Against the Brainstem View of the Persistence of Human Animals/ Rina Tzinman[[1]](#footnote-1)

Abstract: In this paper I will discuss Eric Olson’s account of the persistence of human animals. I will first show that Olson is committed to the view that brainstem persistence is necessary and sufficient for the persistence of human animals. I will then show flaws in the account by discussing two thought experiments. The upshot of the discussion is that any future account of human animal persistence, and thus any animalist account of our own persistence, should steer away from accounting for human persistence via the brainstem.

Introduction

According to animalism human persons - or rather we - are essentially human animals[[2]](#footnote-2). Therefore, any question about human animals[[3]](#footnote-3) is automatically a question about us. Accordingly, an account of the persistence of human animals is an account of our persistence. In this paper I will not explore the claim that we are essentially human animals. Instead I will focus on the specific account of the persistence of human animals defended by Eric Olson, which he provides as an account of our own persistence. I focus on Olson rather than on other proponents of animalism for two reasons. First, while animalists agree that our persistence conditions are those of human animals, some proponents of animalism stop short of saying what exactly those persistence conditions are, and others don’t provide persistence conditions that are informative enough and thus helpful for determining human animal persistence[[4]](#footnote-4). According to one strand of animalism the necessary and sufficient condition for animal persistence is sameness of life over time. Olson belongs to this strand of animalism, but he goes further and gives an account of what sameness of life consists in[[5]](#footnote-5). As a result, his view is also the most detailed. The second reason that I will focus on Olson’s view is that his view seems prima facie very natural. According to Olson, the persistence criterion for human animals involves the brainstem. In the medical profession there are several ways to determine death. One of these is brainstem death, i.e. the death of the human animal is established by establishing brainstem death. Given that the centrality of the brainstem for determining death is already present in medical practice, Olson’s view seems appealing[[6]](#footnote-6). However, I will argue that the criterion of persistence that Olson offers – brainstem persistence – does not in fact provide a necessary and sufficient condition for the persistence of a human animal.

An Exposition and Reconstruction of Olson’s View

 Although Olson claims that it is ultimately the business of biologists to tell us what organisms are because it is roughly the same project as explaining the nature of life, he thinks that there are a few “life-giving” features that distinguish organisms from non-organisms (1997, 130). These features are metabolism, teleology and organized complexity (1997, 130). An organism can retain its characteristics and structure despite changes in matter and energy with its surroundings. In other words, it has a metabolism (Olson 1997, 127). It has a teleology in that it “adjusts its activities to take advantage of the changing structures in its surroundings” (Olson 1997, 128) and its parts are connected together in such a way that "each has a role to play in enabling the organism to achieve its ends - survival and reproduction" (Olson 997, 128)[[7]](#footnote-7). And this goal-directedness of living beings is “grounded in an underlying biochemical structure of unimaginable complexity” (Olson 1997, 128).

 The above characteristics only tell us what an organism is, not what changes it can undergo. Olson's account is supposed to offer persistence criteria for individual organisms. We will see that the key to organism persistence according to Olson is life. An organism must remain alive to persist. Olson does not explicitly define life in terms of necessary and sufficient conditions, but one can glean what he would consider an appropriate characterization from his various scattered remarks on life. A life is a self-directing biological event that is well-individuated (Olson 1997, 136). Furthermore, Olson thinks that a particle cannot participate in two lives at once, unless one of the lives is subordinated to the other (Olson 1997, 137)[[8]](#footnote-8). Since life is a jealous event “an organism cannot be animated by two lives, at least not at once” (Olson 1997, 137)[[9]](#footnote-9). What Olson seems to mean is that the existence of a life rules out the existence of an overlapping life. I will henceforth refer to this characteristic as *Jealousy*. We can generalize this thought beyond life to a thing of any kind - an object kind or an event kind - by giving the following definition of jealousy:

*Jealousy*: Kind K is jealous iff (if the activity of the xs constitutes an instance of K, k1, at t, then the activity of no ys that overlap the xs can constitute another instance of K, k2, at t, unless one of k1 and k2 is subordinate to the other at t)[[10]](#footnote-10)

While Olson does not put it in these terms, this formulation seems close enough to what he has in mind and does not assume that the only thing that can be jealous is a life. However, one may object that conjoined-twins are a counter-example to jealousy. We can therefore introduce a weaker, more permissive, version of jealousy that is still close to the spirit of Olson's suggestion:

*Weak Jealousy*: Kind K is jealous iff (if the activity of the xs constitutes an instance of K, k1, at t, then the activity of no ys that largely overlap the xs can constitute another instance of K, k2, at t, unless one of k1 and k2 is subordinate to the other at t)[[11]](#footnote-11).

We should expect a life to at least satisfy *Weak Jealousy*, i.e. to not greatly[[12]](#footnote-12) overlap with another life.

According to Olson, the criterion of organism persistence is biological continuity: “What it takes for us to persist through time is what I have called *biological continuity*: one survives just in case one’s purely animal functions—metabolism, the capacity to breathe and circulate one's blood, and the like—continue” (Olson 1997, 16 emphasis in the original). In other words, we are human animals and we, i.e. human animals, persist just in case our biological life continues. An animal persists “just in case its capacity to direct those vital functions that keep it biologically alive is not disrupted” (Olson 1997, 135). Olson does not specify what he means by disruption, but he does state that an animal dies and ceases to exist once “the event that maintains its internal structure stops and cannot be restarted” (Olson 2007, 29)[[13]](#footnote-13). Olson further clarifies that a life is an event that contrasts with its surroundings. As such, it has natural boundaries: for example the activities of the particles of one’s upper half, i.e. the torso, the arms and the head, may constitute a biological event that is akin to a life, but since the boundary is arbitrary rather than natural, this activity is not a life (Olson 1997, 138). One’s upper and lower half would have to be contained in the space marked by *natural* boundaries.

We can extract the following characterization of a life from the above discussion:

(*Life Principle*) x is a life iff x is a jealous, self-directing, self-organizing, non-intermittent biological event with a metabolism and a natural boundary.

According to Olson “the objects that compose the organism are the ones whose activities constitute its life” (Olson 1997, 138). Given his account of life and the relation of life to the organism one should accept the following criterion of the identity of organisms: “For any organism x and any y, x=y iff x’s life is y’s life” (Olson 1997, 138). This is also meant to be the criterion of organism identity *over* time. Thus the following captures the condition under which organisms persist: for any organism x at t1 and any y at t2, x=y iff x’s life at t1 is y’s life at t2[[14]](#footnote-14). In other words:

(*Life*): Life L1 at t1 is identical to life L2 at t2 ≡ Organism O1 animated by L1 at t1 is identical to Organism O2 animated by L2 at t2.

For this criterion to be useful for present purposes, however, we need to know under what conditions a human animal’s life persists, i.e. what it is for a life L1 to be identical to a life L2. And indeed, Olson offers a way to determine whether or not a life at t1 is the same as a life at t2, at least for organisms that have a brainstem or an organ of maintenance that controls their life. This criterion does not involve reference to the animal itself. Instead, it specifies the persistence conditions of a life in terms of the brainstem controlling that life. Olson thinks that the brainstem is “essential to you, for without it there is no…life and no living organism at all” (Olson 1997, 140). As I will shortly argue, by “essential” Olson means that the brainstem is not just necessary but also sufficient for the persistence of an animal’s life and thus for the persistence of a human animal. The basic idea that underlies the view is the following. The brainstem controls the life of the human organism. If the controller of a life – the brainstem in the human animal case – ceases to function, then that life is disrupted. Once the biological life of the organism is disrupted, the organism ceases to exist. Furthermore, as long as the controller of a life continues to function, that life persists and the animal survives. These ideas assume that the following principle is true:

(*Conditional*): If an x controls the life of an organism, the persistence of that x is necessary and sufficient for the persistence of that life.

