

THE ORGANISM VIEW DEFENDED

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Abstract

What are you and I essentially? When do you and I come into and go out of existence? A common response is that we are essentially organisms, that is, we come into existence as organisms and go out of existence when we cease to be organisms. Jeff McMahan has put forward two arguments against the Organism View: the case of dicephalus and a special case of hemispheric commissurotomy. In this paper, I defend the Organism View against these two cases. Because it is possible to devise more McMahanian-type cases, I also provide a more general solution to these kinds of cases.

THE ORGANISM VIEW DEFENDED

I. McMahan's Challenge

What are you and I essentially? When do you and I come into and go out of existence? For example, are you numerically identical to the infant that existed sometime ago? How about the embryo or the sperm and the egg? What kind of changes can you undergo and still persist as you? Suppose you lost a finger, are you still the entity that has lost a finger? What if you lost your brain? When do you go out of existence? Do you go out of existence if you are hit on the head and a persistent vegetative state results?

A common response to the question of what we are essentially is that we are essentially organisms.¹ That is, we come into existence as organisms and go out of existence when we cease to be organisms. After all, if we were not organisms, who is the being sitting here in front of the computer writing this paper and who is the being reading this paper? This view, call it the Organism View, might seem obviously true especially to scientists. However, for quite some time, a number of philosophers have rejected it in favor of the Psychological View.² The Psychological View holds that some kind of

* I would like to thank Jeff McMahan, David Hershenov, Eric Olson, John Broome, Peter Singer, David DeGrazia, Chris Grau and Wibke Gruetjen for their comments on early drafts of this paper. I also benefited greatly from the discussions at the University at Buffalo Conference on Metaphysics and Medicine organized by Barry Smith and David Hershenov.

¹ See, e.g., Carter, W. R. "Do Zygotes Become People?" *Mind* 91 (1982): 77-95; Quinn, W. "Abortion: Identity and Loss." *Philosophy and Public Affairs* 13 (1984): 24-54; Snowdon, P. F. "Personal Identity and Brain Transplants." In *Human Beings*, edited by D. Cockburn, 109-26. Cambridge: Cambridge University Press, 1991; van Inwagen, P. *Material Beings*. Ithaca, NY: Cornell University Press, 1990; and Olson, E. *The Human Animal: Personal Identity without Psychology*. New York: Oxford University Press, 1997.

² Locke, J. 1993. *An Essay Concerning Human Understanding*. abridged ed: Everyman; Grice, H. P. "Personal Identity." *Mind* 50 (1941): 330-50; Perry, J. "Can the Self Divide?" *Journal of Philosophy* 69 (1972): 463-88; Parfit, D. *Reasons and Persons*. Oxford: Oxford University Press, 1984; Parfit, Derek. "Experiences, Subjects, and Conceptual Schemes," *Philosophical Topics* 26 (1999): 217-70; Nozick, R. *Philosophical Explanations*. Cambridge, Mass.: Harvard University Press, 1981; Johnston, M. "Human Beings." *Journal of Philosophy* 84 (1987): 59-83; Noonan, H. *Personal Identity*. London: Routledge, 1989;

psychological continuity (e.g. mental contents or the bare capacity for consciousness) is required for identity. This view implies, among other things, that we come into existence only when some kind of psychological state is present. An often used argument to motivate this view is the brain transplant argument. For example, consider the following:

Imagine that there are two human beings, Abbey and Brenda. Both have their cerebrums removed. The cerebrum that had been in Brenda is then destroyed while the cerebrum that had been in Abbey is transplanted into the skull that had encased Brenda's cerebrum. Let us call the being that receives the cerebrum transplant "Brenbey" while the name "Cerebrumless" will refer to the now mindless body that had earlier contained Abbey's cerebrum. And let us suppose that Brenbey has Abbey's psychology and is now able to (quasi-) know and (quasi-) remember things that Abbey had known and remembered. The question is whether Abbey is numerically identical to Cerebrumless or to Brenbey?³

A number of philosophers claim that many people's intuitions are that Abbey would be numerically identical to Brenbey, since Brenbey has Abbey's psychology and Brenbey would think that she is Abbey. If so, this would support the Psychological View instead of the Organism View, because if the Organism View were true, then Abbey would be

Unger, Peter. *Identity, Consciousness, and Value*. Oxford: Oxford University Press, 1990; Martin, R. *Self Concern*. Cambridge: Cambridge University Press, 1998; Unger, P. "The Survival of the Sentient." *Philosophical Perspectives* 14 (2000); and McMahan, J. *The Ethics of Killing: Problems at the Margins of Life*. Oxford: Oxford University Press, 2002.

