



# Disability, Origin Essentialism, and the Problem of Differently Constituted Precursors

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## Abstract

“Origin essentialism,” or “the necessity of origin,” is the vague idea that, in some way, a human individual’s origin is essential or necessary to who she is. I give examples of how this idea can be understood to shape discussions about our general obligations to future generations and our specific obligations to prevent genetic disability. I explain several ways of formulating origin essentialism about humans more precisely, and settle on one from Nathan Salmon. I explain why what I call the Problem of Differently Constituted Precursors is a genuine problem for origin essentialism. This Problem asks us to use our imagination and intuition to think carefully about how the reproductive cells which produced each one of us might have themselves been quite differently constituted than they were. I consider and respond to the strongest objection to this argument. I conclude by noting the broader philosophical significance of this argument before making several final suggestions for disability ethics.

**Keywords:** *disability ethics, genetic disability, non-identity problem, origin essentialism*

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I recently had an unexpected and unpleasant experience: I felt like I was “blacking out” while driving my car on the highway. I feared I would be unconscious within seconds, and that my ability to drive my car, already quickly fading, would vanish before I could get off the road. Fortunately, this frightening one-time episode ended with me immediately pulling my car to the nearby shoulder as I verbalized what I felt. After I safely stopped the car, my teenage daughter insisted on swapping seats with me so that she could be in the driver’s seat and I in the passenger’s seat.

A doctor’s visit later that hour ruled out the worst prognoses but led to ordering an MRI just in case. Both before and after the MRI showed nothing unusual, the current best working hypothesis is that I may have experienced my first (and, I hope, last) “vestibular” migraine. Since things could have been much worse—for example, I shudder to think what might have happened had I been driving alone in the faster lanes at night—I am grateful that my particular temporary disability happened in a context in which my next of kin was literally right there to help me out in virtually every way that mattered.

Unfortunately, not all disability is like this. Not all is so temporary. Not all is so relatively minor. Not all is experienced with the presence and support of one’s children. Indeed, some disability is experienced precisely in the context of our relationships to the next generation. And sometimes, the “intergenerational” context for some experienced disability happens where we are “alone” (in one sense) because the members of the next generation are not even there yet, at least not in many of the ways that matter.

For example, sometimes an activity of one generation—such as being exposed to a radioactive substance (like depleted uranium) as a soldier—can lead to disability in members of the next generation—such as a genetic disability of a child of the exposed soldier. The child was not even in existence when the exposure occurred, yet her disability is a fairly straightforward result of the exposure in question.

Even more ordinary cases from the domain of reproductive ethics contain seeds of similar reflections. For example, does a mother (or father) past a certain age ever have a duty to avoid conceiving a child, on the grounds that the child-to-be-conceived is more likely to have a genetic disability because of the age of (one or more of) his or her parents? If so, would similar considerations argue in favor of avoiding conception past a certain age, in a case where each prospective parent is likely to die within the next two years, on the grounds that the child-to-be-conceived would live most of his or her life without the presence of any living parent? Whether being parent-less

like this could ever constitute a sort of “disability,” it is surely quite often a serious disadvantage, even allowing for the goodness of individuals and institutions who adopt and care for orphans.

Reflections about our relationships with members of the next generation, then, naturally lead us into thinking about what disadvantages might properly be classified as disabilities. And such reflections also invite us to think about what steps might be appropriate to take in grappling with an (alleged) disability. This is true not only before (and after) the alleged disability manifests itself, but, indeed, even before the person who might have the alleged disability comes into existence in the first place.

Unfortunately, as soon as we begin thinking about such things, we are tempted to either roll our eyes in skepticism, or let our eyes glaze over in puzzlement, because it is not obvious how to think about our duties to people who are not yet conceived. Do we have a duty to conceive them? If so, is this duty *towards them*? Do we have a duty to make sure that they are conceived in a genetically ideal state? If so, is this duty *towards them*? How can we have a duty concerning (or *toward*) a person who does not yet exist?

One clear if somewhat humorous approach is to think of not-yet-existing persons like the character Marty McFly from the famous Steven Spielberg time travel movie *Back to the Future*. Marty (played by actor Michael J. Fox) is a 1980s teenager who realizes that his very nature and existence, like those of his brother and sister, can ebb and flow, materialize and dematerialize, depending on how his original parents behaved towards each other in the past. So, when a time machine allows Marty to accidentally interfere with the events leading up to his parents falling in love at a high school dance, it becomes a matter of life and death—or, more precisely, existence or non-existence—for Marty to somehow set things right again.

The big picture overview of where I am going to go in this article, and what I will seek to accomplish when going there, is this. I am going to try to explain how a cluster of ideas often get used when we think about our relationship to future generations; while some of these ideas are intuitive and practical, others are more technical and theoretical and have been defined, defended, and deployed by philosophers to argue for certain ways of thinking about human persons and our duties to future generations. I will demonstrate how one of the most influential of these technical ideas—an idea called “origin essentialism”—might be resisted, confronted, challenged, and argued against using the tools of careful philosophical thinking. Finally, I will show how challenging this idea has interesting implications for the way we think about human persons, and the way we think about and try to



prevent the genetic disabilities of people who do not yet exist. Throughout the article, I hope to move back and forth between the more intuitive and practical ideas and implications, on the one hand, and the more technical and theoretical ideas and implications on the other. Let's begin with some new terminology.

## **§1 Disability, the Non-Identity Problem, and Origin Essentialism**

Thinking about disability today sometimes involves thinking about our origins as individuals. In particular, it can involve thinking about what is sometimes called “the non-identity problem.”

The non-identity problem is an idea that begins with the suggestion, or observation, that our choices can affect both the welfare of future people and the very identity of those people.<sup>1</sup> First example: if a d/Deaf<sup>2</sup> couple (call them A and B) decides to adopt a child (call her C) rather than attempt to conceive a child biologically, the child they adopt (C) is not identical to the child they might have conceived (call her D); because of A and B's choice to adopt, there is one less individual in existence than there otherwise would have been. Second example: if another d/Deaf couple (call them P and Q) decides to wait ten years before conceiving a child, the child they conceive ten years from today (call him R) is not identical to the child they would have conceived today (call him S); there is one less individual, and yet one more individual, because of P and Q's choice to wait ten years—because the one less individual (S) and the one more individual (R) are different individuals. R and S are not identical.