The brainstem is the controller of the human animal’s life. Therefore, the following principle is also true. This principle only applies to organisms that have a brainstem as a control center[[15]](#footnote-15):

(*Control*): Brainstem Brainy1 that controls life L1 at t1 is identical to brainstem Brainy2 that controls life L2 at t2 ≡ L1 (controlled by a brainstem) at t1 is identical to L2 (controlled by a brainstem) at t2.

Thus according to Olson the persistence condition of human animals is given in terms of lives, and the persistence condition of lives of human animals is in turn given in terms of brainstems. One may argue that while the persistence of the brainstem is sufficient for the persistence of a life, it is not necessary for it. There might be a way to sustain the life through a brainstem change. This would be a charitable reading of Olson and as I will shortly show, it seems consistent with parts of his discussion. However, I will argue that Olson’s commitment to the sufficiency claim also commits him to the necessity claim: if the brainstem is sufficient for the persistence of a life and an organism, then it is also necessary. In other words, he is committed to (*Control*). Thus Olson is committed to the claim that if the brainstem at t1, call it Brainy1, and the brainstem at t2, Brainy2, are not identical, then the life of the organism controlled by Brainy1 and the life of the organism controlled by Brainy2 are not identical. And he is committed to that claim that if Brainy1 is identical to Brainy2, then the life of the organism at t1 is identical to the life of the organism at t2.

(*Control*) and (*Life*) jointly entail the following:

(*Brainstem Condition*): The brainstem Brainy1 that controls L1 at t1 is identical to the brainstem Brainy2 that controls L2 at t2 ≡ Organism O1 at t1 (animated by L1) is identical to Organism O2 at t2 (animated by L2).

(*Brainstem Condition*) consists of a necessity and a sufficiency claim. Olson is committed to both. First, he is clearly committed to the sufficiency claim[[16]](#footnote-16). Olson argues that if an animal is pared down to its head it would thereby survive (at least for a certain time), albeit in a very debilitated form. Given his other commitments, this claim also commits him to the claim that a bare brainstem is a severely debilitated animal. For Olson makes it his point to distinguish between a cerebrum transplant and a whole brain transplant (1997, 45). One of the differences between the two kinds of scenarios is that cerebrum transplant cases support the psychological view of personal identity while whole-brain transplant cases are neutral between it and the biological view. The reason is that in the latter case the brainstem – the controller of the life of the animal – is also transplanted: “the ‘control center’ of one’s autonomic nervous system goes along with the brain in the whole-brain transplant. That is why some think that the entire human organism would get pared down to a naked brain in that case” (1997, 45). This is also the reason that Olson cites to explain why someone’s detached head is a “debilitated but living animal” whereas the body left behind without the head is not a living animal (1997, 133). Since the presence of the living brainstem is the difference that makes a difference, it is a safe assumption that paring down a human animal to its brainstem would have similar results. Thus Olson seems to agree with van Inwagen that “the thing the surgeons removed from your head would not be a mere organ, like a heart or a liver, but instead a radically mutilated but (for the time being at least) living human animal” (1997, 45). And since psychology does not matter for the persistence of human animals, the same conclusion would be reached if a human animal would be pared down to the brainstem. The reasoning behind this view entails that the human animal would go where its brainstem goes. If you transplant a cerebrum from one animal with a functioning brainstem to another animal with a functioning brainstem, you have not changed the location of either animal (Olson 1997, 116). And no organ transplantation destroys the animal as long as its brainstem remains intact[[17]](#footnote-17).

Olson does not directly commit himself to the necessity clause of (*Brainstem Condition*). According to Olson “one survives just in case one’s purely animal functions – metabolism, the capacity to breathe and circulate one’s blood, and the like – continue” (1997, 16). Elsewhere he states that “an animal, or any organism, persists just in case its *capacity* to direct those vital functions that keep it biologically alive is not disrupted” (Olson 1997, 135 my emphasis)[[18]](#footnote-18). These passages teach us that on Olson’s view, the *capacity* to direct the vital functions – and not just the vital functions themselves – needs to be intact throughout an organism’s life for the organism to persist through time[[19]](#footnote-19). This explains why, according to Olson, an instantaneous replacement of one brainstem with another brainstem counts as replacing one animal with another (Olson 1997, 140-141). For in such a case, for a brief instant, the capacity to direct the vital functions is disrupted. One might therefore think that if the capacity to direct the vital functions of an animal remains intact, the animal can survive the replacement of a brainstem. However, the second case Olson considers suggests that he does not accept this, at least not without further qualifications. The second case he considers involves the gradual replacement of the brainstem with an inorganic brainstem. He claims that this replacement does not amount to the survival of the human animal: the resulting being would not even be an animal, because not only does it have a different brainstem, it is an also inorganic one (Olson 1997, 141-142). Since it would not be an animal, a fortiori it would not be the *same* human animal. We can therefore see that Olson thinks that for the brainstem to persist over time, it cannot become inorganic, however gradually. Curiously, Olson does not discuss the possibility of replacing the brainstem with an organic surrogate in such a way that the animal’s life is not disrupted. But we can still draw two inferences from the previous scenarios. First, Olson thinks that the brainstem itself cannot survive a gradual replacement of its parts with inorganic parts. Second, the capacity to direct the vital functions of the animal must be continuous for the animal to survive. Is there anything to suggest that he views the numerical identity of the brainstem as not only sufficient but also necessary for the persistence of the human animal? I believe there is. The following thought experiment should compel Olson to accept the claim: if an Organism O1 at t1 (animated by L1) is identical to Organism O2 at t2 (animated by L2), then the brainstem Brainy1 that controls L1 at t1 is identical to the brainstem Brainy2 that controls L2 at t2.

Take the sufficiency claim that Olson is committed to: if the brainstem Brainy1 that controls L1 at t1 is identical to the brainstem Brainy2 that controls L2 at t2, then Animal A1 at t1 (animated by L1) is identical to Animal A2 at t2 (animated by L2). This means that if we take out a functioning brainstem and put it on life support – say a vat – the animal survives, albeit in a very mutilated form. We can use this admission to introduce a non-symmetric fission case[[20]](#footnote-20). At t1 we have the fully functioning brainstem, Brainy1, in a human animal, Ori. At t2, Ori receives another brainstem, Brainy2, which fully controls its life functions along with Brainy1. We can suppose the life functions are overdetermined by two brainstems. Note that as it stands, the description is neutral with respect to the persistence facts. It doesn't matter what happens at t2, e.g. whether there is only one animal in that region or two overlapping animals controlled by two brainstems. We can instead focus on what happens at t3: at t3 Brainy1 is removed and put into a life-supporting vat, but the remaining animal, call it Ori-minus, survives because at no point does the capacity to direct its life stop, since it still has Brainy2. The problem for Olson is as follows. The sufficiency claim commits him to saying that the original animal, Ori, goes where the original brainstem goes. Therefore, if a brainstem is removed from an animal, the original animal goes with the brainstem. In this case, the original animal goes with Brainy1. But what happens in the current case? There are three options before Olson. I will argue that the first option, which commits him to the necessity claim, is the most feasible one.

First, Olson might claim that since the sufficiency claim commits him to saying that the animal goes with the original functioning brainstem, at t3 the original animal, Ori, is no longer located where Ori-minus is located. Suppose, however, that Olson *rejects* the necessity claim. This means it is possible that Ori is Ori-minus, because it is possible for a human organism to persist through brainstem change. But in this case at t3 the original animal (Ori) would be located both where the original brainstem is (given that Ori goes where the brainstem goes), and where Ori-minus is located (because Ori can persist through brainstem change). Unless Olson thinks that it is possible for one animal to be located at two places at the same time, he should accept the necessity claim, which would rule out this possibility. If the necessity claim is true, then if Brainy1 does not persist, neither does the animal. In this case, Ori-minus at t3 is not identical to Ori at t3 because it no longer has Brainy1. Thus if the necessity claim is true, Olson does not have to answer the worry that Ori is located at two places at the same time, both as Ori’s original brainstem and as Ori-minus. Accepting the necessity claim along with the sufficiency claim would allow Olson to avoid the claim that Ori is located at two disjoint places at once. There are two more options that are available to Olson, and below I will argue that they are unfeasible.

