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Surviving death: how to refute termination theses

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ABSTRACT


When deciding how 'death' should be defined, it is helpful to consider cases in which vital functions are restored to an organism long after those vital functions have ceased. Here I consider whether such restoration cases can be used to refute *termination theses*. Focusing largely on the termination thesis applied to human animals (the view that when human animals die they cease to exist), I develop a line of argument from the possibility of human restoration to the conclusion that in many actual cases, human animals continue to exist after they die. The line of reasoning developed here can be extended to show that other organisms survive death in many actual cases. This line of reasoning improves on other arguments that have been offered against termination theses. And if my argument regarding human animals surviving death is successful, then assuming that human persons are animals, we can also conclude that human persons in many actual cases continue to exist after death.

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1. Introduction

As Feldman describes it, the 'Termination Thesis' applied to persons is the claim that 'people go out of existence when they die' (2000, 28). The claim is not merely that when persons die, they cease to exist *as persons*. It is consistent with the claim that one ceases to be a person at death (by losing whatever psychological features are necessary for personhood) that one continues to exist after death without being a person. The person termination claim that Feldman addresses, and rejects, is the claim that when a person dies, the person ceases to exist, not merely as a person, but *simpliciter*.

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The term 'die' in the claim that 'people go out of existence when they die' is not synonymous with 'cease to exist', for otherwise the claim would be tautological. The type of death being mentioned is biological/organic death. So the termination claim in question does not concern possible inorganic persons, such as gods, angels, or robots. It concerns persons who can suffer organic death, persons like you and me (and any non-human animals that might count as persons). This termination thesis may be expressed as follows:

*human persons, and any other organic persons there happen to be, cease to exist when they die.*¹

One obvious motivation for believing that we, human persons, cease to exist when we die is the belief that each of us is nothing other than or at least entirely dependent on a human animal, together with the view that

*human animals cease to exist when they die.*²

This Human Animal Termination Thesis is an instance of the more general Organism Termination Thesis that

*animals, and organisms generally, cease to exist when they die.*³

which some might consider good reason for accepting the Person Termination Thesis expressed above.

While many philosophers have endorsed one or all of these termination theses,⁴ I agree with Feldman that they should be rejected. Focusing largely on the Human Animal Termination Thesis, I develop a line of argument against it which I believe is more effective than previous arguments that have been offered against termination theses. The line of reasoning

¹One might wish to add 'if not before death' after 'when they die'. Suppose one believes that being a person is an essential property of each person. One could still qualify as a 'terminator', believing that persons often cease to exist at the time of their death by losing the psychological features necessary for personhood at that time. Yet, this person-essentialist would add that if a person loses the requisite psychological features at some time prior to the death of the body, then the person ceases to exist at that earlier time. The claim, then, would be that if bodily death occurs, the person ceases to exist at that time, assuming the person has not already ceased to exist.

²In these formulations, 'cease to exist when they die' means 'if they die at some time t , then they cease to exist at t '. This allows that the individual ceases to exist even if the body never undergoes the process of death. So a proponent of these termination theses can believe, for instance, that in fission cases, the individual that divides no longer exists after division, even though it is arguable that the body that divided did not undergo genuine (biological) death.

³I borrow the title 'Organism Termination Thesis' from Hershenov (2005). Belshaw (2011) uses the label, 'Disappearance Thesis'. And Feldman distinguishes the organism termination claim from the still more general termination thesis applied to all living things, 'whether person, cell, tissue, or organ', according to which, 'If a living thing dies at a time, then it simply ceases to exist at that time' (1992, 92).

⁴There is Aristotle's claim, in *De Anima* Bk II, Ch 4, that for living things, their being is to live, and Locke's view in *An Essay Concerning Human Understanding* (II, 27, 4–8) that an organism persists so long as it partakes of the same life. Contemporary endorsements of termination theses include Hershenov (2005), Johansson (2005, 45), Luper (2009, 45–48), Merricks (2001, 151), Olson (1997, 135–136; 2004, 269–270), Rosenberg (1983, 34), Sumner (1976, 153–154), van Inwagen (1990, §14), and Yourgrau (1987, 87; 2000). Also, as Rosenbaum (1986, 217) points out, discussions of the Epicurean doctrine that fearing death is unreasonable typically begin with the assumption that death is the end of one's existence.

developed in Sections 2–5 shows that in many actual cases human animals continue to exist for some time after death. And, as explained in Section 6, this argument can be extended to show that the same is true of (at least many varieties of) non-human organisms. One obvious conclusion is that in developing an account of the persistence conditions of animals or organisms in general, we should not require that the organism remains alive or maintains continuity of vital functions to continue to exist. In fact, the argument developed here shows that an organism can undergo significant decomposition, well beyond losing the capacity for vital functions, while continuing to exist.

The argument offered here also has obvious potential consequences regarding the persistence of *persons* (specifically, human persons and any other organic persons there might be). It might appear that the only reason one could have for believing that you, and I, and other persons continue to exist after death is the belief that we either have or are immaterial souls. But suppose it could be shown that organisms, and human animals in particular, can survive death. Then on the plausible assumption that you and I and every other human person *is* a human animal (i.e. is identical with, the very same thing as, a human animal), there would be good reason to believe that we, human persons, survive death in many actual cases.

