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Stages of Life: A New Metaphysics of Conceptionism

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Introduction

The aim of this paper is to present a new metaphysics of conceptionism, the view that human beings begin to exist at conception. One of the most influential objections to this view is the twinning argument: because a zygote is divisible into monozygotic twins, a zygote couldn't be trans-temporally identical with a human being, in which case, a human being can't come into existence at conception. In defence of conceptionism, we argue that this objection only shows that the conceptionist, apart from revising the classical logic of identity, must deny endurantism, a metaphysics on which material objects, including zygotes, can be wholly present at different times. The conceptionist, we observe, can, instead, adopt a rival metaphysics of material objects, such as perdurantism, on which material objects are spacetime worms spread out in time as well as space, or exdurantism, on which material objects are wholly present at a given time and persist in virtue of having momentary counterparts at different times. Given the twinning argument, the conceptionist then faces a choice between perdurantist conceptionism and exdurantist conceptionism, and we argue that, apart from commitments beyond the metaphysics of embryology, they should prefer the latter over the former.

The paper is in four sections. The first outlines conceptionism and the twinning objection to that view, presenting it as a paradox. To address this paradox, section 2 summarizes the metaphysics of persisting material objects as a response to another paradox, the paradox of change. Section 3 applies that metaphysics to the metaphysics of monozygotic twinning, where we distinguish an endurantist, a perdurantist, and an exdurantist metaphysics of this biological phenomenon, and we observe that, apart from denying the classical logic of

identity, the endurantist must deny conceptionism, and the conceptionist must then affirm either perdurantism or exdurantism. In section 4, we initiate a cost/benefit analysis of these three metaphysics (anti-conceptionism endurantism, perdurantist conceptionism, and exdurantist conceptionism), and we argue that the conceptionist, apart from commitments beyond the metaphysics of embryology, should prefer exdurantist conceptionism over perdurantist conceptionism.

1. The twinning argument

The ethical value of some biomedical practices is affected by whether they destroy an individual human being. Prominent examples include biomedical research and therapies which utilise embryos. For instance, the permissibility of human embryonic stem cell research is contingent on whether the blastocysts destroyed by pluripotent stem cell extraction are already human beings.[1] This makes central the question of when a human being comes into existence. There are some well-established candidates, each of which maps on to a stage of human embryonic development.

Conceptionism is the view, familiar from various religious traditions, that a human being comes into existence at conception, that is, on completion of fertilization or syngamy, in the form of a one-celled zygote. Another view is that a human being originates as the inner cell mass of the blastocyst, which forms around four to five days after conception, and goes on to develop into what is sometimes called 'the embryo proper'. A third view is that a human

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[1] That the embryo is a human being is one of two standard reasons for protecting it, the other being that the embryo has the potential to become a human being; for further development of this argument, see Holland (2016: 11–31). But in this paper, we concentrate on the view that the embryo is – as opposed to potentially being – a human being, because that's the focus of the metaphysical dispute.

being comes into existence around 14 days after conception, at gastrulation; that is, the process of cellular differentiation into tissue layers, which sees the formation of a basic body plan, and development of a primitive streak.

An influential objection to conceptionism – and a major part of the case for identifying 14 days after conception as the earliest at which a human being comes into existence[2] – is based on the fact that the pre-gastrulation embryo can divide to form monozygotic twins. A standard rendition of this twinning objection invokes transitivity. Suppose an embryo, A, divides, resulting in two monozygotic twins, B and C. Now suppose A is a human being who is numerically identical to B. Any reason for thinking A is B is a reason to think A is C. But if A is B and A is C, then, by transitivity, B is C. This is patently false. So, by *reductio*, the premise that A is a human being who is numerically identical to B, is false.[3] The conclusion reached is that A is identical to neither B nor C.