Second, Olson might claim that we should adopt the following persistence conditions. If Brainy1 is not replaced by Brainy2 and there is no living Ori-minus left behind, then the animal goes where the brainstem goes. But if prior to the removal of Brainy1 the animal receives an additional brainstem that together with Brainy1 controls its vital functions, it does not necessarily go where Brainy1 goes but instead stays with whatever brainstem remains attached to the animal and controls the original body parts of the animal. More generally, according to this view x at t1 can persist as a bare brainstem at t2, but only if there is no better candidate at t2 for being x. Moreover, if any y shares a brainstem with x and is connected to it in the right way (casually, spatiotemporally, or what have you), y is a better candidate for being x than a bare brainstem. This is the case even if the brainstem y shares with x is not the brainstem that x originally started out with. This view amounts to a rejection of the necessity claim: it is possible for an animal to have numerically distinct brainstems over time. One could argue that this second option would allow Olson to keep a *qualified* version of the sufficiency claim: if the brainstem Brainy1 that controls L1 at t1 is identical to the brainstem Brainy2 that controls L2 at t2, then Organism O1 at t1 (animated by L1) is identical to Organism O2 at t2 (animated by L2), *ceteris paribus*. The ceteris paribus clause is added because under some circumstances, i.e. if Ori-minus-Brainy1 is continuously alive and is connected to Ori at t1 in the right way, the claim is not true.

There are two problems with this suggestion. To begin with, the ceteris paribus clause might give too much leeway to those who reject the sufficiency claim in the first place. An opponent of the sufficiency claim might argue that the ceteris paribus clause entails that the persistence of the brainstem is not a necessary and sufficient condition for the persistence of a single life. This opponent would argue that the reason Ori-minus persists despite a change in its brainstem is that its life continues. But in this case, the identity of a brainstem over time comes apart from the persistence of a life over time and is thus neither necessary nor sufficient for the persistence of a life. Furthermore, the persistence criteria offered by this second option do not merely push Olson’s view towards a closest continuer account of human persistence, but make the persistence conditions highly disjunctive. Closest continuer theories usually take the form of specifying the criterion of identity through time as a condition that in some sense admits of degree, e.g. psychological continuity and connectedness. Such theories may be motivated because they are attempts to reconcile the following intuitions: (i) the condition is sufficient for persistence; (ii) when both z and y have a good claim on the basis of the condition to be x, the one that satisfied the condition to a higher degree has the better claim to identity. Such a closest continuer theory results from allowing a property that is sufficient for identity to be gradeable. But the theory here is not a closest continuer theory. If it were, the problem with the criteria conditions offered by the second option would be benign, since any material theory about human beings that does not avoid temporal parts can be pushed toward a closest continuer account of human persistence[[21]](#footnote-21). Rather, the second option offers a disjunctive persistence condition that takes an intuitively sufficient property for identity and in the face of counterexamples *disjoins* it with something else. This way of addressing counterexamples is ad-hoc in a way that familiar closest continuer theories are not[[22]](#footnote-22). For closest continuer theories of persistence are not the result of adding extra disjuncts to a persistence condition, but merely admit that the relation that determines survival can be gradeable (for instance: psychological continuity). By contrast, the present theory is the result of adding disjuncts to the persistence conditions themselves in order to avoid counterexamples[[23]](#footnote-23).

The third option available to Olson is to offer the following reading of the scenario: Ori does not survive. But this seems absurd. This means that at t3, despite having two good candidates for being the original animal, and despite the life functions of both brainstems continuing, the original animal ceases to be. Moreover, this would also imply that the sufficiency condition does not hold. For despite the original brainstem remaining intact throughout the process, the animal ceases to exist. And given that division does not clearly disrupt the process of that life, Olson cannot say that Ori does not survive at all. Furthermore, this response also seems antithetical to the motivation for the brainstem view, namely that we can specify necessary and sufficient conditions for the persistence of an animal in terms of the persistence of its brainstem. It is also important to note that a symmetric fission case would be a problem for any theory of persistence. In such cases b and c stand in relation R to a, and R is thought to be sufficient for identity. Thus both b and c seem to be identical to a. But it seems implausible to treat the present case as a symmetric fission case, given that one candidate is a brainstem in a life-supporting vat and the other candidate is a fully functioning animal. The brainstem in a life-supporting vat presumably does not stand in the same relation to Ori as a fully functioning animal. One could find the view that Ori survives as Ori-minus plausible and one could also understand the view that Ori survives as the brainstem. But if a view entails that the two are equally good candidates for being Ori, we have a good reason to doubt that view.

 All of these options seem to be implausible. At this point, one might want to simply reject (*Brainstem Condition*). However, if Olson is committed to the sufficiency claim, as it seems he is, this option is not open to him. For the only interpretation of the scenario that genuinely respects the sufficiency claim (brainstem persistence is sufficient for animal persistence) is the first reading. However, this reading also entails that the necessity claim (brainstem persistence is necessary for animal persistence) is true. On the other two interpretations of the scenario the sufficiency claim also has to go, along with the necessity claim. Thus a plausible view that respects the sufficiency claim should also accept the necessity claim. In what follows I will treat Olson’s position as if he is also committed to the necessity claim. If the reader believes he is not committed to such a claim, she should treat the following discussion as a discussion of Olson\*, at least when it concerns the necessity clause of (*Brainstem Condition*).

As we have seen, Olson does not give an explicit argument for (*Brainstem Condition*). What follows is a charitable reconstruction of an argument that can be gleaned from various points scattered in Olson's discussion[[24]](#footnote-24):

(1) Life L1 at t1 is identical to life L2 at t2 ≡ Organism O1 animated by L1 at t1 is identical to Organism O2 animated by L2 at t2. (*Life)*

(2) There is a functioning brainstem B1 that controls the life of the human animal.

(3) If an x controls the life of an organism, the persistence of that x is necessary and sufficient for the persistence of that life. (*Conditional*)

(4) Therefore, brainstem B1 that controls life L1 at t1 is identical to brainstem B2 that controls life L2 at t2 ≡ L1 (controlled by a brainstem) at t1 is identical to L2 (controlled by a brainstem) at t2. (*Control*)

 (5) Therefore (by transitivity from (*Life*) and (*Control*)), brainstem B1 that controls L1 at t1 is identical to brainstem B2 that controls the life L2 at t2 ≡ Organism O1 at t1 (animated by L1, controlled by B1) is identical to Organism O2 at t2 (animated by L2, controlled by B2). (*Brainstem Condition*)

In the next section I will show that the argument (1)-(5) (henceforth *Brainstem Argument*) fails. I will do this by offering two more thought experiments. The first one attacks (*Control*), i.e. the idea that the persistence of a brainstem over time is necessary and sufficient for the persistence of a life over time. This thought experiment also undermines (*Conditional*), i.e. the idea that if x controls the life of an organism, the persistence of x over time is necessary and sufficient for the persistence of that life over time, since it presents a case in which the conditional's antecedent is true but its consequent is false. The second thought experiment shows that ‘life’ is ambiguous between at least two different notions. The disambiguation that renders (*Control*) initially plausible renders (*Life*), i.e. the idea that the identity of a life over time is necessary and sufficient for the identity of an organism over time, implausible. And the disambiguation that renders (*Life*) initially plausible renders (*Control*) implausible. If that is the case, there is an ambiguity involved in the inference that established (*Brainstem Condition*). On no disambiguation are all premises of the argument true, so the argument is unsound.