As Olson points out, while it matters little for practical purposes whether we continue to exist after death as corpses or we cease to exist and are replaced by corpses, which of these actually does obtain ‘makes a big difference to our nature and place in the world’ (2013, 81). For if we were to continue to exist after death as dead animals, then being alive would not be part of our fundamental nature. Also, assuming that we no longer have mentality when we are dead, the mental properties required for personhood would also not be part of what we are fundamentally. As Olson puts it, if we were to survive death as corpses, then ‘[t]hough we differ from sticks and stones in our mental and biological properties, these differences would be only temporary, and not woven into our inmost being’ (81). It would seem, then, quite metaphysically significant whether we survive death, even if only as dead animals.

So it appears that if we, human persons, are identical with human animals, then showing that the Human Animal Termination Thesis is false, as I aim to do here, has important consequences regarding our nature and place in the world. And since the argument offered here can be extended to show that the Organism Termination Thesis is false as well, we also have reason to believe that if there are any non-human organisms that count as persons, they too survive death in many actual cases, which reveals much about their fundamental nature.

Before presenting my argument against the Human Animal Termination Thesis, I would first like to mention the apparently obvious fact that to have a convincing case against a termination thesis, it will need to be made quite clear that the individual present before death can itself, the very *same* individual, continue to exist after death. The most popular argument against termination theses, the argument that appeals to how we ordinarily talk about persons and organisms that have died, fails to make it sufficiently clear that it is the same individual present before and after death.

Feldman highlights the fact that we commonly and quite naturally speak of 'dead animals' or 'dead organisms' as if they were formerly living things. He notes that it seems highly implausible to deny that the frogs dissected in biology class once ate flies and dozed on lily pads, or that what is served at the seafood restaurant once swam in lakes or oceans (1992, 94–95), and we would not wish to say that the dead tree in the yard was never alive (2000, 101). Pointing at human corpses in the morgue and claiming that they were never alive would seem just as peculiar as saying the same of a dead frog, fish, or tree. We also often speak of human *persons* as if they continue to exist after death, for example, with 'Here lies ...' on headstones (Feldman 2000, 102), or when we say there are 'dead people' in the house after the roof has fallen in (Thomson 1997, 202).

However, as Feldman (2000, 101) admits, this linguistic argument against termination theses can be resisted. In each of the examples provided, the claim that *this is* the organism/person that was there before death can be rephrased as the claim that *this is the dead body of* the organism/person that was there before death, which is perfectly consistent with the dead item itself not being there then. Apart from the fact that our inclination to say that something is the case is not itself adequate evidence that it is the case, the way we talk about dead organisms and dead persons is not even compelling evidence that we generally *believe* that they exist after death since the beliefs we express can be expressed with words that do not presuppose that the same thing is present after death.^{5,6}

⁵In fact, as Luper (2009, 46–47) shows, some ordinary ways of talking suggest that we do not believe persons or animals survive death as corpses. See also Arnadóttir (2013, §3.1). However, see Snowdon's (2014) support of linguistic arguments against termination theses.

⁶Other unconvincing arguments against termination theses include the worry (expressed, for example, by Feldman 2000, 103) that at death there seems to be nothing popping into or out of existence when the organism/person is replaced by a corpse – in the case of a person, nothing entering or leaving the clothes. Yet, as Hershenov (2005, 40–41) reminds us, there are plenty of significant internal changes going on at the time of death and none of those changes requires anything that need be considered peculiar in any way. Against termination theses it has also been objected that if the organism did not exist after death, it would make no sense to study the corpse to learn about the animal or its species (Feldman 1992, 119; Mackie 1999, 234). But Hershenov notes that in general there is no mystery that knowledge of how one item died can be gathered by studying other items; 'footprints, artefacts, nests ... tell us a great deal about an organism that they are not identical to' (2005, 39–40). These arguments against termination theses are lacking because they do not make it sufficiently clear that the same item is present before and after death.

A more compelling argument against a termination thesis will identify cases in which it is more obvious that the very same item is present before and after death. That the same thing is present before and after death is more obvious in cases where life is restored to an organism after vital functions have ceased.⁷

2. Life restored

Feldman (1992) mentions cases of suspended animation, which regularly occur in laboratories around the world. In a typical case, Feldman reports, some micro-organism is grown in a culture, and

The culture is then flooded with glycerol or some other suitable cryoprotectant, and the whole thing is gradually cooled until frozen solid. Subsequently, the frozen culture is placed for storage in liquid nitrogen at a temperature of -196°C . The glycerol prevents crystallization within the cells, which otherwise would rupture.

