



COULD A ZYGOTE BE A HUMAN BEING?

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ABSTRACT

This paper re-examines the question of whether quirks of early human foetal development tell against the view (conceptionism) that we are human beings at conception. A zygote is capable of splitting to give rise to identical twins. Since the zygote cannot be identical with either human being it will become, it cannot already be a human being. Parallel concerns can be raised about chimeras in which two embryos fuse. I argue first that there are just two ways of dealing with cases of fission and fusion and both seem to be available to the conceptionist. One is the Replacement View according to which objects cease to exist when they fission or fuse. The other is the Multiple Occupancy View – both twins may be present already in the zygote and both persist in a chimera. So, is the conceptionist position tenable after all? I argue that it is not. A zygote gives rise not only to a human being but also to a placenta – it cannot already be both a human being and a placenta. Neither approach to fission and fusion can help the conceptionist with this problem. But worse is in store. Both fission and fusion can occur before and after the development of the inner cell mass of the blastocyst – the entity which becomes the embryo proper. The idea that we become human beings with the arrival of the inner cell mass leads to bizarre results however we choose to accommodate fission and fusion.

1

A common view of a new human conceptus, particularly one in the pre-implantation stage, is that it is *just a clump of cells*. The person making this claim is, of course, not denying that it is a clump of *human* cells. Nor is that person denying that its intrinsic nature is such as to imbue it with the potential to become a human being, nor that it has all the value that potential can bestow on it. What that person is denying, albeit somewhat theatrically, is that it is *already* a human being. Far from being the expression of brutal indifference towards the embryo, this remark is best seen as a somewhat exasperated retort to those who regard the one-cell zygote and its multi-cell

immediate successors including the morula as ‘little human beings’ or ‘little persons’.

I shall call the intended target of the just-a-clump-of-cells jibe the *conceptionist*, simply to have a convenient term for someone who holds that a human conceptus is already a human being at syngamy and, in particular, is a human being throughout the stage before cellular differentiation has begun. I shall not assume that the conceptionist accords the conceptus a right to life, either directly because being a human being is what counts, or indirectly because it has the potential to become a person. A typical expression of conceptionism is the position of John Noonan: ‘at conception the new being receives the genetic code. . . . (a) being with a human genetic code

is man'.¹ I shall call someone who combines conceptionism with the view that a human being has full moral status from the moment of its arrival a *full status conceptionist*.² Finally I shall call a theorist who strives to locate the beginning of human life as early as rational argument will allow an *early starter*. Obviously, being an early starter is not to hold some particular identifiable position about the beginning of human life. Rather, I shall require the term to refer to those conceptionists whose reaction to convincing arguments against their position is to beat a dignified and minimal retreat rather than to rethink the basis of their position. So, for example, if conception does not prove to be a plausible location, the early starter will propose the earliest point that is not vulnerable to the objection they regard as telling.³

Before we begin in earnest, I have two points to clarify. First, by a *human being* I mean a member of the species *homo sapiens*. A cloned human organ would be human and alive, as is cultured human tissue in a petri dish, but neither being would be a human being. Second, it might be wondered why I do not ask whether a zygote is a *person* from conception. I have a good reason for not posing my question this way. There are at least three possible families of conceptions of a person very much alive in the current philosophical literature.⁴ First we have neo-Lockean conceptions according to which 'person' is a forensic notion: a person is a self-conscious locus of responsibility.⁵ According to this position, we are not persons until well after we are born. Second, we have

neo-Cartesian pictures. A person is a thinking, i.e., sentient, thing.⁶ The earliest possible time at which we could locate the arrival of consciousness is at about 28–32 weeks in foetal development, if 'wake state' EEGs are required.⁷ On positions of both these kinds, there simply is no question of a zygote being a person, and both are open to the conceptionist. Positions of the third kind equate being a person with being a human being in the sense I identified.⁸ On this view, discussing whether a zygote is a human being *just is* discussing whether it is a person.

The now stock objection to conceptionism, even from writers whose views on abortion are otherwise conservative, e.g., Ramsey,⁹ is that conception, or syngamy, the time of completion of formation of a single cell zygote, is not, not even by lucky accident, the point at which we have a single human individual with its unique genetic code.¹⁰ For some time prior to implantation, it is possible for a conceptus to split, giving rise to identical twins. Let *A* be a one cell zygote and *B* and *C* the identical twins which result from that zygote splitting later in its development. *B* and *C* are not identical, so how can *A* be identical with either? Neither *B* nor *C* is privileged as the 'important' product of *A*'s splitting and *A* can't be regarded as having died as there is no corpse. Since, in cases of monozygotic twinning, a zygote is not identical with either of the twin human beings it gives rise to, it cannot already be a human being. But, if some zygotes are not yet human beings, none can be.