Such thinking, in turn, often relies on what is sometimes called “origin essentialism”: the vague idea that, in some way, a human individual's origin is essential to who she is, so that (for example) if you imagine an individual human—say, Eva—having a “different” origin (for example, being conceived by a different sperm and egg), you are thereby imagining a completely different individual—an individual not identical to Eva.<sup>3</sup>

The ways these concepts typically enter into bioethics discussions in general, and genetics/disability discussions in particular, is short if not altogether sweet. You might think that the behavior of a woman (call her Elizabeth)—for example, having biological children past the age of 60—in a context in which

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1. See Parfit 1984, Buchanan et al. 2000, Boonin 2014, and DiSilvestro 2009.

2. The use of the locution ‘d/Deaf’ acknowledges the contentious debates surrounding the question of whether deafness is more appropriately understood as a disability or a distinct culture. I take no position on that question here.

3. See Kripke 1980, Forbes 1985, Hawthorne and Gendler 2000, DiSilvestro 2012, and DiSilvestro 2017.

such behavior raises the likelihood of a genetic disability for any of Elizabeth's future offspring, *risks harming* Elizabeth's offspring, and indeed *actually harms* her offspring if that risk materializes. But you might be wrong to think this, at least if "harm" means "to make an individual worse off than he would have been." For consider an individual—call him John—who is born to Elizabeth with precisely the genetic disability forecasted, for precisely the reasons forecasted. If John would not have existed at all were it not for Elizabeth's behavior, then her behavior did not make him worse off than he would have been. So her behavior did not harm him. Nor did it risk harming him. What, then, if anything, was objectionable about her behavior?

Fortunately, at this point in the essay, it is not necessary to demonstrate the concepts of the non-identity problem and origin essentialism more extensively than this, first by looking at the relevant bioethics literature, and second by demonstrating specifically how these concepts are employed in the genetics and disability literature.<sup>4</sup> These tasks are, fortunately, unnecessary here partly because many in the relevant bioethics, genetic, and disabilities literatures are simply unaware of the concepts of (or labels for) the non-identity problem and origin essentialism, and their discussions merely assume, in faultless ignorance, the conclusions that others have labored to establish elsewhere. But it is also partly because, even when the relevant bioethics, genetic, and disabilities literatures do make reference to the concepts of (or labels for) the non-identity problem (or, far less frequently, origin essentialism), they do so with the wholly unexamined assumption that origin essentialism is simply true, and indeed unobjectionably true.

The rest of this essay explores what I believe is a frequently overlooked problem with origin essentialism, which I shall call the Problem of Differently Constituted Precursors. The lesson is that the common assumption of "origin essentialism" at the root of much thinking about disability (especially *genetic* disability) may be mistaken. I make several tentative suggestions regarding how this lesson might be applied to ethical considerations relating to disability at the end of the article. But I leave the labor of detailed applications of this lesson to various ethical and policy issues for other, perhaps future essays (and other, perhaps future people!) to tackle.

The rest of this article has four sections. In §2, I explain origin essentialism about humans more precisely. In §3 I explain why the Problem of Differently Constituted Precursors is a genuine problem for origin essentialism. In §4

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4. But I thank an anonymous reviewer for inviting me to make just such a discussion of these literatures at just this point in the paper.

I consider and respond to the strongest objection to this argument. In §5 I briefly note its philosophical significance beyond the realm of thinking about disability before making my two final suggestions for disability ethics.

Before going further, I want to issue a gentle request to the reader. The next three sections of this paper are likely a bit denser in certain ways than other types of writing on disability. This is partly because I believe that “going deep” into the unexplored assumptions behind our ordinary thinking, and “going small” into the minutia and technicalities of that deeper research, can be genuinely worthwhile and profitable activities. For example, to take but one illustration from a parallel issue: people engaged in practical, hands-on disability ministry may be quite good at what they do even without “going deep” and “going small” into the ongoing academic discussions of “why people matter”—and yet it can be genuinely worthwhile and profitable for them to learn how Christian philosophical/theological views of why people matter can be articulated and defended and applied in the face of rival views on this question.<sup>5</sup> The minutia and technicalities of how to understand a concept like “the image of God” can enhance both the actions and the attitudes of those engaged in disability ministry. In a similar way, then, I request that you “hang in there” with me in what follows, hoping and trusting that the payoff is worth the investment of your intellectual energy.

## §2 Specifying Origin Essentialism about Humans

As I noted in the previous section, the general idea of origin essentialism is vague. There are many facts about a given individual’s origin that might be thought essential to that individual. Here is a sample of such facts:

- (i) the fact that the individual began to exist as the result of certain “precursors” (for example, one sperm and one ovum) combining with one another;
- (ii) the fact that the individual began to exist at a certain time;
- (iii) the fact that the individual began to exist in a certain region of space;
- (iv) the fact that the individual was composed of a certain hunk of matter, or constituted by certain material constituents, when it began to exist;
- (v) the fact that the individual possessed a certain structure, or was made according to a certain plan, when it began to exist;

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5. See Kilner 2017.



- (vi) the fact that the individual was the *only* individual of which the relevant members of (i)-(v) are facts;
- (vii) the fact that the individual was the *nth* (first, second, etc.) individual of which the relevant members of (i)-(v) are facts.<sup>6</sup>

The vagueness of origin essentialism as a general philosophical thesis will carry over to particular versions of origin essentialism, such as origin essentialism about humans. Assume that you came into existence when a particular sperm and a particular ovum combined at a particular time and a particular place,<sup>7</sup> that you were initially constituted by certain material constituents and had a certain (genetic) structure when you began to exist, and that you were the only individual of which these things were true. According to origin essentialism about humans, which of these particular aspects of your origin (if any) are essential to you?

