**Were You a Part of Your Mother?**

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Is the mammalian embryo/fetus a part of the organism that gestates it? According to the *containment view*, the fetus is not a part of, but merely contained within or surrounded by, the gestating organism. According to the *parthood view,* the fetus is a part of the gestating organism*.* This paper proceeds in two stages. First, I argue that the containment view is the received view; that it is generally assumed without good reason; and that it needs substantial support if it is to be taken seriously. Second, I argue that the parthood view derives considerable support from a range of biological and physiological considerations. I tentatively conclude in favour of the parthood view, and end by identifying some of the interesting further questions it raises.

Were you a part of your mother? This paper will not provide a complete answer to this question. But it will take a significant step towards doing so, by considering a closely related question, the resolution of which might, granted certain further assumptions, imply an answer: is the mammalian fetus a part of the organism that gestates it?

This is not a question that has received much philosophical attention. Two options spring to mind. First, one might hold that the fetus is not a part of the pregnant organism, but merely contained within or surrounded by it. This *containment view* of pregnancy is widely assumed in the philosophical literature. For example, Smith & Brogaard (2003, p. 74) contend that the fetus is inside but not part of the pregnant woman the way ‘a tub of yogurt is inside your refrigerator’. Oderberg (2008, p. 266) writes that the embryo is ‘an organizational unity that is not a part of its host’. And Howsepian (2008, p. 152) asserts that the fetus could not be ‘merely a part of some other thing’.[[1]](#footnote-1)

Alternatively, one might reject the containment view, instead endorsing the *parthood view*, according to which the fetus *is* a part of the maternal organism. Although not as widespread as the containment view, the parthood view does appear to have its adherents. For example, Iris Marion Young describes the fetus as ‘part of me’ (1984, p. 50), and Mellor writes that ‘severing a new-born child’s umbilical cord makes the child cease to be a part of its mother’ (2008, p. 67).[[2]](#footnote-2)

Who is right?[[3]](#footnote-3) In §2, I examine the containment view. I first argue that, the views of Young and Mellor notwithstanding, it is both philosophical orthodoxy and under-defended (§2.1). I then examine the few arguments in favour of the view. These turn out either to beg the question or, properly interpreted, to support the parthood view (§§2.2–2.3). In §3, I present my case in favour of the parthood view, arguing that most biological accounts of organisms invoke criteria that can be shown to support the view. In §4, I respond to several objections to the parthood view, before concluding, in §5, that, for the time being at least, it appears to be the more plausible view. I end by identifying some of the interesting further questions that the parthood view raises.

Before we start, however, we need to get clearer on the question.

**1. Clarifiying the question**

First, the claims in this paper are restricted to organisms.[[4]](#footnote-4) Nothing about persons can be inferred from these claims about organisms without significant further assumptions that are beyond the scope of this paper. Note in particular that claiming that the fetus is a part of its gestator does not, in the absence of significant further premises, entail that it is not also a person and/or organism in its own right. Note, too, that no moral conclusions follow from this metaphysical premise alone. It is, for example, entirely compatible with the parthood view that there are significant moral differences between the fetus and other parts of the organism.

What goes for fetuses goes for their gestators. The persons who are pregnant are all too frequently overlooked in philosophical discussions of pregnancy. But, insofar as persons aren’t identical to organisms, pregnant persons genuinely fall outside the restricted scope of this paper.[[5]](#footnote-5) The same holds for non-fetal male organisms/persons. This is not to diminish the genetic and—surely even more important—social contribution of fathers to their offspring. But these do not affect whether the fetus is a part of the pregnant organism.[[6]](#footnote-6)

Second, a note on terminology: henceforth, I will speak about the *foster* and the *gravida*. ‘Gravida’ will be used as a term for a pregnant organism.[[7]](#footnote-7) ‘Foster’ will be used as a term for anything that a gravida can be pregnant with: anything from an early embryo, or perhaps even zygote, up to a fetus-about-to-be-born.[[8]](#footnote-8) This does not imply that there aren’t important distinctions between zygotes, early embryos and term-fetuses, but merely that, in terms of their mereological relationship to the gravida, and thus for the purposes of this paper, they can be treated alike. I am deliberately noncommittal about the precise spatial[[9]](#footnote-9) and temporal boundaries of fosters, and on whether zygotes are fosters, for reasons I shall return to briefly in the conclusion. But we can speak uncontroversially about fosters from, at least, implantation onwards.

Third, let me clarify what I mean by the claim that the foster is a *part* of the gravida.[[10]](#footnote-10) In first instance I take this to be a claim that employs our common-sense understanding of part-whole relations, an understanding according to which kidneys are parts of dogs, table-legs parts of tables, and engines parts of cars. There are substantial questions concerning the nature of this understanding and the ontological commitments that do or don’t come with it. Here, I will restrict myself to some brief remarks on how the parthood view might be interpreted by those who operate within different ontological frameworks.

To begin, consider ontologies that countenance organisms, kidneys, and part-whole relations, and which grant that kidneys are parts of organisms. Given any such common-sense ontology, the parthood view appears relatively straightforward: it is the view that the foster stands in the *part-of* relation to the gravida. (This paper will largely presuppose such an ontology.)

But now consider ontologies that deny the existence of some or all of the following: organisms, kidneys (and other organs), and part-whole relations. On such ontologies, it may not be immediately clear how this paper’s central question is to be interpreted. But that does not mean that the question, or the considerations below, become otiose. For those who accept such ontologies typically provide interpretations or paraphrases of common-sense claims that are capable of being literally true (in the appropriate circumstances) despite the sparseness of their envisioned ontological landscapes. So, for any such ontology, one should proceed by interpreting or paraphrasing the parthood claim in whatever way one would interpret or paraphrase other common-sense claims of parthood. That is, one can start by treating talk of fosters being parts of gravidae as parallel to talk of, say, kidneys being parts of dogs.

For an example of how this might work, consider an ontology that contains only organisms and simples, such as the one defended by Van Inwagen (1990). On this ontology, there are no kidneys, but only simples arranged ‘kidney-wise’. The parthood view might then be reinterpreted, in first instance, as the view that, in cases of pregnancy, there exist simples arranged foster-wise that stand in the same sort of relation to the gravida as do (say) certain simples arranged kidney-wise: specifically, the relation of being among the simples that compose the gravida. (But note that this is the best interpretation of the view only on the (questionable) assumption that fosters are not organisms. If that assumption is denied, and fosters are taken to be organisms, then the parthood view should be interpreted in whatever way other claims of parthood between organisms would be interpreted.[[11]](#footnote-11))

Finally, and in line with our common-sense understanding of part-whole relations, I assume throughout the paper that the *part-of* relation is antisymmetric. Moreover, I assume that if the foster and the gravida stand in a parthood relation, then the foster is a part of the gravida. Both assumptions seem plausible on the face of it, but I offer no serious defence of them here.[[12]](#footnote-12)

**2. The containment view**

*2.1 The prevalence of the containment view*

According to the containment view, fosters are merely inside gravidae, the way the metaphorical bun is in the oven, or the way ‘a tub of yogurt is inside your refrigerator’ (Smith & Brogaard 2003, p. 74). Birth, then, involves a mere change of environment, like opening the fridge or oven and taking out your desired breakfast.

The containment view is heavily promoted by the dominant representation of human pregnancy that pervades contemporary Western culture. This emphasises the physical resemblance and continuity between human fosters and babies, presenting them as already-separate individuals, while at the same time de-emphasising the foster’s location within, and connection to, the gravida. Images of human pregnancy, for example, invariably give the foster’s skin the colour of (white) babies rather than the dark purple that it actually is.[[13]](#footnote-13) They also tend to de-emphasise, fade out, or omit altogether the gravida, placenta and umbilical cord. Our language similarly reinforces this idea: it is common to refer to human fosters as ‘babies’ almost regardless of their developmental stage. For example, early ultrasounds are often presented as ‘baby’s first picture’ (Mitchell 2001), and a popular pregnancy-tracking website writes, of the second week, that ‘[b]y this time, your developing baby is a little ball of cells’.[[14]](#footnote-14)

The popularity of this representation does not mean that it is either unproblematic or uncontroversial. A rich tradition in history and sociology both documents its cultural dominance and deconstructs it, arguing, broadly speaking, that the prevalence of what I shall call the ‘fetal container model’ of pregnancy is a recent and culture-specific phenomenon, one which is contingent on particular historically situated social developments and often on gendered and classed power-structures.[[15]](#footnote-15) These include, for example, medical professionals’ attempts to establish and extend their authority over the maternity domain (Arney 1982), and the political activities of anti-abortion campaigners, whose preferred fetal imagery is strongly suggestive of a separate human merely residing inside the gravida (Dubow 2011; Petchesky 1987).