In this paper, I shall try to identify what, if any, truth lies behind the clump-of-cells objection to conceptionism. First (§2), I shall raise a series of strange puzzles that complicate the stock objection to conceptionism. Second (§3), I shall sketch two possible conceptionist answers, not only to the stock objection, but also to each of the related family of puzzles identified earlier. In §4, I shall provide what I take to be a much better argument against conceptionism, one that is untouched by the replies to the stock objection. I shall then return (§5) to the strange family of individuation puzzles sketched in §2 in an attempt to ascertain what they really have to teach us about human development. Finally, in §6, I shall return

¹ J. Noonan. 1970. An Almost Absolute Value in History. In *The Morality of Abortion: Legal and Moral Perspectives*. J. Noonan, ed, Cambridge, Mass: Harvard University Press: 1–58, at p. 57.

² Some have objected that in introducing a moral dimension into my account without discussing the role of the mother in determining fetal status, I am leaving the most important character out of the story. Were I discussing fetal status, or presupposing an account I regard as adequate, I would indeed be guilty as charged. But I am doing neither. I shall be discussing problems for full status conceptionism and related views; I shall not be endorsing that position. The moral and social views I rely on are not in contention in discussions of fetal status. For the record, my position on fetal status is both relational and developmental. The pregnant woman very much shares centre stage with the fetus. For a view I find congenial, see Catriona McKenzie. Abortion and Embodiment. *Australas J Philos* 1992; 70: 136–155.

³ Arguably, if only one point turns out to be defensible, it might seem that we are all in the end early starters. I do not think this is so, even in the unlikely event that one point should turn out to be uniquely best. To be an early starter is to adopt a certain strategy of retreat; it is not to adopt a certain position for what it is, independently of prior conviction and intuition.

⁴ There are almost certainly more but I want to confine myself to very popular positions.

⁵ See M. Tooley. 1983. *Abortion and Infanticide*. Oxford: Oxford University Press; M. A. Warren. On the Moral and Legal Status of Abortion. *Monist* 1973; 57: 43–61.

⁶ B. Steinbock. 1996. *Life before Birth: The Moral and Legal Status of Embryos and Fetuses*. Oxford: Oxford University Press.

⁷ See J.A. Burgess & S.A. Tawia. When Did You First Begin to Feel It? – Locating the Beginning of Human Consciousness. *Bioethics* 1996; 10: 1–26.

⁸ M. Reichlin. The Argument from Potential *Bioethics* 1997; 11: 1–23

⁹ P. Ramsey. 1970. Reference Points in Deciding About Abortion. In J. Noonan, *op. cit.* note 1, pp. 60–100.

¹⁰ *Ibid.*: 75. See also H. Kuhse & P. Singer 1990. Individuals, Humans and Persons: the Issue of Moral Status in *Embryo Experimentation*. P. Singer et al., eds. Cambridge: Cambridge University Press: 65–75.

to the question of when a human being is 'born', not so much to answer it as to explain why I doubt that there will be a morally significant answer.

2

Monozygotic fission leading to identical twins is only the most common of a family of unusual possible embryological developments that raise puzzles about human individuation. I shall briefly sketch three others that are relevant to our problem.¹¹

First, we can have a *chimera*. Twinning involves fission; in contrast, a chimera forms as the result of the fusing of two distinct embryos. In the most unusual and interesting case, the fusing is of non-identical twin embryos giving rise (at least apparently) to a single human being who carries two genetic codes. This is a rare condition which is hard to detect, and the literature on it is correspondingly sketchy, but there seems to be consensus that fusion can occur up to the time of implantation. We are forced to conclude that what appears to be a single, fully functional, human being might be the result of more than one genetic code.¹²

Second, we have the *foetus in fetu*. Sometimes one monozygotic twin can 'incorporate' another which, on occasion, can continue to grow as, again at least apparently, a distinct individual. The enveloping occurs very early in pregnancy.¹³ The growth is usually located in the abdominal cavity of the 'host' and, although seriously deformed, it can develop its own functioning organs and circulatory system. A recent case was detected only when a five-month-old child appeared pregnant and was examined to determine the cause of its extreme abdominal swelling. Although the literature tends to refer to the *foetus in fetu* as a tumour, and these beings cannot live if separated from their host, there have been cases so well-developed organically and anatomically that it would seem perverse to deny that they are human beings if one regards anencephalic infants as human beings.

Third, we have *conjoined twins*, which result from imperfect fission. This seems most likely to happen when

¹¹ For a brief account of all three phenomena and for references to the scientific literature on them, see K. Dawson 1990. Segmentation and Moral Status: a Scientific Perspective. In Singer et al., *op. cit.* note 10, pp. 53–64.

¹² For more recent and detailed accounts of tetragametic chimeras, see N. Yu et al. Disputed Maternity Leading to Identification of Tetragametic Chimerism. *N Engl J Med* 2002; 346: 1545–1552; and L. Strain, et al. A True Hermaphrodite Chimera Resulting from Embryo Amalgamation After In Vitro Fertilization. *N Engl J Med* 1998; 338: 166–169.