³ Many philosophers believe it is a conceptual truth that one cannot have someone else's memories. Given this, the term 'quasi-memories' is introduced a la Parfit and Shoemaker to avert this possible conceptual mistake.

numerically identical to Cerebrumless as Cerebrumless is still organismically continuous with Abbey.

Brain transplant cases such as this one have been criticized on the ground that they are not realistic.⁴ To address this worry, Jeff McMahan, an advocate of a version of the Psychological View, has put forward two examples, which he believes are more realistic. The first is the Dicephalus Case. Dicephalus means ‘two-headedness’ and occurs when a human zygote divides incompletely, resulting in twins conjoined below the neck. In dicephalic twinning, it seems clear that there are two people. McMahan cites the case of the conjoined twins, Abigail and Brittany Hensel, each having “her own private mental life and her own character, each [feeling] sensations only on her own side of the body, and each [having] exclusive control over the limbs on her side.”⁵ Although there are two persons in dicephalic twinning, McMahan argues that there seems to be only one organism between them. If he is right, then neither twin can be numerically identical with the organism, since if they were, they would be numerically identical with each other, which seems not to be the case. Moreover, according to McMahan, since there is no reason to suppose that dicephalic twins are fundamentally different types of beings from the rest of us, this seems to suggest that none of us is essentially an organism.

McMahan’s second example requires some knowledge of hemispheric commissurotomy. Hemispheric commissurotomy is a procedure by which one severs the

⁴ See, e.g., Wilkes, K. *Real People: Personal Identity without Thought Experiments*. Oxford: Clarendon Press, 1988; Baillie, J. *Problems in Personal Identity*. New York: Paragon House, 1993; and Rovane, C. "Critical Notice of Peter Unger, *Identity, Consciousness, and Value*." *Canadian Journal of Philosophy* 24 (1994): 119-34. Others have also questioned brain transplant cases on the ground that identity is not what matters to us. For example, Olson argues that people may be metaphysically misled by their quasi-prudential concern for the recipient of their cerebrum-based psychology to think that they would have switched bodies when their cerebrums have (The Human Animal, op. cit.)

⁵ McMahan, *Ethics of Killing*, p. 35.

corpus callosum, which connects the two cerebral hemispheres of the brain and which enables them to communicate directly with one another. The procedure has typically been used to alleviate epileptic seizures. It has been found in experiments on hemispheric commissurotomy that when different sensory stimuli are presented to each of the hemispheres, one hemisphere could be unaware of what was presented to the other hemisphere.⁶ The upshot of such studies is that they seem to suggest that one's consciousness could be divided.⁷

On this basis, McMahan hypothesizes that if a commissurotomy was performed at birth and each hemisphere was then for many years presented with different stimuli, while the other was anaesthetized, such a procedure could produce two different minds, each with a different set of experiences, dispositions, beliefs, and memories.⁸ McMahan argues that if this happens, then there would be two people coexisting, but there would only be one organism. Again, according to McMahan, since there is no reason to think that such a being would be fundamentally different from us, this would also suggest that we are not essentially organisms. Call this the Modified Commissurotomy Case.

In this paper, I would like to consider McMahan's two cases against the Organism View and show that in fact, they do not undermine it. Since it is possible to devise more McMahanian-type cases, another aim of this paper is to give a more general solution to these kinds of cases. To do this, I begin with an account of the Organism View.

II. An Account of the Organism View

⁶ See, e.g., Puccetti, R. The case for mental duality: Evidence from split-brain data and other considerations. *Behavioral and Brain Sciences* 4 (1981):93-123.

⁷ Robinson, J. "Personal Identity and Survival." *Journal of Philosophy* 85 (1988): 319-28, has challenged this conclusion.

⁸ McMahan, *Ethics of Killing*, p. 38.

Organisms are beings that have the capacities to carry on certain life processes. Some such processes may include *metabolism*, which is the capacity to break down substances and convert them to other substances that can be used by the body; *growth*, which is the capacity to increase the size of existing cells and the number of cells; *assimilation*, which is the capacity to absorb substances that are chemically different from those found in the body; *responsiveness*, which is the capacity to detect and respond to changes outside or inside the body; *movement*, which is the capacity to move the whole body, parts of the body such as organs, single cells, or even structures inside cells; and *reproduction*, which is the capacity to form new cells for growth, repair, or replacement or the formation of a new individual. Other life processes may include respiration, digestion, absorption, circulation, excretion, differentiation, and so on.