Before countering the twinning argument, we would point out that it is deceptively simple. In fact, it has been interpreted in a variety of ways. Some have concluded from the argument that zygotes, because they are divisible, aren't even individuals, and so, *a fortiori*, can't be trans-temporally identical with human beings. Van Inwagen argues as follows,

> It seems to me to be most implausible to suppose that the developing embryo is yet an
> organism if it is still at a stage at which monozygotic twinning can occur. Suppose I
> was once a mass of adhering cells that was still capable of splitting into two masses,
> each of which would have developed into an organism that was genetically exactly

[2] A position now so well-established that it has been described as something of an 'established consensus' in bioethics' (Oderberg 2008: 263).

[3] The argument traces back to a passing remark by Geach (1977: 30) and was developed by Anscombe (2005a, 2005b). For an excellent discussion of just how Anscombe's argument should be interpreted, see Rohrbaugh (2014).

like me. Suppose, then, that this had happened. What would have become of me?

Only one answer is even superficially coherent: I should have ceased to exist, and two

new organisms would have been generated out of the cells that had composed me. I

prefer to think that if an embryo is still capable of twinning, then it is a mere virtual

object (van Inwagen 1990: 154)

Similarly to van Inwagen, Devolder and Harris (2007: 153) take the embryo to be an

'irredeemably ambiguous entity, one that defies classification and slips seamlessly between

moral and biological categories' in part because it is divisible. George and Tollefsen put the

argument this way:

Proponents of the argument from twinning against the humanity of the embryo assert

that the potential for division indicates that the embryo does not, while it still can so

divide, possess the intrinsic unity characteristic of a whole distinct organism.

Something potentially two, in other words, cannot really be one. So the suggestion is

that as long as twinning is still possible, what exists is not yet a unitary human being,

but only a mass of cells . . . (2008: 149-50)

But such a conclusion would rule out there being not only zygotes but also amoebae,

flatworms, logs, and nations, all of which are divisible, which is clearly absurd.

Others, such as Ford (1988: 120), Kuhse and Singer (1990), and Smith and Brogaard (2003),

have taken the argument to show that, even though zygotes are individuals, they can't be

trans-temporally identical with human beings. To explore this way of taking the conclusion of

the argument, we need to expand the argument a bit more. Say, for *reductio*, that embryo A is

identical with human being B. Now, possibly, A divides into monozygotic twins B and C. In

such a situation, A is identical with neither B nor C, for the reasons given above. Since A is

possibly distinct from B, A is necessarily distinct from B, and so actually distinct from B.

Thus, zygotes can't be trans-temporally identical with human beings. A further consequence of this argument is that only those who are actually monozygotic twins could have been so.

Finally, still others – such as Finnis (2011), Harman (2007), Marquis (2007), Oderberg (1997, 2008), and Tollefsen (2006) – have taken the argument to show that, though zygotes could be trans-temporally identical with human beings who aren't twins, those human beings who are monozygotic twins aren't trans-temporally identical with zygotes. As Finnis (2011: 290) puts it, 'Twinning is an unusual way of being generated; the relationship between the earlier and the later generated individuals is an unusual form of parentage'. And on the other side, 'What twinning shows is that there are more ways for a human being to go out of existence than by dying' (Oderberg 2008: 269). Bringing these two observations together, on this view, there are two ways in which human life begins, fertilization and monozygotic twinning, and two ways in which human life ends, death and monozygotic twinning. Given this latter consequence, and if embryos matter in the same way that you and I do, then, when monozygotic twinning occurs, it is '*tragic*. For it is the ceasing to exist of someone who matters' (McMahan 2007: 178; emphasis in the original). And so, as Oderberg (1997: 270) observes, it is appropriate for the parents to mourn the loss of their child, that is, the human organism which would have resulted from the zygote that was destroyed in the twinning process.