¹³ C. Hoeffel et al. Fetus In Fetu: A Case Report and Literature Review. *Pediatrics* 2000; 105: 1335–1344.

fission occurs after implantation has begun. The resulting degree of connectedness varies in two distinct dimensions. First, the degree of bodily overlap can vary from minimal, in the case of very superficial peripheral connection, to highly significant, as when the twins share several vital organs. Second, the degree of dominance can vary from minimal, where both twins are equally developed and robust, to significant, where one twin is very well-developed and robust and the other is not. They raise a very interesting individuation puzzle. In cases of equality, we seem to have two human beings even though we might have only a single genetic code and a single body. But, when one twin is extremely dominant, is it clear that we have two distinct human beings at all?

It is unclear just how late in development cases of the kinds just described may be initiated. As Dawson has noted,¹⁴ this raises practical problems for those who would like to stipulate an upper bound – usually 14 days – after which it is to be assumed that individuation is finally complete. Those who want to treat individuation as a mark of the end of the period in which research on embryos is legally to be permitted face the problem of convincingly nailing down the appropriate time. But this is only a practical epistemic problem, which further research should clear up, and I shall say no more about it. My interest here in individuation lies in the idea that it is criterial of the beginning of human life, and we could have good reasons to believe that it is criterial, even though we might not now know just when individuation is complete.

3

When faced with individuation puzzles, a popular move is to insist that we cannot have a human being until such time as the possibility of further fissioning and fusing has passed.

But this manœuvre does not solve the individuation puzzles; it simply sweeps them under the carpet. If a two-cell organism splits to form two one-cell zygotes, we still have a puzzle as to whether the original organism persists through the fissioning or whether it perishes. Whether or not the organism is already a human being, we still need a convincing answer to this puzzle. Should it turn out, on independent grounds, that it is wrong to regard any of these organisms as human beings, that would be important and interesting, but we would still need a satisfactory response to the individuation puzzles. There are only two possible responses to those puzzles.

¹⁴ Dawson, *op. cit.* note 11, pp. 55–59.

The first genuine solution to the individuation problem is to hold that when an object fissions, it gives way to two new objects of the same kind, and when two objects of the same kind fuse, they give way to one new object of the same kind. Let us call this the *Replacement View*. It has been proposed by Jeff McMahan, who has argued that we can regard a splitting zygote as a human organism, just so long as we do not identify the pre-twinning organism with either of its successors. It has been endorsed by David Oderberg.¹⁵ To accept this answer, we would have to regard twinning as involving one human organism ceasing to exist and giving way to two new organisms. Likewise, in cases of fusion, two human organisms would cease to exist and give way to one. On the face of it, this is not an attractive solution. As McMahan correctly points out, we do not lament a loss of a life when twinning occurs, nor do we try to prevent it.¹⁶

There is, however, in the literature on identity, a ready-made reply to the stock objection that seems to fit the conceptionist position nicely. The idea was developed by David Lewis, as a way of accommodating hypothetical examples of fission and fusion for persons,¹⁷ and it was then elaborated by Denis Robinson as the centrepiece of his solution to a similar puzzle concerning the actual reproductive behaviour of amoebae.¹⁸ I shall describe the idea using amoebae as my example as their behaviour most closely resembles that of the twinning zygote. I shall provide only enough detail to enable the reader unfamiliar with the strategy to see clearly how it would apply to zygotes.

Although it might seem a bit artificial, we may think of objects that persist over time as having temporal as well as spatial parts. Just as my right arm is a spatial part of me, so too was my 41st year a temporal part (or stage) of me. Every object that persists over time has countless overlapping temporal stages. Just as my arm includes my forearm (spatially), so too does my 41st year include the May segment of that year. Normally we think of the counting of objects as tied to the counting of objects of particular kinds, and that, in turn, as being conceptually tied to identity. I cannot count the material objects in a room – do I count all the molecules in a chair as well as the chair? But

¹⁵ D.S. Oderberg. *Modal Properties, Moral Status and Identity*. *Philos Public Aff* 1997; 26: 259–298. See pp. 270–71.

¹⁶ J. McMahan. *The Metaphysics of Brain Death*. *Bioethics* 1995; 9: 91–126, at p. 98. See also J. McMahan 2002. *The Ethics of Killing: Problems at the Margins of Life*. Oxford: Oxford University Press, p. 26ff; and J. McMahan. *Killing Embryos for Stem Cell Research*. *Metaphilosophy* 2007; 38: 170–189, at pp. 177–78.

¹⁷ D. Lewis 1976. *Survival and Identity*. In *The Identities of Persons*. A.O. Rorty, ed. Berkeley: University of California Press: 17–40.

¹⁸ D. Robinson. *Can Amoebae Divide Without Multiplying?* *Australas J Philos* 1985; 63: 299–319.

I can count the chairs. The Lewis/Robinson idea is that this is only correct for favourable cases.