Time and place can be safely set aside, since most believers in origin essentialism about humans do not think those aspects of an individual's origin are essential to the individual. Believers in origin essentialism about humans would say that although a switch in time and place of origin might *in fact* have given rise to a distinct individual, the deeper explanation for this fact would refer to the change in the sperm and ovum that accompanied the change in time and place.<sup>8</sup> This move suggests that it is the sperm and the ovum, and *not* the time and the place, which do the philosophical work of justifying origin essentialism about humans. The precursors mean more than the place and time.

Let the gametes whose fusion produces you be given the names sperm<sub>1</sub> and ovum<sub>1</sub> and the labels s<sub>1</sub> and o<sub>1</sub>. According to origin essentialism about humans, if either s<sub>1</sub> or o<sub>1</sub> had not been involved in the fusion of gametes,

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6. Conditions (vi) and/or (vii) are sometimes introduced in such discussions to help clarify the best way to deal with situations of twinning or cloning.

7. I realize that this assumption is somewhat controversial. See Olson 1997; Kripke 1980, 115: "...I might have been deformed if the fertilized egg from which I originated had been damaged in certain ways, even though I presumably did not yet exist at that time." However, it is not entirely clear from this statement whether Kripke is claiming (a) that he did not yet exist at the time when the *already*-fertilized egg from which he originated got damaged, or (b) that he did not yet exist at the time when the *soon-to-be*-fertilized egg from which he originated got damaged.

8. See Parfit 1984, 351-5. A man and woman, by waiting two months (until their marriage in Las Vegas) to have intercourse, would produce a completely different child than the child they would have produced tonight in Los Angeles. On the other hand, a fertility clinic, by waiting two months (until their upstairs lab is complete) to fuse a particular sperm and a particular egg that they are keeping alive in storage, would not have produced a completely different child than the child they would have produced today in the downstairs lab, since it is the same sperm and egg either way.

then you would not have been produced. Chart 1 captures this view, since it represents *both* the actual fusion of  $s_1$  and  $o_1$  *and* three of the other possible fusions that could have occurred instead, resulting in four distinct possible human organisms:

Chart 1	$o_1$	$o_2$
$s_1$	$h_1$	$h_2$
$s_2$	$h_3$	$h_4$

According to origin essentialism about humans,  $h_1$  cannot be transworld-identical to  $h_2$  or to  $h_3$  or to  $h_4$ .

Since the notion of “transworld-identical” will play an important role in what follows, a brief word providing a basic, simple definition of the concept may help. The easiest way to quickly show what “transworld-identical” means is by way of an illustration. A “possible world” is often understood just as “a total way that things could be.” The adorable angel Clarence in the movie *It’s a Wonderful Life* let George Bailey explore another “possible world” because he let George see what the universe would have been like without George ever having existed. Now imagine the basketball player LeBron James gets a computer that lets him peek into other “possible worlds” with the help of an app rather than an angel. LeBron says “show me a possible world where basketball has never been invented... and show me the individual that is *me* in that world.” The computer then shows LeBron a picture of... a man who looks almost exactly like LeBron, but it turns out the individual is named Tim, and Tim is a philosophy professor! Tim and LeBron are transworld-identical. The relation of transworld-identity holds between LeBron and Tim. However, now imagine LeBron says “OK, show me any possible world where I do not ever exist... a universe where I never get born, or conceived, or whatever... and show me the individual that looks the most like me in that world.” The computer then shows LeBron a picture of... a man who looks almost exactly like him, who happens to be named Joe. Joe and LeBron are not transworld-identical. The relation of transworld-identity does not hold between LeBron and Joe. Indeed, there is no individual in that second possible world who is transworld-identical with LeBron, since that is precisely what LeBron asked for. (That second possible world is, to LeBron, what the world the angel showed George Bailey was, to George Bailey. He



just is not in it—at all.) Question: *what is it, precisely, that makes LeBron James transworld-identical to an individual in another world?* That is the million-dollar question. I am not answering that question here. But origin essentialism is one way of giving one part of an answer to that question—namely, origin essentialism claims that the fusion of one sperm and one ovum is part (not the whole) of individual identity.

Returning now to our larger discussion, it's worth noting that many contemporary formulations of origin essentialism do not focus on an individual's precursors *per se*, but rather focus on an individual's initial material constituents and structure. A different hunk of wood, assembled according to a different blueprint, would have produced an individual table with different initial material constituents and structure. Likewise, a different sperm and/or ovum would have produced an individual human with different initial material constituents and genetic structure. Origin essentialism says that a wooden table could not have been constructed from a different hunk of wood (and according to a different construction plan) than the hunk (and plan) it was in fact constructed from (according to). Likewise, origin essentialism says that a human organism could not have been constructed from a different hunk of stuff (and according to a different genetic plan) than the stuff (and genetic plan) it was in fact constructed from (according to).

So then, while at first it appears that the sperm and ovum (and not the time and place of origin) do the work of justifying origin essentialism about humans, it turns out that what really does this work is not the sperm and ovum *per se*, but rather the initial material constituents and genetic structure of the resulting human organism. The sperm and ovum turn out to be, as it were, mere carriers of the truly essential factors of a human individual's origins.

This 'neo-hylomorphic' version of origin essentialism—so called because it is a new ('neo-') way of focusing on the original material constituents (the 'matter,' Greek *hyle*) and the initial structure (the 'form,' Greek *morphe*) of an individual—is the version of origin essentialism that I shall focus on in what follows. This neo-hylomorphic version of origin essentialism can be formulated more precisely and illustrated by way of a recent argument put forth by one of origin essentialism's defenders.

Let the *matter* of a living thing at a given time be the collection of whatever that thing's simplest parts are at that time (this was the original meaning of "atom" but nowadays we might talk about "subatomic particles"). Let the *form* of a living thing at a given time be the particular genetic structure

possessed by that thing at that time (think of how the atoms/subatomic particles are organized, especially within DNA).<sup>9</sup> Let a living thing’s matter be represented by italicized lowercase letters like *x*, its form represented by italicized uppercase letters like *X*, and its matter and form, taken together, represented by the relevant italicized letters placed next to one another like *xX*. Let the gametes referred to in Chart 1 have distinct matters and forms as follows:

$$\begin{array}{ll} s_1 : aA & o_1 : cC \\ s_2 : bB & o_2 : dD \end{array}$$

Let the following simplifying assumption be true: in the actual world, each of these gametes retains precisely the same matter and form throughout its entire “career” or time in existence: for example, *s*<sub>1</sub> has *aA* at the beginning, middle, and end of its career. Finally, let the fusion of any two distinct material hunks of matter *x* and *y* be represented *xy*. Let the fusion of any two distinct genetic structures *X* and *Y* be represented *XY*. Let the fusion of any two distinct matter-form compounds *xX* and *yY* be represented *xyXY*.