Later on, when there is need for the microorganisms, a lab technician can remove the culture from the freezer and allow it gradually to warm up. If the culture has been properly handled, the microorganisms will return to life merely as a result of being returned to room temperature. (1992, 61)

He mentions that this suspended animation procedure is also applied when embryos, including human embryos, are frozen. After *in vitro* fertilization and a modest amount of cell division, the blastula is soaked in glycerol and frozen in liquid nitrogen. Later the frozen embryo can be thawed, implanted in a uterus, and the fetus develops.

Feldman also describes a hypothetical case of adult human suspended animation. He has us imagine a person with a bad disease, who will soon die unless a cure is found. Since there is reason to believe a cure will be found some time in the not too distant future,

Cryogenics, Inc., offers to inject some specially formulated glycerol and to freeze the man solid. Then, when the cure has been perfected, they will thaw him out, reanimate him, and see to it that he is cured of the disease. The man accepts the offer and is injected and frozen. Ten years later, a cure for the disease is found. The body is thawed, reanimated, and subjected to the cure. The man goes on with his life. (1992, 62)

⁷I have been and will continue to talk about something at one time being the *same* as (i.e. numerically identical with) something at a later time. However, I wish to remain neutral on the debate between endurantists and perdurantists. Those attracted to perdurantism can translate this into talk of distinct temporal parts being parts of the same more temporally extended item. Note, also, that those who accept eternalism, according to which, all times and their contents exist equally (and those who endorse the 'growing block' theory of time, claiming that past items exist in addition to the present ones) may want to rephrase the termination theses and discussions regarding them in terms of *ceasing to be present* after death rather than ceasing to exist (as Gilmore 2013, §1.1 and §1.2, explains).

In the actual suspended animation cases Feldman describes, along with this hypothetical adult human example, it seems plausible to say that life is being restored, not to a different organism, but to the very same organism. It seems that the micro-organisms or embryos that were frozen are the same organisms as those that were thawed. And it seems that the adult human animal that survives the procedure in Feldman's imagined case is the same human animal as the one that was frozen.⁸

We cannot, however, conclude from these suspended animation cases that either the Human Animal or the Organism Termination Thesis is false, for in these cases it is arguable that the individual did not actually die. Vital functions ceased, but the *capacity* for them remained, which makes it tempting to say that the organism was not dead while frozen. In fact, Feldman presents these cases not to refute any termination thesis, but to show that 'death' should not be defined as the *loss of life*, for while life processes have ceased in these cases, there is reluctance to say that the organism died.⁹

In the cases of suspended animation Feldman describes, the individual instantly goes from a 'living' state, with vital functions intact, to a frozen state, with little time for decomposition to occur. Gilmore (2013) describes a scenario in which some time passes before the organism is frozen to allow a noteworthy amount of decomposition, making it more compelling to think that the organism has died. He has us imagine an organism, Beta, that lives a typical life, and then as a result of standard wear and tear, ceases to engage in metabolism and other life-sustaining functions. The body 'begins to decompose slightly', but 'before much further decay has had a chance to set in', the remains are frozen and preserved. Scientists later undertake to make the remains viable once again. 'Without introducing any new matter or removing any of the original matter, the scientists gradually and nondisruptively reverse the damage that has recently occurred'. They

⁸Those actual cases where human bodies (or heads) have been frozen in cryonics labs are a bit different from the one Feldman describes. In actual cryonics cases, some time passes between the loss of vital functions to the deeply frozen state. After pronounced clinically dead, the 'patient' is transported to a cryonics lab. Despite great care to minimize decomposition, by the time the body reaches its new home it has long lost the ability to maintain its own vital functions. So the typical cryonics case would seem a better candidate for a situation in which death has occurred. Although, cryonics enthusiasts who are optimistic about the technology needed for recovery might disagree with the 'death' verdict.

⁹Alternatively, we might choose, with Luper (2016, §1.2), to view the case of suspended animation not as refuting the *loss of life* account of death, but as showing that while death involves the loss of life, life should be viewed as the *capacity* to activate and control vital functions, which is still present in those cases. See, also, van Inwagen, who claims to 'find it attractive to suppose that the cat's life persists even when the cat is frozen', proposing that 'when the cat was frozen, its life was "squeezed into" various small-scale physical processes (the orbiting of electrons and the exchange of photons by charged particles)' (1990, 146–147).

then thaw the repaired matter, leaving ‘something that is alive and has an active metabolism’ (2013, 23).¹⁰

Gilmore labels this scenario, ‘Restoration’. Unlike the cases of suspended animation mentioned earlier, in Restoration enough decomposition has occurred that some rearrangement of constituent matter is necessary to recover the capacity for vital activity. So it seems more plausible to describe this case as one in which the organism actually died. Gilmore mentions that ‘by any ordinary standard, Beta is dead’ prior to restoration ‘and has been for some time’, ceasing to engage in the relevant life-functions ‘as the result of a standard cause of *death* – namely, old age and structural damage’ (2013, 25).

Luper presents a similar case involving an adult human organism.

I have a heart attack, and die. My corpse begins to decompose, but my nephew stows it away in a freezer. Centuries later, scientists thaw it and, using a device they call a Corpse Reassembler, return all of its atoms to where they were before I had my heart attack, thus restoring my life. (2009, 45)

In this case, too, it seems that death has occurred since, as Luper notes, not only have vital functions ceased, but the *capacity* to maintain them is also lost.