Which of these is the best interpretation of the twinning argument is open to dispute; nonetheless, for the conceptionist, at least, the twinning argument presents something of a paradox. What we want to do in this paper is to clarify the ways in which the paradox can be resolved. Now, one way of resolving it would be to reject some of the logical principles on which it relies, such as the transitivity of identity, or, for the second interpretation above, the necessity of distinctness, since the twinning argument is meant to present a logical reason for denying conceptionism. But what hasn't been recognised as much as it should have been – notable exceptions being Oderberg (1997), Burgess (2010), and Curtis (2012) – is that all

versions of the argument rest on an implicit metaphysics of material objects, namely, endurantism. So, the conceptionist need not deny any of the logical principles of identity to maintain her view but, rather, may deny endurantism, and use an alternative metaphysics of material objects to understand the persistence of a zygote in the process of becoming a human being. To show this, we will discuss another paradox, the paradox of change, in which context these metaphysics of material objects are typically presented.

2. The metaphysics of persistence

Imagine that there's a candle on the windowsill standing straight in a candle holder at 9am on a summer's day. So, it seems, the candle is straight. But the sun starts to shine brightly, and the candle gets very warm. By 12noon, the candle is bent. So, it seems, the candle is bent. But nothing can be both bent and straight. How is change then possible?

Suppose that material objects are wholly present at different times. Change is explained by an object x having a property F at an earlier time t_1 and a property G at a later time t_2 according to one of the following ways:

- At t_1 <x is F>[4] is true but <x is G> is false, but at t_2 <x is F> is false but <x is G> is true.

- x is F-at-t_1 and x is G-at-t_2.

- x is-at-t_1 F and x is-at-t_2 G.

So, to explain the change the candle undergoes:

- The candle is wholly present at both 9am and 12noon, and <the candle is straight> is true at 9am and false at 12noon, and <the candle is bent> is false at 9am and true at 12noon.

- The candle, wholly present at both 9am and 12noon, has the property being-straight-at-9am and the property being-bent-at-12noon.

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[4] Angle brackets denote 'the proposition that', and so this use should be read as 'the proposition that x is F'.

- The candle, wholly present at both 9am and 12noon, is-at-9am straight but is-at-12noon bent.

These are versions of endurantism, the metaphysics on which the twinning objection depends. But endurantism isn't the only way of accounting for change. Another way is to deny that material objects are wholly present at different times. Instead of enduring, they perdure.

On perdurantism, just as material objects are extended in space, so are they extended in time: just as material objects have spatial parts, so do they have temporal parts, which are momentary objects. Thus, material objects are spacetime worms extended in time in virtue of having temporal parts across different times. Change is then explained by an object having a temporal part at one time, instantiating a certain property at that time, and a temporal part at a later time, instantiating another property, incompatible with the former property at that later time. On this account then, to return to giving a philosophical explanation of the candle's change from becoming straight to becoming bent, the candle has a temporal part at 9am which is straight and a distinct temporal part at 12noon which is bent. But there is, again, another way of accounting for the candle's change, one that seems to combine aspects of both endurantism and perdurantism. Instead of enduring, or perduring, they exdure.

On exdurantism, material objects are wholly present in the present, but they have counterparts, akin to temporal parts, at earlier times, where x is a counterpart of y just in case they stand in a relation of relevant similarity. Change is explained by an object being wholly present at the present and instantiating a certain property at the present, and having a counterpart at an earlier time, instantiating another property, incompatible with the former property at that earlier time. So, to explain the change the candle undergoes, first define a counterpart relation such that x is a counterpart of y just in case there is significant spatiotemporal and causal continuity between x and y. Take the candle at 9am. It is wholly present at that time, and is straight. There is then a sequence of counterparts consisting of momentary stages such that, progressively, each wholly present counterpart is less straight

than its predecessor, until, at 12noon, there is a counterpart that is bent. This view, too, has its problems, as any philosophical view of any interest has, such as its requirement that objects come into and go out of existence every instant; but with the statement of this view, we now have the full complement of three prominent metaphysics of material objects. We turn now to applying these metaphysics to the twinning argument against conceptionism.

