.2 Uncertainty and Thresholds

We noted previously that if you endorse a metaphysics-first view then you can suppose that there is some metaphysical fact which determines a threshold regarding when the relevant CPC holds to a high enough degree that the SP-relation obtains. If one thinks this, then one *might* think that the choices made be Freddie are in fact irrational: either he’ll survive a mining collapse to degree 1, or he will survive to degree 0, and his choices should exhibit this fact. Of course, one need not think this: as noted earlier one might try to capture the rationality of Freddie’s decision(s) by appealing to his uncertainty regarding whether or not he will survive various events. In either case, however, one thinks that the SP-relation does not hold to degrees between 1 and 0.

In §3.3 we will argue that, at least for agents like us, it is most unlikely that the desire-first approach would support the existence of such thresholds, and hence the existence of an all or nothing SP-relation. Before we do this, however, we want to consider the upshot of the view that says that there are such thresholds, and that the patterns of practical concern outlined earlier are the result of uncertainty regarding the location of these thresholds. We will argue that this combination of views is actually less adept at explaining our patterns of practical concern than one might have supposed.

Metaphysics-first views hold that the connection between the SP-relation and our patterns of practical concern is a normative one. We *ought* to have certain preferences given that the metaphysical facts about the SP-relation are thus and so. So such views can explain why we find certain patterns of practical concern amongst person-phases only by supposing that those person-phases have certain beliefs about the metaphysical facts regarding the SP-relation: both that they have certain beliefs regarding which CPC is the SP-relation, and that they have certain beliefs about where the thresholds are, above and below which the SP-relation does not, and does, (respectively) hold, or, alternatively, certain beliefs about their levels of uncertainty regarding where the thresholds are.

That is, suppose we ask the question: why does Freddie have the pattern of practical concerns he does? The answer must be: because Freddie believes that, say, psychological continuity facts ground facts about the SP-relation and Freddie cares about the SP-relation, and so Freddie’s patterns of practical concern track the degrees to which the psychological continuity relation obtains. Or: because Freddie believes that, say, psychological continuity facts ground facts about the SP-relation, and Freddie cares about the SP-relation, and Freddie believes himself to be uncertain how much psychological continuity is required for the SP-relation to obtain, and his patterns of practical concern track this uncertainty. The point is this: in the absence of Freddie having some beliefs about what the metaphysical facts are, and some beliefs about where they obtain, or some beliefs about his own uncertainty about where they obtain, he has no reason to have the preferences he does. That is to say, the only connection that obtains between Freddie’s conative states, and the facts about the SP-relation, come from Freddie having some beliefs about the SP-relation, beliefs which then inform his desires. This, however, is an unsatisfying explanation of Freddie’s patterns of practical concern. For often, person-phases will simply have no beliefs about the metaphysical facts regarding the SP-relation.[[14]](#footnote-15) And in the absence of those beliefs the metaphysics-first views provide no account at all of why person-phases have the patterns of practical concerns they do.

In sum, then, although we agree that in principle, appealing to uncertainty regarding the metaphysical facts (i.e. the thresholds at which the SP-relation obtains or does not) might explain the same patterns of practical concern that the SP-degree thesis can, we think that in fact the explanation is less plausible than the one we offer. For it requires going via beliefs about these metaphysical facts, beliefs that we are sceptical many actual person-phases have.

That brings us to the next component of our argument in favour of the SP-degree thesis. Namely that if, like us, you are attracted to a desire-first approach to personal identity, then you have independent reason to reject the idea that the SP-relation is an all or nothing matter.

3.3 Thresholds and the Desire-first view

We’ve seen that metaphysics-first views can quite naturally endorse the idea that the SP-relation holds only when the relevant CPC obtains above some threshold. It’s worth noting that a desire-first theorist could also think there is such a threshold. Or, rather, she could think that there are two such thresholds. If the SP-relation is the relation that holds between person-phases when at least one CPC holds between those person-phases, and its holding is desired, then there are two places in which degrees can get into the picture. They can get into the picture by its being a matter of degree whether some CPC is desired; and by its being a matter of degree whether some CPC holds between person-phases. In either case we might expect the SP-relation itself to come in degrees. The desire-first theorist could hold that only when a CPC holds above a certain degree, and only when it is desired above a certain degree, does the SP-relation obtain.