Luper’s Corpse Reassembler case and the human counterpart of Gilmore’s Beta example are both scenarios in which the vital activity of a human animal ceases, and enough time passes from the cessation of vital activity to the point just before freezing that we would be inclined to say that the individual died. And then with whatever structural alterations are needed to restore the capacity for vitality, vital activity resumes in the thawed body (with thawing occurring before reassembly in Luper’s example and after in Gilmore’s). There is, of course, a wide range of cases that fit this general description, with differing amounts and types of decomposition, and therefore different amounts and types of modifications required to restore the capacity for vital functions. How confident we are that the human animal to which life is restored is the *same* animal as the one that lost vital functions will depend on the amount and type of decomposition, and therefore the amount and type of reassembly required to restore the capacity for vital functions. However, provided that the amount of decomposition is not too extreme, and the amount of reassembly required is not too extensive, it does seem correct to say that the resulting individual is the *same* human animal as the one that lost vitality.

¹⁰Gilmore also presents the Beta example in an earlier work (2007). In that earlier paper, Beta is a bacterium. The later, 2013 presentation of the example follows his discussion of the suspended animation of tardigrades. There Gilmore provides a useful report of details regarding ‘cryptobiosis’, artificial and natural, described in the scientific literature (see, especially, 2013, 15–18).

While the technology to restore in this way might be well beyond our current reach, it seems that these cases do not violate any actual laws of nature. So it seems they are nomologically possible; and if they are, then they are also physically possible, i.e. not violating any physical laws. It is certainly hard to deny that such cases are at least metaphysically possible; even if the actual laws of nature did preclude them, which is doubtful, it seems there could have been causal laws that allow such cases to obtain. It would appear, then, that there are possible cases (metaphysically, physically, and nomologically possible) that satisfy the following description:

the vital activity of a human animal ceases, and enough time passes from the cessation of vital activity to the time of freezing (with some decomposition along the way) that it is tempting to say that the human animal has died, and then after requisite alterations of the body to restore the capacity for vital activity, the thawed body regains vitality, with the resulting individual being the *same* human animal as the one prior to the loss of vitality.

Let us call a scenario of this sort a 'restoration_H^{*}' case, where the asterisk indicates the degree of decomposition and subsequent reconstruction of the sort present in Gilmore's Beta scenario and Luper's Corpse Reassembler example, and the subscript indicates a case like Luper's in which a human animal is restored.

Gilmore uses his Beta example, not to refute any termination thesis, but to question definitions that characterize death as the *irreversible* loss of life. It does seem that Beta is dead for at least some of the period during which vital functions are absent. So in this case, it seems there is death but without irreversible loss of vital functions. Gilmore uses the Beta example to question, more specifically, the view that death requires the physical impossibility of living again. And Luper, who actually defends termination theses (2009, 46–47), uses the Corpse Reassembler case to illustrate that 'something dies not when its vital processes are suspended, but rather when its capacity to maintain itself through its vital processes ... is destroyed' (45).

One wonders, however, whether these examples can be used to refute some of the termination theses. In particular, can the possibility of a restoration_H^{*} case, which involves a human animal, be used to show that the Human Animal Termination Thesis is false? There are three obstacles to reaching this conclusion.

- (1) If a restoration_H^{*} case were to obtain, then a human animal would survive death in the sense of existing at some time after it dies. However, it does not follow that it continues to exist *while dead*. It might be argued that in such a case the individual has a 'gappy' existence; that is, it exists up to the time when vital functions

cease, and then it goes out of existence for a while, only to come back into existence either when vital activity or the capacity for it is restored with the help of surgical intervention. As Gilmore recognizes, even terminators can accept that in the Beta case he describes the organism after repair and revitalization is the same organism as the one prior to the loss of vitality – if they accept that Beta enjoyed ‘intermittent presence’ (2013, 25). So we cannot infer that in a restoration_H* case the human animal exists while dead unless we can show that in such a case gappy existence does not obtain.

- (2) A second obstacle to concluding that the Human Animal Termination Thesis is false is that one might resist the intuition that in a restoration_H* case the individual has died. One might insist that it is part of the concept of death that an organism has not died unless the loss of vital processes is *permanent*. Or one might insist that if there is *technology available* for restoring vital processes, as there is in the sort of case we are imagining, then by definition the organism has not really died.
- (3) Suppose that restoration_H* cases are possible (nomologically, physically, and/or metaphysically), as they seem to be. Suppose, also, that in such cases the human animal continues to exist during the non-vital period, and is truly dead for at least some of that time. It follows that the Human Animal Termination Thesis is false only if the thesis is construed as the strong modal claim that, *necessarily*, human animals cease to exist when they die. However, the termination theses mentioned earlier were not formulated as necessity claims. While some terminators might wish to endorse the strong modal claims, it seems that others might legitimately not wish to do so. Recall the Person Termination Thesis. Some of those who believe that human persons actually do not exist after they die might want to maintain that things could have been otherwise; they might believe that we, human persons, could have had immaterial souls, allowing us to survive the death of our bodies. Likewise, some of those who endorse the Human Animal Termination Thesis might want to allow that while human animals cease to exist when they die, things could have been different; they might wish to allow that in those possible worlds where restoration_H* occurs, the human animal exists throughout and is dead for some of that period. These modest terminators who allow such possibilities are making a claim about what actually

does happen when one dies; they are claiming that given the way things actually are, the individual does not survive death. In order to disprove a termination thesis of this modest non-modal sort, we need to do more than note the mere possibility of continuing to exist after death.