3. Three metaphysics of monozygotic twinning

In turning our attention from candles to zygotes and human beings, let's look at the metaphysics of the twinning argument, restated here for convenience:

> Suppose an embryo, A, divides, resulting in two monozygotic twins, B and C. Now suppose A is a human being who is numerically identical to B. Any reason for thinking A is B is a reason to think A is C. But if A is B and A is C then, by transitivity, B is C. This is patently false. So, by *reductio*, the premise that A is a human being who is numerically identical to B, is false. The conclusion reached is that A is identical to neither B nor C.

Straightforwardly, the argument as stated relies on the metaphysics of enduring objects. For, on a metaphysics of temporal parts, one could say either that A is the overlapping of B and C (perdurance),[5] or that B and C share A as a counterpart (exdurance).[6] Let's unpack those suggestions.

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[5] This response is ultimately due to Lewis (1976, 1983) who develops it in connection to a debate with Parfit (1971) over whether identity matters in personal identity. The first application of this approach to the twinning argument is by Oderberg (1997: 274).

[6] This response is ultimately due to Sider (1996, 2001), who develops it in as an alternative to Lewis's perdurantism, using the concept of a counterpart Lewis introduced and developed (1968, 1986, respectively).

On an endurantist view, at t_1 prior to monozygotic twinning, when pointing at A, there is absolutely one zygote, that is, in no sense is there more than one zygote occupying the spatiotemporal region that A occupies. At t_2, when monozygotic twinning occurs, though A as an enduring object can be wholly present at different times, A ceases to exist, that is, at t_2, a zygote, A, dies, or, put more graphically, monozygotic twinning kills A. At that same time, two zygotes, B and C, come into existence. As a consequence, either no human was ever a zygote, or some humans were but those who weren't, namely, monozygotic twins, began to exist at monozygotic twinning.

On a perdurantist view, at t_1 prior to monozygotic twinning, the zygote which has B as a temporal part shares A as a temporal part with the zygote which has C as a temporal part. So, when pointing at A, and counting logically, that is, by the identity relation, there are two temporal parts of two zygotes. But, counting by a different, non-logical relation, namely, identity-at-a-time, when pointing at A, there is but one temporal part of one zygote.[7] At t_2, when monozygotic twinning occurs, rather than A fissioning into B and C, B separates from C. Thus, no zygote goes out of existence, that is, dies, at t_2 (though their temporal parts do). As a consequence, there is no reason from monozygotic twinning to suppose that all humans didn't have zygotes as temporal parts; to put it in a loose and popular sense, all humans were zygotes.

On an exdurantist view, at t_1 prior to monozygotic twinning, when pointing at A, there is absolutely one zygote, that is, in no sense is there more than one zygote occupying the spatiotemporal region that A occupies. Now, let x be a counterpart of y just in case *x* is significantly spatiotemporally, causally, and genetically continuous with *y*. At t_2, when monozygotic twinning occurs, A, as a non-enduring object, goes out of existence, and B and C come into existence as counterparts of A. Since B and C are counterparts of A, there are

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[7] This distinction between counting by identity and identity-at-a-time is due to Lewis (1976).

two sequences of counterparts which have A as a member. So, in a sense, A dies at t_2, since it goes out of existence then. But it does so, not because it is killed by monozygotic twinning, but, rather, because it is a non-enduring object. Thus, in another sense, there is no death at t_2, since there are two sequences of counterparts which span the event of monozygotic twinning. As a consequence, there is no reason from monozygotic twinning to suppose that all humans are sequences of counterparts which have zygotes as members; to put it in a loose and popular sense, all humans were zygotes.

From the above analysis, we can see that, rather than showing that conceptionism is false, the twinning argument shows that, apart from denying the classical logic of identity, the conceptionist must deny endurantism, and so adopt either perdurantism or exdurantism. In the following section, we argue that the conceptionist should prefer to adopt exdurantism over perdurantism in their evasion of the twinning argument.

