

Brain Death and Irreplaceable Parts

Christopher Tollefsen

ABSTRACT: Could a human being survive the complete death of his brain? I will argue that the answer is no. No human organism can survive the loss of its irreplaceable parts. Hence, when an irreplaceable part is gone, whatever remains is not numerically identical with the organism that existed previously. If you were the original organism, then you do not survive as the residuum. In this paper I give an explanation of what is meant by “irreplaceable part”; explain why an human being cannot survive the loss of such a part; and argue that the brain is such a part.

COULD A HUMAN BEING survive the complete death of his brain? I am going to argue that the answer is no. I will make an assumption that is common to almost all of the Aristotelian-Thomists engaged in the controversy over brain death: that you are I are human animals, organisms of a particular species, *homo sapiens*.¹ As such, we are not numerically identical to any of our parts: no human person is identical to a hand, liver, skin cell, brain, or soul, but each is rather a composite, of form and matter, soul and body (however one wants to describe it at some level of resolution or other).²

I take it for granted that in some cases an organism of some sort exists after the complete destruction of the brain that heretofore was housed in the skull associated with that organism.³ That is a controversial assumption, and

¹ For essays on both sides of the controversy, see the special issue of the *Journal of Medicine and Philosophy*, edited by Melissa Moschella, “Brain Death and Human Organismal Integration: A Symposium on the Definition of Death” (2016), vol. 41.

² I am only concerned with human persons in what follows. So, whenever I talk about organisms, the reader can take it for granted that I am talking only about human organisms.

³ The claim that there is such a residual organism is denied by Maureen Condic in Condic, “Determination of Death: A Scientific Perspective on Organismal Integration,”

if it turns out that the arguments for thinking that this never happens – that what looks like a residual organism is really, as Maureen Condit argues, only a coordinated set of organic structures – are sound, then so much the better. My argument would not be vitiated by that, just rendered somewhat redundant. But my argument goes through even if there really is an organism of some kind. This is good to note, for this is the case that poses the toughest objection to the claim that individuals do not survive the complete death of their brains. After all, if there is an organism after the loss of the brain, it is natural to think it is the same one that was there before the brain perished.

Here is the argument in very brief form: The human organism cannot survive the loss of its irreplaceable parts. Hence, when an irreplaceable part is gone, whatever remains is not numerically identical with the organism that existed previously. If you were the original organism, then you do not survive as the residuum. The brain is such an irreplaceable part, therefore, etc.

One will want to know, of course, what I mean by irreplaceable parts. Which parts are, in fact, irreplaceable? And why it is that the loss of such parts has such consequences? My paper will be an attempt to answer all these questions.

1. Irreplaceable Parts

The idea that some parts of the human animal are irreplaceable provides a key to understanding much of the controversy over brain death. But some precision is needed as to which sense of “irreplaceable” is being used. I think there are three possible senses.

First, it could simply mean that nothing else can substitute for it. Once it is gone, it is gone. This might be true of an individual’s sex cells. You probably cannot replace sperm cells in a human male in such a way that they would be *his* sperm cells. The same seems true of a woman’s oocytes. No sex cells that came from elsewhere, a donor, or a lab, could be integrated in the right way into the biological economy of the organism.

Journal of Medicine and Philosophy 41 (2016): 257-78. The claim that there is a residual organism and that it is a human being is asserted by Alan Shewmon. Among various works, See his essay “You Only Die Once: Why Brain Death Is Not the Death of a Human Being: A Reply to Nicholas Tonti-Filippini,” *Communio: International Catholic Review* 39 (2012): 422–94. The claim that there is a residual organism that is not a human being is defended by Patrick Lee and Germain Grisez, “Total Brain Death: A Reply to Alan Shewmon,” *Bioethics* 26 (2012): 275–84.