Obstacles (1)–(3) are addressed in Sections 3–5. Let us start with obstacle (1).

3. Gappy existence

Carter (1999, 170) mentions Feldman's human suspended animation case, where the individual is frozen prior to death to await the cure for his disease, and Carter claims that in this case, '[t]he subject who is cured at the story's conclusion is identical with the subject who consents to cryopreservation at the outset; and '[s]ince it is implausible to judge that he is subject to intermittent or gappy existence, it seems this individual exists at a time when he is neither alive nor psychologically engaged'. It certainly does seem implausible to say that there is gappy existence in Feldman's case. Granted, this case is not plausibly described as a case of death; it is like the case of the frozen micro-organism or embryo where the capacity for vital functions is retained (which is why Feldman presents it as a problem for the loss of life account of death). Yet, as we shall see, there is reason to think the gappy existence verdict is also implausible in restoration_H* cases where death does seem to have occurred.¹¹

Let 'A' name the human animal prior to the loss of vital activity in such a case, and let 'C' name the animal after vitality has been restored. 'B' will be reserved for the individual present during the intervening non-vital period. We are inclined to say that A is the *same*, numerically identical, human animal as C; it certainly seems that A was not replaced with a different animal. So the question arises: what is it about the way A is related to C that makes it the case that A and C are the same animal? The conditions necessary and sufficient for the diachronic identity of an animal or other organism are certainly open to debate. But even without agreeing on which conditions are necessary and sufficient, it is easy to pick out various relations that obtain

¹¹It might be that at some levels of physical structure, there are momentary gaps in our existence, where the micro-items that comprise our bodies go out of existence for fractions of a second to be replaced by similar ones. The gappy existence that I am denying is where the organism fails to exist either for the entire period of non-vitality in restoration_H* cases or for the portion when the capacity for vital functions is absent. So when I say that in such cases gappy existence is absent, what I mean is that those large temporal gaps do not obtain.

between A and C that might be considered at least part of what makes it the case that $A = C$.¹²

There is the fact that

- (i) A is spatiotemporally continuous with C.

It is also true that

- (ii) A is causally continuous with C,

in the sense that the activity of A's body prior to the loss of vitality is largely causally responsible for the way B's body is during the non-vital period, which has a causal impact on the processes of C's body post-restoration. Another fact about the relation between A and C that might seem relevant to their identity is that while significant changes occurred in the transition from A at time t to C at time t' , including the loss of vitality, the changing of component parts remained sufficiently gradual that

- (iii) for any pair of adjacent times between t and t' , enough of the body's internal components remain the same.¹³

One might plausibly argue that (i)–(iii) are not sufficient for being the same organism since organisms are essentially biological entities, and none of (i)–(iii) mention anything specifically biological. There is, however, an obvious biological relation that does obtain between A at t and C at t' . The continuity mentioned in (i)–(iii) is bodily continuity of a biological entity, an organism, and the same type (species) of organism throughout. So we can add that

- (iv) for any time between t and t' , the body present is a body distinctive of some species of organism, and the same species of organism at each of those times.

Is there any other biological relation between A and C that might be thought to contribute to A being identical with C? Given the intervening non-vital period when B is present, *continuity of vital activity* does not relate A to C. In fact, given the decomposition, not even the *capacity* for vital activity is retained – at least not in any normal sense of 'capacity'. Granted, prior to the repair of structural damage in a restoration_H* case, the following is true: *if there were suitable repair* of the structural damage due to decomposition, vital functions would resume under the right conditions. But to call

¹²As mentioned in footnote 7, while I talk in this paper about something at one time being the same as (i.e. identical with) something at a later time, I wish to remain neutral on the endurantism/perdurantism debate. Those attracted to perdurantism can translate my phrasing here into talk of distinct temporal parts being parts of the same more temporally extended item.

¹³A proponent of (iii) would need to give some indication of how much sameness counts as 'enough' and at what levels of structure must enough sameness be retained. Condition (iii) is inspired by Mackie's more robust proposal that '[a]n organism persists for as long as it retains enough of its parts, in a sufficiently similar state of organisation' (1999, 238). See also Belshaw's suggestion that an animal continues to exist after death '[i]f most of the parts are there, in the same order, without interruption' (2011, 411).

this a 'capacity' for vital functions does strain the meaning of the word. Yet, Rosenkrantz notes that if it were 'physically possible to repair dead organisms and bring them back to life ... then there might be some sense in which dead organisms have a "potentiality" to be revived' (2015, 305). So regarding vital activity, this much seems true:

(v) at any point between t and t' when vitality or the capacity for it is absent, there is a *potential* for vital activity (at least in the loose sense that it is physically possible for vitality to be restored under the right conditions given suitable structural repair).