4. A cost/benefit analysis: Endurantist anti-conceptionism, perdurantist conceptionism, and exdurantist conceptionism

Let 'endurantist anti-conceptionism' name the view that endurantism is true and so conceptionism is false.[8] Let 'perdurantist conceptionism' name the view that perdurantism is true and conceptionism is true. And let 'exdurantist conceptionism' name the view that exdurantism is true and conceptionism is true. These are the three metaphysics of twinning that we describe above. In this section, we argue that exdurantist conceptionism is to be preferred over its two rivals.[9]

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[8] We include consideration of endurantist anti-conceptionism because it is a helpful comparator to the competing metaphysics of conceptionism.

[9] To be clear, we are demonstrating that exdurantism is a viable, and indeed, arguably, a preferable metaphysics of conceptionism. This is not to deny that 'exdurantist *anti-*

To begin, let's consider four commonly held intuitions about monozygotic twinning. First, it seems that zygotes are wholly present at different times. In addition, prior to monozygotic twinning, when pointing at A, it seems that there is but one zygote. Furthermore, it seems that monozygotic twinning doesn't kill a zygote.[10] Finally, it seems that, after monozygotic twinning, there are but two zygotes. Now, given the classical logic of identity, not all of these intuitions can be true. So, how do these three views accommodate them (or not)?

Intuition	Endurantist anti-conceptionism	Perdurantist conceptionism	Exdurantist conceptionism
Zygotes are wholly present at different times.	Affirms	Denies	Affirms
Prior to monozygotic twinning, when pointing at A, there is but one zygote (or temporal part of a zygote).	Affirms	Affirms relative to a non-logical way of counting, namely, by identity-at-a-time, but denies relative to the logical way of counting, namely, by identity	Affirms

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conceptionism' is feasible – an exdurantist could disavow conceptionism – but that is not the point of the paper.

[10] This is borne out by prospective parents not mourning the loss of a child when informed that they will be having monozygotic twins.

Monozygotic twinning doesn't kill a zygote.	Denies	Affirms	Affirms
For some arbitrarily small amount of time after twinning, there are but two zygotes (or sequences of temporal parts of zygotes).	Affirms	Affirms	Denies

Assuming that these four intuitions are held with equal strength, it seems that the views which accommodate them best are either endurantist anti-conceptionism or exdurantist conceptionism, and what will determine the choice between those two views will be one's reasons for (or against) conceptionism.

So, on the basis of intuition, exdurantist conceptionism is preferable to perdurantist conceptionism. But in addition to reviewing intuition, we should look at some more sophisticated metaphysical arguments concerning the metaphysics of embryology. To do this, we will refer to a recent discussion carried in this journal between Burgess (2010) and Curtis (2012), who pursue the perdurantist response to the twinning objection, which they term the 'multiple occupancy view'.

We start by pointing out that exdurantism can deal with seemingly problematic features of embryonic development at least as well as can perdurantism. To illustrate, having employed the multiple occupancy view – that is, perdurantist metaphysics – to defend conceptionism

against the twinning objection, Burgess presents a putatively insurmountable difficulty for the conceptionist. In all normal cases, around four or five days after conception, the zygote gives rise to a blastocyst, which is comprised of an inner cell mass surrounded by a trophoblast. The former goes on to develop into the embryo proper, whist the latter gives rise to the placenta.[11] Ironically, suggests Burgess, this means that the entity prior to the blastocyst 'does *too much*' to be a human being (2010: 65; emphasis in the original).

The way Burgess puts the putative problem for the conceptionist here recalls the standard way of presenting the twinning argument from above, in terms of transitivity:

> Let us call a zygote A and … suppose that it gives rise to an implanted embryo B and a placenta C. Let us, for simplicity, concede that B already is a human being. Then, according to the conceptionist, A = B. But A gives rise just as naturally to C as it does to B. By parity of reasoning, A = C. But B ≠ C. No human being is a placenta. So A ≠ B, contrary to hypothesis (2010: 65)

In response, Curtis (2012: 137-138) points out that, in presenting this putative problem for the conceptionist, Burgess has misconstrued perdurantist conceptionism and the multiple occupancy view. According to the multiple occupancy view, the entities in question are distinct temporally extended things, say, a zygote-region, embryo-region, and placenta-region. Given unrestricted mereological composition – that is, that any combination of filled space-time regions is a legitimate object provided there are sufficiently strong reasons for thinking so – each of these will be spatiotemporal parts of myriad objects. Notably, according

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[11] More accurately, the trophoblast gives rise to extra-embryonic structures required to support the embryo, including the placenta and placental membranes, amniotic sac, etc. Here we use 'placenta' to refer to all of these, for the sake of brevity.

to the multiple occupancy conceptionist, the zygote-region and embryo-region are parts of a human being. Regarding the placenta, there are two options.