By contrast, there are plenty of parts that are replaceable in this sense in a human organism. A human animal can lose a hand, and a gifted surgeon can graft a donor's hand to its arm. Its body will, if all goes well, integrate the living or potentially living tissues of the donor hand into its own biological life, and the hand will become his or hers. This case is unlike, as Aristotelian-Thomists tend to agree, the case of a prosthetic limb made out of plastic and metal, for such a thing will never be so integrated in the way that living tissue can be integrated into someone's body.⁴

And although a human animal's sex cells cannot be replaced, I do think that a penis transplant to a man who has, say, lost his penis in an accident does restore a penis to that man. So, in principle, it seems to me that some sex organs are in this way replaceable, though not, I think, the gonads, since they are responsible for the generation of the sex cells.

In this sense, some parts of the human animal are replaceable, others are not. But this does not satisfactorily capture the sense of "irreplaceable" that lurks in the debate over brain death, for the loss of irreplaceable parts in this first sense is compatible with continued existence of the animal whose part it was. As a result, we must say that there is a second sense of "irreplaceable": a part is irreplaceable in the sense that the animal cannot live without it. It seems that if there is something irreplaceable in this sense, then when the irreplaceable part ceases to exist, so does the substance of which it was a part.

But this cannot be the intended sense either, since a heart is irreplaceable in this sense. The animal can't live without it. But it is not true that the end of the animal's heart automatically means the end of the animal, for the heart *is* replaceable in the *first* sense: with a heart transplant, the animal can continue to live.

What is needed, I think, is something that is irreplaceable in both senses: in this third sense, something is irreplaceable for an animal if and only if it is something the animal cannot live without but that is also such that there is no substitute for it possible. When it is gone, it is gone and so is the animal to which it once belonged. If the brain is an irreplaceable part of human beings in

⁴ For discussion of the integration of once alien parts into a living organism's biological life, see Germain Grisez and Joseph M. Boyle, *Life and Death with Liberty and Justice: A Contribution to the Euthanasia Debate* (Notre Dame IN: Univ. of Notre Dame Press, 1979); and Eric Olson, *The Human Animal* (New York NY: Oxford Univ. Press, 1999).

that sense, then whole brain death would mean the end of the human animal, because the animal cannot live without it, and there is no substitute.

Here is another way to put the point. A part is irreplaceable to an animal if and only if its absence means that any remaining animal or other organism will fail to be numerically identical to the animal that once had the part. In the brain death case, this would mean that when the brain is entirely destroyed, any remaining animal or organism fails to be numerically identical with the organism that once housed the brain.

It is natural to ask a further question. What is it about a part that could make it irreplaceable in this very strong sense? We can easily see what it is about a part that could make it such that an animal cannot live without it. Many parts are like that in virtue of the vital functions they fulfill. But the strongly irreplaceable parts will presumably have to fulfill vital functions *and* be unavailable for substitution. What could make a part be like that?

The answer given through much of the dialectic over brain death is that a part is irreplaceable in the strong sense when it plays the coordinating, integrating, and directing role that is necessary for the integrated organic function of the human animal as a whole.⁵ Something that performs this function is clearly irreplaceable in the sense that the animal could not live without it. To be alive is to have the right kind and degree of coordinated integrated function, and something needs to accomplish that. But it also seems plausible that such a part would be irreplaceable in the other sense as well, for, as Melissa Moschella argues in her contribution to the brain death symposium, self-directedness is essential to an organism's existence. The coordinating and integrating need to come from within the organism itself.⁶ But suppose that there is an organ or part that plays this integrating role. Then a substitute would seem to be in some way from without, external.

The integrating organ thus stands on a footing different from other organs that an animal cannot live without but that can be *integrated* into the organism, presumably by the *integrating* organism's performance of its function.

⁵ Prior to Alan Shewmon's work, this was *the* way of identifying what it is about the brain that makes it irreplaceable. See, e.g., James Bernat, Charles Culver, and Bernard Gert, "On the Definition and Criterion of Death," *Annals of Internal Medicine* 94 (1981): 389–94.

⁶ Melissa Moschella, "Deconstructing the Brain Disconnection–Brain Death Analogy and Clarifying the Rationale for the Neurological Criterion of Death," *Journal of Medicine and Philosophy* 41 (2016): 284–85.