On the Replacement View, when an object fissions, one becomes two, and when two objects fuse, two become one. This creates a problem for identity. If amoeba *A* splits into *B* and *C*, we might say that *A* has become *B* and also that it has become *C*. Intuitively, *A* still exists. If we say that *A* = *B*, we must also say that *A* = *C* since each resulting amoeba has an equally good case to count as the continuation of *A*. But this is impossible. Identity is transitive, so we would have to say that *B* = *C* which is manifestly false; *A* has split into two numerically distinct amoebae. On the standard view, we must conclude that *B* and *C* are both distinct from *A*. But this conclusion, while preserving the formal properties of identity and the connection between identity and counting, is not without its counterintuitive features. *A* has ceased to exist when it becomes *B* and *C* but it has not died, nor is there a corpse to mark its passing.

According to the Lewis/Robinson view, *B* and *C* were *both* already present in *A*. If we insist that *A* names a single thing, it would have to be an amoeba stage which it shares with all the amoebae it will ‘become’ through splitting. On this view, counting and identity come apart. When, as the standard view would have it, we count objects of a kind, we are really counting stages of persisting objects and not the persisting objects themselves. In standard cases, there is no difference between counting stages of objects and the objects themselves; hence the strength of the belief that we are really counting objects. But the possibility of fission and fusion shows that the standard view is wrong. When an object fissions it doesn’t *become* two; it was two all along, the two objects sharing an initial temporal stage. Similarly, when two objects fuse, they do not *become* one, they remain two objects which come to share a temporal part or stage. I shall call this the *Multiple Occupancy View*.

The application of this idea to zygotes and other pre-implantation embryos is straightforward. If a zygote splits once to form twins, then, according to the conceptionist, there already were two human beings present from the beginning.¹⁹ Were both to split again, there would have been four human beings present at the earliest stage, and so on. At least superficially, this ought

¹⁹ Obviously the analogy isn’t perfect; amoebae always split into separate organisms. Furthermore, we might, after the fact, be able to identify which cells in *A* were to go with *B* and which with *C* after twinning. But this neither undermines the solution nor makes it redundant. When a one-cell zygote divides we can’t single out ‘parts’ of the original cell that could be identified with different human beings. And we still can’t know until twinning can no longer occur whether any particular zygote will give rise to one human being or more.

to seem intuitive to the conceptionist. Although it perhaps has less intuitive appeal, the view handles chimera in a similar fashion. When a chimera results from the fusion of two zygotes, it remains two human beings, albeit two human beings who share a temporal stage which covers almost all of their life. Clearly this is counterintuitive, but so is the Replacement View, and there are no others. It is perhaps not wholly counterintuitive, however. It is natural to say that conjoined twins whom we wish clearly to count as two share the part of the body that serves both of them. Sometimes that might just be a small portion of connecting tissue but, in extreme cases, it could be a torso, internal organs, and limbs. Those who adhere to the standard view may still hold that conjoined twins share a torso; indeed they can hold that conjoined twins can share the vast majority of their body. What they must hold, however, is that they cannot, as a potential limiting case, share a whole body for a period of time. The exclusion of complete overlap as a limiting case of partial overlap might seem to be capriciously arbitrary. This capricious arbitrariness, if that is indeed what it is, would be bad news for the Replacement View but good news for the Multiple Occupancy View. On the latter view, complete overlap is continuous with partial overlap; on the Replacement View there is a (possibly arbitrary) limit to the amount of overlap that is possible without one human being 'disappearing.'

In sketching these responses, I have adopted a conceptionist perspective, but clearly they are also the only options available to someone who regards a zygote, an embryo or a blastocyst as not yet a human being. Neither the Multiple Occupancy View nor the Replacement View is fully intuitive; it seems that the conceptual tools we employ to think about identity and counting were not designed with cases of fission and fusion in mind. But fission and fusion are awkward facts of life, and everybody who encounters them needs a theory that is capable of dealing with them.

4

So, have we succeeded in rehabilitating conceptionism? It might come as a surprise to hear that we have not done enough to re-establish conceptionism as a genuine contender. There is a variation on the stock objection which seems to be decisive. The problem, rather curiously, is that a zygote (morula or blastocyst) simply does *too much* to be a human being. Consider a blastocyst. It is only at this stage, about four days after syngamy, that we are able to identify an *inner cell mass*, which will go on to engender all the tissues of the developing embryo during

and after implantation, and a *trophoblast*, which gives rise to sustaining matter like amniotic fluid and the placenta. So a zygote, initially a single cell, splits into two identical cells, and then four, and so on. Eventually the structure becomes a blastocyst at which point there is sufficient cellular differentiation for us to identify a future embryo and a future bundle of supporting tissues. (It is at this point that the inner cell mass is removed for the extraction and culturing of cells in the production of embryonic stem cells for research and therapy. It is also at this point that we cease to find totipotent cells; whether from the inner cell mass or from elsewhere, no cell taken from a blastocyst can become a separate human being.)

Now let us work through the standard argument. Let us call a zygote *A* and, for simplicity, assume that it will be subject to no fissioning or fusing. Let us 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 $B \neq C$. No human being is a placenta. So $A \neq B$, contrary to hypothesis.²⁰

The conceptionist might try to avoid this conclusion by privileging the embryo. Socially, the embryo matters much more than the placenta, although the placenta is necessary for the survival of the developing embryo. Of course, from the point of view of someone contemplating the whole of foetal development, it is natural and correct to view that embryo as the developing organism and the placenta as part of its support team.²¹ But, from the point of view of someone contemplating a zygote, there are no logical grounds to privilege one rather than the other. *A* will give rise to *B*. But *A* will also give rise to *C*. $B \neq C$ so *A* is distinct from both *B* and *C*.