With this notation in place, we can replace the earlier Chart 1 (which represents the fusion of two pairs of gametes) with the following Chart 2 (which represents the fusion of the matters and forms of these gametes):

Chart 2	<i>cC</i>	<i>dD</i>
<i>aA</i>	<i>acAC</i>	<i>adAD</i>
<i>bB</i>	<i>bcBC</i>	<i>bdBD</i>

Given Chart 2, we can now consider an example of the way in which a contemporary version of origin essentialism regarding tables carries over to

9. These are no doubt oversimplifications, since living things might not have any simplest parts, and since any living thing will have many other interesting formal features at a given time besides its genetic structure at that time. Still, these characterizations of matter and form do well enough for present purposes.

human organisms. Nathan Salmon endorses the following principle in one of the appendices to the second (2005) edition of his *Reference and Essence*:

- (1) Necessarily, if a table  $x'$  is originally formed entirely from all of some matter  $z$  according to a plan  $P$ , and  $x'$  is the only table originally formed partly from any matter in  $z$ , then necessarily, any table that is originally formed entirely from all of  $z$  according to  $P$ , and the only table originally formed partly from any matter in  $z$ , is the very table  $x'$  and no other.<sup>10</sup>

Let's pause to reword and explain this principle and its significance to help us comprehend it better. This premise establishes an identity condition: given that *this* table *here* has a certain sort of origin, it follows that if some table in some "possible world" has the same origin, then *that* table *there* is transworld-identical to *this* table *here*. In other words, this principle answers for tables the question we asked (but did not answer) for LeBron James above.

Salmon argues, partly on the basis of this principle, for the following origin essentialist conclusion, which focuses exclusively on the original matter of a table while downplaying its original "plan":

- (2) If a given table originates entirely from all of certain matter, then it is necessary that the given table does not originate entirely from all of any nonoverlapping matter while being the only table originally formed partly from any of that matter.<sup>11</sup>

In other words, given that *this* table *here* came from *that* matter *there*, the table in question can only have come from *that* matter *there*. It is not difficult to see how (1) and (2) could be reformulated to apply to human organisms like LeBron James or you and I rather than tables. The reformulation of (1) runs like this:

- (3) Necessarily, if you were originally formed entirely from all of some matter  $ac$  according to a plan  $AC$ , and you were the only human organism originally formed partly from any matter in  $ac$ , then necessarily, any human organism that is originally formed entirely from all of  $ac$  according to  $AC$ , and the only human

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10. (1) is my label for Salmon's (P<sup>'''</sup>). See Salmon 2005, 374.

11. (2) is my label for Salmon's (C<sup>\*\*</sup>). See Salmon 2005, 375.

organism originally formed partly from any matter in *ac*, is you and not someone else.

And the reformulation of (2) runs like this:

- (4) If a given human organism originates entirely from all of certain matter, then it is necessary that the given human organism does not originate entirely from all of any nonoverlapping matter while being the only human organism originally formed partly from any of that matter.

Now, the really important point for present purposes is that (4) entails that  $h_1$  could not be transworld-identical to  $h_4$  in Chart 1. This is because (4) entails the following claim (drawing on the notation in Chart 2):

- (5) If you originated entirely from matter *ac*, then it is necessary that you did not originate entirely from all of matter *bd* while being the only human organism originally formed partly from any of *bd*.

In what follows, I shall make (5) the target of the Problem of Differently Constituted Precursors. However, since some origin essentialists might prefer to include in their formulation of origin essentialism the sort of formal or structural elements that Salmon includes in (1) (such as being originally constructed according to a given genetic “plan”), I shall set up the Problem of Differently Constituted Precursors so that it targets these formulations as well. Although this makes the resulting argument more complex, the payoff is that the conclusion will clearly apply far beyond (5).

### §3 The Problem of Differently Constituted Precursors

Recall the simplifying assumption stated above: in the actual world,  $s_1$ ,  $o_1$ ,  $s_2$  and  $o_2$  retain precisely the same matter and form throughout their careers: for example,  $s_1$  has *aA* at the beginning, middle, and end of its career. The Problem of Differently Constituted Precursors keeps this simplifying assumption in place, but introduces possible worlds in which these same gametes begin with the same matter and form that they have in the actual world, but do not retain the same matter and form throughout their careers. To adapt the LeBron James examples above, we are asking the computer: “show me a possible world where the sperm that made me in the actual world... has something happen to it which changes its initial matter... and/or its initial

form... in the following specific ways....” Perhaps the possible worlds we are shown will involve some genetic engineering, or will involve something more (or less) scientifically advanced than genetic engineering. In any event, we are using our imagination and our intuition to think through the steps of an argument posing a Problem for origin essentialism.

There are three main steps in constructing this Problem. The first main step is to imagine gradually changing  $s_1$  so that it has the matter and the form of  $s_2$ . The second main step is to imagine gradually changing  $o_1$  so that it has the matter and the form of  $o_2$ . The third main step is to imagine fusing the altered  $s_1$  and  $o_1$  instead of the original  $s_1$  and  $o_1$ .

The first main step has three sub-steps:

- (6) In some possible worlds,  $s_1$  gradually comes to have matter  $b$  (the matter that  $s_2$  has in the actual world).
- (7) In some possible worlds,  $s_1$  gradually comes to have form  $B$  (the form that  $s_2$  has in the actual world).
- (8) In some possible worlds,  $s_1$  gradually comes to have matter  $b$  and form  $B$ .