The first option is that there is an object which has as temporal parts the zygote-region and placenta-region. This object would be a four-dimensional spacetime worm, as prescribed by perdurantism. As Curtis points out, given unrestricted mereological composition, this could be only one of myriad legitimate objects that have these filled space-time regions as temporal parts. The second option is that the zygote gives rise to a placenta, but there is no object of which both are temporal parts. After all, as Curtis points out, not every entity, and that to which it gives rise, are temporal parts of a single object; for example, the zygote gives rise to 'a liver, a pair of kidneys, a heart, lungs, etc.' (2012: 140, n. 18), but we don't think there is an object which has as its parts, say, the zygote-region and the liver-region.

Which of these options the multiple occupancy theorist should take depends on there being good reasons to think that an object exists which has the zygote-region and the placenta-region as temporal parts. In particular, there must be independent reasons for thinking the object in question comes into existence with the zygote. Though he appears sceptical about there being such independent reasons, Curtis leaves this moot. This is apposite because, on either option, there is no problem for the multiple occupancy conceptionist. On the first option, two objects come into existence at conception, with the zygote: a human being, and an object of which the placenta-region is a temporal part; both of these objects share, or are multiple occupants of, the zygote-region. On the second option, a human being comes into existence with a zygote which gives rise to a placenta, a distinct entity which will be discarded after performing its embryo-supporting function.[12]

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[12] We endorse Curtis's corrective, but would point out another response to the problem for the multiple occupancy view Burgess raised. The problem arises only if the placenta is an entity distinct from the embryo: to recall Burgess' presentation, 'Let us call a zygote A and …

The point for our purposes is that exdurantism is also able to accommodate this seemingly problematic embryological feature. The development of the placenta is no problem for a conceptionist who relies on exdurantism. This is so for reasons which are isomorphic with the perdurantist's response to Burgess' problem just sketched. In other words, the exdurantist conceptionist has two options. Their first option is to say that the placenta is an object which has as a counterpart the zygote; their second option is to say that there are two distinct objects, the zygote and the placenta, which do not bear a counterpart relation to one another. As was the case for the perdurantist conceptionist, which option to take will depend on independent reasons; that is, on whether there are sufficient grounds for thinking the counterpart relation holds between the relevant entities. And (just as was the case for the perdurantist conceptionist) this can be left moot since on either option the placenta is no problem for an exdurantist conceptionist. This illustrates that exdurantist conceptionism is no more vulnerable to problematic features of embryological development than is its rival, perdurantist conceptionism or the multiple occupancy view.

We can go further, because there are substantive arguments in favour of exdurantist conceptionism. There is space here to canvass one, by way of illustration. To begin, note that embryos can fuse as well as fission, a phenomenon Burgess (2010: 64), in particular, emphasises. Suppose a 70-year-old, C, who resulted from the fusion of two early embryos, A

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suppose that it gives rise to an implanted embryo B and a placenta C'. But is the placenta distinct from the embryo in the way the argument requires? We could think of a complex organism – call it an embryo+ – which includes the embryo and placenta. After all, these organic materials share the same DNA, and there are plenty of examples of complex organisms incorporating supporting structures which are discarded (baby teeth, for example). On this account, the putative problem Burgess presents doesn't even get going, so Curtis's corrective is redundant.

and B, dies. According to perdurantism, when C dies, two human beings die. This is because we have to think of a temporally extended human being that includes A and C, and another temporally extended human being that includes B and C. In other words, there are two human beings in existence, who share a long-extended temporal part – in this case, for over 70 years – both of whom die when C dies.[13]