Taxonomically, two kinds of organisms can be distinguished: unicellular and multicellular organisms. Many unicellular organisms do not have a nucleus. Such organisms are known as prokaryotic cells. *Streptococcus pyogenes*, the bacterium that causes strep throat, is an example of a prokaryotic cell. Eukaryotic cells have a nucleus and are usually found in multicellular organisms. Unicellular organisms such as bacteria and multicellular organisms such as human beings are organisms because they possess the capacities to regulate and coordinate the kind of life processes described above such as metabolism, growth, and so on.

The Organism View, as I understand it, says that a being, X, is *essentially* an organism, if

a) X begins to exist when the capacity to regulate and coordinate its metabolic and other life processes is there; b) X persists as long as there is what may be called ‘organismic continuity,’ which is the continuing ability to regulate and coordinate its metabolic and other life processes; and c) X ceases to exist when the capacity to regulate and coordinate its metabolic and other life processes is permanently gone.

The meaning of a) should be clear. Let me explain b), specifically, what I mean by ‘organismic continuity’; and c), what I mean by ‘permanently gone.’

Philosophers have employed such concepts as physical and functional continuities.⁹ Y and Z are *physically continuous* if Y and Z contain the same constituent matter or if there is the gradual, incremental replacement of the constituent matter over time. For example, the car I had yesterday (C1) is physically continuous with the car I have today (C2) if C1 and C2 contain the same constituent matter, or if they contain just about the same constituent matter, supposing that some very microscopic rusting could have occurred between yesterday and today, which could have replaced some of the constituent matter. Y and Z are *functionally continuous* if Z retains Y’s capacities. For example, the car I had yesterday (C1) is functionally continuous with the car I have today (C2) if C2 retains C1’s capacities, e.g., like C1, C2 can be driven, and so on.

Y and Z are *organismically continuous* if Z retains the same coordinating and regulating capacity of the life processes such as metabolism, growth, differentiation, and so on, as Y. For example, a person before an artificial heart replacement (H1) is organismically continuous with the individual after the heart replacement (H2) if the

⁹ See, e.g., McMahan, *Ethics of Killing*, p. 68.

person retains the same coordinating and regulating capacity of the various life processes working, that is, the capacity that keeps H1 functioning as an integrated organism is keeping H2 functioning as an integrated organism.

To understand what it means for the capacity to regulate and coordinate metabolic and other life processes to be permanently gone, it is worth distinguishing between temporary and permanent organismic discontinuity.¹⁰ Temporary organismic discontinuity may occur when, for example, a person has a heart seizure or falls into a coma, so that the capacity to coordinate and regulate the life processes stops, but it is possible to intervene externally in order to regain organismic continuity. Permanent organismic discontinuity occurs when it is no longer possible to regain organismic continuity by any means. In the case of temporary organismic discontinuity, the numerical identity of the individual would still persist, because the coordinating and regulating capacity of the various life processes, which is lost and regained, remains the same. In the case of permanent organismic discontinuity, the individual would be considered dead, since the capacity to coordinate and regulate the various life processes would no longer be there, that is, it would be permanently gone.

To illustrate the Organism View, let us consider a bacterium, which is typically regarded as essentially an organism. Indeed, the starting point of a bacterium's existence can be traced to the beginnings of its ability to regulate and coordinate its various life processes such as assimilation, growth, and so on. This is usually a point after binary

¹⁰ The concept 'permanent' is not easy to define. We can avoid some confusion though if we distinguish between a metaphysical and an epistemic understanding of this term. Metaphysically, permanent organismic discontinuity for an organism occurs when in fact the organism is no longer able to coordinate its life processes. Epistemically though, we can of course be wrong about when this point has occurred for an organism. For a further discussion of this concept, see Becker, L. "Human Being: The Boundaries of the Concept" *Philosophy and Public Affairs* 4:4 (Summer, 1975):334-359.; Cole, D. "The Reversibility of Death" *Journal of Medical Ethics* 18 (1992):26 - 30; and Hershenov, D. "The Problematic Role of 'Irreversibility' in the Definition of Death." *Bioethics*. 17:1 (2003): 89-100.

fission, when a bacterium is capable of independent existence. In addition, as long as the bacterium is able to continue to regulate and coordinate its metabolic and other life processes, the bacterium is regarded to be persisting as numerically the same bacterium. Hence, while the bacterium may leak enzymes out of its cell membranes into the environment (in order to break down various tissues and molecules into proteins and cellulose so that they would be small enough to enter into the bacterium's cell membrane), as long as the same capacity is keeping the bacterium functioning as an integrated whole, the bacterium persists, since there is organismic continuity. Finally, the bacterium may at some point cease to be able to coordinate and regulate its various life processes. This may occur if it dies or if binary fission occurs, where it splits into two daughter bacteria. In either case, there would be permanent organismic discontinuity and the original bacterium would have ceased to exist. The bacterium case thus illustrates how the Organism View can account for the numerical identity of a bacterium.