To see the plausibility of (6), consider that the particles that compose a given sperm made their way into that sperm via a circuitous route of biological processes of that sperm’s owner—biological processes like eating. Imagine your father eating different food at certain times in his biological life than the food he actually ate at those times, so that matter  $a$  in  $s_1$  is gradually replaced. Even a convinced believer in origin essentialism can admit that  $s_1$  would still exist even if it gradually came to possess different matter than matter  $a$ , the matter it began with. This suggests a principle:

- (9) It is not essential to *sperms* to be constituted by a given *hunk of matter* at the end of their careers.

But once this is admitted, it is a very small step to imagine that  $s_1$ ’s original matter  $a$  is gradually replaced with matter  $b$ . Here is that small step:

- (10) It is not essential to *hunks of matter* that they constitute one particular *sperm* at the end of its career.



One can imagine matter *b* existing in possible worlds where  $s_2$  does not exist: perhaps no human beings ever walk the earth. But one can also imagine matter *b* existing in possible worlds where  $s_2$  does exist, even though *b* never constitutes  $s_2$ : perhaps matter *b* never gets eaten by the owner of  $s_2$ , or anyone else. Finally, one can imagine that your father ate matter *b* before the owner of  $s_2$  has a chance to eat matter *b*: perhaps your father was first rather than second at the salad bar that day.  $S_1$  would still exist even if it gradually came to possess matter *b* instead of matter *a*.

To see the plausibility of (7), consider that the genetic structure possessed by a particular sperm depends upon the environmental features that sperm's owner was exposed to during certain times of his biological life—environmental features like radiation. Imagine your father being exposed to a different amount of radiation at certain times in his biological life than the radiation he actually was exposed to at those times, so that the genome (form) *A* in  $s_1$  is gradually restructured. Even a convinced believer in origin essentialism can admit that  $s_1$  would still exist even if it gradually came to possess a different form than form *A*, the form it began with. This suggests a principle:

- (11) It is not essential to *sperms* to be structured by a given *form* at the end of their careers.

But once this is admitted, it is a very small step to imagine that  $s_1$ 's original form *A* is gradually replaced with form *B*. Here is that small step:

- (12) It is not essential to *forms* that they structure one particular *sperm* at the end of its career.

One can imagine form *B* getting instantiated in possible worlds where  $s_2$  does not exist. But one can also imagine form *B* getting instantiated in possible worlds where  $s_2$  does exist, whether or not form *B* is instantiated in  $s_2$ . Consequently, one can imagine that your father was in an environment that caused  $s_1$ 's original form *A* to be gradually replaced with form *B*.  $S_1$  would still exist even if it gradually came to possess form *B* instead of form *A*.

To see the plausibility of (8), simply combine (6) and (7). If your father had lived in a different part of the world during certain times of his life, the food he ate and the radiation he was exposed to could have led to  $s_1$

gradually coming to have matter  $b$  and form  $B$ , even if it began its career with matter  $a$  and form  $A$ .<sup>12</sup>

So then, the first main step of the argument is to imagine gradually changing  $s_1$  so that it has the matter and the form of  $s_2$ . The second main step of the argument is to realize that precisely the same sorts of things that have been said about  $s_1$  and  $s_2$  could be said about  $o_1$  and  $o_2$ . The

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12. This is probably the best place to state and respond to an astute comment given by an anonymous reviewer:

...in the explanation of matter-form compounds  $xyXY$ , the  $XY$  form as genetic structure is clear, but it would be helpful to clarify what the  $xy$  matter refers to, as it is not clear but seems to be referring to the organic or corporeal manifestation of the gametes and thus including epigenetics. Assuming this to be the case, then it should be specified. Additionally, as the argument develops . . . it seems that the genetic structure is playing quite loosely with genetics and epigenetics especially with the argument of  $s_1$  coming to have matter  $b$  and form  $B$ . Does the significant distinction between genetics (DNA sequencing) vs. epigenetics (phenotypic variations caused by external/environmental factors that impact how cells read the genes/DNA sequence) signal a conceptual complication for this argument? At the very least it seems that it is conflating the potential of  $s_1$  to gradually become  $b$  and  $B$  on the basis of this conflation of genetic concepts. Unless I have misunderstood the relevant genetics and/or the argument (both of which are highly possible), aside from genetic intervention it seems unclear how  $s_1$  would become form  $B$  (a different genetic structure).

My response to this comment is twofold. First, in constructing this argument, I had pictured the relevant genetic “form” in terms of genetics, by which I meant DNA sequencing, with countless base pairs of A, G, C, and T molecules spiraling together in all their glorious complexity. To use a crude illustration, imagine a child’s Lego tower construction involving a large number of red, one-bump Lego bricks, and blue, two-bump Lego bricks, in a Lego tower with two doors and one window. Gradually replacing each red, one-bump brick with a white, one-bump brick, and each blue, two-bump brick with a black, two-bump brick, a child could replace the “matter” of the tower without changing the “form” at all. But if, in so doing, the child also gradually changed the tower from a one-window-and-two-door-tower into a two-window-and-one-door-tower, she would have also changed its form. That, in a rough way, was the type of molecular turnover I had imagined happening at the genetic (= DNA sequencing) level in turning a gamete with one matter and one form into another matter and another form. And how exactly this replenishment and restructuring might happen was left as a “black box” in my proposal—so whether it’s an ordinary thing in the natural life-cycle of every single gamete, or whether it takes billions of dollars and hundreds of scientists working in a hyper-specialized special molecular lab at MIT or Caltech, it’s the thought (that this might be possible) that counts.

Second, however, I do not think that there is anything about the basic outline of the argument that requires this more narrow interpretation, and consequently, upon reflection, I suppose that however it is filled in—with genetics or with epigenetics—a version of the argument could go through. However, I still am attracted to the idea that the “form” should be whatever microstructural formal elements are on the “genotype” side of the “genotype/phenotype” divide. So whether an epigenetic element would fall within the scope of what I meant by “form” is a direct consequence of whether that epigenetic element falls on the “genotype” or “phenotype” side of that divide.



above discussion of (6)-(12) could be repeated, replacing ‘sperm’ with ‘ovum’, ‘father’ with ‘mother’, and ‘a/b/A/B’ with ‘c/d/C/D’ in the relevant places.