But the imposition of such thresholds could not be the result of there being some independent metaphysical fact that makes is so, since desire-first theorists reject the existence of any such facts. Rather, if one thinks, as desire-first theorists do, that the CPC in question matters for the obtaining of the SP-relation *because* of the conative relations the relevant person-phases bear to it, then there could be such thresholds only if those person-phases have fine-grained desires about such thresholds. That is a logically possible way for person-phases for be, and with regard to such person-phases there are, according to the desire-first view, such thresholds. In these cases the SP-relation holds to degree 1 or 0, but nothing in between. We, however, think it most unlikely that person-phases like us have these kinds of conative attitudes. Consider two pairs of person-phases: P1 and P2 on the one hand, and P1\* and P2\* on the other hand. Suppose that each of P1 and P1\* desires the very same CPC, and desires that CPC to the same degree. Suppose further that the CPC holds between P1 and P2 to *almost* the same degree that it holds between P1\* and P2\*. For there to be a threshold such that the degree to which that CPC holds between P1\* and P2\* falls one side of threshold, and the degree to which it holds between P1 and P2 falls the other side of the threshold, it would need to be that the person-phases in question care about that exact cut-off in such a way that despite the CPC holding to almost the same degree in each case, in one case one person-phase cares about the CPC (because it holds to that exact degree) and in the other case the person-phase in question does not care about the CPC (because it holds to some other exact degree). In such a case it will turn out that P2 is SP-related to P1, but P2\* is not SP-related to P1\*. We do not think that actual person-phase’s practical cares are like this: we do not think that very small differences in the extent to which a CPC holds between person-phases will make the differences between those person-phases caring, in a distinctively prudential way, about some continuer phase that is related by the CPC, and not caring at all about that continuer phase. Instead, we think it patently obvious that actual patterns of prudential concern come in degrees. And if they do, then so does the SP-relation. Quite generally, on the assumption that person-phases don’t care about particular thresholds in a strong way, it follows that the desire-first account *entails* that the SP-relation comes in degrees.

With this in mind, let’s return to the issue of how to explain our patterns of practical care. Recall that in the previous section we argued that despite appearances, metaphysics-first views that deny the SP-degree thesis have trouble explaining these patterns because their explanation must proceed via beliefs that person-phases have about the metaphysical facts regarding the SP-relation. Desire-first approaches have no such troubles.

If desire-first theorists want to know why some person-phase displays the pattern of practical concerns it does, they have no reason to look to said person- phase’s beliefs about the SP-relation. For according to the desire-first approach, the facts about the SP-relation are themselves determined by these very patterns of practical concern. That the desire-first approach has this explanatory benefit is tightly tied to the fact that it easily allows us to answer the question: why does the SP-relation matter? Metaphysics-first views allow that what we care about—our practical concerns—can come apart from the facts about the SP-relation, so that we can both fail to care about person-phases to which we bear the SP-relation, and we can care (prudentially speaking) about person-phases to which we do not bear the SP-relation. Since the obtaining of the SP-relation and the presence of our practical concerns can come apart in this way, we cannot explain the latter in terms of the former, except by going via person-phases’ *beliefs* about the former. Hence the desire-first approach better explains these patterns of practical concern than does any metaphysics-first approach.

There is also another way in which desire-first views do better at explaining the sorts of patterns of practical concern we considered in §2.1. For suppose that while Freddie’s preferences are as described in §2.1, there is another miner, Johnnie, who has somewhat different preferences. Johnnie, we might suppose, desires to be extended by physical continuity, and hence the prospect of being backed-up does not result in Johnnie taking more risks that he would were he not backed-up. Let’s suppose that both Johnnie and Freddie agree about all the facts about which CPC relations would obtain between their current person-phases and relevant future person-phases. Yet despite that, Johnnie and Freddie display different patterns of concern: with Freddie electing to mine when the backup is very recent and when the risk of a mining accident is high, and Johnnie declining to mine under those same circumstances. One might think that both Johnnie and Freddie’s pattern of practical concern is entirely rational. Unlike metaphysics-first approaches, desire-first approaches can vindicate *both* Johnnie and Freddie’s pattern of practical concern. For it is because Freddie and Johnnie have different desires that different SP-relations obtain between their present person-phases and various future phases, and, in virtue of that, each can survive (or not) different events. Hence each can be acting rationally when Freddie decides to mine, and Johnnie declines to mine.