Also relevant, and it seems essential, to the identity of A and C is the fact that the continuity described in (i)–(v) is *non-branching*. That is, unlike a fission scenario, there is no other individual at t' that is distinct from C but equally continuous with A in the ways described in (i)–(v). Otherwise, there would be the worry that $A \neq C$ since one item cannot be (numerically) identical with two. So we should add to our list of conditions that are arguably relevant to A's being identical with C:

(vi) at time t' there is no individual other than C or any of C's parts that is equally continuous with A in the ways described in (i)–(v).

I do not know whether each or any of (i)–(vi) is necessary for A's being the same human animal as C. Indeed, if gappy existence of certain peculiar sorts were possible, e.g. with no body present in the interim, then perhaps none of (i)–(vi) would be necessary. However, even if some or all of (i)–(vi) are unnecessary, it does seem that they are jointly sufficient for being the same organism. It is doubtful that anything other than the relations described in (i)–(vi) is necessary for the persistence of a human animal or any other organism. It seems that continuity of vital processes is not necessary for being the same organism, for it is implausible to suppose that organisms go out of existence in those actual cases of suspended animation (e.g. involving micro-organisms and embryos) where vital functions cease and the organism is later revived.¹⁴ The possibility of restoration_H* cases also shows that continuity of vital functions is not required, as well as showing that not even the *capacity* for vital activity needs to be retained. It would seem, then, that whatever makes it the case that A before the loss of vitality is the same organism (the same human animal) as C after vitality is restored is nothing in addition to what is described in (i)–(vi).

But now consider B, where B is the individual during the intervening non-vital period. In fact, let 'B' name what is present during any portion of

¹⁴One might adopt van Inwagen's proposal (mentioned earlier in footnote 9) that even while deeply frozen, life is still there, squeezed into various small-scale physical processes. While one may call this 'life' if one chooses, those larger-scale chemical and biological functions, for which we would normally reserve the label 'vital', are absent in the suspended animation cases being considered here.

that period, including the part just after decomposition and prior to surgical intervention, where not only vital functions are absent but so is the capacity for them. (This is the portion where one would be most comfortable saying that the individual is dead.) Now, each of the relations described in (i)–(vi) holds not only between A and C, but also between A and B and between B and C. So if the relations described in (i)–(vi) suffice for A's being the same organism as C, as it seems they do, then they also suffice for A's (i.e. C's) being the same organism as B. And if so, then the human animal continues to exist during the non-vital period in a restoration_H* case.

It seems, then, that there is good reason to prefer the non-gappy description of restoration_H* cases, according to which, what is present at any point during the non-vital period is the very same thing as the animal present prior to the loss of vitality, the same entity as the animal to which life was restored. This certainly is the preferred verdict assuming the animal is not really dead during the non-vital period, since an animal, or any organism, no doubt continues to exist if it does not die (assuming a non-fission scenario). However, even if we think that the animal is dead, as it seems to be, during at least some portions of the non-vital period, it still appears most plausible to say that the animal exists at that time. For it seems that whatever makes it the case that the animal, C, after restoration is the same animal as the one, A, prior to the loss of vitality also makes it the case that the animal before and after is the same as the item B present at any point in the non-vital interim. The relations between A and C described in (i)–(vi) also obtain between A and B and between B and C, and these relations do seem sufficient for being the same organism.

We cannot yet conclude that human animals can continue to exist while dead, for one might argue that restoration_H* cases are not instances of genuine death. That is obstacle (2) mentioned near the end of Section 2. In Section 5, I show how this obstacle can be avoided, and in a way that also allows us to overcome obstacle (3), i.e. in a way that shows that existing while dead is not only possible, but actually does happen.

4. Strict accounts of death

In a restoration_H* case, not only do vital functions cease, but the capacity to sustain them is also lost, which is what inclines us to think the human animal has died in that scenario. Yet, one might resist this conclusion, focusing on the fact that while the technology is not yet actually available for restoring of the sort that obtains in the cases we are imagining, *in those cases* the technology is available. And, one might think, for any possible case in which

technology is available for restoring life to an organism, the organism is not dead. Or one might wish to view death as the *permanent* cessation of vital functions, and for this reason, too, one might deny that restoration_H* cases involve genuine death.

Definitions of 'death' that make death dependent on available technology are not without objections. Such definitions allow that there could be two organisms that are physically indistinguishable in all respects, but one is dead and the other is not dead (because only the former exists at a time and location where the technology to restore life under those conditions is available). The consequence that physically indistinguishable bodies might differ in terms of death does seem implausible. As Hershenov remarks, 'death is best thought of as a nonrelational alteration in an individual's body or organs ... "death" is a biological concept (and a nonrelational one) and thus should be determined solely by biological factors rather than technological features' (2003, 93).¹⁵ A definition of 'death' that requires permanent cessation of vital functions is also implausible (as, for example, Feldman 1992, 63–64 shows). On such a definition, whether death has occurred at some time can be a function of events occurring at later times – such as whether others will soon take measures to resuscitate, or whether some later damage occurs to make revival impossible.