Thought Experiment 1: The Story of Stemmies

Suppose a brilliant scientist wants to replace a human’s brainstem. In order to keep the human alive, she transplants a second brainstem, Stemmy2, into the human while keeping the first brainstem, Stemmy1, functioning. At time t1 there is only one brainstem, Stemmy1, which controls the vital functions of the animal. Stemmy2 comes to replace the first brainstem by gradually taking over the human’s vital functions, which at time t2 are overdetermined by two brainstems. At t3 Stemmy1 no longer functions (and cannot be reanimated) and the body that was originally controlled by Stemmy1 is now controlled by Stemmy2, which gradually came to replace Stemmy1[[25]](#footnote-25).

The thought experiment will shed light on the following problems, which I will discuss in detail in the following paragraphs. First, the first stage of the thought experiment (taking place at t2) will show an inconsistency in Olson’s account: (*Control*) and *Jealousy* are incompatible[[26]](#footnote-26). If they are, Olson needs to choose between them. If he chooses *Jealousy*, then the controller of a life and the life it controls can come apart. If that is the case, then (*Conditional*) is false because in some cases its antecedent is true, i.e. brainstem B1 controls the life of an organism at t1, but its consequent is false, i.e. the persistence of B1 is not necessary and sufficient for the persistence of that life. If (*Conditional*) is false, the argument for (*Control*) collapses. Second, I will introduce a revised (*Brainstem Condition*) and show that it, too, cannot escape this criticism. Third, the last stage of the thought experiment (taking place at t3) will show that the life of an organism and the brainstem that controls that life can indeed come apart. This will undermine (*Control*) not by way of pointing to the incompatibility between it and *Jealousy*, but by directly showing that we would have no good reason to believe it even if it were consistent with *Jealousy*. I will now go over these points in due order.

The thought experiment uses the claim that any biological organism can only have one life at a time to show that a human animal’s having the same brainstem and a human animal’s having the same life can come apart. (*Control*) concerns the relation between brainstems and lives, and as such is detachable from worries about overlapping animals. This scenario poses the following problem for Olson’s view. At t2 there are two brainstems that control the vital functions of the same particles-arranged-animal-wise[[27]](#footnote-27). Olson, however, must claim that at t2 there are two lives in that region of space. For according to (*Conditional*) if a brainstem B1 controls life L1 and B2 controls life L2, then the identity of B1 at t1 and B2 at t2 is necessary and sufficient for the identity of the life L1 at t1 and L2 at t2. One of the brainstems that controls the life at t2 in the thought experiment is the same as the brainstem that controls it at t1, namely Stemmy1. However, at t2 a second brainstem is introduced. Stemmy2 did not control L1 at t1. Therefore, Olson must claim that transplanting a second brainstem into the original animal multiplies the life at t2. In other words, at t2 there is a life that is identical to L1, and a second life controlled by Stemmy2, which is distinct from L1.

The activity of the particles, call them the xs, constitutes life L1 at t2, and the activity of the ys, which largely overlap the xs, constitutes another life L2 at t2. Thus at t2 two lives significantly overlap. However, this substantial overlap contradicts not only *Jealousy*, which rules out any kind of overlap, but also *Weak Jealousy*, according to which Kind K is jealous iff (if the activity of the xs constitutes an instance of K, k1, at t, then the activity of no ys that largely overlap the xs can constitute another instance of K, k2, at t, unless one of k1 and k2 is subordinate to the other at t).

 If Olson wishes to respect *Weak* *Jealousy*, he must admit that at t2 the xs and the ys in fact only partake in one life. Otherwise, Olson must claim that most of the particles in that region of space belong to two lives at exactly the same time without one being subordinate to the other. Thus if Olson wishes to respect *Weak* *Jealousy* he cannot maintain (*Control)* as the criterion of identity of a life over time. If, on the other hand, Olson wishes to accept (*Control*), then given that there are two brainstems at t2, he has to say that there are two lives at t2 constituted by the activity of largely overlapping particles[[28]](#footnote-28). Either (*Control*) or *Weak* *Jealousy* has to go and Olson must choose between them. Call this *Dilemma*. Obviously enough, there are two ways out of *Dilemma.* If Olson thinks that *Weak Jealousy* is more important than (*Control)*, then he has to say that at t2 there is one life overdetermined by two brainstems. Since he also endorses (*Life*), then he must claim that there is one human animal at t2. However, if he thinks that (*Control)* is more important, he must give up the view that life is necessarily a jealous event and admit that there are two lives at t2 in the present scenario. The human animal at t1 was animated by life L1, which was controlled by Stemmy1. At t2, before the transplantation of Stemmy2 into that animal, Stemmy2 was a radically mutilated animal. So the life L2 controlled by Stemmy2 is not identical to the life L1 controlled by Stemmy1. Thus at t2 there are two distinct animals with two distinct lives. Therefore, at t2 there are two human animals.

 One might think that another complication arises from the grammar of (1)-(5). The argument uses the definite description ‘the brainstem that controls L1’. This is problematic either for the thought experiment or for the formulation of Olson’s argument. For, as I have already mentioned, the grammar of (*Brainstem Condition*) rules out animals with more than one brainstems at a time. Either the thought experiment does not get off the ground, or the argument should be revised. I think that the thought experiment is not implausible[[29]](#footnote-29). We might therefore want to revise (*Brainstem Condition*)*.* One might suggest the following revised condition:

 (*Brainstem Condition\**) There is a brainstem B such that B controls both the life L1 of Animal A1 at t1 and the life L2 of Animal A2 at t2 ≡ Animal A1 at t1 (animated by L1) is identical to Animal A2 at t2 (animated by L2).

This condition allows for an animal to have more than one brainstem at a time. However, this condition is inconsistent with the transitivity of identity. Consider the present thought experiment. At t1 Animal has brainstem Stemmy1, at t2 it receives another brainstem, Stemmy2. According to the criterion Animal is not multiplied because it receives another brainstem. At t3 Stemmy1 is destroyed and Animal remains with Stemmy2. The criterion entails that Animal at t1 is identical to the animal at t2 because they share a brainstem. For the same reason the animal at t2 is identical to the animal at t3. We should then expect that Animal at t1 is also identical to the animal at t3 because identity is transitive. However, Animal at t1 and the animal at t3 do not share a brainstem. Therefore, they cannot be identical.

 We can remedy the aforementioned problem with the following fix:

 (*Revised Brainstem Condition*) Animal A1 at t1 (animated by L1) is identical to Animal An at tn (animated by Ln) ≡

 ∃x (x is a brainstem that controls both L1 of A1 at t1 and L2 of A2 at t2)

 ∃y (y is a brainstem that controls both L2 of A2 at t2 and L3 of A3 at t3)

 ...

 ∃z (z is a brainstem that controls both Ln-1 of An-1 at tn-1 and Ln of An at tn)

This criterion preserves the transitivity of identity. It also allows an animal to have more than one brainstem at a time. However, this criterion does not help Olson against the concern raised by *Dilemma.* To see why imagine that Stemmy2 previously belonged to another human animal, Animal2. According to the view proposed by Olson, an animal pared down to its brainstem is a severely mutilated human animal. Thus at no point did Stemmy2 cease to be Animal2. Allowing that an animal can have two brainstems at a time is of no help to Olson here. For if he claimed that there is only one animal at t2, he would also have to say that Stemmy2 ceased to exist - despite being a living (albeit mutilated) animal - as soon as it was transplanted into Animal: something can cease to exist by coming to be surrounded by sustaining tissues[[30]](#footnote-30).