Here’s where we are then. We’ve argued that if you share our particular metaphysical scruples you will not be attracted to a metaphysics-first view, and hence you will be attracted to something like a desire-first view. As such, you will have independent reason to think that the SP-degree thesis is true. Moreover, you will have a very attractive explanation of different person-phase’s patterns of practical concern, an explanation that does not go via those phase’s beliefs about the facts about the SP-relation. By contrast, if you embrace a metaphysics-first view then you have the resources to deny that the SP-degree thesis is true, and instead to hold that there are thresholds in the CPCs over which it obtains, and below which it does not obtain. One can then attempt to explain our patterns of practical concern by appealing to our uncertainty regarding where these thresholds lie, and hence uncertainty regarding between which person-phases the SP-relation obtains. We have argued, however, that this explanation is not as good as the one we offer, (even setting aside its reliance on metaphysically profligate additional metaphysical facts) because it must go via person-phase’s beliefs about the SP-relation (beliefs about when it obtains, or beliefs about one’s uncertainty over when it obtains) and it is not clear that all actual person-phases have these kinds of beliefs. Hence we think our explanation of these patterns, which appeals to the SP-degree thesis and a desire-first approach, is superior.

We will offer no further arguments for the SP-degree thesis. Instead, in what follows we turn our attention to the question of how to model the SP-degree thesis, within the context of more general theories of persistence.

**4. Modelling SP by degrees.**

 There are three standard theories of persistence: endurantism, perdurantism and exdurantism. So far we have remained neutral on whether the SP-relation is the relation of numerical identity (as endurantists will suppose) or some other kind of similarity cum genidentity relation that obtains between numerically distinct person-stages, as most perdurantists and all exdurantists will suppose. The question now arises as to whether one can make sense of the SP-degree thesis within any, or all, of these theories of persistence. In what follows we will argue that one can. Nevertheless, we think that it is a much more natural fit with a view that does not construe the SP-relation as a relation of numerical identity. So we will spend most of our time modelling the SP-degree thesis within this context. But first, we will briefly say something about the SP-degree thesis within an endurantist metaphysics of persistence.

 Endurantists will suppose that the SP-relation is a relation of numerical identity. Hence they can accommodate the SP-degree thesis only as long as they hold that identity *itself* comes in degrees. That is a view that has been defended by, *inter alia*, Nick Smith (2005). Perhaps there are good independent reasons to think that identity comes in degrees. At the very least, though, it would be surprising if reflecting on our patterns of practical concern gave us reason to endorse such a heavy-weight metaphysical view about the nature of identity. Given this, we think that though endurantism is strictly consistent with the SP-degree thesis, this is not a very natural pairing of views. As such, in what follows we focus on views according to which the SP-relation is not a relation of numerical identity.

 Let’s start by considering what our view would look like if one accepted a worm theory—the view that persisting objects are four-dimensional ‘worms’ composed of shorter-lived temporal stages (temporal parts). If persisting persons are worms, they are worms all of whose person-stages are united by the SP-relation. The question, then, is how the degree structure of the SP-relation shows up in the worm ontology. Three options suggest themselves. We call these, respectively, the centred worms view, the parthood to a degree view, and the fastenation to a degree view. Let’s consider these last two views first.

According to the fastenation by degree view, each of the temporal parts of a four-dimensional worm are *parts* of the worm to degree 1, but the degree to which those parts are, metaphorically speaking, glued together via the SP-relation, varies. Thus the degree of fastenation of the parts is the degree to which the SP-relation holds between those parts. By contrast, according to the parthood to a degree view, different parts of the four-dimensional worm are parts of the worm to different degrees, which correspond to the degree to which the SP-relation obtains between those parts.

In fact matters are more complicated than either of these pictures initially paint. The SP-relation must be non-symmetrical. After all, we want to accommodate the idea that from the perspective of one person-stage, P, some other person-stage, P\*, bears the SP-relation to P to degree D, while from the perspective of P\*, P bears the SP-relation to P\* to degree D\*, where D and D\* are not the same.[[15]](#footnote-16) Indeed, in the limiting case we can imagine that P\* bears the SP-relation to P to some degree from the perspective of P, but from the perspective of P\*, P does not bear the SP-relation to P\* to any degree. How can that be? Well suppose P and P\* bear relations of bodily but not psychological continuity with one another and that each of these relations is a CPC. Suppose, further, that P desires psychological continuity in virtue of having certain primitive attitudes of anticipation and origin towards stages connected to P via psychological continuity. Suppose, further, that P does not in any way desire bodily continuity. Then since P and P\* are *not* connected via psychological continuity, from the perspective of P the SP-relation fails to hold between the two stages. But now suppose that P\* desires bodily continuity in virtue of having certain primitive attitudes of anticipation and origin towards stages connected to P via bodily continuity. In virtue of this, for P\*, the SP-relation holds (to some degree) between P and P\*. In virtue of P and P\* having the relevant conative attitudes towards different CPCs, it turns out that from the perspective of P, P\* is not SP-related to P, and from the perspective of P\*, P is SP-related to P\*.