There are good reasons to believe that we also are essentially organisms. For one thing, the Organism View seems perfectly adequate for explaining the numerical identity of many beings that are non-human. Indeed, it is fairly uncontroversial to hold that bacteria, plants and lower non-conscious animals are numerically identical to their organisms.¹¹ That is, we do not think that plants and lower non-conscious animals are essentially something-other-than-organisms and that they stand in certain relations to their organisms in the way that, according to some philosophers, we stand to our

¹¹ Some might wonder why I do not use lower conscious animals as examples. The reason is that Peter Unger has argued that our intuition about brain transplantation in the case of human beings should apply to lower conscious animals as well ("The Survival of the Sentient," *op. cit.*). It seems to me that other advocates of the Psychological View could also make such a move. Anticipating this, I therefore use non-conscious animals instead of lower conscious ones in order to avoid presupposing any element of the Psychological View.

organisms, that is, one of non-identity. Given that the Organism View explains so well the numerical identity of many beings that are non-human, and given that we are not very different from these organisms in that, like them, we too coordinate and regulate various life processes, there is a *prima facie* case for believing that the Organism View should also be able to explain the numerical identity of human beings.

Also, the Organism View captures many of our common intuitions about what we essentially are. According to this view, we begin to exist when we have the capacity to regulate and coordinate our metabolic and other life processes. As commonly interpreted, this means that we typically begin to exist as embryos, since the capacity to regulate the various life processes typically begins to exist at this point, when the embryo coordinates its own division and growth to create a more specialized individual.¹² The Organism View also says that we persist as long as there is organismic continuity, which is the continuing ability to regulate and coordinate our metabolic and other life processes. Hence, on this view, we are numerically identical to the infants that once existed, and we would be numerically identical to human beings in a persistent vegetative state, as long as there is organismic continuity between us and them. Finally, this view says that we cease to be when we are no longer able to regulate and coordinate these functions. So on this view, we cease to exist when we are dead, since a dead body is not able to regulate and

¹² Eric Olson, an advocate of an Organism View, and some others have argued that this implication need not follow from the Organism View. I argue elsewhere that the Organism View does have this implication. In particular, I argue that the zygote survives as a two-cell organism, because growing by increasing cell numbers still involves coordinating various life processes. For example, in order for the embryo to grow by increasing cell numbers, the embryo must undergo mitosis, which involves duplicating genetic information, and assimilating and metabolizing necessary materials. Moreover, I argue that unlike a dividing amoeba, the daughter cells of the embryo will not just wander off, but will communicate with one another in order to coordinate further development. Indeed, if one of the cells in the embryo is removed, the other cells will coordinate to replace the cell so that further development can continue. Hence, the kind of coordination of life processes involved in embryonic divisions is sufficient for the embryo to be considered as a single organism.

coordinate metabolic and other life processes, which means that there is no organism there, and there is no organismic continuity between us and the dead bodies. Given that the Organism View seems to be able to account adequately for many of our intuitions about what we are essentially, there are reasons to believe in its validity.

Here it is worth noting that establishing what we are essentially does not automatically tell us how we should treat beings that are numerically identical to us at various segments of our lives. For example, someone in a deep coma may very well be numerically identical to us (on both the Organism View and the Psychological View, since there is organismic continuity and since the cerebral hemisphere where particular mental states and consciousness reside could still be intact). However, it does not follow that this person should be treated in the same manner as a normal healthy adult human being, if it really is the case that the person in a deep coma may have no prospect of ever waking up again and being able to pursue a life worth living.

III. The Dicephalus Case and the Modified Commissurotomy Case

McMahan's cases of dicephalus and hemispheric commissurotomy are intended to challenge the Organism View. In both cases, the aim is to show that because there are two persons and only one organism, therefore, persons are not numerically identical to their organisms.