The issue of how 'death' is best defined is notoriously difficult, and I will not try to argue here that restoration_H* cases are instances of genuine death. I will, instead, side-step this issue in the following manner. I will show that if (as argued in Section 3) these cases are instances of non-gappy existence, then we should also accept the possibility of a certain type of *non-restoration* case where the human animal continues to exist after the loss of vital activity. Since these non-restoration cases I will describe include many *actual* cases where death has undeniably occurred (even on a strict account of death), we will be able to draw the conclusion that there are many actual cases in which the human animal continues to exist after death.

5. Non-restoration and ordinary cases of death

Recall that in the cases we have been imagining, the vital functions of the human animal cease, and just enough time passes since the cessation of vital functions for a modest amount of decomposition to occur, after which there is freezing and later restoration, which involves some reassembly of

¹⁵And as Belshaw mentions, 'many will think it odd to suggest that whether someone is dead can depend on things other than the condition of their body, and to suppose that accidents of history and geography can make the difference' (2009, 34).

parts and thawing. Let us use 'P' to designate the period of time extending from the loss of vital functions, through the modest decomposition phase, until the time just prior to freezing. Now imagine a non-restoration case, one that is just like a restoration_H* case during P, but with no subsequent freezing and restoration. In the non-restoration case, just after period P the human body is placed with the others in the morgue, or remains buried in the rubble, or lying in the wilderness. Whatever happens to the body, let us suppose that no restoration of any kind occurs after P. Call a situation of this sort a 'non-restoration_H*' case.

It seems, in general, that whether an organism actually is frozen and later restored after some time *t* cannot itself affect whether the organism exists at *t*. It seems that if an organism, human or otherwise, exists at *t* when later frozen and restored, the organism would also exist at *t* if everything up to that point were the same and the body were then left alone. Note, however, that in a non-restoration_H* case, the relevant events up to the end of period P (the events relevant to whether the organism exists during P) are just the same as those that obtain in a restoration_H* case. The presence of a team of professionals waiting to freeze and later surgically intervene and revive certainly is relevant to how long an organism continues to exist after P and to whether vital functions are successfully regained. But a team in wait is not relevant to whether the organism exists during P. If it exists during P with later intervention and revival, then it would exist during P even if left to further decompose. So given that the human animal does exist during P (not to mention after) in a restoration_H* case, it seems that it would exist during P in a non-restoration_H* case as well.

My reasoning here relies on the following assumption:

whether an individual *x* exists at some time *t* depends only on the conditions that obtain up to and including *t*, not on conditions that obtain after *t*.

Let us call this existence claim, principle 'E'. Principle E tells us that whether an individual *exists* at some time *t* is not affected by what happens after *t*, but it does not entail that whether an individual *dies* at some time *t* is not affected by what happens after *t*. One might wish to reject this latter claim based on a definition of 'death', according to which, death requires permanent cessation of vital processes. While such a definition is suspect, as mentioned in Section 4, one might nonetheless argue for it to show that whether something *dies* at *t* can be affected by what happens after *t*. However, even if one's death at *t* can be influenced by what happens after *t*, this would be no threat to principle E. Even if the truth of the proposition '*x* is *dead* at *t*' were to depend on what happens after *t*, it would not follow that the truth of '*x* *exists* at *t*' depends on what happens after *t*. Indeed, it seems quite implausible, if not

contradictory, to suppose that whether something exists at a time can be influenced by what happens after that time.

It was argued in the previous section that the human animal exists during P , and also after P , in restoration $_{H}^{*}$ cases (where P is the period of time extending from the loss of vital functions, through the modest decomposition phase, until the time just prior to freezing). Non-restoration $_{H}^{*}$ cases are exactly the same as restoration $_{H}^{*}$ cases up to and including P in all ways relevant to the existence of the organism. So, given principle E, it follows that the human animal exists during P in non-restoration $_{H}^{*}$ cases as well. So far, then, we have the following line of argument:

- In restoration $_{H}^{*}$ cases, the human animal continues to exist during the time when vital activity is absent, which includes period P .
- In non-restoration $_{H}^{*}$ cases, the conditions up to and including P relevant to the existence of the human animal are the same as they are in restoration $_{H}^{*}$ cases.
- Principle E.
- Therefore, in non-restoration $_{H}^{*}$ cases, the human animal continues to exist for some time after the loss of vital activity.