Can either fastenation to a degree or parthood to a degree accommodate this? Yes. Consider, first, parthood to a degree. The natural thing to say is that there exist distinct overlapping four-dimensional objects: objects that share all of the same parts, but are non-identical. They are non-identical because they differ in the degree to which some of those parts—i.e. the person-stages—are parts of the whole. So, for instance, let’s consider a simple case in which a worm has only two person-stages, each of which is SP-related to the other from the perspective of each of those stages. Suppose the worm is composed of P and P#. Further, suppose that from the perspective of P, P# bears the SP-relation to degree .7, and that from the perspective of P#, P bears the SP-relation to P# to degree .4. Then we will say that there exist two coinciding worms: W and W#, each composed of P and P#. But one of these worms, W, has P as a part to degree 1, and has P# as a part to degree .7, and the other worm, W\*, has P# as a part to degree 1, and has P as a part to degree .4.

The fastenation to a degree view can also make sense of this data. On that view we will say that P# is fastened *to* P, to degree .7, but that P is fastened *to* P# to degree .4. So fastenation always runs *from* some person-stage *to* other stages, where the stage *from* which it runs determines the degree of fastenation by determining both the degree to which the relevant conative attitudes are held towards some CPC, and by that CPC holding to some degree or other, between the relevant stages. Fastenation itself becomes a non-symmetric relation.[[16]](#footnote-17)

Finally, that brings us to the centred worm view. The centred worm view is relevantly analogous to thinking of worlds as centred worlds. So, just as there are many centres within a single world, and yet there is nevertheless just one single world (not a bunch of coinciding worlds) likewise, on this proposal there is just a single worm with a single set of relations obtaining between its parts. But that worm has different centres: the different person-stages that compose it. And just as we can assess the truth of a proposition at different world centres, so too we can assess the truth of a proposition at different *worm* centres. Just as it can come out as true that vegemite is tasty, when assessed at one world centre and not another, so too it can come out as true when assessed at one worm-centre P, that some person-stage, P\* is SP-related to P to some degree D, and yet also be true, when assessed at worm-centre P\*, that P is SP-related to P\* to some degree different from D.

To put things another way, propositions about the conative attitudes of each person-stage, and propositions about the nature and degree to which CPC relations hold between person-stages, are simply true or false *simpliciter*. Propositions about the degree to which the SP-relation obtains between any two stages, however, are always true, or false, at a *centred* worm. The view does, however, admit of two interpretations. According to the first, while there is one worm, there are multiple persons: each distinct person being a centred worm. While this view avoids multiple overlapping worms, it has distinct centred worms—if the persons are distinct, then so must be the centred worms with which they are identical. Whether this is ontologically parsimonious depends on your take on the ontology of centred worms. If you think centred worms are ontologically ‘innocent’[[17]](#footnote-18)—nothing costly added to the worm and its centres—then you might think so, otherwise not. The alternative is to identify the person with a single worm, and use the centred worm story as a formalism to describe the SP-relations from the perspective of each person stage. On this interpretation persons have a less direct relationship to the SP-relation. The person is something like a maximally connected set of person-stages connected by the SP-relation in either direction, to any degree. SP-relations will be the things which most directly explain patterns of concern. The benefit is in economy: there is only one person, and the centred worms play only a formal role. The cost is that the relation between persons and the relations which explain patterns of concern displayed by a person-stage is only indirect.

Of these three options we are inclined to prefer the third, since it its less ideologically and ontologically costly than either of the other options: it doesn't require that we posit fastenation relations that come in degrees, nor that we accept coincident objects composed of the same parts, but to different degrees. There is, however, a fourth option that we think may be preferable even to the centred worms view. According to this option, we adopt a stage-theoretic (i.e. exdurantist) semantics for persistence. The advantage of this is that exdurantists are committed to the existence of temporal counterpart relations. Since counterpart relations are non-symmetric, it will be easy and un-revisionary to model a non-symmetric temporal counterpart relation. Moreover, since counterpart relations are similarity relations and since similarity relations come in degree, it ought be straightforward to suppose that a stage can be a temporal counterpart to a degree. Then what it is for one person-stage to be a temporal counterpart of some other person-stage is just for one stage to be SP-related to the other, and we model degrees of SP-relatedness in terms of degrees of temporal counterparthood. Then just because P# is a temporal counterpart of P to degree .7, doesn’t mean that P is a temporal counterpart of P#’s, nor that, if it is a temporal counterpart, it is a temporal counterpart to that same degree.