There seems to be an obvious move that the conceptionist can make at this point, which is to identify the human being with the inner cell mass of the blastocyst. If *A* = zygote, *B* = implanted embryo, and *C* = placenta, what the conceptionist can say is that *A* is a compound object, a mereological sum of the inner cell mass and the trophoblast, and that although the human organism is not identical with *A* as a whole, it is identical with the inner cell mass of the zygote. What we need to say is that

²⁰ See Buckle 1990. *Arguing From Potential*. In Singer, et al, *op. cit.* note 10, pp. 90–108, see especially pp. 99–101.

²¹ I have encountered the objection that a zygote's production of a placenta could be regarded as no more puzzling than the growth of a tumour. This objection fails. First, a tumour is most naturally regarded as a (dysfunctional) part of the organism in which it grows; a placenta is neither dysfunctional nor a part of the embryo it nurtures. Second, a tumour grows within a much larger human being; the inner cell mass of a blastocyst, the embryo proper, is only a tiny speck in a mass of cells destined to play support functions.

A is the sum of A_1 (inner cell mass) and A_2 (trophoblast). Then the conceptionist argument can be reformulated as follows: $A_1 = B =$ the human organism, while $A_2 =$ the placenta, which is a part of the organism. In short, A_1 is the essential part of A , while A_2 is a nonessential part. On this view, to say that I was once a zygote is an inexact way of making the more precise claim that I was once a proper part of a zygote – namely, the inner cell mass.

To think this argument helps the conceptionist, we must be trading on an ambiguity in the term ‘zygote.’ Strictly speaking, a zygote is the one cell organism we have immediately following syngamy. After the first cell division we no longer have a zygote. Call this entity a zygote *in the strict sense*. Recently, some writers have come to use the term zygote as a generic term for the fertilised ovum at *any* stage pre-implantation. Call this entity a zygote *in the loose sense*. Now we can see where the objection fails. A zygote in the strict sense has no inner cell mass. Nor does its two and four cell successors, and nor does a morula. It is only after four days of development that we can identify an inner cell mass – that is four days too late for the conceptionist. Clearly a zygote in the loose sense can have an inner cell mass, but only from the time that it becomes a blastocyst. This, then, becomes the earliest point at which the early starter can locate the beginning of human life.

It would be possible to avoid this conclusion if we could find our way clear to apply the Lewis/Robinson strategy to objects of different kinds. Can we say that A wholly embodies a human being, and a placenta, and an amniotic sac. . . . and so on? So there are as many different kinds of thing constituted by A as there are different kinds of thing it will become? I do not think that it is possible to maintain this view. To be sure, an object can be wholly constituted of one kind of thing at one stage and a different kind of thing at another stage. So, for example, a route from X to Y can consist of a railway for its first stage, a road for its second, and a waterway for its third stage. I might, for example, specify a route by saying ‘Catch the train to Central, walk down George St. to Circular Quay, and then catch the ferry to Manly.’ But a route on the one hand, and a road, a stretch of harbour, and a railway on the other, are objects at different levels of abstraction from the physical matter that constitutes them. The route from my home to the university carpark is a stretch of road. If I live at one end of the road, and the carpark lies at the other end, the road and the route could exactly coincide. But could they be strictly identical? Of course not; they differ decisively in their modal properties. The road could be extended by, say, ten kilometres without the route thereby being extended. When we say that the route *is* the road, the ‘is’ is the ‘is’ of constitution, not identity.

Roads and routes are objects at very different levels of abstraction. Railways, roads and waterways are objects at the same level, and with objects at the same level, it is even clearer that an object’s being of one kind excludes its also being of another. Not only can no object that is wholly road also be wholly railway or wholly waterway; no object of one of these kinds can be wholly constituted by an object of another. It is only because the notion of a route is abstracted from that of its particular physical embodiment that we can say that a route may consist in part of road and in part of railway.

So, no zygote can be a human being, nor can a morula or a blastocyst be a human being. (Recall, however, that our argument does not show that the inner cell mass of a blastocyst is not already a human being.) This conclusion stands quite independently of whether one accepts or rejects the Multiple Occupancy approach to identity. Both options are open.