 It seems, then, that even the most charitable revision of (*Brainstem Condition*) entails that there are two largely overlapping animals at t2 in this scenario; one controlled by Stemmy1 and the other controlled by Stemmy2. This means that two organisms share a cerebrum and therefore their entire stream of consciousness. Olson may not think that this is such a bad consequence, for he thinks that two organisms can share a brain and that therefore two people can share thoughts[[31]](#footnote-31). However, his discussion of conjoined twins only requires him to give up *Jealousy*. The current scenario would also force Olson to give up *Weak Jealousy* if he favors (*Control*). For this is a case in which the two animals share all their parts apart from their brainstems.

According to the third step in our thought experiment at t3 only Stemmy2 survives. Therefore, at t3 we know that there is only one life and thus one animal in that region. The life of the organism at t3 is not controlled by Stemmy1. If (*Control*) is true, the life at t3, L2, is distinct from L1. If that is the case, then by (*Life*) it follows that the original animal does not survive and the animal at t3 is a numerically distinct animal from the animal at t1.

If we take into consideration what happens at t3, we have a reason to reject (*Control*) that is independent from the incompatibility between (*Control*) and *Weak Jealousy*. Recall that according to (*Life Principle*) a life is a self-directing and non-intermittent event. When Stemmy2 was added to the organism whose life functions were thus far controlled by Stemmy1, the event (i.e. the life) in the region was not disrupted. Therefore, between t1 and t3 the life in the region was not disrupted. We have a positive reason to believe that there is no disruption of life in the present case, since the animal has the brainstems in temporally overlapping periods. Disruption would at least require an instant t\*, in which there is no capacity to sustain life. But then it seems that the claim that lives are self-directing events is compatible with the claim that lives can persist through a change of controllers: although Stemmy1 is not numerically identical to Stemmy2 at t3, the event in the region was not disrupted.

The thought experiment shows that a life may be continuous without the controller of the life being the same over time. Furthermore, it shows another way of continuously having a brainstem that does not involve gradual part-by-part replacement of the original brainstem with an inorganic replacement. Namely, there can be a replacement of one brainstem for another with a temporal overlap. The overlap ensures that there is no gap in the life. This scenario helps us draw some useful distinctions that are obscured by Olson’s original scenario of gradually replacing the brainstem with an inorganic surrogate: for it allows us to see how a brainstem replacement is possible without rejecting Olson’s requirement that the brainstem be organic. We can thus respect the intuition that a brainstem – just like any other part of the animal – should be organic in order to properly be integrated into the life of the animal. The only reason I can see for resisting my conclusion is antecedent commitment to (*Control*). But it seems to me that there is no independent reason to accept (*Control*), and the thought experiment I just presented provides ample reason to abandon it.

Complicating Matters: Another Life Principle

 In this section I will introduce another characterization of a life, which can be extracted from additional comments that Olson makes (in places that do not directly discuss the term). While the previous characterization of a life is concerned with what a life is, the new principle shifts the focus to the persistence conditions of a life. The discussion will show that the term ‘life’ which figures in (*Control*) and in (*Life*) is ambiguous. No disambiguation of the term supports all the premises at the same time. Specifically, on no disambiguation are both (*Control*) and (*Life*) plausible. (*Life Principle*) is at least prima facie plausible as a criterion for distinguishing living objects from non-living ones[[32]](#footnote-32). However, this criterion is only plausible for a synchronic account of life, that is, for what counts as a living thing at a time, rather than over time. While this may be the thought that makes (*Control*) seem plausible, it is clearly unacceptable as an interpretation of ‘life’ as it figures in (*Life*). I will first discuss the two disambiguations and then examine how they affect Olson’s argument.

According to Olson, mere spatiotemporal continuity between an object O1 at t1 and an object O2 at t2 is not sufficient for O1 to be identical to O2 (1997, 150). He agrees with Wiggins that there is no such thing as spatiotemporal continuity in general, but only relative to a concept (Olson 1997, 151). For instance, suppose the cerebrum of an animal is transplanted into another animal, while the brainstem stays behind. Both the cerebrum and the brainstem are in some sense spatiotemporally continuous with the original animal. But since they cannot both be identical to it, we need to go beyond mere spatiotemporal continuity if we want to know their persistence conditions. In addition, we need to know under what substance concept the examined object falls in order to know what changes it can undergo (Olson 1997,151). O1 and O2 need to fall under the same substance concept to be identical. We can revise (*Life Principle*) to accommodate this idea:

(*Revised Life Principle*): Life L1 at t1 = Life L2 at t2 iff L1 at t1 and L2 at t2 are jealous, self-directing, self-organizing, non-intermittent biological events with a metabolism and a natural boundary and are spatiotemporally continuous and their owners fall under the same substance sortal. [[33]](#footnote-33)

(*Life Principle*) does not explicitly state that a life belongs to an organism, but one can argue that this claim is entailed by the definition, since a life always belongs to an organism. By comparison, (*Revised Life Principle*) places a further constraint on the identity of life over time: a life L1 at t1 and a life L2 at t2 cannot be identical unless they are spatiotemporally continuous and are owned by objects that fall under the same substance sortal[[34]](#footnote-34).  How specific must that substance sortal be? Presumably, the organism O1 at t1 and the organism O2 at t2 must be not only of the same kingdom, e.g. Animalia, or class, e.g. Mammalia, or even family, e.g. Hominidae, but also of the same species, e.g. homo sapiens. The reason is that Olson thinks we are not just animals, but human animals and as such have the persistence conditions of human animals[[35]](#footnote-35). A human cannot cease to be human without ceasing to exist[[36]](#footnote-36).

 (*Revised Life Principle*) does not merely introduce a restriction to (*Life Principle*). It introduces a new characterization of a life, which applies to a life over time rather than at a time. One could argue, then, that this principle of life is likely to be more useful when determining the persistence of organisms.

Since (*Life*) specifically connects the notion of a life with the notion of the human animal, (*Revised Life Principle*) seems appropriate as the disambiguation of the notion of a life that figures in it. But (*Revised Life Principle*) cannot be the right disambiguation of the notion of a life that figures in (*Control*). (*Control*) tells us that sameness of the controller of an event is necessary and sufficient for sameness of the event over time. This criterion makes no reference to organisms or substance sortals. It is only meant to give us a way to identify an event over time. Thus (*Life Principle*) is the appropriate disambiguation of the term ‘life’ as it figures in (*Control*): if life is a self-sustaining, self-directing, non-intermittent metabolic event, it seems at least prima facie plausible that in order for event E1 at t1 and event E2 at t2 to be the same events, their controllers too need to be identical. As we have seen, the previous thought experiment should already make us skeptical of this claim, since it shows that a human animal’s having the same brainstem and a human animal’s having the same life can come apart. However, if there is some initial plausibility to (*Control*), then the notion of a life that figures in it is likely to be the one that occurs in (*Life Principle*). In the next section I will present another thought experiment. I will then examine it according to (*Life Principle*) and then according to (*Revised Life Principle*). The discussion will show that there is an ambiguity in *Brainstem Argument*.

Thought Experiment 2: Betty and the Chimp

Suppose that at time t1 there is a human animal called Betty. Betty is a fully functioning human animal with a completely regular human form: she has human arms and legs, a human digestive system and so on[[37]](#footnote-37). Suppose that a brilliant scientist takes Betty’s brainstem and transplants it into the brainstemless body[[38]](#footnote-38) of an animal of a different species, say, a chimpanzee. Call this pre-surgery body Chimp-minus[[39]](#footnote-39). By t2 the original brainstem that was once in Betty is fully integrated into the life processes of Chimp-minus and controls the vital functions of Chimp-minus. The original chimpanzee’s brainstem is destroyed before Betty’s brainstem is transplanted into Chimp-minus. Is the animal at t2 human in virtue of having a human brainstem, or non-human in virtue of having belonged to a different species at t1? According to (*Brainstem Condition*) sameness of brainstem is necessary and sufficient for sameness of the animal over time. Therefore, if the argument for (*Brainstem Condition*) is correct, the animal consisting of Betty’s brainstem and Chimp-minus at t2 is the original human animal, i.e. Betty.