One problem with running the argument like this, though, is that it can seem, in the face of Alan Shewmon's examples, to beg the question. Is this a living human being? If it is, it is an integrated whole, a single living organism. But it cannot be, because it does not possess the brain (which is the organ that does that integrating) and still maintain the whole as a whole. But that cannot simply be a conceptual truth about the brain, and its empirical adequacy is jeopardized by the data. The question that we have here is whether this apparent organism really is one, and we should not be able to appeal to the presence or absence of the brain to decide the case.

As a side note, I take it something like this thought motivates the move made by Grisez and Lee. For them too it is true that an irreplaceable part is integrating, but their argument works by identifying what is missing in the residual organism, namely, the capacity for sentience. This is a non-question-begging approach, but it has in common with other approaches the claim that the brain is indeed an integrating organism. It just does not have that claim as a premise.

In this paper I plan to approach the phenomenon of irreplaceability by way of a somewhat different route. I will argue that there are two irreplaceable parts, the brain and the soul. That claim also is common to most of Aristotelian-Thomists. They agree that a human organism cannot live without its brain or its soul, and that there is no substitute for either. On the traditional approach, there is a parallel explanation available for why these are irreplaceable, viz., that each in some sense does necessary coordinating, integrating, and directing work for the organism as a whole.

But since I am not taking that path, in order to make the argument work, I have to make some claims that, at least until fairly recently, would have put me well outside the Thomistic mainstream. As we will see, these claims are now much less universally denigrated, but they still create difficulties, especially if one claims to be an animalist, and I will not be able to deal with all those difficulties. The basic theses of this paper will require further work in the future.

What is the claim that is true of both the brain and the soul that identifies each organ as irreplaceable in the properly strong sense? It is this: assuming that you are a human being, both the brain and the soul are the only proper parts of the human being that you could exist *as*, under certain, admittedly extreme, circumstances. So my argument needs to defend the following claims: that this is true of the brain and of the soul; that it is true *only* of the brain and

the soul; and this identifies the brain and soul as irreplaceable in the suitably strong sense. If these claims are true, then it will follow that no organism that is biologically the successor to a human being but that lacks that human being's brain is that human being. The same is true of the soul.

2. You Could Exist as Your Brain and You Could Exist as Your Soul

Let's start with the claim that you could exist as your brain. Could you be reduced to life simply as a brain? I think that it is the most extreme and unlikely possibility, but I think that it could happen. Suppose that your brain were removed from the rest of the organism that usually houses it, and were kept alive – in a vat, of course, since it is an example from recent work in philosophy. No doubt the form of consciousness available to such an immensely mutilated entity would be itself quite mutilated – probably unimaginable to us. Maybe no form of consciousness at all could be maintained, except in potency. But I think that few would deny that if the brain were kept alive and then transplanted into a new organism, then the waking organism would be you. And I think it would make sense as well to think that you had somehow survived through the process.

For example, your head might have been severed, then the brain excavated, transported, and surgically inserted. You would have become much smaller, physically, but then you would have been restored to something more like your original size, height, weight, and so on. But you would have been present throughout the narrative.

I think that the same is true of your soul. Could you survive as only your soul? Currently, there is an argument among Thomists both about whether you could do so *and* about whether St. Thomas believed that you could. Those who think that you could survive as a soul are called “survivalists” while those who deny this “corruptionists.”⁷ It seems to me that St. Thomas was in the latter camp, despite some texts where at least he suggests otherwise, for he asserted, as is well known, that if my body is not raised to eternal life, but only my soul exists, then neither am I raised to eternal life, for “I am not my soul.” The

⁷ The literature on this controversy is growing quickly. Among the most important contributors are Patrick Toner, on the corruptionist side, and David Oderberg on the survivalist side. Jason Eberl gives a helpful review of the dialectic and points to most of the relevant literature in his as yet unpublished “Consistent Hylomorphism: Answering Challenges to Survivalism,” and I am grateful to Jason for sharing that essay with me.