Of course, the sociological and historical deconstruction of the fetal container model of pregnancy need not invalidate the containment view. But we should be wary of uncritically assuming a metaphysical picture whose apparent plausibility may be traceable to a highly contingent cultural representation. Uncritically assuming the containment view, however, appears to be exactly what much of contemporary philosophy has done.

Some, of course, offer explicit endorsements of the containment view in discussions of the metaphysical status of the foster, as illustrated by the quotes from Smith & Brogaard (2003), Oderberg (2008) and Howsepian (2008) provided in the introduction. Much more telling, however, is the general *absence* of discussion of the maternal-fetal relationship in the literature: it is this, I want to suggest, that reveals just howwidespread and implicit the acceptance of this view is.

Consider, for example, animalists who claim both that we are organisms and that we were once fetuses. Since human fetuses are located within other human organisms, this raises interesting and important questions: Can one human be a part of another? What does this imply about the ways in which we are or were related to our mothers? And yet no prominent animalist seriously considers these questions. In their book-length defences of animalism, Olson (1997) and Snowdon (2014) do not even mention them. This suggests that the containment view is being implicitly assumed, and that the possibility that the foster might be anything other than merely contained within the gravida is not being entertained.

As another example, consider the literature on abortion. Most of this work appears to be premised on the view that the foster is notpart of, but merely inhabiting or using, the gravida. Thomson (1971), for example, famously analogises becoming pregnant to waking up with a critically ill violinist plugged into one’s kidneys, who needs to remain on the life support this provides for nine months if he is to survive. This analogy invokes an image of pregnancy as the *use* of one’s body by a separate individual, rather than the *incorporation*, as a bodily part, of something that is (also) an individual.[[16]](#footnote-16) The related field of obstetric ethics paints a similar picture: it frequently characterises the foster as a patient, separate from the gravida (for example, Chervenak & McCullough 1996), or even as a prisoner in the ‘fortress’ that is the maternal abdominal wall (Phelan 1991).[[17]](#footnote-17)

Finally, the containment view appears to be widely assumed in metaphysical discussions of organisms or material particulars more generally. By way of example, consider the following quote that illustrates just how uncontroversial the containment view is often taken to be:

Most people would deny that there is something entirely composed of Alpha Centauri and my left thumb. We are more tolerant of composites whose parts are more “connected”, a prime example being molecules. And then there are the various “intermediate” candidates, perhaps *the mereological sum of a pregnant woman and the fetus*, or schools of fish—cases in which we are not sure whether “there are” such putative things. (Båve 2011, pp. 103–4*,* emphasis added)

The containment view is rarely justified—this is perhaps the best evidence of the implicit and unreflective nature of its widespread acceptance. But any widespread and uncontroversial philosophical assumption, which the containment view certainly appears to be, ought to be capable of being given a solid grounding. So what justification for the view has been, or can be, provided? In the next two sections, I will suggest that the arguments that have been presented for the view fail to justify its acceptance.

*2.2 The intuitive argument*

First, consider Howsepian (2008), who provides an argument that reflects, I think, elements of people’s first blush intuitions.[[18]](#footnote-18) Call it ‘the intuitive argument’. This argument typically focuses exclusively on cases of *human* pregnancy. Restricting our use of ‘foster’ and ‘gravida’ accordingly, then, and letting HUMAN serve as a variable that denotes human beings, or human organisms, or persons, or something similar, we can represent it thus:

(1) Fosters are HUMANs.

(2) No HUMAN could be part of another HUMAN.

(3) [Implicit] Gravidae are HUMANs.

(C) Fosters can’t be parts of gravidae.

What support is there for the premises of this argument? (3), I think, we can accept. (1) is, to put it mildly, under dispute. But (2), especially, appears to be assumed without any explicit foundation.

One way in which we might attempt to motivate (2) is by appeal to a principle stating that any object of some more general (but still restricted) kind *K* can’t have another *K* as a part: a principle of ‘maximality’.[[19]](#footnote-19) And indeed a maximality principle is frequently accepted for mammalian organisms. This is what motivates Hawley (2001, p. 166), for example, to write that ‘no cat is a proper part of a cat’.

However, no such principle can support (2) in a way that will allow it to play a role in an argument for (C). Maximality principles are typically invoked in order to respond to very particular problems, such as the ‘problem of the many’ (Unger 1980). A cat, *C*, sat on a mat,appears to have many cat-like proper parts, each of which seems, intrinsically, to have a claim to being a cat: *C* minus a few hairs, for example. Should we conclude that there are many cats sitting on the mat? Surely not. Intuitively, at least, there is just one: *C*. And taking cathood to be maximal (and so extrinsic) can play a role in vindicating this intuition. For granted that *C* is a cat, the other cat candidates are ruled out from being cats on the basis of their being, extrinsically, parts of *C*.

But now suppose that this cat, *C*, is pregnant with a single foster, *F*. Here, on the assumption that a feline foster has, intrinsically, the right kind of claim to being a cat, intuition tells us that there are neither many cats, nor one cat, but precisely two cats on (or in the vertical vicinity of) the mat: *C* and *F.* If this intuitive verdict is granted, then a maximality principle for cats will entail that *F* is not a part of *C*. And it may seem that, once generalised to other mammalian organisms, this line of thought will provide a maximality-based argument for (2), and so, via the argument above, a reason for accepting (C).

The problem here is that any maximality principle for organisms will have been formulated either with or without the possibility of pregnancy in mind. If it is the former, then accepting such a principle for organisms of kind K involves presupposing that either *K* fosters are not *K*s or *K* fosters are not parts of *K* gravidae. And so, in the context of an argument of the sort above, in which (1) (or its equivalent for *K*s) is taken to be true, it involves presupposing that *K* fosters are not parts of *K* gravidae. But that is just to say that it involves presupposing the containment view. And so the principle cannot itself be used to justify the view.

But of course this is not how any maximality principles were devised. Hawley did not pause to consider fosters when she made the claim above: her concerns lay with the vague spatial and temporal boundaries of objects.[[20]](#footnote-20) So why should we take the verdicts delivered by such principles, in cases of pregnancy, to be probative? Why should we not, instead, take pregnancy to provide a potential counterexample to such principles, at least as formulated above? Or, to put it another way, why not treat them as inadvertent overgeneralisations?[[21]](#footnote-21) After all, these principles were designed with the sole aim of avoiding having to recognise unwelcome multiplicities of (say) cats; but taking *F* to be both a cat and a part of *C* does not, in and of itself, raise the spectre of an unwelcome multiplicity (or plurality) in the relevant sense.[[22]](#footnote-22)

What all of this suggests is that we should begin our investigation of the metaphysics of pregnancy by looking at pregnancy on its own terms, and not by importing a set of prior philosophical commitments that were formed withoutbearing the possibility of pregnancy in mind. If those other commitments need revision because pregnancy raises metaphysical difficulties, then so be it. It wouldn’t be the first time that philosophical reflection prompted such revision. Indeed, this is partly why mammalian pregnancy is an interesting topic for metaphysics.

In the absence of a general principle in support of (2), one might think there is something specific about the kind HUMAN that supports it. Indeed one might think this *obvious*. After all, you and I are HUMANs, and neither of us is presently part of another HUMAN. But accepting (2) on this basis constitutes an unwarranted generalization. Our present non-parthood does not itself entail that no HUMAN could be part of another HUMAN; only that at least some HUMANs are not parts of other HUMANs. Alternatively, one might think that one HUMAN being a part of another is just so difficult to imagine*,* and so far removed from the case of the paradigmatic HUMAN adult, that it can’t occur. But that merely suggests a lack of reflection on HUMAN development. Fosters *are* very different from paradigmatic HUMAN adults. And so, if (1) is supposed to hold, then being a HUMAN must be compatible with having quite different characteristics to those possessed by adults.

One might also accept (2) on the grounds that it is some brute characteristic of, or follows directly from, the kind of thing that a HUMAN is—a self-standing individual, say—that no HUMAN could be part of another HUMAN. But here we have to be careful.[[23]](#footnote-23) Remember (1), which stated that fosters are HUMANs. Whether that premise is true depends on what precisely it is to be a HUMAN. If being a HUMAN is a matter of being a conscious, self-aware entity, for example, then (1) is presumably false. If, by contrast, being HUMAN is a matter of being a living entity possessing a full set of human genes, or being an entity developing from the unification of a human sperm & egg, then (1) is true. So if it is a brute fact that HUMANs can’t be parts of other HUMANs, then it becomes an open question whether (1) is true, that is, whether fosters are HUMANs. Moreover, the answer to this question will depend entirely on the very conclusion that the argument was intended to establish: whether fosters are parts of gravidae.

Alternatively, if it is a brute fact that fosters are HUMANs, which makes (1) true, then it becomes an open question what attributes HUMANs can have—and these will include whatever attributes fosters do in fact possess. It thus becomes an open question whether HUMANs can be part of other HUMANs—i.e. whether (2) holds—which again depends on whether fosters are in fact parts of gravidae.

