

## **Embryo loss and double effect**

Ezio Di Nucci (Universität Duisburg-Essen)

*Abstract* I defend the argument that if embryo loss in stem cell research is morally problematic, then embryo loss in in vivo conception is similarly morally problematic. According to a recent challenge to this argument, we can distinguish between in vivo embryo loss and the in vitro embryo loss of stem cell research by appealing to the Doctrine of Double Effect. I argue that this challenge fails to show that in vivo embryo loss is a mere unintended side-effect while in vitro embryo loss is an intended means and that, even if we refine the challenge by appealing to Michael Bratman's three roles of intention, the distinction is still unwarranted.

Stem cell research is sometimes criticised on the grounds that the embryo loss that it causes is morally problematic (1, 2). A standard reply to this charge is to point out that embryo loss is also involved in the mundane practice of trying to conceive and conceiving children through sexual intercourse (3, 4, 5). According to this argument, if stem cell research is ethically problematic because of its embryo loss, then trying to conceive and conceiving children through sexual intercourse is similarly ethically problematic; but since trying to

conceive and conceiving children is obviously not ethically problematic – or so this argument goes, stem cell research is also not ethically problematic.

Recently the disjunctive premise of this argument in defence of stem cell research has been challenged by application of the Doctrine of Double Effect (DDE) (6). According to this challenge, by appealing to double effect one can distinguish between the embryo loss involved in stem cell research and the embryo loss involved in the mundane practice of trying to conceive and conceiving children through sexual intercourse. DDE could then be used to morally justify the latter but not the former. The idea is, in short, the following: both in vivo conception and stem cell research involve embryo loss. But embryo loss is an intended means of stem cell research while embryo loss is only a merely foreseen unintended side-effect in the case of in vivo conception.

DDE says that, in pursuing the good, we may sometimes bring about some evil as long as such evil is not intended and as long as such evil is not out of proportion with the good we are pursuing.<sup>1</sup> So merely foreseen unintended evil can, under certain conditions, be morally justifiable; while intended evil can never be morally justifiable. If embryo loss is intended evil in stem cell research then, according to DDE, it cannot be morally justifiable. And if embryo loss is a merely foreseen unintended side-effect in in vivo conception, then it can be morally justifiable as long as the evil involved in embryo loss is proportional to the good involved in the conception of children. Murphy (6) argues exactly along these lines that embryo loss in in vivo conception is not an intended means; that in vivo conception is driven by the good

---

<sup>1</sup> This is a simplification of the classic four conditions: “A person may licitly perform an action that he foresees will produce a good and a bad effect provided that four conditions are verified at one and the same time: 1) that the action in itself from its very object be good or at least indifferent; 2) that the good effect and not the evil effect be intended; 3) that the good effect be not produced by means of the evil effect; 4) that there be a proportionately grave reason for permitting the evil effect” (7).

intention to procreate; and that the embryo loss involved is proportional to the good represented by procreation.

### *1. Murphy's argument*

Here I argue against this appeal to DDE in two steps: I first show the failings of Murphy's particular argument and then I offer a more general critique of appeals to DDE. I leave Murphy's discussion of IVF to the side, as it has already been criticised elsewhere (8). Murphy's discussion is divided in three parts, reflecting three classic elements of DDE: the value of the intention and action in itself; the intended means as opposed to merely foreseen side-effects distinction; and proportionality. Here I argue that his discussion of each of these three elements is defective.