exegetical claim has recently been advanced by Turner Nevitt on the basis of a number of passages in which Aquinas denies that Christ was a human being during the three-day period before his resurrection. It has also been argued extensively by Patrick Toner.⁸

It would be too much to wade further into the exegetical waters here, but while I think that the corruptionists have the better of the interpretive argument, I have become convinced in recent years that the survivalist position is true, even if it is not St. Thomas's. It is true that I am not my soul. Neither am I my brain. To exist only as a soul would be to exist in a radically deprived state, one in which the condition of someone's consciousness can barely be imagined. Existing only as a soul would thus be existing in a radically mutilated state, as would existing as a brain.

But the prospects for understanding what it means to say that my soul continues to exist after my death while I do not are dim. The same goes for a soul that enjoys a form of consciousness that is aided by the Divine and yet is not me, or one that is punished, or engages in certain acts, or is the suitable object of petitionary prayer. It is hard to understand what these claims amount to. The soul is the principle of all my acts as an embodied creature, and I will never exist as I most fully ought to exist without the restoration of my body, but it seems to me that I can exist as a soul.

In the next section I will defend the claim that you could survive *only* as either your brain or your soul. Before I do so, let me make three qualifying remarks.

First, it is necessary to say something about the expression "could exist *as*." My claim is not quite that you could be numerically identical to your brain, or numerically identical to your soul. Those claims would be problematic, for anything you *could* be numerically identical to is what you *essentially* are. If you could be numerically identical to your soul, then you would essentially be a soul. But that is a false claim if the starting point of the paper is true: you and I are essentially matter-soul composites.

So, *existing as* is not the same as numerical identity. One possibility is that it could be some form of a constitution relationship. In speaking of heads,

⁸ See Turner Nevitt, "Aquinas on the Death of Christ: A New Argument for Corruptionism," *American Catholic Philosophical Quarterly*, 90 (2016): 77-99; and Patrick Toner, "St. Thomas Aquinas on Death and the Separated Soul," *Pacific Philosophical Quarterly*, 91 (2010): 587-99.

David Oderberg defends such a claim about both souls and brains. Eleonore Stump also defends this view.⁹ In such cases, a whole is constituted by a single part, but the whole is not identical to that part, as can be seen by considering the differing modal properties of each.

A second aside: the fact that I argue that you can exist as your soul without your brain, and that both brain and soul are marked as irreplaceable because you can exist as each might suggest that I think you can exist as your brain without your soul. But, of course, that could not be the case. You are still ensouled when existing as a brain. I do not think that this is a problem for my argument, but I await correction.

A final aside: while I say at the beginning that I assume the truth of animalism throughout the paper, I confess to being tempted to think that what is true of your brain and soul is also true of the organism that you are. In *some* sense I think that it is true to say that you are that organism, but I think as well that you – the I that identifies with that organism – is not reducible to the organism that it – in some sense – is. Our personal existence transcends our organic existence, but not by being the existence of some *thing*, such as a soul, that is different from the living body. Indeed, such transcendence claims seem necessary if my claims about what you can survive as are true. But I leave this deeper issue for another time.

3. True Only of Brain and Soul

Are there any other contenders for the role of parts that you or I could exist as? I think that there is only one other. This contender is the brain *hemisphere*. One might think that if I could be reduced to a brain, then I could be reduced to a brain hemisphere. Just keep whittling. After all, any reason to think that you could be reduced to a brain applies equally strongly to the hemisphere. Those who undergo an anatomical hemispherectomy lose half their brain and still manage to experience the range of human consciousness and function. In principle, it seems they could survive the removal of that hemisphere only and its maintenance in the proverbial vat.

⁹David Oderberg, “Survivalism, Corruptionism, and Mereology,” *European Journal of Philosophy* 4 (2012): 1-26; and Eleonore Stump, “Resurrection, Reassembly, and Reconstitution: Aquinas on the Soul” in *Die menschliche Seele: Brauchen wir den Dualismus?*, ed. Bruno Niederbacher and Edmund Runggaldier (Frankfurt: Ontos Verlag, 2006).