In response to the Dicephalus Case, it may be said that there are in fact two organisms, although they may not be completely independent organisms. In most cases of dicephalus, it is possible to identify functioning organs for two organisms. For example, in McMahan's example of Abigail and Brittany Hensel, each twin has her own

stomach and heart; they have distinct brainstems and distinct spines that are only joined at the hips; and they have partially distinct organs that are united. This suggests that in fact, there are two organisms here although they are not fully independent organisms. Moreover, in most if not all actual cases of dicephalic twinning, metaphysically considered, it is the case that they arose out of two distinct embryos, but that during the twinning process, the cleaving of the two embryos was not completed.¹³ Monozygotic twinning occurs when a single fertilized egg splits into two embryos. Usually the splitting is complete, resulting in two distinct individuals. However, sometimes, the splitting will be incomplete, resulting in cases such as the dicephalus. Since dicephalic twinning occurs after two embryos with two capacities for regulating and coordinating the various life processes have been created, but just before they have split completely, it is plausible to argue that there are already two organisms. Finally, and most crucially, in most cases of dicephalus, one can identify two distinct capacities for coordinating and regulating the various life processes. For example, consider the case of Jodie and Mary who were born at St. Mary's Hospital in Manchester, UK, on 8 August 2000. Although at first sight each appeared to have a separate well-formed body with some joining at the lower body, detailed tests showed these conjoined twins were very unequal—Jodie was providing the heart, lungs and many other basic functions for both, while Mary controlled only parts of her limbs. Subsequently, the court ordered the doctors to separate the twins against the parents' wishes on the ground that Mary could endanger Jodie's life. Whether

¹³ One might argue that this is only a contingent truth, since, for example, in some other possible worlds, it is conceivable that the second head could just be an odd growth or someone could genetically engineer an entity with two heads. I shall consider the genetic engineering case shortly. Regarding the odd growth scenario, this would not immediately show that there is only one organism. Pregnancy, for example, also involves the growth of a second organism. Perhaps this is another way by which a second organism could be grown in a human being.

the court judgment is correct or not, the case illustrates that one can identify which twin is controlling which organ or body part, thereby suggesting that there are two capacities for coordinating various life processes, and that therefore, there are two organisms.

Here it might be pointed out that Peter van Inwagen might also hold the view that dicephalic twins are two distinct though overlapping organisms, since he writes of a “fusion of two or more multicellular organisms, after the manner of Siamese twins.”¹⁴ Van Inwagen believes that the core of a human organism is the “control center” that regulates and coordinates the various activities of its parts. Since the brain, in particular the brainstem, has this role, van Inwagen believes that a human organism is numerically identical to the bare brain and that what is left behind when the brain departs is just a mere collection of cells. Given this view, since the Dicephalus Case involves two brains, van Inwagen would say that there are two organisms in this case. The difference between van Inwagen’s view and the view I have advanced is that on my view, having a brain is not a necessary condition for a human organism to persist.¹⁵ In particular, if the provision of minimal external life support, e.g., a respirator, nutrition, hydration and so on, can enable what is left behind to continue to coordinate various life processes, and there is good empirical evidence that this is possible, then there is still organismic continuity and the organism would persist, even if the brain has departed.¹⁶ The difference between the two views will become more apparent when we discuss what I call the Extreme Case.

¹⁴ van Inwagen, *Material Beings*, sec. 15.

¹⁵ For a good critique of van Inwagen’s view, see McMahan, *Ethics of Killing*, pp. 32-39; 428-433.

¹⁶ There are many cases in which pregnant brain-dead women were able to function sufficiently well to support the growth of the fetus, thereby enabling it to be delivered by caesarian section. See, e.g., McCullagh, P. 1993. *Brain Dead, Brain Absent, Brain Donors: Human Subjects of Human Objects?* Chichester: John Wiley and Sons, pp. 35-39.

Concerning the Modified Commissurotomy Case, one response is to deny that there are two people in existence. One reason for believing that there are two people in existence may be because there are, in McMahan's words, two different sets of 'experiences, dispositions, beliefs, memories, and so on.'¹⁷ However, consider a human being with a severe case of Dissociative Identity Disorder (DID) (previously known as Multiple Personality Disorder). This human being could think that he is Bob one day, Joe another, and act very differently on different days. In fact, some people with DID have been known to have up to 16 different 'sets of experiences,' many of which have no memories of the others.¹⁸ Still, it would not follow therefore that there are two or more people. If it did, it would mean that we should not try to cure a person with DID, since doing so would be killing some people.¹⁹ Similarly, just because the human being in the Modified Commissurotomy Case has two different sets of experiences, it does not follow that there are two people.