I will examine this scenario according to each disambiguation of the term ‘life’ as it figures in the argument. According to the first disambiguation the term ‘life’ should be understood according to (*Life Principle*). This understanding of the term seems plausible especially as an explanation of what makes something a living rather than an inanimate thing. The second disambiguation of the term is more robust and includes not just the distinction between living and non-living things, but also the differences between various kinds of living things. The upshot of the discussion is that the disambiguation of ‘life’ that supports (*Control*) does not support (*Life*) and the disambiguation of ‘life’ that supports (*Life*) does not support (*Control)*.

*First Disambiguation*:

 According to (*Life Principle*) x is a life iff x is a jealous, self-directing, self-organizing, non-intermittent biological event with a metabolism and a natural boundary. This principle not only captures under what conditions a life exists, but also seems apt to capture synchronic identity criteria of a life; it gives criteria of something being a life rather than criteria of identity for a life over time. It is this principle that lends initial credibility to (*Control*). For on the face of it, it is somewhat plausible that a life is individuated by its controller – by the thing that makes it autonomous (self-directing, self-propagating etc.).

Although we have seen that the persistence of a self-controlling event does not entail the persistence of the same controller, it is understandable why one might think that it does. Now consider time t2 in the thought experiment. Suppose that the argument for (*Brainstem Condition*) goes through and that we interpret all the premises in the argument according to (*Life Principle*), which makes (*Control*) somewhat plausible. We should then say that Betty survives as the animal composed of Chimp-minus and Betty's brainstem[[40]](#footnote-40). The reason is that the controller of the original organism at t1 is now the controller of the organism at t2. However, this seems to go against the intuition that a human animal cannot, for instance, survive being transformed into the shape of a dog or a chimp[[41]](#footnote-41).

Olson could argue that the resulting organism is merely a variant on a brainstem in a vat. The vat in this case is Chimp-minus, and it supports the mutilated human animal. We should not assume that Chimp-minus becomes a proper part of Betty, much like we would not suppose a vat would. The problem with this response is that in the case of Chimp-minus we have a biological “vat” that is integrated into the same life as the brainstem. Since Chimp-minus partakes in that life in an appropriate way, it is a proper part of the organism whose life it is. In the case of the non-biological vat the claim that it merely provides life-support to the mutilated animal seems justified. The vat does not partake in the metabolism of the animal (Olson 1997, 134-135). Therefore, it fails to be a part of its life even in the sense specified by the first disambiguation of the term. In contrast, Chimp-minus and the original brainstem depend on each other in the appropriate way: they are both organic and partake in the same metabolism.

Moreover, if Chimp-minus is merely a life-supporting vat, yet participates in the metabolism controlled by the brainstem in an appropriate way, it seems that sameness of brainstem and sameness of life come apart. Chimp-minus and the brainstem are integrated into one biological life. If Olson insists that Chimp-minus is merely a vat, yet admits that since it is organic its parts are controlled by the brainstem in the right way, he undermines (*Life*). For on this construal of the situation the following holds. Sameness of brainstem ensures sameness of a life: the organic “vat” and Betty share a life, for Chimp-minus is wholly organic. However, sameness of a life does not ensure sameness of organism: although Chimp-minus and Betty share a life process, they do not form one individual organism.

Olson might respond by appealing to what common sense might have us say in this context, namely that at t2 the animal consists of two parts: a human part and a non-human part[[42]](#footnote-42). The brainstem controls the life functions of Chimp-minus and the particles that compose Chimp-minus partake in the life controlled by the brainstem. There is only one life in which Chimp-minus and the brainstem partake. Therefore, there is only one resulting animal at t2. By acquiring Chimp-minus as a proper part, Betty became a hybrid animal. But this is already admitting too much on Olson’s behalf. Remember that according to (*Revised Life Principle*) an animal cannot survive if it does not fall under the same substance sortal at t1 and at t2. Since the substance sortal must be very specific, i.e. human animal, a human animal cannot become a hybrid animal[[43]](#footnote-43). Thus if Olson claims that Betty survives the experiment as a hybrid animal he must reject (*Revised Life Principle*). Since this is the principle presupposed by the characterization of a life figuring in (*Life*), in that case we are left with no reason to accept (*Life*) and thus (*Brainstem Condition*).

Furthermore, even if we only appeal to (*Life Principle*) we cannot justify a move that treats the resulting animal as hybrid. If the animal at t1 can be part non-human at t2, in virtue of what does the non-human part retain its non-human status? The explanation for its retention of non-human status cannot appeal to the brainstem, for it does not have its original brainstem. It is unclear, on the brainstem view, in virtue of what we can say that the resulting organism has a human part and a non-human part. If Chimp-minus is identified at t2 as the non-human part of an organism in virtue of something other than a brainstem at t2, e.g. on the basis of DNA or the fact that it had a non-human brainstem at a time earlier than t2, then the present account fails to give us necessary and sufficient conditions for sameness of animals over time.

We can see that this disambiguation of the term ‘life’ undermines (*Life*). For if (*Life*) is the correct criterion for human persistence, it should include reference to more than just a life (as a process), e.g. it should specify a substance sortal. I will now examine the second disambiguation of ‘life’. The second disambiguation makes (*Life*) seem plausible. However, it also renders (*Control*) implausible.

 *Second Disambiguation*

 The second disambiguation of the term ‘life’ is (*Revised Life Principle)*: Life L1 at t1 = Life L2 at t2 iff L1 at t1 and L2 at t2 are jealous, self-directing, self-organizing, non-intermittent biological events with a metabolism and a natural boundary and are spatiotemporally continuous and animate organisms that fall under the same substance sortal. This principle includes reference to substance sortals. More specifically, one of the conditions that need to be met for an organism to be identical to another organism at a later time is that they fall under the same substance sortal. This means that a human animal cannot survive changes that would turn it into a non-human animal. The life of a human animal is necessarily human. This seems to be the thought that can motivate (*Life*). If (*Life*) is understood in a way that includes reference to substance sortals in an account of persistence, it is more restrictive and therefore seems more suitable as a criterion of the persistence of organisms. Furthermore, we have seen that (*Revised Life Principle*) is not merely a synchronic condition of life, but a diachronic one. It specifies persistence conditions rather than conditions for something to count as a living object at a time.

Suppose we understand the term ‘life’ as it figures in (*Life*) in the way specified by (*Revised Life Principle*). This would make (*Brainstem Condition*) inconsistent with (*Life*). Consider again our story about Betty and Chimp. According to (*Brainstem Condition*) the identity of the brainstem is necessary and sufficient for the identity of the organism over time. So Betty survives the surgery. However, according to (*Life*) she does not survive the surgery. For under the current disambiguation of the term ‘life’ as it figures in (*Life*) L1 and L2 can only be identical if they belong to an individual that falls under the same substance sortal at t1 and at t2. Presumably, the resulting animal in the experiment is not human (at best, as we have seen, it is a hybrid). Therefore, the resulting animal is not Betty.

Remember that the reason (*Brainstem Condition*) seemed correct was that we accepted both (*Control*) and (*Life*). But (*Control*) cannot be true on this second disambiguation of ‘life’. It is highly implausible that the identity of a brainstem over time is necessary and sufficient for the identity of a life over time understood as the life of an organism that falls under a certain substance sortal. According to (*Control*) and the disambiguation that contributes to its plausibility, Betty survives the surgery (as an animal that has Chimp-minus as a proper part). However, according to (*Life*) and its proper disambiguation, Betty does not survive the surgery. Thus we see that (*Control*) and (*Life)* yield incompatible results when applied.