In the absence of further substantive support for its premises, then, the so-called intuitive argument appears unable to establish that fosters are not parts of gravidae, and instead appears merely to presuppose it. For the argument to do any work, it must draw on a substantive conception of being HUMAN on which both premises are adequately supported. But it is not immediately obvious what such a conception would be.

Perhaps the most likely candidate for such a conception is one that is supported by a more general metaphysical view on which substances can’t have parts that are themselves substances, which would then be capable of persisting through their separation.[[24]](#footnote-24) On such a view, the argument becomes:

(1′) No substance can have as a part another substance, capable of persisting through separation.

(2′) Fosters are substances, capable of persisting through birth.

(3′) Gravidae are substances.

(C) Fosters can’t be parts of gravidae.

Even if one accepts (1′), this version of the argument is problematic. (2′) is no doubt motivated by the *prima facie* compelling idea that fosters are numerically identical to the babies that are spatiotemporally continuous with them. But not only is this claimed identity presently under dispute, it is especially easy to deny on a (1′)-type metaphysical view. For such a view will also deny something else that is just as *prima facie* compelling: that my brother’s kidney, about to be removed, placed on its own in a box of ice for a while, and ultimately donated to my sister, will persist through the affair and end up inside her. There is thus no reason, on this view, to give any weight to the *prima facie* plausibility of the claim that the foster persists through birth.

If, on the other hand, its *prima facie* plausibility convinces us to hold on to (2′) after all, then this should also convince us to recognise the numerical identity of transplanted kidneys. And that amounts to rejecting (1′).

That is not to argue in favour of either position. It is merely to point out that the adoption of (1′) does not in and of itself clinch the argument against the parthood view; it leaves that question wide open. Further consideration of substantive ontological views concerning the relations between substances and parts, or the arguments relevant to them, is, however, beyond the scope of this paper.[[25]](#footnote-25)

*2.3 The topological argument*

What non-question-begging arguments are presented in favour of the containment view? Not many. Smith & Brogaard (2003) come closest to providing one. They argue that the foster, although within the external physical boundaries of the gravida, is not a part of that organism because it is not topologically *connected* with it. Their main argument is that the foster has a ‘complete, connected external boundary’ (p. 47) that it does not share with the gravida. But, as I argue in more detail elsewhere (Kingma forthcoming), this is simply false. By Smith & Brogaard’s own criteria, such a boundary cannot lie at the level of the umbilicus, for the umbilical cord is topologically connected to the foster. But it can’t lie at the level of the placenta either, for the placenta is perfused by both maternal and fetal blood supply and connected to the foster by the umbilical cord, and to the rest of the gravida by growing directly into (or out of) the uterine wall. Indeed, Smith & Brogaard’s criteria do not support the containment view, but speak in favour of the parthood view. And the apparent mistake Smith & Brogaard make when discussing the physiology of pregnancy is neatly explained by the literature on the fetal container model of pregnancy. After all, de-emphasizing the connection between gravida and foster is precisely what that model does.[[26]](#footnote-26)

*2.4 Conclusion*

I have argued that the containment view appears to be widely accepted in philosophy, but not on the basis of any convincing argument. This widespread acceptance is neatly explained, but not justified by, the socio-cultural dominance of the fetal container model of pregnancy. The few arguments that are presented in favour of the containment view appear either to beg the question or to speak against it. The containment view does not, then, stand on solid ground.

This does not, of course, demonstrate that the view is wrong. A defense of it may yet be mounted. But, pending such efforts, I conclude that philosophers are ill-justified in simply assuming the containment view. They should, instead, recognise that the view carries at least some burden of proof.

What about the alternative?

**3. The parthood view**

According to the parthood view, the foster is part of the gravida. Whether this claim is correct depends on the answer to the more general question of what is or can be part of a (mammalian) organism. And this is a question into which an account of the organism can provide insight.

There are at least two general directions in which one might look for such an account. First, one might look towards contemporary biology and philosophy of biology, both based in evolutionary theory, where much has been written on that question. Second, one might look towards accounts of the organism in metaphysics. In this paper, I will do the former. The latter will be reserved for future work.

What is the philosophically respectable biological account of the organism? There is no single answer. The question of what an organism is, and more generally the question of what a biological *individual* is, are live areas of biological and philosophical research (see, for example, Clarke 2010, Pepper & Heron 2008, Wilson & Barker 2013). Although the notion of an individual organism may seem fairly well-circumscribed when we consider horses and other mammals, the natural world presents a dazzling variety of organisation that defies such easy categorisation: colonies of ants may be best described either as groups of individual organisms, or as ‘superorganisms’ (Wheeler 2011); the Portuguese ‘man-o-war’ appears to us to be a single organism—a jellyfish—but could equally be viewed as a highly stable and organised community of organisms; and many organisms, including mammals, outsource some of their key-functions to symbiotic bacteria. Even humans may be complex symbiotic communities rather than the genetically unified individuals that we often take them to be (see, for example, Hutter, Gimbert, Bouchard, & Lapointe 2015).

I do not want to focus on one, inevitably tendentious, account of the organism, particularly given that this is an ongoing area of research. Instead, then, I plan to consider four distinct criteria that frequently recur in work on the delineation of organisms (Pepper & Herron 2008), and which can provide guidance when it comes to deciding what is and isn’t part of an organism. These appeal, respectively, to: homeostasis and physiological autonomy; metabolic and functional integration; topological continuity; and immunological tolerance.[[27]](#footnote-27)

In focussing on these criteria, I do not commit to the view that any one (or any combination) of them provides either a necessary or a sufficient condition for being a part of an organism. I commit only to the claim that something meeting all of these criteria has a very strong initial case for being part of an organism. (And besides, we have to start this investigation somewhere.) In the next four sections, then, I will demonstrate that the foster meets each of these conditions with respect to the gravida.

*3.1 Homeostasis and physiological autonomy*

The first theme that Pepper & Herron identify is homeostasis and physiological autonomy. Organisms, especially mammals, have an internal environment which they actively maintain in a state of relative homeostasis, and within a narrow range of parameters, as opposed to their externalenvironment, where much larger variations in conditions can be tolerated (see, e.g., Ruiz-Mirazo, Etxeberria, Moreno, & Ibáñez 2000, p. 217). In mammals, for example, internal temperature, acidity, osmotic pressure, and so on are all very tightly regulated, and much of the metabolic activity of the organism is devoted to this regulation. This stands in stark contrast to the considerable fluctuations in temperature (and so on) that regularly occur in the wider environment. While tolerated externally, such fluctuations would not be compatible with the continued living of the organism were they to occur internally. Plausibly, then, whatever is in the internal environment is part of the organism, while for the external environment this does not hold.

What falls inside, or is part of, the internal environment of the mammalian organism? At the very least, the contents of its body: muscles, organs, blood, and so on (though possibly not the contents of its gastro-intestinal system.) Somewhat more formally: everything that is inside the (topologically) doughnut shaped unit that is lined by the epidermis (that is, the skin) and the surface of the gastro-intestinal tract.[[28]](#footnote-28)

Is the foster within the internal environment of the gravida? Yes, for two reasons. First, on spatial grounds. While a debate can be had about the proper delineations of inlets into the doughnut or the apparent connections between things inside it and things outside it—think of the spaces in the nose, trachea and lungs; of the bladder, urethra, sperm vesicles and testes; and of pores and exchange functions in the skin, nose and gut—this debate is hardly relevant to the status of the foster. For even if one thinks that the uterine cavity is not a part of the internal environment,[[29]](#footnote-29) the foster still would be. After all, post-implantation, the foster does not reside in the uterine cavity, but is implanted in the uterine wall, within the maternal deciduous tissue, and is, at least in its early stages, completely covered by it.

Second, on homeostatic grounds. The foster’s state is regulated by, and within the context of, the rest of the gravida, so that the entire entity can maintain its internal environment within the narrow range of parameters that are compatible with life.

One may object that the foster appears to maintain its own internal environment relative to the rest of the gravida, and has a certain degree of physiological autonomy. But objecting on this basis is problematic in a number of ways. First, the external boundary of the foster is not clearly delineable.[[30]](#footnote-30) Second, the foster relies on the rest of the gravida for many of its important physiological functions, including the extraction of oxygen, digestion, temperature regulation and waste disposal. (Its lungs only start working after birth, and its kidneys, despite functioning prior to birth, are only fully relied on postnatally.) And third, the existence of parts with their own internal environments, and so with some degree of physiological autonomy, is a universal feature of multicellular organisation, and one of the reasons why the problem of biological individuality is the problem that it is. A complex organism’s cells, for example, all have clear delineations of their internal and external environments, with internal metabolisms and homeostatic requirements that may differ from those of their surrounding organism(s). Up to a point, the same applies to organs. (Think of the blood-brain barrier, for example, or the lower temperature maintained in testes.) Nevertheless, cells and organs are clearly parts of such organisms.