According to this view, there are many temporal counterpart relations that one person-stage bears to other stages. *Which* of these temporal counterpart relations is relevant in determining the truth about claims about personal-identity and survival is determined by context; in this case, the context is provided by the conative attitudes of the person-stage in question. In effect, each CPC will map onto some temporal counterpart relation or another. When a name, ‘Freddie’ picks out a particular person-stage, P, then *which* temporal counterpart relation is the correct one for assessing personal-identity claims about Freddie—i.e. claims about what Freddie will survive, and to what degree—will be determined by the conative attitudes that P bears to the various CPCs. So what makes true, claims about what Freddie will, or will not, survive, is the existence of temporal counterparts of P that are temporal counterparts of P to some degree or other, where that degree is determined by conative facts about P. When the name ‘Freddie’, at some later time, picks out person-stage P\*, then which temporal counterpart relation is the correct one for assessing person-identity claims about Freddie will be determined by the conative attitudes that P\* bears to the various CPCs. Thus while it can be true, when ‘Freddie’ picks out P, that ‘Freddie will survive event E’, it can also be true, when ‘Freddie’ picks out P\*, that ‘Freddie did not survive E’, if P and P\* bear conative attitudes towards different CPCs.

**6. Conclusion**

We have argued that consideration of our patterns of practical concern suggest that the SP-relation comes in continuous degrees, and that this is best accommodated within a desire-first approach to personal identity. Further, we have argued that if one is antecedently attracted to a desire-first approach, then it more or less falls out of this view that for agents like us, the SP-relation comes in degrees. Hence, we think, this package of views is a very natural one: the two views, together, provide mutual support for one another. None of this is to say that one cannot avoid supposing that the SP-relation comes in degrees: quite clearly one can, if one is prepared to accept certain additional claims about metaphysical facts, and the connection between those facts and explanations of our practices. Still, we think that we have said enough to put the SP-degree thesis on the map as worth of consideration.

Our view is strongly revisionary. Survival is a matter of degree. We think that it’s being a matter of degree better explains our behaviour than the view that says it is an all or nothing matter. The behaviours we have focused on in this paper are patterns of practical concern with regard to future person-stages. But, we think, noting that on the SP-degree thesis survival comes in degrees opens up the possibility of explaining other aspects of our reasoning about persons over time. In particular, it may be that we can explain, and rationalise, at least some of the ways in which person-stages temporally discount. It might also be that we can explain the non-discrete way we judge moral responsibility to (under some circumstances) gradually fade over time. So the SP-degree thesis opens up a number of potentially fruitful research projects. What these projects suggest is that the graded nature of the SP-relation is in fact central to our experience of personhood.