With these first two main steps of the argument in place, there opens up the possibility of characterizing different versions of  $s_1$  and  $o_1$  depending on what matter and form these gametes gradually come to have. Let  $s_1$  in the possible world where it gradually comes to possess *both* the matter *and* the form  $s_2$  had in the actual world be designated  $s_{1*}$ . Let  $o_1$  in the possible world where it gradually comes to possess *both* the matter *and* the form  $o_2$  had in the actual world be designated  $o_{1*}$ . The eventual matters and forms of these variations would be as follows:

$$\begin{array}{ll} s_1 \colon aA & o_1 \colon cC \\ s_{1*} \colon bB & o_{1*} \colon dD \end{array}$$

The third main step of the argument is to imagine fusing these imagined versions of  $s_1$  and  $o_1$ , as in Chart 3:

Chart 3	$o_1$	$o_{1*}$
$s_1$	$h_1$	$h_{2*}$
$s_{1*}$	$h_{3*}$	$h_{4*}$

(Note: although Chart 3 designates the resultant humans using different subscripts, this manner of designating the resultant individuals is not meant to beg any questions about whether any of them are transworld-identical with any of the others.)

Finally, Chart 3 can be replaced by the following Chart 4, which represents the eventual matters and forms of  $s_1$ ,  $s_{1*}$ ,  $o_1$  and  $o_{1*}$  and the various fusions of such matter-form combos as  $h_1$ ,  $h_{2*}$ ,  $h_{3*}$ , and  $h_{4*}$ :

Chart 4	<i>cC</i>	<i>dD</i>
<i>aA</i>	<i>acAC</i>	<i>adAD</i>
<i>bB</i>	<i>bcBC</i>	<i>bdBD</i>

Now notice something startling: Chart 4 has the same contents as Chart 2 from earlier:

Chart 2	<i>cC</i>	<i>dD</i>
<i>aA</i>	<i>acAC</i>	<i>adAD</i>
<i>bB</i>	<i>bcBC</i>	<i>bdBD</i>

But since Charts 4 and 2 were each merely the hylomorphic representations of Charts 3 and 1 respectively, the fact that Charts 4 and 2 have the same contents means that each of the resultant humans in Chart 3— $h_1$ ,  $h_{2^*}$ ,  $h_{3^*}$ , and  $h_{4^*}$ —has the same matter and form as one of the four resultant humans in Chart 1 from earlier— $h_1$ ,  $h_2$ ,  $h_3$ , and  $h_4$ :

Chart 3	$o_1$	$o_{1^*}$
$s_1$	$h_1$	$h_{2^*}$
$s_{1^*}$	$h_{3^*}$	$h_{4^*}$

Chart 1	$o_1$	$o_2$
$s_1$	$h_1$	$h_2$
$s_2$	$h_3$	$h_4$



$H_1$  has the same matter and form in both Chart 1 and Chart 3: *acAC*.  $H_{2*}$  has the same matter and form as  $h_2$ : *adAD*.  $H_{3*}$  has the same matter and form as  $h_3$ : *bcBC*.  $H_{4*}$  has the same matter and form as  $h_4$ : *bdBD*.

This is where the problem with (5) becomes clear. (5), recall, was the claim that resulted from applying Nathan Salmon's formulation of origin essentialism to humans:

- (5) If you originated entirely from matter *ac*, then it is necessary that you did not originate entirely from all of matter *bd* while being the only human organism originally formed partly from any of *bd*.

Recall that  $h_1$  is *you* in the actual world. According to (5), you ( $= h_1$ ) cannot be transworld-identical to  $h_{4*}$ , because you have completely different initial material constituents than  $h_{4*}$ . But this is very hard to believe. It is very hard to believe that if your father and mother had eaten different food at certain times in their life, then you could not have existed. The more plausible view is that you could still have existed even if your father and mother had eaten different foods at the allegedly relevant times.

In other words, (5) must confront the fact that there seem to be possible worlds in which the same gametes that produced you in the actual world possess completely different material constituents and genetic structures than the material constituents and genetic structures they possessed in the actual world, and yet you still exist after the fusion of such altered gametes. In possible worlds like these, you would still exist even if you had completely different matter than matter *ac* and a completely different form than form *AC*: indeed, you would still exist even if you had matter *bd* and form *BD*.

At this point, it would be possible to take a shortcut to the very last two paragraphs of this article's conclusion, and still get the main "gist" of the essay. For the basic outline of the "theoretical" part of the argument is in place. There are reasons for thinking that a dominant assumption in many discussions about the nature of you and I, as well as the nature of humans yet to be born or conceived, is mistaken. And that means that any moral reflections about benefitting and harming future generations built upon this dominant assumption may need to be re-thought. But before making those applications, the next section considers and replies to a somewhat technical, but also very astute, objection.

## §4 Objection and Reply

Perhaps the strongest objection I have encountered to this argument runs as follows. The Problem of Differently Constituted Precursors is not an argument against origin essentialism *per se*, since it merely defeats one version of origin essentialism by relying on another version of origin essentialism. The defeated version is Neo-Hylomorphic Origin Essentialism (NOE): essentialism about matter and form. The version used to defeat NOE is Precursor Origin Essentialism (POE): essentialism about precursors. To see why the argument does rely on POE (this objection continues), note that the general structure of the argument is this:

Assuming (a) Sufficiency of Origin [to be defined momentarily], and assuming as well that (b) matter and form are not essential to precursors, we get that: if POE were to be true, then NOE would be false.

Note (this objection continues) that (a), (b), and NOE are in fact jointly consistent as long as POE is denied. Therefore, in order to have an argument against NOE, when (a) and (b) are assumed, one needs to accept POE. The argument amounts to pointing out a tension between NOE and POE. So (this objection continues!) we are not escaping Origin Essentialism altogether, because some other specific version will have been assumed.

I would like to answer this objection in three steps, by asking three questions. First, does the main argument above really assume (a) Sufficiency of Origin (and if so, does that matter)? Second, does the argument really assume (b) matter and form are not essential to precursors (and if so, does that matter)? Finally, does the argument really assume POE (and if so, does that matter)?