*3.2 Metabolic and functional integration*

The second main theme that recurs in biologically informed accounts of the organism, which is closely related to that of homeostasis and physiological autonomy, is metabolic unity and functional integration.[[31]](#footnote-31) An organism’s parts normally work together as one metabolic system, towards a common ‘goal’: the survival and reproduction of the organism (Boorse 1976, 2002). Or, more precisely, organisms are the products of a long history of competition and selective reproduction—that is, of evolution by natural selection—and, because of this, under conditions relatively similar to those in which its ancestors evolved, an organism’s parts will tend to act in ways that promote its inclusive fitness.[[32]](#footnote-32) This means that the functional behaviours of the various parts of an organism are interdependent, and must be understood and explained with reference to the organism itself. For example, the lower-level ‘self-sacrificial’ behaviour of cellular parts of an organism in apoptosis (planned cell-death) cannot be explained if we think of cells exclusively as independent and individual entities, in sole pursuit of their own survival and/or reproduction. But it can be explained once we take into account the fact that cells are functionally integrated parts of larger organisms.[[33]](#footnote-33)

This functional integration is evidenced by the metabolic unity of the organism. Metabolic unity provides a less clear-cut guide than does functional integration when it comes to determining whether something is part of an organism, due to the ways in which organisms maintain homeostasis and regulate their metabolisms, which include, for example, seeking and drinking water. Moreover, organisms engage in regulation of their environments through, for example, niche construction and agriculture (Odling-Smee, Laland & Feldman 2003), both of which, as cultural traits, are themselves heritable and thus subject to evolution by natural selection. Nevertheless, within the organism, metabolic regulation is fairly direct, involving many hierarchical and mutually responsive feedback systems.

Is the foster functionally and metabolically integrated with, and interdependent with, (other) parts of the gravida? Yes, for at least three reasons. First, because the foster depends upon the gravida for several of its metabolic activities, including waste disposal and temperature regulation. Second, because the gravida actively *integrates* the foster into its metabolic system, making anatomical and metabolic adjustments to facilitate its continued presence, such as an increase in cardiac output, which can then persist for months after pregnancy. (Moreover, and in contrast to, for example, the pathological changes involved in hosting a malaria parasite or tuberculosis bacillus, these changes are functional: they were likely selected for, and certainly tend to contribute to, the maternal organism’s inclusive fitness.) And third, because of the way in which foster and other parts of the gravida work together. That is to say, successful maintenance and conclusion of the pregnancy is a complex interplay between foster and other regulatory parts of the gravida—albeit one that remains poorly understood.

One might object that the foster cannot count as being functionally integrated with (other) parts of the gravida because it does not contribute to, but in fact diminishes, the (likelihood of the) survival of the gravida. But that is irrelevant. Evolution by natural selection doesn’t produce organisms that tend towards their survival, but organisms that tend towards the promotion of their inclusive fitness. And inclusive fitness primarily requires reproduction; survival matters only as an aid to that.[[34]](#footnote-34) Moreover, a trade-off between survival and reproduction is entirely normal; we find it all over the natural world. Think of the energy invested and risks taken by male stags in growing giant antlers and then using them to fight each other in the mating season: essential for reproduction, but hardly promoting survival.

Denying that reproduction is a core function of the organism, or denying that organs that promote reproduction but not survival are functionally integrated, would not only be biologically bizarre, it would also significantly diminish organisms, excluding, at a minimum, penises, testicles, ovaries, breasts and wombs from being parts of organisms.

Another possible objection to the claim that the foster is functionally integrated with (other) parts of the gravida points towards the possibility of serious fetal-maternal conflicts. And indeed, these do happen, and may threaten the gravida’s life. They are not the norm, however. As a result, they are comparable to other pathologies, such as autoimmune reactions, tumours and overactive thyroids, that can threaten the organism’s life. But the question of whether or not pathological or malfunctioning immune systems, tissues and fosters are functionally integrated with the organisms containing them can be set aside.[[35]](#footnote-35) Whether they are or are not, the mere possibility of their malfunction cannot call into question the functional integration of *normal* immune systems, tissues and fosters. And it is worth remembering that maternal-fetal conflict is not in the foster’s or future baby’s interest either: absent modern technology, baby mammals that kill their mothers during pregnancy or birth stand virtually no chance of survival.

Finally, one might object that the foster and (other) parts of gravida are not functionally integrated on the grounds that they sometimes compete for resources, such as calcium and iron. But this is not a relevant indicator: muscles and gut compete for oxygen; brain and muscles compete for sugar; bladder and sperm compete for the penile urethra; and sex chromosomes compete to unbalance the first meiotic division. What is biologically striking about such competition is not its existence, but the degree to which it is limited and supressed by the unity of the organism. Biological individuals (and parts of biological individuals) in which such competition is successfully balanced and supressed are fitter than those in which lower-level competition is rampant. Given the genetic heterogeneity involved in the case of the foster and the gravida, the high degree of successful regulation and suppression of competition between them—itself a key indicator of organismic individuality—is what stands out as particularly impressive.

That is not to say, of course, that the evolutionary interests of the foster and the gravida completely coincide. Because their genomes only partially overlap, their genetic inclusive fitness may come apart.[[36]](#footnote-36) Thus, statistically speaking, a gravida may better serve the promotion of its inclusive fitness by investing comparatively less in its present foster, instead spreading out its resources and investment over a lifetime of iteroparity, either by investing in present offspring or by saving resources for future fosters. The foster, by contrast, may wish to hog comparatively more of the gravida’s resources for itself.[[37]](#footnote-37) This is a point I shall return to later.[[38]](#footnote-38) For now, the criterion we are concerned with in this section is functional integration, and not—for want of a better term—*complete coincidence of evolutionary interest*. And, if we stick to the present criterion, which states that organisms are marked by the high degree of functional integration and metabolic unity among their parts, then, according to this criterion, fosters appear to be parts of gravidae.

*3.3 Topological continuity*

A third frequent theme in accounts of organism delineation is that of being ‘physically continuous and bounded’ (Wilson & Barker 2013, see also Wilson 2005): organisms display ‘spatio-temporal continuity’ (Hull, 1978), or are one material object*.*[[39]](#footnote-39)This is one main reason why we are tempted not to consider ant-colonies organisms: the ants are spatially dispersed. It is also a main point of dispute with those who, analogously to the ‘extended mind’ theory (Clark 2008), want to include an organism’s constructed niche—for example, a fox’s burrow, a bird’s nest, or a human’s house—as part of the ‘extended organism’ (Turner, 2000).

Are fosters spatially continuous with the rest of the gravida? Yes. As we saw in our earlier discussion of Smith & Brogaard (in §2.3), the placenta and umbilical cord both grow directly out of the fosters abdomen and into/out of the maternal uterine tissue—there isn’t even a separating membrane. [[40]](#footnote-40) There is therefore not a complete spatial discontinuity between foster and gravida. And so the foster is hooked up to, or rather hooked into, the gravida, not only metabolically and functionally, but also topologically.

*3.4 Immunological tolerance*

A fourth common way of delineating and understanding organisms is by appealing to what an organism immunologically tolerates, where ‘immunological toleration’ is to be understood broadly (Tauber 1994; Pradeu 2010, 2012).

Are fosters immunologically tolerated by gravidae? Yes. Mammals are actively set up so that, on the whole, the foster is not attacked by the gravida’s immune system during pregnancy. (Though of course, like any other system, this can and does malfunction.) And this active immunological non-rejection signals acceptance by the gravida of the foster as one of its parts (Pradeu, 2012; Howes, 2007).

One might object that this acceptance is achieved, not by recognition of the foster as ‘self’ by the immune system (with the caveat that ‘self-recognition’ is a highly simplified way of conceptualising the immune-system; cf. Pradeu 2012), but by shielding the foster from the immune system, in part through the maintenance of separate cardiovascular systems. And it is true that this is how acceptance is achieved. But this fails to show that the gravida does not immunologically integrate the foster. This shielding is simply the best way for the gravida to realise that integration whilst also maintaining a sound immune system. Compare, for example, the blood-brain barrier, which partially shields the brain from the immune system. This is a way for an organism both to have a powerful immune-system and to protect a part of itself—the brain—that would be particularly vulnerable to the normal workings of that immune system. Specifically, the blood-brain barrier protects the brain from the damage that could be done by inflammation, by stopping most antibodies, as well as many immune cells, from entering the brain tissue. In a similar way, the relative shielding of the foster from the gravida’s immune system is the way in which the gravida maintains its immune system whilst also having parts (fosters) and engaging in activities (reproduction) whose full exposure to the immune system would be detrimental. Such shielding does not stop us from recognising the brain as part of the organism, and so it should not stop us from recognising the foster as part of the gravida. Indeed, because immunological shielding is active (Howes 2007), it is more fruitful to think of the blood brain barrier and the placenta as elements of the pregnant organism’s immune regulation: these are the ways that the organism has found to accommodate certain important parts (brain and foster, respectively) within the context of the workings of its own immune system.[[41]](#footnote-41)

*3.5 Four criteria combined*

According to these four recurrent criteria for the delineation of organisms, the foster is part of the gravida. When does the foster cease to be such a part? On three of the criteria, birth marks that moment. At birth, foster and gravida cease to be topologically continuous (§3.3); it largely marks the end or destruction of the active set-up by which the gravida includes and immunologically tolerates the foster (although antibodies in milk may maintain some shared immunological activity) (§3.4); and it means that the foster is no longer part of the internal environment of, or the autonomous homeostasis-maintaining unity that is, the gravida (§3.1). Rather, post-birth, and all being well, now-baby and now-mother are two different homeostasis-maintaining units, and two different topological entities, each with its own internal environment, and each living in a similar external environment.