But this is simply a case in which the brain is reduced in size to that of (roughly) a hemisphere. The hemisphere *is* the brain, not half a brain. Similarly, if some bit of tissue were removed from your liver for donation, it would not be the case that you would now have half a liver. You would have a whole liver that is smaller.

Now, this might pose a problem for my overall argument if it could be the case that both hemispheres could survive as persons. We can agree, I expect, that it is not the case that the two separated hemispheres together are one person. So, there are two other options: either one of the hemispheres would be me and the other not, or neither would be.

The first option would be strange but not a problem for my argument. It would require a new person to come into existence that is constituted by a small hemisphere-sized brain. It would not pose a challenge to my claims about what parts *you* could exist as. You could still exist as a brain. The second possibility is incompatible with my argument, as we will see in the next section. So, I need pre-emptively to deny that it is possible, and I will do that by denying that either option is really possible.

The only evidence that we have to support the claim that you could exist as a hemisphere-sized brain is that it seems that you can exist *with* only half a brain after a hemispherectomy.¹⁰ But this is not *exactly* right. In this procedure, a hemisphere is removed from the brain, but it is not the case that the brain is reduced to merely a hemisphere. Rather, deep-brain structures remain after the surgery, and so does the brain stem, so that the remaining brain is considerably different from the brain material that is removed.¹¹ I think that the success of anatomical hemispherectomy gives us reason to think, at the very edges of what is possible, that we could exist as a brain with only one hemisphere. But it gives us no reason to think that we could exist as a hemisphere proper.

So, I conclude that the brain and the soul, and only the brain and the soul, are the parts that you or I could exist as.

4. These Organs Are Irreplaceable

In this section I argue that the parts you could exist as are irreplaceable in

¹⁰ For a description of this surgery, see Christine Kenneally, "The Deepest Cut," *The New Yorker* (July 3, 2006), pp. 36-42.

¹¹ And in fact, the direction that this procedure seems to be moving in is towards the removal of less rather than more brain matter.

the strong sense. That is to say that this feature of any part identifies it as irreplaceable. In an appendix I say something about why we should expect this to be the case. For now, the proof that they are.

Recall the definition of an irreplaceable part in the strong sense: a part is irreplaceable to an animal if and only if its absence means that any remaining animal or other organism will fail to be numerically identical to the animal that once had the part. Put in the terms used earlier, a part is irreplaceable to an animal if and only if it is something the animal cannot live without but that is also such that there is no substitute for it possible. When it is gone, it is gone and so is the animal to which it once belonged.

Suppose that you are an organism (O), but that there is some part of that organism (P) such as an organ that you could in some circumstance exist as, albeit in a radically debilitated state. Suppose that this part were removed and maintained, and so you would continue to exist as P; and suppose further that removing P leaves, in this instance, a residual organism (R) – the previously existing organism minus the organ that you now exist as. Grant that this residual organism is alive, one, self-integrating, and so on.

Obviously, if you exist as the removed part P, then you do not exist as the residual organism R, and so R is also numerically different from O, the original organism, because O *was* you prior to the removal of P. If R was identical to O, then it too would be you.

Now, suppose that P is not removed but destroyed and that there remains behind a residual organism exactly like R in the previous scenario. Could R be you now, since there is no other contender? Could it be numerically identical to O?

It could not be. For whether R, the residual organism, could be numerically identical to that earlier organism O should not – I would say cannot – depend upon what happens to something *else*, namely, P. David Wiggins calls this the “*Only a and b* rule.”¹² Where a and b are candidates for the relationship of numerical identity, whether they are numerically identical cannot depend upon what happens, or how they are related, to some third entity c. It cannot depend on whether there exists or does not exist a *better contender* for the identity relation.