There is an objection that some readers might have been wanting to press for some time. Many conceptionists locate the beginning of human life at conception because they believe that this is the point at which we become ensouled. Although nothing I have said rules out the possibility of ensoulment taking place, I do not believe that appealing to ensoulment can help with the problems we have been rehearsing. Let us suppose that a one-cell zygote is already ensouled, for this is what the conceptionist would need if ensoulment is to help. Do souls fission when bodies do and fuse when they do? Presumably not. So do zygotes which are going to fission come equipped with two souls or does the soul depart on fissioning and two replacements arrive? And what happens when two embryos fuse? Further, since, as we have already seen, a one-cell zygote isn’t a human being, if it can already be ensouled, why can’t an unfertilised ovum already be ensouled? And where precisely in the evolution of our species did souls begin to appear? I’m not saying that there might not be answers to these questions. But, to be convincing, they would have to be answers for which we have evidence; it will not do simply to stipulate. Further, and crucially for our purposes, the introduction of souls simply brings with it an analogue for souls of every individuation problem for bodies to add to those already facing bodies, as well as a few new and distinctive problems of its own. Appealing to souls will not help us to solve the problems rehearsed in this paper.²²

²² The objections rehearsed here significantly overlap those of McMahan 2002, *op. cit.* note 16, pp. 18–19 and McMahan 2007, *op. cit.* note 16, pp. 183–185.

5

If my argument has been correct, the would-be conceptionist must, I think, admit defeat at this point. But before the opponent of conceptionism embarks on a premature celebration, it is important to stress just how little, in practical terms, that concession amounts to. Presumably, the early starter will now locate the beginning of a human life at the arrival of the inner cell mass of the blastocyst. The full status early starter would have to abandon opposition to the morning-after pill and to very early embryo experimentation but to little else. For example, the standard method of obtaining embryonic stem cells involves the destructive extraction of cells from the inner cell mass of a blastocyst; this would still violate a right to life, as would almost all methods of abortion.

Some may locate the beginning of human life at the arrival of the inner cell mass of the blastocyst to place it as early as possible whilst still having acceptable answers to the individuation problems. However, early for early's sake is not, in and of itself, a good reason. But before we can ask which accounts of the beginning of human life are likely to make best sense (§6), we should first ask how the two responses to the stock objection now look in the light of the conclusions of §4. The first point to notice is that embryonic fission and fusion can still occur at the blastocyst stage. This makes all the more pressing the need to re-examine the relative merits of the Replacement View and the Multiple Occupancy View as solutions to the individuation challenges raised in §2. I shall work my way systematically through the options. We must ask how both approaches to individuation fare, first for the early starter who has retreated to regarding the arrival of the inner cell mass as the beginning of a human life, second, for the full status early starter, and finally for the theorist who holds that we do not have a human being till after the blastocyst stage.

Of the two options facing the early starter, the Multiple Occupancy View might now seem to be by far the best. At first blush, it faces no objection stronger than those it faced before the objection of §4. Counting is divorced from the counting of substances and becomes the counting of substance stages just as it did earlier. That is still counterintuitive. It is just that the need to count stages begins a few days later. In contrast, the fate of the Replacement View depends on whether or not the would-be conceptionist is a full status early starter. If not, the view is still just bizarre, if so, it goes from being merely bizarre to being virtually incoherent.

First let us examine the position of the early starter who does not attribute full moral status to an early human being. A zygote that fissions still ceases to exist

and gives rise to two new zygotes, but, since it can't be regarded as a human being, that is an event of no moral significance whatsoever and of no obvious social significance. It would not seem rational for the mother to mourn or to feel a sense of loss.²³ She has not been deprived of a child; she has possibly been blessed with two. After fission, things are a bit bizarre, as before. A human being has ceased to exist without first dying. That is strange. It would seem that the mother has lost a child but it does not seem rational for her to mourn that loss. That is counterintuitive. As with fission, so too with fusion. When a chimera forms before the blastocyst stage, that is a matter of no social significance. When a chimera forms at or after that stage, two human beings cease to exist and are replaced by a single new human being.

Now let us consider the position of the full status early start theorist, once conceptionist, now committed to an inner cell mass position. If an embryo fissions before the formation of the blastocyst, his or her position does not differ from that of the theorist who does not attribute full moral status to the early human being. But if an embryo fissions *after* the formation of the blastocyst, that is now a tragedy – the loss of a human life – and, since that human being had a right to life, something to be prevented should it be in our power. Twinning, then, is either tragic or a matter of indifference depending on when it occurs. The same conclusion can be drawn for cases of fusion, except that two give way to one as before. Furthermore, on this view, or so it seems to me, we should regret the fact that the entities that result from fission and fusion after the formation of the inner cell mass exist at all. After all, their existence depends wholly on a tragedy that we should all wish never to have happened. Frankly, I find this consequence of the view more than a little

²³ Here, and in later places where I make similar points, some will wish to protest that, in appealing to intuitions about when it is or isn't sensible for a mother to mourn, I am introducing a moral dimension which is illicit when discussing conceptionism as a metaphysical view with no moral baggage. To think this would be to make a serious mistake. Nobody has a right to be mourned or an obligation to mourn. The expectation that we shall mourn our loved ones is a *social* expectation. Furthermore, I am talking about when it would *make sense* to mourn and not to when it would be *socially expected*. It makes sense to mourn the loss of a child or a pet dog but not the loss of a bush or rock to which one has no sentimental attachment. It is generally expected that we will mourn the loss of close relatives and friends. If you suddenly discover you have a sister you have never met, and she dies before you can meet, it would make sense to mourn her loss. On the other hand, if a close friend dies like Frank Rosolino, shooting himself and his children in a murder-suicide, would you call the natural reaction mourning? The intuitions I appeal to, although informed by reflection on unusual cases like the two I just described and although value laden, are no more tendentious than this.

creepy. On the Multiple Occupancy View, however, no lives are lost when fission or fusion takes place.