The story according to the criterion of §3.2, metabolic unity and functional integration, is a little more complex. One could certainly make the case that functional integration does not cease upon birth, but continues beyond it, gradually diminishing over time. Although the duration of this continued integration varies considerably from species to species (compare, for example, humans and guinea pigs), all baby mammals are heavily dependent on maternal care.[[42]](#footnote-42) Active functional integration of the other’s need also continues (think of, for example, hormonal control of lactation in the mother, and uniquely identifying calls in seal pups). Similarly, one could argue that metabolic integration does not fully cease at birth. For when nursing exclusively, mother and offspring may continue to count as one metabolic (and, to a small extent, immunological) unit, as the regulation of lactation quantity and response between mother and offspring is cooperative and functional. [[43]](#footnote-43) And this may well be considered to be direct metabolic regulation.

On the other hand, birth does, at the very least, mark a sudden and very substantial drop in both functional integration and metabolic regulation. The baby starts breathing, thus regulating its own oxygen supply; it starts using its kidneys in earnest; it quickly begins to regulate its own temperature; it gains a microbiome, and thereby digestive abilities; and so on. Taken together, then, the criteria suggest that birth marks the end of the foster’s being part of the gravida.

*3.6 Some responses*

There are a number of ways in which one might try to cast doubt on the claims that I have made in this section.

First, one might question whether any or all of the criteria above are convincing candidates for individuating organisms. That is certainly possible. But to offer a substantive defence of these criteria is beyond the scope of this paper.

Second, one might object by appeal to parasites. Consider, for example, a tapeworm. A typical tapeworm is clearly inside its host’s internal environment; is integrated into its metabolic system; and may even have successfully shielded itself from the immune system. One could even argue it is topologically integrated. But, surely tapeworms aren’t parts of the organisms that host them?[[44]](#footnote-44)

Even if such an argument could be made convincing, crucial differences between tapeworms and fosters remain. Specifically, tapeworms aren’t actively functionally integrated with their hosts. Unlike what can be said about the tapeworm, it is just not true to say that the foster antagonistically exploits the gravida, or that, as Oderberg puts it, the foster ‘uses its host’ (2008, p. 266). Fosters and gravidae rely on each other for the promotion of their fitness: the foster relies on the rest of the gravida for everything, but the gravida relies on the foster to realise its considerable reproductive investment. The gestating of fosters, unlike the hosting of parasites, is something that female mammals aim for, initiate, and actively facilitate. It is a functional and key part of their lifecycle, and indeed is their central means of realising their main evolutionary ‘goal’: leaving offspring. Fosters really are not comparable to parasites.

Third, and in response, one might point out that not all parasites are parasitic: some manage to make themselves indispensable to the organism, and some are sought out because their cooperation is essential and mutualistic. Revisiting the earlier observation that the foster’s evolutionary interests do not fully coincide with that of the gravida, then, one might attempt to rebuild the case for containment by arguing that fosters are akin to mutualistic parasites, living in (temporary) symbiosis. Such an argument takes us into extremely contentious territory, however. For one thing, the assumption that such mutualistic parasites aren’t parts of their host organisms is highly controversial, and takes us straight to the heart of contemporary debates over levels of selection, biological individuality and the nature of organisms, where at least some would argue that in certain cases of symbiosis, the symbiotic community *is* the organism.[[45]](#footnote-45) These debates cannot be settled here. For another, fosters are, in at least one important sense, utterly unlike mutualistic parasites or other examples of symbiosis, for the foster and the gravida belong to the same species. More than that, they are part of a single reproductive lineage: the one is the offspring of the other. This means that foster and gravida do not just mutualistically rely on each other for the promotion of their inclusive fitness; in addition, each appears as a component in the other’s fitness function. So an objection of this sort would not only have to show that symbiosis and mutualism preclude parthood, it would also have to explain why the significant differences between these phenomena (on the one hand) and pregnancy (on the other) should not be taken to undermine the analogy. And it is far from clear that either requirement can be met.

Fourth, one might question the relevance of the criteria to the question at hand, either because the criteria may not seem fully pertinent to questions about whether some given thing is part of an organism[[46]](#footnote-46), or because they might seem to be focussed on distinguishing organisms of different species, rather than, as would be required to settle our question, distinguishing different generations of organism in the same species. Both concerns can be met, however.

The literature on biological individuality is concerned with at least two types of question. First, and in response to the first worry, there are questions about how to distinguish organisms from entities located at higher levels of organisation or individuality, such as colonies or groups, and from entities located at lower levels of organisation, such as organs, cells and organelles (Pepper and Herron 2008). Thus, accounts of the organism do not just provide insight into what is to count as part of an organism, but are directly relevant to questions of this kind, including: whether human cells are best characterised as organisms or as parts of organisms (the latter); whether ants are best characterised as organisms or as parts of larger organisms (who knows!); and whether gut bacteria are best characterised as organisms or as parts of larger organisms (possibly both?).

Second, and in response to the second worry, the literature is also straightforwardly concerned with questions about how to distinguish individual organisms of the same species, including distinguishing parents and offspring. It is just that these questions have mainly been asked in the context of research on plants, fungi, and asexually reproducing animals. And once again, these questions are related to concerns about parthood: for questions about clonal growth versus reproduction (Janzen 1977)—as in budding strawberry plants, for example—are equally questions about parts and wholes.

*3.7 Interim conclusion*

If we take our four recurrent criteria for delineating organisms at face value, we will be led to the view the foster is a part of the gravida. This gives us a strong initial case in favour of the foster being a part of the gravida. But that does not mean the story ends here. Once we start digging deeper into debates about organisms and biological individuality, we not only enter difficult territory where the parameters of debate are unclear, but we also find that consideration of the foster raises its own set of distinctive questions. These are questions that overlap with questions about mutualism and symbiosis, as well as with the sorts of questions that arise in plant biology about distinguishing organisms that form part of the same reproductive lineage. I thus want to finish this section with two observations. First, that we have, as we didn’t have before, an initial set of arguments in favour of the parthood view, as each of the established and frequently recurring criteria for the individuation of organisms supports it. Second, that the foster does not just generate interesting questions in metaphysics, but also presents a genuine and possibly novel set of questions for current debates surrounding biological individuality, debates which sufficient reflection on pregnancy may well challenge or alter. This is another interesting upshot of looking into the metaphysics of pregnancy, one that is to be considered further another time.

**4. Objections**

I have presented what I take to be a strong prima facie case in favour of the parthood view. I want now to consider five potential objections that I have often encountered in conversation.

*4.1 Genetic difference*

To begin, one might argue that the foster cannot be part of the gravida because it has a different genome.[[47]](#footnote-47) Admittedly, this is one frequently recurring criterion in discussions of the organism that I have not yet mentioned (see, again, Pepper & Herron 2008). But it is not a convincing one.

First, many parts of a typical mammalian organism will not have its genome anymore, including its hairs and its red blood cells.

Second, mammalian organisms have always harboured multiple genomes. This is not only because, if an organism’s microbiome is counted as part of it, much of ‘its’ DNA—roughly 90% in the case of a human organism—will count as being of alien origin, but also because of microchimaerism: the small-scale mixing of different genetic cell lines in one organism. Microchimaerism is often caused by pregnancy, as fetal cells commonly traverse the placenta and stay behind in the mother’s body, sometimes – in humans – for up to decades after giving birth. Through similar processes fosters often end up with some maternal cells, or, in the case of twins, due to placental transfers, with each other’s cells and blood. And I see no reason why these cells, which appear to integrate into the body, are not to be counted as parts. This illustrates that mammalian organisms are not, and so need not be, genetically unified.

Third, I see no reason to deny that, when an organism receives a transfusion or transplant, the donated blood, or bone marrow, or kidney, becomes part of it. And yet that would, again, result in its having parts with different genomes.