Conclusion

The previous considerations show a few problems with the argument for (*Brainstem Condition*). First, as the story about Stemmies shows, the notion of sameness of brainstem and the notion of sameness of life can come apart. Understood as a metabolic, self-sustaining and self-directing event, a life can continuously persist without the persistence of its original brainstem. Second, the story about Betty and Chimp shows that if we understand the term ‘life’ in the way specified by (*Life Principle*), (*Control*) may seem plausible but (*Life*) is undermined. On the (*Revised Life Principle*) disambiguation of the term ‘life’, (*Life*) may seem plausible, but at the expense of rendering (*Control*) implausible. In other words, there is no disambiguation of the term ‘life’ that makes both the (*Control*) premise and the *(Life*) premise true. The argument for (*Brainstem Condition*) is therefore unsound.

Given the problems that face (*Brainstem Condition*), we might be advised to look elsewhere for the persistence conditions for human animals. As the preceding considerations show, brainstem identity over time is unlikely to be a feature that is included in the criteria of human persistence[[44]](#footnote-44).

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1. Forthcoming in A*nimals. New Essays*. Munich: Philosophia Verlag. [↑](#footnote-ref-1)
2. According to Olson “We are essentially animals if we couldn't possibly exist without being animals… Whether our being animals implies that we are essentially or most fundamentally animals depends on whether human animals are essentially or most fundamentally animals. If the animal that you are is essentially an animal, then so are you…. Most philosophers think that every animal is essentially and most fundamentally an animal, and I am inclined to agree” (2003, 320). While most animalists accept the essentiality claim, one can be an animalist without it. See Johansson (2007, 196) and Olson (2003, 320). [↑](#footnote-ref-2)
3. Olson uses “animal” and “organism” interchangeably and so will I. [↑](#footnote-ref-3)
4. According to Snowdon, “there is no real controversy…over the claim that certain continuities to do with an animal’s body are sufficient for the persistence of the animal. If the body of an animal remains intact and sustains the processes we call ‘life’, the animal in question has survives. Animalism seems to imply that such conditions are sufficient for our survival” (1995, 71). Snowdon does not commit himself to the thesis that life is necessary for the persistence of the animal (1995, 71). Thus Snowdon does not give us persistence conditions of the human animal in terms of necessary and sufficient conditions. He at best accepts the sufficient condition that if the body of an animal remains intact and supports the life processes, the animal survives. Van Inwagen (1990) thinks that the persistence of the organism has something to do with the continuation of its life. However, he does not give necessary and sufficient conditions for the persistence of that life. Wilson (1999) gives persistence conditions for the different kinds of individuals he distinguishes. His account of human persistence is close to van Inwagen’s and therefore also to Olson’s. [↑](#footnote-ref-4)
5. One might initially be tempted to think that van Inwagen (1990) is committed to an account similar to Olson’s. Van Inwagen (1990) claims that life is a criterion for the existence of a composite object, i.e. an organism. And in his discussion he stresses the importance of the organ of maintenance for the survival of an organism. His account, however, is not mainly concerned with *human* animals in particular. Furthermore, while he specifies how we normally individuate a life over time, the account does not amount to a set of necessary and sufficient conditions for the persistence of organisms (van Inwagen 1990, 149-157). Since parts of Olson’s view are influenced by van Inwagen, I will highlight relevant similarities and differences in the footnotes. [↑](#footnote-ref-5)
6. The diagnosis of death is not uniform. For instance, in the UK brainstem death alone equates to the death of the individual, whereas in the USA and many other European countries it is necessary to prove the death of the whole brain, including the brainstem, before establishing the death of the individual (Johnston and Matta, 2003). Presumably, these practices and theories reflect different epistemic criteria of death. [↑](#footnote-ref-6)
7. Reproduction is an element of the account that I will ignore since Olson would agree that an individual organism could survive without the ability to reproduce. [↑](#footnote-ref-7)
8. “Like an army or a totalitarian state, a life imposes ‘total obedience’ upon the materials whose activities constitute it. When a life draws a molecule into itself, it breaks that molecule into smaller pieces and reassembles them according to its needs. After extracting such chemical energy from them as it can, it expels their remains in a less ordered form. Thus, a particle cannot participate in two lives at once, any more than one can serve in two armies at once; and two lives cannot overlap. Unless, that is, one of the lives is subordinate to the other.” (Olson 1997, 137) Here Olson is essentially subscribing to van Inwagen’s characterization of lives and jealousy (see van Inwagen 1990, 89-91). [↑](#footnote-ref-8)
9. This formulation suggests that an organism could be animated by two lives at two distinct times. This would go against the criterion that sameness of life is both necessary and sufficient for sameness of the organism over time. And as I will show, it seems clear that Olson means to embrace this criterion. [↑](#footnote-ref-9)
10. Van Inwagen first referred to this characterization of a life as jealousy. See van Inwagen (1990, 89-90). [↑](#footnote-ref-10)
11. What van Inwagen would think about this is unclear: he claims that although it may seem as if the fusion of two lives allows for two lives to overlap without one being subordinate to the other, it in fact only shows “that it is possible for the vague haloes of influence that surround lives to overlap” (van Inwagen 1990, 89). [↑](#footnote-ref-11)
12. Of course, "greatly" and “largely” are vague terms. For the purpose of the paper it does not matter what exactly counts as a large subplurality of the xs or as great overlap. [↑](#footnote-ref-12)
13. Van Inwagen thinks that a sufficient degree of disruption of life requires more than the life slowing down or freezing. For instance, he claims that it is not clear that the life of a cat ceases when the cat is frozen (van Inwagen 1990, 146). He does think, however, that if the organ of maintenance (the brainstem in the case of the human animal) is destroyed the life of the organism ceases (this would be a clear case in which life is sufficiently disrupted). It should be clear that neither Olson nor van Inwagen is committed to there being a single moment at which the life stops. The point where a life stops can be vague. [↑](#footnote-ref-13)
14. That he intends this to be the condition of organism identity over time is clear from his discussion of how we may reidentify lives at different times to reidentify organisms at different times and that it is not necessary to first identify and reidentify the organism in order to identify and reidentify lives (Olson 1997, 139-140). [↑](#footnote-ref-14)
15. This is how the principle should be understood throughout the paper. The principle can also be modified to accommodate organisms with a control center that is not a brainstem (by replacing “brainstem” with “controller”). [↑](#footnote-ref-15)
16. My reading of Olson’s commitments regarding the brainstem differs from Belshaw’s interpretation (2011). Belshaw thinks Olson is clearly committed to the necessity claim but not to the sufficiency claim. I think Olson is clearly committed to the sufficiency claim and that he implicitly commits himself to the necessity claim. [↑](#footnote-ref-16)
17. The preceding considerations for the sufficiency claim would also be endorsed by van Inwagen, though he has an additional emphasis on composition. According to him the particles arranged headless-body-wise would not compose anything, thus the human animal would not survive brainstem removal (and destruction), even if kept on life support. But a severed head (the important element being the brainstem - the center of maintenance of life) kept on life support would be the same animal as the animal it was severed from. See van Inwagen (1990, 177-181). [↑](#footnote-ref-17)
18. Olson claims that we can make this into a general account of the identity of animals along the following lines: “if x is an animal at t and y exists at t\*, x=y iff the vital functions that y has at t t\* are causally continuous in the appropriate way with those that x has at t” (1997, 135). The two formulations are slightly different. Presumably, however, the capacity to direct the vital functions is included in the appropriate causal continuity mentioned in this formulation. [↑](#footnote-ref-18)
19. Belshaw (2011) reads Olson as being committed to the necessity claim and he then argues that Olson must also be committed to the sufficiency claim. The view Belshaw attributes to Olson is less defensible than the way I interpret Olson (namely, as first being committed to the sufficiency claim). [↑](#footnote-ref-19)