Should we then prefer the Multiple Occupancy View despite the havoc it plays with our intuitions about counting? Perhaps surprisingly, I think that the answer is no. Properly understood, there is surprising symmetry between the Multiple Occupancy View and the Replacement View in the matter of strange consequences. Up to this point, I have gone gently on the Multiple Occupancy View because it has not been given a hearing, let alone a fair hearing, in the literature on the beginning of human life, despite its considerable popularity elsewhere. It is now time to milk fusion for all the strange consequences it can deliver.

The Multiple Occupancy View has no difficulty in accommodating fusion that takes place before the blastocyst stage, for now we don't treat a zygote as a human being. But for fusion taking place later, there are startling consequences. Recall that, according to the Replacement view, there was pressure on the conceptionist to make sense of our mourning the loss of a life whenever a pre-blastocyst embryo fissions. Fusion can lead to at least equally bizarre consequences for the Multiple Occupancy View. Recall that, on that view, when tetrazygotic fusion results in a chimera at or after the blastocyst stage, it is compulsory to maintain that two human beings share a body for as long as that body is alive. What this suggests is that believers in the early arrival of a human being should mourn the loss of two human beings, not one, whenever a chimera dies. Obviously, this applies not just to deaths that occur pre-term but also to deaths that occur after the physical separation of child and mother. Further, if identical twins can fuse to form a chimera,²⁴ this would be undetectable either through genetic testing or through observable phenotypic differences. We would then be in the position of never knowing, in the case of absolutely every human death, how many human beings we are mourning and burying. If monozygotic twinning threatens to make nonsense of the Replacement View, chimeras threaten to make nonsense of the Multiple Occupancy View. But these positions are the only possible responses to the individuation puzzles. What has gone wrong?

What has gone wrong is not the metaphysics; the Replacement View and the Multiple Occupancy View are indeed the only options. What has gone wrong is the interaction of the metaphysics with moral and social philosophy; the idea that it makes sense to treat the living

antecedents of human organisms as though they were already morally or even socially considerable *individuals*. What is so absurd about mourning the loss of two individuals when a chimera dies is that a chimera presents as a single, perfectly well-integrated, person. The alternative, the Replacement View which requires us to make sense of mourning the loss of corpseless individuals who have not in any recognizable sense 'died' may seem less absurd, but that is only because the tragedies typically occur unnoticed and unlamented, hidden from view deep inside the mother. But our lack of interest in a one-cell zygote *as an individual* is just as clear.

The moral of our discussion of the embryological anomalies that fission and fusion provide is that we simply do not see losses of potential individuals before individuation as losses of *individuals*, nor do we see multiplications that might result from fusion as genuine threats to individuality. To mourn the loss of a zygote that fissions is not to mourn a human individual. At best it is like thinking that laying a wreath at The Tomb of the Unknown Soldier is a way of paying our respects to the *particular* soldier who happens to be buried there. At worst, it is like mourning the loss of a child when she becomes an adolescent. Of course, if you want a child and you miscarry in the very early stages, it makes very good sense to lament the loss of possible life. But what you are lamenting is best described as *the fact that no child will result from this pregnancy* and not the death of an individual human being or beings. Given that any one of us could be the result of the fusion of two monozygotic twins, on the Multiple Occupancy view, we *never* know whether or not we are mourning an individual. What that shows is that, whatever it is about humans we value, a normal human body contains only one of them, even if it is a chimera.

Before we move on, I shall mention another consideration which might also prompt the early starter to move the time of arrival of a new human being forward even further, perhaps to implantation or thereabouts. Although the inner cell mass is alive and a distinguishable proper part of a blastocyst, it does not itself seem to be an organism. If it is not an organism, it cannot itself be a human organism and so cannot be a human being.

Finally, then, let us ask whether the Multiple Occupancy View or the Replacement View is best for zygotes and blastocysts, considered as entities which precede and become human beings but which are not themselves human beings. The divorce of identity from counting still plagues the Multiple Occupancy View and is still counterintuitive. It seems strange not because it violates intuitions specifically about zygotes and blastocysts – aside from our expectations derived from embryology we have

²⁴ The result of monozygotic fusion would probably not be *called* a chimera, even if it were detectable. It would, of course, still need to be counted as two objects on the multiple occupancy view.

no further intuitions about how these objects will behave – but because it violates intuitions we have about the connection between identity and counting in general. The Replacement View seems more intuitive to me. The key to illumination is to stop thinking of zygotes and blastocysts that come into, and go out of, existence as being born or as dying, except perhaps in a metaphorical sense that doesn't lead us to expect to find a corpse after 'death.' Since it is no longer human beings who fission and fuse, our intuitions about when it is sensible to mourn do not apply to them. A human zygote is a human zygote and not another thing; so too is a human morula and a human blastocyst. These entities are not in any literal sense born and they do not die. A zygote can go out of existence without leaving a corpse. It does so if it fissions, it does so if it fuses and it does so if it simply gives way to a morula. There is nothing counterintuitive about the Replacement View at all when we apply it in the right way.