Fourth, there are more serious cases of *macro*chimaerism: the merging of two blastocysts, which might otherwise have become dizygotic twins, to form what appears to be a single organism. Such an entity will comprise cells of two distinct genetic lineages: its kidneys, for example, may contain genetic material originating from the one zygote, its brain material from the other. But it seems highly implausible to deny that this would indeed be a single organism.[[48]](#footnote-48)

*4.2 Future detachment*

One might also object that fosters cannot be parts of gravidae because they will not be parts of them in the future. There are two versions of this argument.[[49]](#footnote-49) First, one might think that fosters are not parts of gravidae because they can exist as non-parts. But this argument is obviously fallacious: it conflates a modal property with its actualisation. The fact that a glass could be broken does not mean it is broken now; nor does the fact that I am mortal make me dead. Similarly, an organism has many parts, such as hair, blood and kidneys, that can be separated from it; the potential for separate existence doesn’t preclude parthood.

Second, one might think it is relevant that the foster *will* become separate, and have a life of its own. By itself, this objection suffers the same problem: I am not just mortal, I *will* die—and yet, again, I am not dead. Similarly, many parts of an organism that *can* exist separately, such as skin cells, hairs and a great many molecules, are ones that *will* exist separately; future separation does not preclude present parthood. Moreover, if future detachment were taken to block present parthood, very little—perhaps almost nothing (think of the molecules!)—could be counted as part of any given organism. But this is absurd.[[50]](#footnote-50)

Alternatively, one might read this second version of the objection as emphasising, not so much the future *separateness* of the foster, but the fact that it will have a life or life-cycle *of its own*.[[51]](#footnote-51) Even in this guise, however, it is unclear why this should be taken to constitute an objection to the parthood view. For whyshould we think that something, which looks in every respect like a part, is not in fact a part, just because it is going to enjoy a life or life-cycle of its own? On the face of it, the biological world is full of such parts, as evidenced by widespread clonal reproduction, as in parthenogenesis in asexually reproducing aphids, or budding in sea anemone, strawberry plants and the hydra. Indeed, the view that no organism could have a part that will have a life-cycle of its own risks denying, on the grounds of conceptual impossibility, most existing forms of biological reproduction.[[52]](#footnote-52) In the absence of some reason to think that a future life-cycle precludes parthood in the biological world at large, then, orsome specific reason to think that mammals should to be treated as exceptional in this regard, this line of objection appears to be unconvincing.

*4.3 Social & psychological dependence*

Another sort of objection that I have encountered involves arguing that the kinds of considerations I have discussed in this paper are incapable of settling the question. For I have, throughout this essay, assumed what strikes me as a plausible view: that whether or not something is part of an organism—which I take to be a metaphysical fact—is not determined by social or psychological facts. But this assumption could be challenged.[[53]](#footnote-53)

If one were to take the view that some such facts play a role in determining the answer to our question concerning the relation between the gravida and the foster, then one would not take the considerations offered above to come close to settling it. Whilst they might still be taken to put significant pressure on the containment view, they could not then be taken to establish, or even build a strong case in favour of, the parthood view.

Moreover, this kind of view might well be taken to cast doubt on the assumption that a single, non-context dependent answer to our question can be given. Consider, for example, metaphysical views about persons according to which personhood is dependent on certain contingent social facts, such as the social conferral of personhood (for example, Baier 1985; Federer Kittay 2005), or standing in a rearing relationship (Jaworska & Tannenbaum 2014). On these views, personhood can vary with time, place, context and the attitudes of the individuals involved. One could imagine someone developing and defending a similar kind of view about organismic parthood, according to which it can (at least sometimes) depend on certain contingent social or psychological facts, such as a woman’s own interpretation and construal of her pregnant experience.[[54]](#footnote-54) On such a view, the kinds of considerations discussed in this paper would, once again, be incapable of settling questions about organismic parthood.

However, I cannot begin to consider, in this paper, the various additional factors which might be taken to be relevant were the assumption above to be rejected. Suffice it to say that, while a challenge along these lines is certainly possible, it does not strike me as promising. For it is unclear what could justify taking organismic parthood in the case of humans to depend on factors of a fundamentally different kind to those on which it depends in other mammals. And yet—one presumes—no social or psychological factors of the sorts mentioned above play a role in determining parthood when it comes to, say, rats.

*4.4 Moral status*

Yet another line of objection relies on the claim that the (human) foster has some sort of special moral status or relevance, taking this to give us a reason to deny that it is a part of the gravida. For present purposes, we can set aside questions about the nature of this purported moral status/relevance and debates about whether or not it really is possessed by (human) fosters. The point I want to make here is simply that any objection of this sort will rely on a premise to the effect that no part of an organism could have the relevant moral property. And the question is: why should we accept any such premise?

One inclined to press this kind of objection might point out that the relevant moral property, whatever exactly it is, is not possessed by any previously recognised parts of gravidae, or by any parts of non-pregnant organisms. But the various parts of an organism can be importantly different from one another. There are many ways, including moral ones, in which kidneys may differ from hearts, brains, hair, nails, sperm and skin-cells. And so there may be many ways, including moral ones, in which fosters may differ from kidneys, or any other body parts. If (human) fosters can be shown to have the relevant moral property, and the parthood view is otherwise plausible, then, surely the correct conclusion to draw is not that fosters aren’t parts of gravidae after all, but rather that organisms can, in the special case of (human) pregnancy, have parts with this moral property.[[55]](#footnote-55)

*4.5 Intuition*

Finally, one might simply claim it is intuitively obvious that fosters are not parts of gravidae, and that birth is merely the relocation of a baby rather than the separation of a part. There are, however, multiple problems with this line of objection.

First, we should be willing to reject an intuition when faced with good arguments to the contrary. And I have provided such arguments in this paper.

Second, we have good reasons for not according this particular intuition much weight. One is that powerful, well-documented social and historical forces have established the fetal container model as the dominant and largely unchallenged cultural representation of pregnancy.[[56]](#footnote-56) It is not surprising that, in the context of this cultural conditioning, the containment view retains an intuitive pull. But it certainly becomes questionable whether this intuition should be taken to indicate anything deeper or more significant than the fact that we have been subjected to such conditioning. Another, complementary, reason is that there is cross-cultural variation in intuitions about fetal parthood: in different historical periods, and in different cultures, the containment view has not always seemed intuitive.[[57]](#footnote-57)

Third, it is worth considering *who* has this intuition, who does not, and whether everyone is in an equal position to have their intuitions on these matters regarded as knowledgable or reliable.[[58]](#footnote-58) Women, and in particular pregnant women and mothers, have hardly had a dominant voice in social, medical or philosophical discussions of pregnancy. Now, I don’t want to claim that all women or mothers would naturally intuit the parthood view, or that women’s intuitions are not shaped by culture and society. But there is at least some reason for thinking that, if we pay due concern to what women intuit about their own pregnancies, the containment view will no longer seem to be quite so intuitively obvious. For example, several female philosophers who have written about pregnancy provide us with a picture that is distinctly un-container-like: metaphysically messy and ambiguous (Young 1984; Kristeva 1980; Irigaray 1985; Howes 2007), active and agential (Ruddick 1994; Lindeman Nelson 1994), constructed and transitional (Bergum 1997), and characterized by intimacy and intertwinement (Little 1999, 2005). Even Judith Jarvis Thomson writes that ‘[a] woman may be utterly devastated by the thought of a child, *a bit of herself*, put out for adoption and never seen or heard of again’ (1971, p. 66, emphasis added). Thus, even if our question is to be settled by intuition alone, there remains an interesting and open question concerning which intuitions should be given weight, and what ‘the intuitive view’ should be taken to be.

None of these objections, then, provides a clear reason for doubting the parthood view. It deserves to be given a fair hearing.

**5. Conclusion**

This paper has articulated and examined a hitherto under-considered question: is the foster part of the gravida, or merely contained within it? On the basis of the considerations offered in this paper, and on the assumption that the answer to this question does not depend on moral, social or psychological facts, I conclude that the parthood view has the firm upper hand: many biological and physiological considerations speak in its favour.

The containment view, by contrast, has little, if anything, going for it: the purported arguments in its favour either presuppose it or speak against it. So there appears to be no good justification for the widespread acceptance that it currently seems to enjoy. If we are to continue taking the view seriously, then, some compelling arguments need to be presented in its favour.

That is not, of course, to say that the parthood view has been conclusively proved. The foregoing is merely an initial attempt to make some headway in answering our question. Much of what has been said raises questions that are interesting in themselves, and which stand in need of further research. Some of these we have already encountered. For example, we saw that there were questions about how the parthood view should be interpreted and evaluated on less commonsensical ontologies than the one assumed in this paper, as well as questions about how to understand organismic individuality in the context of mutualistic interdependence, genetic relatedness and sexually reproducing lineages—a domain of inquiry in which pregnancy may, as discussed, introduce its own set of interesting and peculiar complications. But there are also a number of important questions to which acceptance of the parthood view may give rise.