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1. With thanks to BLINDED. [↑](#footnote-ref-2)
2. Since the personal-identity relation comes with a various different kinds of metaphysical baggage attached, depending on your particular perspective, we’ve introduced the SP-relation in order to target the relation that we have in mind. [↑](#footnote-ref-3)
3. Note that some worm theorists take the view that personal-identity claims *are numerical* identity relations. According to them, the relation holds between the worm and itself. So if I see Martha at t1 I see the whole of Martha (via visual connection to a part of her, which is how we usually see wholes) and when I see Martha at t2 I see the same (numerically identical) worm, this time via visual contact with a different part of her. In this case the personal-identity relation does not hold between the person-stages, but between the worm and itself seen via contact with different stages. This way of organising talk is not *metaphysically* distinct, we take it, from talk of a “same-person relation” which holds between the t1 stage and the t2 stage in virtue of them both being temporal parts of the same worm, where that worm is a person. [↑](#footnote-ref-4)
4. Though we use the term ‘phase’ in this context, we don’t intend the sort of heavy-duty notion that Johnston (1989) introduces by his talk of phase sortals, or crypto phase sortals, etc. [↑](#footnote-ref-5)
5. This is Parfit’s view (1984 p 206). [↑](#footnote-ref-6)
6. Of course, worm theorists allow that there can be some vagueness around the edges, but that is quite different to the claim we make, that the SP-relation itself comes in continuous degrees. [↑](#footnote-ref-7)
7. Again, ordinary vagueness aside. [↑](#footnote-ref-8)
8. For instance, Parfit (1984 p 206-207) thinks that there needs to be enough overlapping chains of direct psychological connectedness in order for there to be psychological continuity, and there being psychological continuity is what there being an SP-relation consists in. [↑](#footnote-ref-9)
9. With thanks to an anonymous referee (who did not frame this as an objection, so we have taken some liberties here). [↑](#footnote-ref-10)
10. With thanks to BLINDED. [↑](#footnote-ref-11)
11. We have plans to do this, but as yet we have no empirical results that we can share here. [↑](#footnote-ref-12)
12. Examples of desire-first accounts include White (1989); West (1996); Braddon-Mitchell and West 2001; Braddon-Mitchell and Miller (2004); Miller (2009), and Johnson (1989). Views of this kind have also been gestured towards in Nozick (1981 p 69), Unger (1990 p66) and Whiting (1986). See also D. Shoemaker (2003) for a related view according to which “our identity as functioning, well-developed agents is constituted by our nexus of cares.” Eklund (2004) calls views of this kind *self-concern relativism.* Kovacs (2016 and forthcoming) develops a view that is not metaphysics-first, but neither is it desire first: instead it is best thought of as first-person-thought-first. [↑](#footnote-ref-13)
13. We noted earlier that a relation counts as a CPC only if a person-phase could organise its conative attitudes of extension and origin around that relation under conditions of full rationality and relevant knowledge. What does this mean, and why does it matter? To some extent we want to remain neutral on exactly the right way to spell out this constraint. What is important is that it does not follow that if a person-phase, P, has primitive attitudes of anticipation towards a relation R, and some future inanimate object-phase, O, is R-related to P, then P is SP-related to O. For it might be that under conditions of relevant knowledge and rationality P could not organise it’s conative attitudes around R.

For instance, one might hold that for any future object-phase, O, that lacks mental states, P cannot, given relevant knowledge and rationality, anticipate the experiences of O, and hence P cannot organise its (relevant) conative attitudes around any relation R that connects P and O. Hence no such R is a CPC.

If so, no person-phase can bear a CPC to some future phase of a rubbish bin or a car, something we take to be a desirable outcome. Likewise though, no person-phase can bear a CPC to some future phase of a human being in a persistent vegetative state, or to a human corpse. If that is so, then CPCs do not include relations of bodily continuity, since such relations can obtain between phases at least one of which lacks mental states.

One need not, however, accept a claim this strong. One might hold that in conditions of full rationality and relevant knowledge, P cannot organise its conative attitudes around some relation R that connect P with an inanimate object that not only lacks mentality, but does so essentially, or at least, does so in all close worlds. Nevertheless, one could allow that under such conditions P can organise its conative attitudes around a relation R that connect P with a object which in fact lacks mentality, but where in close worlds that object has mentality (such as a human being in a vegetative state). There are various options here; the point is simply that SP-relatedness between P and P\* does not straightforwardly follow from the attitudes that P (and P\*) happen to have in conditions of ignorance of non-ideal rationality. [↑](#footnote-ref-14)
14. On some accounts of belief one might suppose that there is tacit belief recoverable from Freddie’s behavioural profile. But that profile is consistent either with a story about desires, such as the one we provide, or tacit beliefs about theoretical entities coupled with desires for the theoretical entities, such as the one provided by the metaphysics-first approach. Whether this is a sharp distinction, and if it is which view it favours, is an issue we do not have space for here. Suffice for now to say that the desire story is more theoretically economical. [↑](#footnote-ref-15)
15. Braddon-Mitchell and West (2001) and Sider (forthcoming) also argue for views with this feature. [↑](#footnote-ref-16)
16. There is a complication here. We have not discussed whether SP-relations hold only between neighbouring temporal stages (in which case they might hold in a derived way via the ancestral of the SP-relation) or directly between stages even where there are intermediate stages. The former view requires person-stages to be non-densely ordered, so there *is* a next stage. The latter view appears to create a *prima facie* problem for the fastenation view as it is most naturally understood as a relation between neighbouring stages. But the idea of fastenation could be extended to include direct relations between a stage and every other stage in the worm. Relatedly we have not discussed whether there is a unique pair of SP-relations that hold between two stages, or whether there is a potentially different relation from the perspective of a different third stage as a context of assessment. Many interesting first order questions hang on this choice, but sadly there is no space to discuss them here. [↑](#footnote-ref-17)
17. By analogy with Lewis’ view about mereological fusion. [↑](#footnote-ref-18)