Some people might of course argue that the condition of DID is not currently well understood. However, if the condition of DID is not very well understood, the condition of the Modified Commissurotomy may be even less so. Indeed, whereas DID does exist, the condition of the Modified Commissurotomy does not currently. Others might complain that in the DID case, the 'multiples' may not be thinking concurrently. While this is true of the multiples in the case of DID, it should be said that the multiples in the Modified Commissurotomy Case also do not think concurrently. As McMahan describes

¹⁷ McMahan, *Ethics of Killing*, p. 38.

¹⁸ Flora Rheta Schreiber, *Sibyl*, 1974, Harmondsworth: Penguin. Sibyl for example had sixteen personalities, and some of Sibyl's personalities knew nothing of each other, and Sibyl was amnesiac between episodes in one personality and episodes in another.

¹⁹ See also Bayne, T. "Moral Status and the Treatment of Dissociative Identity Disorder." *Journal of Medicine and Philosophy* 27, no. 1 (2002): 87-105.

it, when one hemisphere is activated, the other hemisphere will be anaesthetized, which excludes the possibility of concurrent thoughts. Finally, some might propose that in the DID case, the concepts possessed by one multiple may not have been obtained independently of the other multiple. However, it seems that in the DID case, one multiple could have interacted with the environment in ways that the other multiple could not, thereby obtaining concepts independently of the other multiple. Indeed, some of the multiples in DID hold at least one concept that is independent of the other, namely, when one multiple does not know or remember that he or she has another multiple.

McMahan himself might, in response to the DID case, distinguish between what might be called the Mental Content View, according to which the contents of an individual's experience determine that individual's numerical identity, and his view, which might be called the Bare Capacity View, according to which the bare capacity for consciousness is what matters for numerical identity.²⁰ The Bare Capacity View can avoid the consequence of the DID case and say that there are two people after a hemispheric commissurotomy, because there are two bare capacities for consciousness.

However, in actual fact, any hemispheric commissurotomy will produce two capacities for consciousness, since the right brain and the left brain can and will function quite independently of one another once the corpus callosum is severed. Does this mean that each time a hemispheric commissurotomy is performed, two people are thereby created? More importantly, suppose we tried to reattach the corpus callosum, does this mean that we would be killing someone, since we would be causing two capacities for consciousness to become one again? These implications seem absurd. Hence, the fact

²⁰ Parfit, among others, might be regarded as holding the Mental Content View, while, McMahan and Unger might be regarded as holding the Bare Capacity View. See McMahan, *Ethics of Killing*, p. 69.

that there are two capacities for consciousness does not show that there are two people in existence.

There is an alternative response to McMahan's Modified Commissurotomy Case, a possibility which I do not endorse, but which I also do not rule out. The proposal is that the Modified Commissurotomy Case does create two people, but it also creates the beginnings of two organisms. The Modified Commissurotomy Case is not exactly like an ordinary hemispheric commissurotomy, since it involves anaesthetization and takes place over a long period of time. One effect of anaesthetizing one side of one's brain is that one loses control of one side of one's body. For example, if the left brain is anaesthetized, then typically one loses control over the right side of the body, and vice versa. Overtime, it could be the case that two capacities for coordinating various life processes would be created, each regulating a distinct part of the body. As a possible litmus test for this idea, if one kept one side of the brain anaesthetized for too long, one side of the body may wither completely. If so, one may be able to claim that there are two organisms in existence. Consider a possible parallel. Suppose one takes a hydra and cuts its head partially into two. As it is known, a two headed hydra would be created, given the hydra's regenerative ability. More importantly, there would now be two locations, sometimes called 'head activation potentials' that can coordinate life processes.²¹ When this happens, one may be able to interpret this as the beginning of two organisms, albeit two partially fused organisms. Similarly then, the Modified Commissurotomy Case may be the beginning of an organismic split in a human being. Normally this is not possible in higher animals. Perhaps this is why we resist thinking

²¹ Zeretzke, S., and S. Berkin. "Pattern Regulation Properties of a Hydra Strain Which Produces Additional Heads Along the Body Axis." *Int. J. Dev. Biol.* 45 (2001): 431-39.

that there are two organisms in such a case. But, like a hydra, perhaps this is one way by which a human being could begin to be split partially. If so, like the hydra, this would be the beginning of two organisms. If this is at all plausible, then even if McMahan insists that there are two people in existence in the Modified Commissurotomy Case, this would not undermine the Organism View. My view, again, is that the Modified Commissurotomy Case creates only one person and one organism, albeit a very fragmented individual. But I do not immediately rule out this alternative possibility. What is relevant for our purpose is that both approaches support the Organism View.