6

So when do we become human beings? First, let us be clear that to treat earliness as a desirable feature, in and of itself, is to put the moral cart before the metaphysical horse. For the frustrated conceptionist to retreat to blastocyst formation or implantation would, if earliness were its only merit, simply be to accept that position as a consolation prize. We need to find a positive reason to opt for a point like this.

To see clearly why the argument I have provided is *not* an argument for implantation as the time of arrival of a human being, notice that I have not provided, nor would it have been plausible to provide, an *a priori* argument that human beings *cannot* sensibly fission or fuse. Should we discover, for example, that, under extraordinary circumstances, adult humans do fission, we would simply have to adjust our concepts to accommodate this surprising contingency. In order to do this, we would have to alter radically our view of what kind of thing a human being is. I have argued that our social conventions and evaluative habits *do not*, as they stand, leave room for this possibility and not that they *could not*.

David Oderberg echoed the sentiments of most conceptionists when he claimed, concerning a human being, 'the only point at which an event can be singled out which marks its coming into existence is that of conception'.²⁵ I

think that this contains a grain of truth.²⁶ The grain of truth it contains is that there is no single point which common sense, metaphysics, biology or any combination of the above can underwrite as uncontentionally the point at which the life of a human being begins. This is not, as is often suggested, principally because human foetal development is continuous. That is not a problem of any great significance; we successfully distinguish stages in foetal development such as the zygote, the morula and the blastocyst. Rather, it is because we have no clear conception of just how much development is required for us to have a human organism, just as we have no clear conception of just how much organic breakdown is required for human death. This is true but it is no cause for alarm. Biology is a deeply non-essentialist science, so why should we expect it to yield us a single non-arbitrary answer to this question? Instead of running away from this truth, I propose that we embrace it and tailor our thinking to accord with it.

I come now to the aspect that is not true. Choosing a sensible boundary is not arbitrary in the sense that absolutely any time has as great a right to be chosen as any other. To be a genuine contender, an account of beginnings has to be part of a coherent story about what human life is. In fact, there are probably only a small number of stories about the beginning of life, 'birth,' which cohere with possible stories about the end of life, death. For a story to be coherent, the property we lose when we die must be the very property we gain when we are born, i.e. there must be symmetry between birth and death.²⁷ If the best candidate for human death, the death of the human body, is organic breakdown, as signified by the irreversible failure to support the functioning of the cardio-vascular, central nervous and respiratory systems, then the arrival of functioning in the first major life system should signify the beginning of a human life. That point would be the beginning of rudimentary circulation at about 6 weeks.²⁸

²⁶ Although it is strangely at odds with Oderberg's view that the successful completion of monozygotic twinning is an acceptable non-arbitrary location for the beginning of a human life.

²⁷ I first encountered this highly intuitive requirement in M. Lockwood. 1985. *When Does a Life Begin*. In his *Moral Dilemmas in Modern Medicine*. Oxford: Oxford University Press: 9–31, p. 23ff. Another to insist on it is Jeff McMahan 2002, *op. cit.* note 16, pp. 435–39.

²⁸ See J. McMahan 1995, *op. cit.* note 16, p. 101ff. If, following McMahan, we distinguish between 'becoming alive' and 'beginning to exist,' on the ground that a human being still exists as a corpse after it is no longer alive, there might appear to be scope to locate the coming into existence of a human being even earlier, but I would not expect any such account to be very precise, nor would I expect it to support moral distinctions of any great significance. I think it highly unlikely that this idea can be made to work. The inner cell mass of a blastocyst is already

²⁵ Oderberg, *op. cit.* note 15, p. 261.

One final point requires clarification. In insisting on coherent stories about the birth and death of a human being, am I not reintroducing the very essentialism I was repudiating just before? The short answer is no.²⁹ I call the position I have just sketched *factitious essentialism*; even though essentialism is not in general true, human social life requires us to tell ourselves essentialist stories on pain of our rendering our lives incoherent. To take death as an example, there is more than one interesting conception of human death but we can only say our last goodbyes once. It is vital that we choose a time that makes sense to us. Our essentialist myths often occupy

alive, even though its failure to be an organism disqualifies it from being a human being. This will also be true of any later candidate we might propose. McMahan has also suggested to me that for the relevant symmetry we should look for functional integration among parts. If cells count as parts in the relevant sense, this could place the beginning of existence much earlier. But I cannot pursue this issue further here.

²⁹ My position is akin to that of Quine who repudiated essentialism while still insisting that postulated objects be furnished with identity conditions.

central positions in our lives and they shape our institutions. But that is no excuse for bad metaphysics. Factitious essentialism is no more a *kind* of essentialism than a faked Rembrandt is a *kind* of Rembrandt.

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