As Burgess (2010: 64) points out, this is counter-intuitive. Worse still, all embryos can fuse – and some do so without our knowing it – so of any human death it might be true that more than one human being died; which is even more counter-intuitive. Burgess uses this to argue against the view that a human being comes into existence at the blastocyst stage, but the point here is that exdurantism simply avoids this counter-intuitive 'two deaths' result. According to exdurantism, in the present case, A is a counterpart of C, and B is a counterpart of C. So, when C dies, it is not the case that two deaths have occurred; in turn, there are no counter-intuitive implications of fusion, of the sort Burgess brings to bear against the multiple occupancy view. As this illustrates, there are substantive reasons for which a conceptionist

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[13] One response – suggested by one of the journal's referees – is that a perdurantist would say of fusion cases that there is one numerically identical four-dimensional human, with different space-temporal parts before embryo fusion; in turn, and contra our argument, the death of a fused individual is a single death. But this response misrepresents fusion. What's unique about fusion cases is that it's unconvincing to think of pre-fusion entities as space-temporal parts of the post-fusion entity. One way of putting this is that a fusion case is precisely a case of which a perdurantist would say, there are two numerically distinct four-dimensional objects which share an extended temporal part, post-fusion. Of course, there are other cases, but ours is the correct perdurantist account of *fusion* cases, so our 'two deaths' argument survives this challenge.

should prefer to defend their position by appealing to exdurantism as opposed to perdurantism (or the multiple occupancy view).[14]

Concluding remarks

In these concluding remarks we reiterate the main aims and claims in this paper. The twinning argument against conceptionism – the view that a human being comes into existence at conception – has proved crucial in a number of bioethical disputes, and very influential in legislation governing the uses of early embryos. The twinning argument is deceptively simple, as illustrated by our sketch of the main ways it has been interpreted (Section 1). But one thing remains clear: all versions of the argument rely on an endurantist metaphysics of material objects. This allows the conceptionist to evade the twinning argument by denying endurantism and adopting an alternative metaphysics of material objects. One option, perdurantist conceptionism – or the multiple occupancy view – has been canvassed, including in this journal (Burgess 2010, Curtis 2012). On this view, monozygotic twins share a temporal part which we call the zygote. Our principal aim is to present an alternative option available to conceptionists, one that has not so far been recognised in the bioethics literature. Apart from perdurantism, conceptionists can evade the twinning argument by adopting an exdurantist metaphysics of material objects.

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[14] There is a complication here. The perdurantist could say that their view only results in there being two deaths if they are committed to counting according to identity rather than identity-at-a-time. The perdurantist should say that, in counting by identity, there are indeed two deaths; but that is the kind of counting we do in the philosophy classroom and, counting by identity-at-a-time – which is how we normally count – only one human being dies, which is the intuitive result. But, nonetheless, exdurantism still scores heavily over perdurantism, because on no way of counting – that is, counting by identity or identity-at-a-time – are there two objects involved in the death of C.

This alternative option – exdurantist conceptionism – is interesting and important only if it is plausible and preferable to the established option, namely, perdurantist conceptionism (or, the multiple occupancy view). We have argued that it is both. Exdurantist conceptionism is clearly coherent (Section 2 and 3). Furthermore, we undertook a preliminary 'cost-benefit analysis' of these options (Section 4). This indicated that exdurantist conceptionism scores well over perdurantist conceptionism, in at least three respects. First, exdurantist conceptionism better accommodates commonly held intuitions about monozygotic twinning. Second, problematic features of embryonic development can be dealt with by exdurantist conceptionism at least as well as by perdurantist conceptionism (as illustrated by the discussion of the placenta). Third, there are substantive arguments in favour of exdurantist over perdurantist conceptionism (as illustrated by reference to embryonic fusion). In sum, exdurantism is a plausible and, arguably, preferable metaphysics of conceptionism.

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