IV. The Extreme Case, Organismic Divisions, and the Genetic Engineering Case

No doubt McMahan or others could try to offer variations of the above cases. In fact, McMahan hints at an extreme case of dicephalus where there are two heads diverging from a common neck, where two cerebrums diverge from a single brainstem: “There are two faces—two pairs of eyes, two mouths that function independently, and so on—and, more important, two cerebrums, each controlling its own face and the limbs on its side of the body.”²² Otherwise, everything else is shared. Again, the aim is to show that because there are two persons and only one organism, therefore, persons are not numerically identical to their organisms. Let us call this the Extreme Case.

Of course, the Extreme Case does not currently exist. Given this, some people might argue that such a case would fail McMahan’s ‘reality’ test.²³ However, we should give McMahan the benefit of the doubt and take seriously the possibility of such a case.

²² McMahan, *Ethics of Killing*, p. 38.

²³ See, e.g., DeGrazia, D. 2005. *Human Identity and Bioethics*. Cambridge: Cambridge University Press.

Moreover, since someone could continue to offer variations of such a case, it is worthwhile considering whether there can be a general solution for them.

To start, we might note that van Inwagen may have a difficult time explaining the Extreme Case. As we said earlier, van Inwagen believes that the core of a human organism is the control center that regulates and coordinates various activities of its various parts. Since the regulatory functions of the brain are localized not in the cerebrum but in the brainstem, and since there is only one brainstem in this case, van Inwagen should say that there is just one organism in the Extreme Case.²⁴ But if it is really the case that there are two independent mental lives in the Extreme Case much like other dicephalus cases, then there would be two persons but only one organism. If so, the Extreme Case would undermine van Inwagen's version of the Organism View.

I propose that when we see past the hypothetical nature of the Extreme Case and other cases like it, we would realize that most of them are the result of division of the sort that creates two or more organisms. Division of this sort can occur when a part of an organism breaks off either naturally or by artificial means. An amoeba's dividing and twinning in animals are typical examples of natural divisions. Examples of artificial divisions might include the grafting of plants or deliberately cutting off parts of a starfish or a salamander. One can also distinguish between equal and unequal divisions, where the former involves the organism's dividing into two roughly equal halves, while the latter results in one part's being smaller than the other. Monozygotic twinning, for example, is typically an equal division. An example of unequal division might be the budding of a hydra. Finally, one can distinguish between complete or incomplete

²⁴ Indeed, van Inwagen says that a cerebrum supported by an external life-support system would not constitute an organism, and hence that one could not survive as a detached cerebrum (*Material Beings*, pp. 169 and 291-292).

divisions. The former creates two independent organisms, while the latter creates two not completely independent organisms. Examples of incomplete natural divisions might include fungi and their septa, and conjoined twinning.

Given this classification, most cases of dicephalus can be identified as the result of incomplete natural divisions. Indeed, as I mentioned earlier, most cases of dicephalus occur after two embryos with two capacities for regulating and coordinating the various life processes have been created, but just before they have split completely. This will be true even in the Extreme Case and other variations like it. For our purpose, since these kinds of divisions imply that there are already two organisms, these cases will fail to show that there are two persons but only one organism.

However, what if one genetically engineered an entity that resulted in the kind of extreme case of dicephalus described by McMahan? Since this entity is genetically designed to have this effect, no division of the sort that we have discussed will have taken place.²⁵ Would it follow that there is only one organism in such a case? If so, would such a case undermine the Organism View? Let us call this the Genetic Engineering Case.

This conclusion need not follow. Insofar as there are two organisms in division cases, it is because divisions create two capacities for coordinating life processes. But while division is one way by which two organisms can be created, it is not the only way. If someone could genetically engineer an entity that would have two capacities for coordinating life processes but that would have the form described by McMahan, that individual would have created two organisms, albeit fused. Indeed, since the entity in the Extreme Case has two capacities for coordinating life processes, and since we are supposing that the genetically engineered entity is intrinsically exactly like the entity in

²⁵ I thank David Hershenov for prompting me to consider this possibility.

the Extreme Case, the genetically engineered entity must also have two capacities for coordinating life processes. If this is right, the Genetically Engineering Case still does not show that there are two persons but only one organism.