20. Other fission cases that pose a problem for animalism include conjoined twins. This is a problem for animalism in general, but here I am concerned with animal persistence and not with whether or not we are animals. For this reason, the fission case I shall introduce also won't make reference to higher cognitive capacities. [↑](#footnote-ref-20)
21. This is a point made by Zimmerman: “…any materialism concerning human beings that eschews temporal parts can be driven… toward a closest continuer account of human persistence conditions. Such materialists cannot avoid saying that, if there are two simultaneously existing and equally good candidates for being involved in the same Life as some earlier person; then the original person ceases to exist, her Life ends, and two new Lives begin. But if one of the two candidates had been completely absent (destroyed at the point of fission instead of being preserved alive), then the original Life would have continued and the original person would have persisted through the loss of half her brain” (1999, 201). [↑](#footnote-ref-21)
22. Moreover, while Olson does not think that all disjunctive persistence conditions are bad, he does think that they are inappropriate for natural kind concepts that carve at the joints (2013, 92). ‘Organism’, according to Olson, is such a concept (2013, 92). And since he considers ‘human animal’ to be a “natural kind and therefore a substance concept” (1997, 121), he must also think that it is a joint-carving concept. Olson also argues that disjunctive persistence conditions would trivialize Wiggins's notion of substance sortal (1997, 81-85). [↑](#footnote-ref-22)
23. Closest Continuer theories try to deal with a scenario in which there are two candidates for being identical with an object by claiming that when b and c are not equally closely R-related to a, the closest candidate wins. But in the present case R is sufficient when there is no fission, and when there is, it gets trumped by a different relation, R\*. [↑](#footnote-ref-23)
24. This is likely what underlies van Inwagen’s emphasis on the organ of maintenance as a criterion for organism persistence (that is at least initially plausible). However, there are some important differences between their views. For instance, Olson’s view emphasizes that we are human animals and that this is a substance sortal (1997, 36; 121), whereas this consideration does not play any role for van Inwagen. We will see that this emphasis might involve a further complication for Olson’s view. [↑](#footnote-ref-24)
25. This thought experiment is not wilder than Olson’s or van Inwagen’s thought experiments. Belshaw (2011) also mentions such a possibility but does not discuss it in depth and only points to the result of the thought experiment at t3. Importantly, he does not see the significance of, in his words, “the animal [being] doubly supported” by two brainstems. First, his formulation suggests that he simply assumes there is only one animal there at t2. Second, he never discusses the notion of the jealousy of life and so does not consider the significance of what is happening at t2. [↑](#footnote-ref-25)
26. Thus I show not only that the identity of the brainstem over time is not necessary or sufficient for the identity of a life over time, but that (*Control*), which gives us the criterion for the persistence of a life, can even be made incompatible with one of the basic characteristics of a life, namely jealousy. *Weak Jealousy* is arguably of no help here because this is a case in which the overlap is so great that the only non-overlapping parts are the controllers. [↑](#footnote-ref-26)
27. I am using the expression "particles-arranged-animal-wise" because it is metaphysically neutral n the sense that it does not in itself reveal how many animals are present in that region. If I used the term “organism” in the singular here, but Olson did not reject (*Control*) he would have to claim that there are in fact two organism at t2, which share most of their particles. [↑](#footnote-ref-27)
28. This might also allow Olson to claim that the case here is not one of overdetermination: there are two lives – not one – controlled by two brainstems at t2. [↑](#footnote-ref-28)
29. Van Inwagen himself mentions it as a possibility (1990, 202-212). Zimmerman also discusses a similar thought experiment (modifying van Inwagen's original scenario), though for a different purpose (1999). [↑](#footnote-ref-29)
30. This violates the destruction principle, which Olson finds attractive: "you cannot destroy a person merely by surrounding him with sustaining tissues" (Olson forthcoming a, section 3). The same problem applies here to animals rather than to persons. [↑](#footnote-ref-30)
31. See Olson, forthcoming b. [↑](#footnote-ref-31)
32. The underlying thought seems to reflect a functional account of life. For an overview of different accounts of life, including the functional accounts, see Mark Bedau (2007). [↑](#footnote-ref-32)
33. At one point van Inwagen also considers whether spatiotemporal continuity and “material continuity” (continuity of replacement) are jointly sufficient for the persistence of a life (van Inwagen 1990, 149). This criterion – spatiotemporal and material continuity – seems prima facie plausible. In many cases applying the criterion would give us the right results. However, he admits that there are counterexamples to this account of sameness of life over time. Cell division and embryonic growth “raise the question about when we actually *have* a case of Lockean [spatiotemporal and material] continuity” (van Inwagen 1990, 149). Furthermore, metamorphosis (particularly in invertebrates) suggests that two numerically distinct lives may be continuous with each other in a way that respects this kind of continuity (van Inwagen 1990, 150). [↑](#footnote-ref-33)
34. The extent to which spatiotemporal continuity is important might be dictated by the substance sortal under which the object falls. For instance, the spatiotemporal continuity requirements for humans are presumably different from those of amoebas. [↑](#footnote-ref-34)
35. According to Olson “our substance concept – what we most fundamentally are – is not *person*, but *Homo sapiens* or *animal* or *living organism*” (1997, 30). Since Olson thinks that all three concepts are substance concepts, it seems that we should choose the narrowest one, namely Homo sapiens (after all, ‘material object’ is also a substance concept, but Olson would want to say more than that we are most fundamentally material objects). [↑](#footnote-ref-35)
36. Olson thinks that “human animal is a natural kind and therefore a substance concept, and… any animal has the persistence conditions…it has by virtue of being an animal, or by virtue of being an animal of a particular biological species, such as a human animal” (1997, 121). For further similar claims see Olson (1997, 28; 36; 72). [↑](#footnote-ref-36)
37. The expression ‘human form’ is borrowed from Madden (forthcoming). [↑](#footnote-ref-37)
38. Olson does not believe in bodies, but nothing hangs on this; I could have written “particles arranged Chimp-minus-brainstem-wise” instead of referring to Chimp-minus as a body. [↑](#footnote-ref-38)
39. Organ transplantation between species is referred to as xenotransplantation. Research focuses on animal to human transplantation, but the direction of transplantation here is irrelevant. An objection to this example could be that the issue is never a transplantation of the brainstem, and that the brainstem is not just another organ like the heart or the kidneys. However, we should not decide on this issue by appealing to this claim because the issue is precisely whether or not the brainstem is unique in comparison to the other body parts. Furthermore, anyone who takes inorganic brainstems seriously should also take seriously the idea of cross-species brainstem transplants. [↑](#footnote-ref-39)
40. One could argue that this description is plausible, because having a human form is not a necessary condition of belonging to the human species. Therefore, Betty can survive by having Chimp-minus as a proper part. However, here Chimp-minus also does not have the same evolutionary origin as a human animal. [↑](#footnote-ref-40)
41. And as we will see below, this is the rationale underlying (*Life*) [↑](#footnote-ref-41)
42. This would mean that it is possible to create a new kind of animal by transferring one animal’s brainstem into the body of an animal of a different kind. We can already do something similar with plants, namely grafting, a process in which tissues from two different plants are joined together. [↑](#footnote-ref-42)
43. Perhaps the claim that an organism falling under a certain substance sortal cannot become a hybrid animal is less obvious for some lower-order organisms, but it seems plausible for higher-order animals like humans. [↑](#footnote-ref-43)
44. I would like to thank Andreas Blank, Berit Brogaard, Simon Evnine, David Mark Kovacs, Eric Olson, Mark Rowlands, Nick Stang and Amie Thomasson as well as the audiences at the 2014 Joint Session at Cambridge, the University of Pécs and the Mind and Metaphysics Workshop at the University of Miami for comments on drafts of this paper. [↑](#footnote-ref-44)