Some actual cases of death are especially violent, involving sudden destruction of the body by explosion, flames, or combustion. These are cases where the body is not restored, but they are not what I'm calling 'non-restoration $_{H}^{*}$ ' cases. However, a greater number of actual scenarios obviously are non-restoration $_{H}^{*}$ cases. These are situations in which the body remains largely in one piece while it gradually decomposes. In these actual cases, we would certainly say that the human animal has been dead for some time during P . Suppose one has what I described as a strict definition of 'death', according to which, death occurs only when the technology for recovery is absent. The technology for recovery actually is absent in these cases (absent at least during the latter half of period P). So even with the belief that death requires technologically irreversible cessation of vital functions, one would still consider these cases instances of genuine death. And, of course, since in these cases there is no recovery, one would consider them instances of death even if one viewed death as requiring permanent cessation of vital functions. It seems, then, that even for those with a strict account of death, there should be no reluctance to view non-restoration $_{H}^{*}$ cases as involving death. Given our previous conclusion, that the human animal exists for some period of time (period P) in non-restoration $_{H}^{*}$ cases, it seems we may confidently conclude that in many actual cases, the human animal continues to exist after death.

So we can add to the formulation above:

- In non-restoration_H* cases, the human animal continues to exist for some time after the loss of vital activity.
- There are many actual non-restoration_H* cases.
- Therefore, in many actual cases, the human animal continues to exist for some time after the loss of vital activity.
- In many of those actual non-restoration_H* cases, the human animal is dead for at least some of that period of time.
- Therefore, in many actual cases, the human animal exists for some amount of time after death.

6. Summary and conclusions

There are actual instances of suspended animation where the organism goes directly from a state of vitality to a frozen condition, and then later when the organism thaws vital activity resumes. These cases do not pose any clear threat to termination theses for it is plausible to believe that in such cases the organism has not really died, especially since the capacity for vital functions remains. Scenarios that pose a greater threat are those (described by Gilmore and Luper) in which enough decomposition occurs before the organism is frozen so that restoring the capacity for vital functions requires significantly modifying its internal structure. In such a situation, it is more plausible to say that the organism has died. However, there are three obstacles to concluding from the possibility of such cases that a termination thesis is false. While it does seem that the organism after restoration is the same organism as the one before the loss of vitality, it needs to be shown that it does not have a gappy existence, going out of existence after the loss of vital functions and then coming back into existence when vitality or the capacity for it is regained. Also, someone with a strict definition of 'death' might insist that death has not really occurred in such cases. Further, the mere possibility of organisms continuing to exist after death does nothing to show that they actually do continue to exist after death. So this mere possibility does not refute a termination thesis of the modest non-modal variety, which claims only that organisms actually do cease to exist when they die.

Here I explained how to overcome these three obstacles. I focused on cases of human restoration, restoration_H*, where enough decomposition occurs before freezing that structural modification is needed to restore the capacity for vital functions. It was shown that despite the great changes that occur in such a case, there is still good reason to believe that the human

animal continues to exist during the non-vital period. With the help of principle E, it was shown how to reach the further conclusion that in many actual cases, the human animal exists for some period of time after the loss of vitality, and exists for a period of time in a condition that would count as death even by strict standards.

While the argument offered here focuses on the human animal, it can easily be modified to show that non-human organisms survive death in many actual instances. In the formulation presented in Section 5, we can replace 'human animal' with 'organism', and focus on cases in which a non-human organism is restored, and with the same percentage of decomposition and repair as what takes place in restoration_H* cases. Given the great variety of non-human organisms, in addition to the kingdoms of organism other than Animalia, it is far from obvious that for all non-human varieties, the organism would remain the *same* organism with restoration of the major sort we have been imagining. However, it does seem that at least for many non-human species, the organism restored would be the same as the one that earlier lost vital functions. As Gilmore's (2013, 2007) discussions show, it would seem that even micro-organisms can survive this sort of restoration. The reasons offered in Section 3 for thinking there is no gappy existence in a restoration_H* case can be used to show that the non-human organism also exists during each phase. And with principle E we can reach the conclusion that in many actual cases, organisms of that sort exist for some time after death.

Of course, showing that human animals, in particular, survive death has obvious potential consequences regarding the persistence of *persons*. Consider the plausible view that we, human persons, are animals. This is not the view that each of us is intimately causally connected to an animal (as even a substance dualist might believe) or the view that a human person is constituted by an animal that is spatially coincident but not identical with the person (as constitution theorists believe). The claim is that each of us, each human person, is identical with an animal. Suppose this animalist claim is true. Then we, human persons, continue to exist just as long as the animals that we are continue to exist. Since I do believe that

- (a) a human person is identical with a human animal,

I also believe that

- (b) a human person persists just as long and only as long as the human animal persists.¹⁶

¹⁶It has not been shown here exactly how long the human animal continues to exist. Yet, given the discussion in Section 3, it would seem that the conditions (i)–(vi) mentioned there are jointly sufficient for the persistence of the animal. And it does seem clear that neither continuity of vital functions nor the capacity for them is necessary for the animal's persistence.

Of course, (a) has not been established in this paper, and neither has (b). However, it has been shown that if (a) is true, then since it entails (b), human persons exist in many actual cases for a period of time after death – although, presumably, not as persons then. (And with the argument offered here extended to other organisms, it would also seem that if there are any non-human organic persons, then assuming that they are identical with the spatially coincident organisms, they too exist after death in many actual cases.)

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