Similarly, whether the organism that is at one time you (O), and the

¹² David Wiggins, *Sameness and Substance Renewed* (New York NY: Cambridge Univ. Press, 2001), p. 96.

residual organism (R) that exists after the removal (or death) of P, are numerically identical must depend only on facts about those two entities, O and R, and not on whether or not that third thing P continues to exist or not. So if $O \neq R$ when P survives detached from R, then $O \neq R$ ever, including the case where P merely happens to be completely destroyed, rather than removed and maintained.

This means that P, in virtue of being a part that you could exist as, is irreplaceable in the strong sense. Obviously, its loss means that no residual animal organism is numerically identical to the animal or organism that once had P as a part. Hence P is something the animal cannot live without, and nothing can substitute for P.

5. Application to Brain and Soul

Now, everyone agrees that when your soul departs, nothing that might remain, even if alive and one and self-integrating, is identical to the organism that your soul once informed. But it follows from the argument just made that when your brain departs, whether because it perishes, or because it has been preserved and maintained in a vat, nothing that might remain, even if alive, and one and self-integrating, is identical to the organism that once housed your brain. Both your soul and your brain are irreplaceable if you can exist as either, and this was what the argument set out to show: *brain-absent* residual organisms are not numerically identical to their brain-present predecessors, and so you will never exist as a brain dead organism.

Appendix I: A Definitional Question

I define irreplaceability in an odd way that might seem odd:

A part is irreplaceable to an animal if and only if it is something the animal cannot live without but that is also such that there is no substitute for it possible. When it is gone, it is gone and so is the animal to which it once belonged.

Here is a different way in which I could have defined it:

A part is irreplaceable if and only if it is something *you* cannot live without and no substitute for it is possible. When it is gone, it is gone and so are you.

But this definition will not do because, by this definition, the brain is not irreplaceable. If you can exist as a soul, then *you* can exist without your brain; it is not irreplaceable *for you*. But that is not where the focus needs to be anyway. It needs to be, not on what *you* can or cannot live without, but on what the *animal* can or cannot continue to exist without. So, the definition makes no reference to “you” even though identifying which parts are irreplaceable does: those parts are irreplaceable that you could exist as.

Appendix II: What is the Connection Between What You Can Exist as and Irreplaceability?

The parts that you could exist as are in fact irreplaceable. We know this by application of the “*Only a and b* principle.” But why? I think that we see in the two parts identified, the brain and the soul, a coming together of the features that made other parts irreplaceable in the two weaker senses that we identified. On the one hand, we had parts that were irreplaceable because they performed a vital function, and thus you could not live without them, like a heart. But substitution was possible; you might have an artificial heart.

On the other hand, a very small number of parts were irreplaceable in the sense that there is no substitute for them. Sex cells seem to be the primary case. Why should these cells be irreplaceable? I think that it is the case because they are connected in a deep way to our identity: our biological identity determines which sex cells can plausibly be considered ours, because such cells are the link between ourselves as potential reproducers and subsequent human beings considered as our biological children. Without the right kind of connection, as mediated by *our* sex cells, subsequent children simply are not biologically ours. So, those cells do not admit of substitution.

Now brains and souls seem to share both these features. To take the easy case first, your soul performs a vital function since it is the animating principle of the organism. It is deeply, constitutively, linked to your identity. Your soul cannot be the soul of another person, nor can any other soul be yours. So, the soul is irreplaceable in the strongest sense.

And of the brain too these seem true. We did not want, prior to making the argument, to say that the brain was irreplaceable because it performs an integrating function, but that the brain *is* irreplaceable. A reason that we can posit for this view is that it does indeed play an integrating function for the

organism that you are. I am not abandoning the idea of the brain as the integrating organ any more than Grisez and Lee do. And that integrating function is certainly vital.

Moreover, the brain seems, in a way that is analogous to the soul, linked to your identity, both biologically and personally. The brain, unlike every other organ, provides the material substrate for the acts that are most deeply linked to your identity as a person – your thoughts, choices, sensations, memories, emotions, and so on. So, like the soul, it has both the features that together give a part a claim to strong irreplaceability.¹³

¹³ For very helpful comments on earlier drafts, I am grateful to Tim Pawl and Adam Omelianchuk.