Some of these questions concern the origins of the foster and/or the organism. For example, what is the status of the sperm? Does it become part of gravida? And what should we say about the period prior to implantation? Does the ovum remain part of the maternal organism throughout? Or does it cease to be a part upon ovulation, in order to combine with sperm, with the resulting entity only becoming part of the gravida upon implantation? Does it matter whether the ovum, sperm and zygote leave the gestator’s reproductive tract? What is the metaphysical significance, if any, of conducting the process in a petri-dish? These are important and interesting questions, but not ones that can be answered here. Accordingly, I remain noncommittal about the beginnings of the foster.

The parthood view may also prompt a reconsideration of various ethical and legal questions, particularly where work in these domains has presupposed a containment view of pregnancy. For example, those who discuss or invoke certain moral and legal rights and principles, such as rights to self-determination and bodily autonomy, as well as standard constraints against interfering with others, typically assume that the parties involved have separate bodies. So how, if at all, are these to be understood when it comes to a situation in which one body is a part of another? This is an open question, but one which must, in light of the parthood view, be settled by any who want to invoke such rights or principles in ethical and legal debates that concern pregnancy.

Finally, the parthood view may have implications for the metaphysics of persons. But, again, what these are is far from straightforward. Positions on personal identity and personal ontology are highly varied, and any inference from the parthood view to a claim about persons will inevitably depend on some additional, and almost certainly controversial, assumptions. It is for this reason that no categorical answer to this paper’s titular question is being offered here. But it is clear that at least some positions in the personal identity debate will, in combination with the parthood view, straightforwardly entail an answer. Perhaps most obviously: animalists typically maintain both that we are human organisms and that human organisms were once fosters. In combination with the parthood view, this commits animalists to answer our titular question with a ‘yes’. For if you are a human organism, which was once a foster, and fosters are parts of gravidae, then you were, quite literally, a part of your mother.

At first sight, the claim that we were once parts of our mothers, and that—for some of us—our children were once parts of ourselves, may strike us as counterintuitive and metaphysically surprising.[[59]](#footnote-59) It may seem particularly counterintuitive in the first person—for is it not strange to conceive of *oneself* as having been part of one’s mother?

Then again, perhaps the claim isn’t so counterintuitive after all. In her influential essay on pregnant embodiment, Young writes:

Later I look with wonder at my mushy middle and at my child, amazed that this yowling, flailing thing, so completely different from me, was there inside, *part of me.* (1984, p. 50, emphasis added)

Such statements are widely seen as metaphor. But if we combine the parthood view with an appropriate metaphysics of human persons, then they can be given a literal interpretation.[[60]](#footnote-60)