Before concluding, it is worthwhile considering another way of defending the Organism View against the Extreme Case. Instead of arguing that there are two organisms in the Extreme Case, David Hershenov proposes that the Extreme Case is one in which there is only one organism and one person who is “cut off” from himself.”²⁶ Hershenov does not explain why he believes that there is only one organism in the Extreme Case. He asserts that “an extra cerebrum no more produces a second organism than would an eleventh finger or third kidney.” But the Extreme Case involves more than just an extra cerebrum. As McMahan describes it, there are two faces, two pairs of eyes, and two mouths that function independently.²⁷ Still, Hershenov’s argument that the Extreme Case involves not two persons but only one person who is cut off from himself is interesting and worth discussing in some detail.

According to Hershenov, the relationship between the two cerebrums in the Extreme Case is exactly like the relationship between Waking Socrates and Sleeping Socrates, an example Hershenov borrows from Locke. Waking Socrates has no recollection of his dream life and Sleeping Socrates has no memories of his waking life. Yet, as Hershenov correctly points out, *pace* Locke, there are not two persons, but only one Socrates cut off from himself. Let us call this the Socrates Case. Similarly,

²⁶ Hershenov, D. 2004. “Countering the Appeal of the Psychological Approach to Personal Identity.” *Philosophy* 79:447-474, p. 464. In personal communication, Hershenov says that he now believes that there are two persons in the dicephalus case.

²⁷ Hershenov, “Countering the Appeal of the Psychological Approach to Personal Identity,” pp. 463-464.

Hershenov believes that the Extreme Case is also just one person cut off from himself. To support this idea, Hershenov examines several possible objections.

First, it might be argued that in the Extreme Case, there can be concurrent thoughts opaque to each other. In contrast, in the Socrates Case, Sleeping Socrates and Waking Socrates are never thinking simultaneously. Hershenov's response is that if Freud is right, then Socrates's unconscious thoughts could also be opaque to Socrates's conscious thoughts. Yet, no one would describe Socrates's having such concurrent thoughts that are opaque to each other as involving two persons, but rather as one person cut off from himself.

Secondly, someone might argue that in the Extreme Case the thoughts would occur in two distinct physical locations in two different cerebrums, but in the Socrates Case, the thoughts may occur in the same location. If so, while in the Extreme Case, the mental life of one person could be destroyed without affecting the mental life of the other, it might seem that destroying Waking Socrates would destroy Sleeping Socrates. Hershenov's reply is that different webs of neurons or the same neurons with different sequences of their firings could be involved with Sleeping Socrates than with Waking Socrates and thus one could be disabled without the other. If so, it need not be the case that the thoughts in the Socrates Case are occurring in the same physical location, and Sleeping Socrates could be destroyed while Waking Socrates would persist or vice versa.

Finally, someone might say that the conceptual skills of Sleeping Socrates are acquired from learning processes Waking Socrates had undergone. In contrast, in the Extreme Case, one cerebrum could conceivably acquire a concept independently of another cerebrum. Hershenov argues however that Sleeping Socrates could also learn

concepts on its own, e.g., if Sleeping Socrates sleepwalked and interacted with the world in a way that was not parasitic upon Waking Socrates' education.

Although Hershenov's responses to these three objections seem plausible, here is another difference between the two cases. In the Extreme Case, both heads could communicate and carry on an intelligent conversation with other people at the same time. This independence suggests that there are two people in the Extreme Case. In the Socrates Case, it is difficult to see how Sleeping Socrates and Waking Socrates could communicate with others at the same time. Hence, the Socrates Case and the Extreme Case are not the same.

This conclusion should not concern us though, because Hershenov may be too quick to accept that there is only one organism in the Extreme Case. As I have argued previously, most dicephalus cases including the Extreme Case will be the results of incomplete natural division in which two capacities for coordinating life processes will have been created. This implies that there are two organisms in these cases. Hence, defenders of the Organism View need not rely on Hershenov's argument to reject the Extreme Case.

V. Conclusion

The Organism View captures many of our common intuitions about what we are essentially and when we come into and go out existence, but it has been criticized in several ways by a number of philosophers. In this paper, I considered McMahan's challenge to the Organism View using the Dicephalus Case and the Modified Commissurotomy Case, and I argued that they do not undermine it. Since opponents of

the Organism View could devise other McMahanian-type cases such as the Extreme Case, I have also proposed that most of these cases can be explained in terms of organismic division.