First: does the main argument above really assume (a) Sufficiency of Origin? Here a bit more background might help set the context. Origin Essentialism is often called “The Necessity of Origin.” Various arguments for the Necessity of Origin begin by assuming the Sufficiency of Origin, the idea (roughly) that *if an individual in some possible world has your origin, then that is sufficient for that individual to be you*. Now, if what we mean by “origin” is “precursors,” then this idea becomes *if an individual in some possible world has your precursors, then that is sufficient for that individual to be you*. And *that* idea is supposedly needed to make the main argument above work. For without that idea, how could we be so confident that the human individual formed from the altered gametes is really you?

I am willing to admit, for the sake of discussion, that the main argument above assumes Sufficiency of Origin in this way. I do not think much hangs on admitting this. However, I must also confess that I am somewhat skeptical of Sufficiency of Origin (where “origin” means “precursors”) partly because of the possibility—indeed the reality—of twins who share the same precursors. I am also skeptical that the main argument above assumes Sufficiency of Origin (where “origin” means “precursors”), partly because it seems to me that a person could explicitly deny the Sufficiency of Origin (where “origin” means “precursors”), while still accepting the main argument above. For example, Sally believes that she is a human organism, that a human organism is the conjoining of an immaterial soul to a body, and that God decided to conjoin her immaterial soul to whatever body resulted from the fusion of certain precursors. Sally denies that these precursors are *sufficient* for her to exist—after all, she thinks God could conjoin her soul to whatever body resulted from the fusion of different precursors. Sally is confident that the human organism formed from the altered gametes is really her, not because of a deeper metaphysical view about the sufficiency of origin, but because of a theological view about the way God decides to conjoin souls to bodies.

Second: does the above argument assume (b) matter and form are not essential to precursors? Yes, but I do not think much hinges on admitting this. The argument above explicitly rejects the claim that matter and form are essential to sperms and ova. But the main argument above does not beg the question against someone who believes that the *initial* matter and form of a precursor is essential to it. For both  $s_1$  and  $s_1^*$  have the *initial* matter *a* and the *initial* form *A*.

Some will object at this point: “But could any sperm be constituted by any piece of matter (or any form)? After all, gradual changes may make a thing cease to exist. In particular, a sufficiently-long chain of small changes may result in different sperms occupying the two extremes of the chain. What (if any) limits are there to this form of argument?” In reply, I can imagine a spectrum with a sperm on one end and a sperm whale on the other end. It seems clear to me that the sperm would not survive as the sperm whale, even if the material and structural changes done to the sperm, in order to end up with the sperm whale, were done very gradually, over a long period of time, by a group of highly skilled genetic engineers. However, if the two extremes of a spectrum are occupied by human sperm, then as long as all stations on the spectrum are occupied by human sperm, I do not think that any gradual changes in between would make the sperm at one end of the spectrum a numerically different entity than the sperm at the other end of

the spectrum. And it is merely this sort of change that the main argument above asks us to envision.

Finally: is it really true that the main argument above assumes Precursor Origin Essentialism (POE)? I do not think that this argument assumes POE, which is the “Necessity of Origin” thesis that means “origin” in the sense of “precursors.” Again, the example of Sally illustrates this. Sally, recall, believes that she is a human organism, the result of God’s decision to conjoin an immaterial soul to whatever body resulted from the fusion of certain precursors. Sally denies that these precursors are *necessary* for her to exist. She thinks God could have conjoined her soul to whatever body resulted from the fusion of different precursors. Sally has no qualms admitting the existence of a possible world in which God conjoins her soul to a body without any gamete precursors: perhaps it is a body that is made straight from the dust of the earth. Indeed, Sally is happy to admit the existence of a possible world in which God creates her without *any* precursors at all. The point, once again, is that Sally is confident that the human organism formed from the altered gametes is really her, not because of a deeper metaphysical view about the necessity of origins, but because of a theological view about the way God decides to conjoin souls to bodies.

Hence, the above argument is not claiming that you *must* go where your precursors go; it is only claiming that you *may* go there, even when this means your initial matter and form are completely different than the initial matter and form you started with in the actual world.

Still, for the sake of completeness, let us assume for just a moment that the above argument against NOE really does assume POE. *Even if* this is the case, the findings here are still significant, since POE is often defended by directly appealing to NOE. What the argument above would show, then, is that these two versions of origin essentialism, which are often taken to be allies, are in tension with one another. Indeed, while NOE is typically taken to support POE, NOE is actually refuted by POE.

Let me put it another way, by referring back to the Charts. The claim that  $h_1$  could not have been  $h_4$  (in Chart 1) is typically defended by the considerations represented in Chart 2. But if the argument above is correct, this typical line of defense cannot be correct. If  $h_1$  could have been  $h_{4*}$  (in Chart 3), then we cannot use Chart 2 to argue that  $h_1$  could not have been  $h_4$  (in Chart 1).

## §5 Conclusion

This essay has argued that there is a problem with origin essentialism about humans that can be called the Problem of Differently Constituted

Precursors. Although the same problem could arguably be generated by discussing artifacts like tables, I think the problem is clearest when humans are in view. The problem is also most in need of being stated when humans are in view, since origin essentialism is widely taken for granted in contemporary discussions of our moral obligations to our descendants—for example, our obligation to prevent some future “harm” by preventing some future disability, or by preventing some future persons with disabilities from coming into existence in the first place.

I will conclude this paper by briefly examining how the above discussion relates to both broader theoretical questions and broader practical questions in genetics and disability.

To see how this discussion relates to origin essentialism in general, and to other philosophical topics of interest, consider it as a defense of (5) in the following argument:

- (1) Origin essentialism is true for all material objects. (Assumption)
- (2) All human organisms are material objects. (Assumption)
- (3) You are a human organism. (Assumption)
- (4) Therefore, origin essentialism is true for you. (1, 2, 3)
- (5) But origin essentialism is *not* true for you!
- (6) Therefore, at least one of (1), (2), and (3) is not true. (1-5)

In other words, the discussion shows that there is a problem with origin essentialism with respect to humans, which may mean that (at least) one of our commonly held assumptions about human beings needs to be reexamined and, perhaps, modified or even rejected altogether.