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1. This quote is ambiguous. If read in isolation, it allows for the possibility that the fetus is not *merely* a part, but both a part of something else *and* an entity in its own right. If read in context, it is clear that this is not Howsepian’s view. (With thanks to Peter Skuce, Lee Walters and Alex Geddes.) [↑](#footnote-ref-1)
2. Thanks to Emily Thomas for alerting me to this passage of Mellor’s. [↑](#footnote-ref-2)
3. One might think there are further options: for example, that the pregnant organism and fetus compose a third, larger entity. But this is not a further option; it is a version of the containment view. (Or, if it can’t survive the challenge that the larger entity is in fact the pregnant organism, then it is a version of the parthood view.) See Finn (manuscript) for a discussion of this and other options. [↑](#footnote-ref-3)
4. Placentals, to be precise. This is the subset of mammals that have an extended placental pregnancy. This excludes marsupials (e.g. kangaroos) and monotremes (e.g. platypuses). [↑](#footnote-ref-4)
5. I discuss the assumption that questions about fetal parthood can be addressed withoutconsidering the opinion of pregnant persons in §4.3. [↑](#footnote-ref-5)
6. I discuss the view that the genetic difference that results from the genetic contribution of fathers matters in §4.1. [↑](#footnote-ref-6)
7. ‘Gravida’ is a Latin term, now used in medical case notes to denote ‘pregnant women’. I use ‘gravida’ (with a wider sense) rather than ‘(pregnant) woman’ for several reasons. First, because my primary object of enquiry is the mammalian organism, not the human person. Second, because it is worth remembering that not all pregnant people identify as women, even if the vast majority do. And third, because the term ‘foster’ might be seen as ‘dehumanising’, ‘medicalising’ or ‘alienating’ the (human) fetus. To start the enquiry on a level playing field, then, I prefer to use a similar term for the pregnant organism. [↑](#footnote-ref-7)
8. ‘Foster’ is a Danish word that I am borrowing from Smith & Brogaard (2001). I prefer ‘foster’ to ‘fetus’ for two reasons. First, because ‘fetus’ in medicine specifies a restricted stage of development, from after about 10 weeks up until birth. This excludes the embryonic and pre-implantation stages, at least some of which I wish to include. Second, because ‘fetus’ usually denotes only that part of the pregnancy that will emerge as a baby. I have concerns about this way of drawing spatial boundaries in pregnancy (see references in next footnote). [↑](#footnote-ref-8)
9. For discussions of spatial boundaries see Kingma 2018, forthcoming. [↑](#footnote-ref-9)
10. Thanks to Alex Geddes, Lee Walters, Chris Hughes and an anonymous editor of this journal for input on the following paragraphs. [↑](#footnote-ref-10)
11. If one were to assume—with, it seems, Van Inwagen himself—not only that fetuses are organisms (1990, p. 154), but also that one organism is part of another just in case the simples composing the former are among the simples composing the latter (1990, p. 89), then the parthood view would in fact require no (re)interpretation at all: it could simply be understood, once again, as the view that fosters bear the *part-of* relation to gravidae, just as cells—which Van Inwagen also takes to be organisms—are thought by him to bear the *part-of* relation to multicellular organisms (1990, pp. 63, 89). (Thanks to Alex Geddes for discussion on this.) [↑](#footnote-ref-11)
12. The first assumption is more or less a default view; for a recent critical discussion of some supposed reasons to reject it see Walters forthcoming. The second assumption is motivated simply by the fact that the alternative—that is, the view that, at the onset of pregnancy, the newly maternal organism becomes part of a foster, before ceasing to be such a part at birth—seems bizarre: it is highly counterintuitive that the gravida herself is part of what she is pregnant with. If one or both of these assumptions is rejected, then one may be willing to take seriously possibilities such as the gravida being part of the foster, or the gravida and the foster being mutual parts. With such possibilities on the table, many metaphysical questions would arise: Is the foster larger than the gravida? Does either constitute the other? In what ways do their persistence conditions differ? At birth, does the gravida survive the loss of the contents of its womb, while the foster survives the loss of a very large, non-pregnant-organism-shaped part? Such questions intersect with further questions both about the extent of or the boundaries of the foster, and about the precise referent of ‘foster’. I set these issues aside for further work. (See also Kingma 2018, forthcoming, n.d.(b).) [↑](#footnote-ref-12)
13. Pigmentation aside, a human organism’s skin colour is affected by the degree of capillary constriction and the colour of its blood. An adult’s arterial blood is bright red, because it has close to 100% oxygen saturation. Caucasian skin is nonetheless typically pale, because, most of the time, capillaries are constricted. In a warm environment, such as a sauna, these capillaries become less constricted, and faces redden, reflecting the colour of the blood. Because fosters are in consistently warm environments, their capillaries are not constricted, and so a Caucasian foster’s skin colour likewise reflects the colour of its blood. But because its blood is oxygenated via the placenta, oxygenated and deoxygenated blood mix in the heart, which means that its arterial oxygen saturation is much lower than an adult’s, and so its blood is darker—colouring its skin dark purple. [↑](#footnote-ref-13)
14. ‘Your Pregnancy: 2 weeks’ (last updated: March 2017). See also, for example, ‘You and your baby at 0-8 weeks pregnant’ (page last reviewed: 09/02/2015). [↑](#footnote-ref-14)
15. See, for example, Bergum 1997; Casper 1998; Duden 1993, 1999; Katz-Rothman 1994; McClive 2002; Oakley 1984. [↑](#footnote-ref-15)
16. See also Purdy (1990). [↑](#footnote-ref-16)
17. Aspects of the fetal container model have not gone uncriticised in these contexts. Lyerly, Little & Faden (2008) and Lyerly et al. (2009), for example, question the adequacy of that representation for moral and medical contexts, and describe pregnancy as a state of physical and emotional entwinement—a state that Little (1999; 2005) characterizes as one of *intimacy* and *interdependence*. (See also Lindemann Nelson 1994.) But these criticisms focus on moral and legal, rather than metaphysical, claims. [↑](#footnote-ref-17)
18. Oderberg (2008) appears to advance a similar argument, and many more examples of arguments of this sort can be found on anti-abortion websites. [↑](#footnote-ref-18)
19. ‘Restricted’ because for the kind ‘material object’ few would defend the claim. [↑](#footnote-ref-19)
20. Personal communication. [↑](#footnote-ref-20)
21. Such problems do not arise only with organismic kinds: a maximality principle for crowns would struggle in a similar way with the Pope’s crown, which has, not many, but precisely three crowns as proper parts (Wiggins 1980, p. 73). For a discussion of attempts to finesse otherwise plausible maximality principles so as to accommodate cases such as pregnancy and the pope’s crown, see Kingma n.d.(a). [↑](#footnote-ref-21)
22. Another example, besides Hawley’s, of inadvertent overgeneralisation resulting in implicit and unmotivated rejection of the parthood view comes from Van Inwagen, when he claims that “[t]he largest proper parts of any human beings are individual cells” (1990, p. 175; see also p. 89). Note that this claim does not follow simply from (other aspects of) his unorthodox ontology, and that taking this claim to imply a rejection of the parthood view does not depend on failing to appropriately reinterpret the parthood view in light of that ontology; see fn. 11 above. Thanks to Alex Geddes for bringing this to my attention. [↑](#footnote-ref-22)
23. The presentation of this argument was inspired by Walters (2013). [↑](#footnote-ref-23)
24. This is the view of Smith & Brogaard (2003) and, perhaps, also Oderberg (2008) and Howsepian (2008). Presumably this view invokes some special or restricted understanding of ‘substance’. For cells, molecules and atoms are all good candidates for being substances, on at least one natural understanding of ‘substance’, and it is not clear that these authors would want to deny that *these* are separable parts of organisms. For further discussion, see Kingma 2018, forthcoming, n.d.(b). [↑](#footnote-ref-24)
25. Other metaphysical views that might be used to support the argument may deny the possibility of there being parts, or complex objects that are parts, altogether. Note that on such unorthodox views the arguments relevant to, and the implications of, the parthood view may well differ. A view on which fosters are parts and parts can’t persist through separation, for example, entails that adult organisms were never fosters. (See also Kingma 2018, forthcoming, n.d.(b).) [↑](#footnote-ref-25)
26. A particularly relevant instance here may be the ‘lonesome space traveller’ depiction of the foster (Buklijas & Hopwood 2008). Smith & Brogaard use that very metaphor—the ‘astronaut leaving her spaceship’—as an analogy for birth (2003, p. 65). [↑](#footnote-ref-26)
27. The first three are drawn from Pepper & Herron 2008; the fourth from Tauber 1994 and Pradeu 2010, 2012. [↑](#footnote-ref-27)
28. That is not to commit to the view that everything outside the doughnut is not part of the organism. Many considerations speak in favour of including, say, the symbiotic bacteria on the skin, or in the gut, or in the stomach, where there is tight regulation of a specific climate, as parts of the organism. Exceptions apply to, and debates can be had about, every criterion that I consider, so I won’t repeat such points. [↑](#footnote-ref-28)
29. Which is not a position I recommend: that ‘space’ connects via oviducts to the peritoneal cavity, which presumably *is* part of the organism. [↑](#footnote-ref-29)
30. See Kingma forthcoming and my earlier discussion of Smith & Brogaard in §2.3. [↑](#footnote-ref-30)
31. Pepper & Herron 2008. And see, for example, Ruiz-Mirazo et al. 2000; Sober 1991; Wilson & Sober 1989; Wilson 1999; Ruse 1989. [↑](#footnote-ref-31)
32. For this understanding of function, see, for example, Millikan 1984, 1989; Neander 1991. An organism’s inclusive fitness takes into account not only its *direct* reproductive success—that is, the production of offspring—but also its *indirect* reproductive success—that is, the transfer of its heritable traits to the next generation by relatives, or the reproduction of kin. [↑](#footnote-ref-32)
33. This is a simplification. Competition and differential selection of heritable traits—that is, evolution—can be found at all levels of the biological world, from within the genome itself to between supra-organismic structures such as groups. Questions about functional integration, organisms and individuals are therefore closely related to the debate over evolutionary levels of selection (see, for example, Okasha 2007) and degrees of (active) suppression of within-group or within-individual competition. [↑](#footnote-ref-33)
34. I want to emphasise that I am speaking purely in biological/evolutionary terms here; I am not making any normative claims about what people should do with their lives. [↑](#footnote-ref-34)
35. Though the view that they aren’t parts strikes me as implausible. [↑](#footnote-ref-35)
36. I thank an anonymous reviewer of this journal for pressing me on this point. [↑](#footnote-ref-36)
37. This is one explanation of why maternal-fetal conflict is so much more frequent than ‘maternal-kidney’ conflict (see, for example, Haig 1993). But that does not undermine the earlier point: maternal-fetal conflict is still pathological, promoting neither the foster’s nor the gravida’s fitness. [↑](#footnote-ref-37)
38. See §4.1. [↑](#footnote-ref-38)
39. There is a debate over whether organisms are objects. Dupré (2012), for example, argues that they are processes. (See also Whitehead 1933.) I do not consider such views here. [↑](#footnote-ref-39)
40. See also Kingma forthcoming. [↑](#footnote-ref-40)
41. All that said, it is worth noting that the shielding is not complete. Antibodies, for example, do traverse the placenta, and by passing on its immunity, both during pregnancy and perhaps even after birth through lactation, the maternal organism continues to protect her newborn after birth. [↑](#footnote-ref-41)
42. But not *only* maternal care. Fathers and others play varying and sometimes considerable roles, depending on the species. But any further questions raised by this fact lie beyond the scope of this paper. [↑](#footnote-ref-42)
43. I am grateful to John Dupré and an anonymous reviewer of this journal for suggesting this line of argument. [↑](#footnote-ref-43)
44. I thank Eric Olson for this objection. [↑](#footnote-ref-44)
45. See, for example, Hutter et al. 2015. On such views, the colonization of the baby at birth by the maternal microbiome is a further interesting factor to consider, but beyond the scope of this paper. [↑](#footnote-ref-45)
46. I thank an anonymous reviewer of this journal for this objection. [↑](#footnote-ref-46)
47. First put to me by Maria Antagnozza and since repeated by many. [↑](#footnote-ref-47)
48. For further reasons to reject a genetic essentialist view of organisms, see, for example, the classics of developmental systems theory: Oyama 1985 and Oyama, Griffiths and Gray 2001. [↑](#footnote-ref-48)
49. I am grateful to Adam Ferner for pressing me on this distinction. [↑](#footnote-ref-49)
50. If one is tempted to bolster this objection by appealing to a version the view that parts cannot persist through their separation, then my comments in §2 apply. [↑](#footnote-ref-50)
51. I am grateful to an anonymous editor of this journal for this interpretation. [↑](#footnote-ref-51)
52. With thanks to David Papineau. [↑](#footnote-ref-52)
53. I am grateful to an anonymous reviewer for this challenge. [↑](#footnote-ref-53)
54. For a defence of a view that takes personal parthood (but not organismic parthood) to depend on a person’s beliefs about what parts they have, see Kovacs 2016. [↑](#footnote-ref-54)
55. It is worth noting here that one who finds the containment view intuitive (see the next section) will *ipso facto* find it intuitive that no part of an organism could have any moral property that, say, only whole (human) organisms, or only (human) fosters, can have. But if this is the source of the claim’s apparent plausibility, then obviously one cannot legitimately use it to motivate a rejection of the parthood view. [↑](#footnote-ref-55)
56. See e.g. Arney 1982; Bergum 1997; Casper 1998; Dubow 2011; Duden 1993, 1999; Katz Rothman 1994; McClive 2002; Oakley 1984 and Petechesky 1987. [↑](#footnote-ref-56)
57. Some Talmudic scholars, for example, consider the foster a part of the mother until birth (Rosner 2001, p. 180). With thanks to Jeremy Rosenbaum Simon. [↑](#footnote-ref-57)
58. For a relevant discussion about pregnancy and epistemic privilege, see Woollard n.d.. [↑](#footnote-ref-58)
59. It also raises the question of the extent to which a person or human entity that is (or was) a part of oneself can properly be regarded as *another*. [↑](#footnote-ref-59)
60. I am grateful to MM McCabe, David Papineu and Eleanor Knox for encouraging me to pursue this topic; to John Dupré, Suki Finn, Alex Geddes, Christopher Hughes, Rae Langton, Eric Olson, Peter Skuce, Lee Walters, two anonymous reviewers and an anonymous editor of this journal, and audiences at King’s College London, Cambridge, Oxford, Eindhoven, Hull, Sheffield, Kent, and Southampton for helpful comments and discussion. This paper is part of a project that has received funding from the European Research Council (ERC) under the European Union’s Horizon 2020 research and innovation programme, under grant agreement number 679586. [↑](#footnote-ref-60)