Finally, to return to several of the issues surfaced in the introduction, what implications might this technical and theoretical argument have for considerations of specific bioethical questions, particularly as they relate to genetics and disability? Are there any concrete illustrations of how the work done in this paper might yield the significant “payoff” promised at the beginning—particularly as it relates to the unique concerns of the disability community? I have four main suggestions here.



First, questions about harming or benefitting future individuals—perhaps through prenatal (especially preconception) genetic testing, contraception and/or selective abortion on the basis of genetic disability, eugenics and/or genetic therapy, and genetic engineering, are all pursued, inevitably, in a philosophical context rather than a philosophical vacuum. Each of those discussions have traditionally relied upon the assumption that you literally have a different individual on your hands if you have a different sperm and/or egg in the equation. But if that assumption is less secure than traditionally thought, it follows that all those questions may need to be re-framed. Perhaps the next individual to be born from two parents is the same individual whether she's born now or ten years from now, or whether she's born with one genetic code or another. So perhaps she can be benefitted (or harmed) after all, in the sense of being made better (or worse) off than she would have been. More will be said about this in a moment.

Second, it is no exaggeration to say that two of the assumptions in the numbered argument just sketched at the start of this conclusion—“(2) all human organisms are material objects” and “(3) you are a human organism”—are relevant to an adequate discussion of much concerning bioethics and disability. It may seem that a technical discussion within professional philosophy is not relevant to questions about personal identity through time from the embryonic to the latest, most elderly stages of human life—but it is. It may seem like there are not theological implications for souls and bodies and the afterlife and the resurrection right around the corner from the theoretical machinery of arguments in analytic philosophy—but they are. In short, metaphysics matters, in part, because metaphysical questions matter to us as persons. I think perhaps one of the often-overlooked ways this happens is when analytic philosophical reflections help us, in their small way, to shake off some of the philosophical naturalism and scientism that passes for common sense, and to realize that we might be more than just dust after all.

Third, in light of the work done in this essay, *are* there obligations to “future” generations? More specifically, *do* we in fact have an obligation to avoid “harm” . . . by *preventing disability*? By preventing persons with disability from *coming into existence* in the first place? The traditional way of answering these three questions is “yes” and “yes” and “maybe.” If origin essentialism is mistaken, and especially if a robust Christian anthropology remains on the table for shaping our views, then we can answer these three questions with “yes” and “yes” and “no!”



Yes, we do have obligations to future generations, since nothing about the standard picture has to change on that score: while our obligations may be limited to persons who do exist at some time or other (e.g., a merely possible god or human does not have a claim to be loved like an actual god or human does), that time does not have to be now in order for our obligation to be binding now (e.g., a past human may have a claim to be treated honestly now, and a future human may have a claim to have her uncle not steal from her father's trust account now, especially if her father set it up to eventually benefit her).

Yes, we do have an obligation to avoid harm by preventing disability, since nothing about the standard picture has to change on that score either: in seeking the flourishing of current and future people, we should aim to remove obstacles to their flourishing, whether those obstacles are bodily (like a broken leg, or a "vestibular" migraine), or social (like a stairway where a slope could be, or a user-operated automobile where a train could be), or both.

But no, we do not have an obligation to avoid harm by preventing persons with disability from coming into existence in the first place; while this alleged obligation was on thin ice to begin with, if origin essentialism is not true, then this alleged obligation may be practically impossible for a given couple. Recall the (second) example involving a d/Deaf couple at the start of this paper: if origin essentialism is not true, then if a d/Deaf couple (call them P and Q) decides to wait ten years before conceiving a child, the child they conceive ten years from today (call him R) *might actually be identical* to the child they would have conceived today (call him S); *so it is not true that* there is one less individual, and yet one more individual, because of P and Q's choice to wait ten years—*it is not true if R and S are identical*. If P and Q (let us assume) were waiting ten years to prevent a person with a disability from coming into existence in the first place, and if R (let us assume) would have had a disability if born today, and if S (let us assume) would not have a disability born 10 years from today, and if R and S are identical, then P and Q have not prevented R from coming into existence by having S—P and Q have merely prevented R from coming into existence with a disability. (This, by the way, suggests that the argument of this essay is one way of challenging the claim put forward by some people that disability is in fact part of one's identity or partly constitutive of one's identity. While there are different ways of understanding such a claim, one of them is to understand it as entailing a restricted version of origin essentialism: *if my disability is rooted in my origin, then that aspect of my origin is essential to me*. However, if the argument

of this paper is correct, then this restricted version of origin essentialism is problematic for the same reasons that the unrestricted version of origin essentialism is problematic.) But does the claim made here, if accepted as true, create a new moral obligation—namely, an obligation to wait to conceive until such time as one knows, or at least reasonably believes, that one will only bring R into existence without a disability?

I do not think this necessarily creates a new moral obligation. However, instead of giving an elaborate defense of this, I propose we see it as part of a fourth and final question: what implications, if any, does this article's argument have for how we think about, or respond to, Peter Singer-type claims regarding the "interchange-ability" or "replace-ability" of children? The short answer is that this essay's argument neither supports nor undermines such claims. The claims themselves typically assert conditions under which—to take the previous example—it is morally equivalent, or permissible, or preferable, or obligatory, to conceive S instead of R. Such claims often assume that origin essentialism is true, which explains why that is really a choice of conceiving S *instead of* R. If origin essentialism is false, and if R and S are identical, then such claims might merely shift to assert conditions under which it is morally equivalent, or permissible, or preferable, or obligatory, to conceive S later versus S now (which is the same choice as to conceive R later versus R now). Other situations where replace-ability or interchange-ability claims arise have nothing to do with origin essentialism: for example, the question of whether to let a disabled infant or child die (or even bring about its death) so that the parents can attempt to conceive a non-disabled individual whose eventual good life might somehow replace the life of the individual who died—this question seems answerable quite apart from origin essentialism, and resolving the question of origin essentialism does not, at least directly, help to answer it. Indirectly, however, as the second point above stressed, the failure of origin essentialism opens up discussion of whether humans are material objects, and a negative answer to that question opens doors to far bigger issues which themselves have a bearing on both metaphysics and moral theory. A longer answer interacting with Singer-type claims here would need to take up these and other matters, which go far beyond the narrow question of whether origin essentialism is true.



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