A. First of all I take issue with Murphy's claim that "The intention to have children is not, therefore, morally disqualified in itself" (6) on the grounds that "for most of human history, the scope of zygote and embryo loss would have been unknowable to people trying to have children. Earlier human beings would not have even been able to link the two effects into a single motive" (6). This talk of action in itself and intention in itself (which is characteristic of DDE, see Mangan's already quoted first condition requiring "that the action in itself from its very object be good or at least indifferent" (7)) is too permissive: that a morally questionable effect of an action (in this case, embryo loss) has been previously unknown cannot be a justification for the 'action in itself' or 'intention in itself' even after the morally questionable effect has been established. After we found out that Thalidomide caused very serious physical malformations, then the act or intention of prescribing Thalidomide was morally

disqualified in itself. This suggests that we should abandon this part of DDE and focus only on the distinction between intended and merely foreseen and on the issue of proportionality – and this move has indeed become standard amongst contemporary commentators (9, 10, 11, 12).

B. Murphy claims that “the death of some embryos is not inherently a condition of success for conception in vivo that results in children, so that we cannot treat efforts to achieve conception in vivo as involving a necessary evil used as the means to a good end” (6); this is because “Some conception, implantation and gestation occur without loss of zygotes, embryos or fetuses” (6). This is a misunderstanding of the conception of ‘means’ in the DDE debate. Whether or not something counts as an intended means is not a mind-independent matter of extensional necessity: it is a purely intensional matter. Being extensionally necessary is neither necessary nor sufficient to being an intended means. It can’t be sufficient, quite obviously, because that something is extensionally necessary does not imply that it is intended. And it isn’t necessary either: take one of the classic cases of impermissible intended means in the DDE debate, Terror Bomber (13, 14).<sup>ii</sup> Terror Bomber intends to kill

---

<sup>ii</sup> As I refer to this influential case more than once in my discussion, let me remind the reader of its structure: “Both Terror Bomber and Strategic Bomber have the goal of promoting the war effort against Enemy. Each intends to pursue this goal by weakening Enemy, and each intends to do that by dropping bombs. Terror Bomber’s plan is to bomb the school in Enemy’s territory, thereby killing children of Enemy and terrorizing Enemy’s population. Strategic Bomber’s plan is different. He plans to bomb Enemy’s munitions plant, thereby undermining Enemy’s war effort. Strategic Bomber also knows, however, that next to the munitions plant is a school, and that when he bombs the plant he will also destroy the school, killing the children inside. Strategic Bomber has not ignored this fact. Indeed, he has worried a lot about it. Still, he has concluded that this cost, though significant, is outweighed by the contribution that would be made to the war effort by the destruction of the munitions plant. Now, Terror Bomber intends all of the features of his action just noted: he intends to drop the bombs, kill the children, terrorize the population, and thereby weaken Enemy. In contrast, it seems that Strategic Bomber only intends to drop the bombs, destroy the munitions plant, and weaken Enemy. Although he knows that by bombing the plant he will be killing the children, he does not, it seems, intend to kill them. Whereas killing the children is, for Terror Bomber, an intended means to his end of victory, it is, for Strategic Bomber, only something he knows he will do by bombing the munitions plant. Though Strategic Bomber has taken the deaths of the children quite seriously into account in his deliberation, these deaths are for him only an expected side effect; they are not – in contrast with Terror Bomber’s position – intended as a means... In saying this I do not deny that Strategic Bomber kills the children intentionally” (13).

the school children in order to demoralize the enemy. Killing the school children is Terror Bomber's intended means to her end of demoralizing the enemy. But that does not mean that killing school children is necessary to demoralizing the enemy (even though it may be sufficient): there are plenty alternative ways of demoralizing the enemy which do not involve killing school children. All the same, killing school children is an intended means even if it is not extensionally necessary.

Also, extensional necessity cannot be the right criterion because it does not distinguish between intended means and merely foreseen side-effects. In both scenarios of the Trolley Problem, *Bystander at the Switch* and *Fat Man* (another classic of the DDE debate), the death of the one is extensionally necessary. But that is not taken to mean that in both cases the death of the one is an intended means, as the Trolley Problem was developed exactly to illustrate the distinction between intended means and merely foreseen side-effects that DDE is found on. To further illustrate how implausible Murphy's proposal is, imagine that we could finally effectively conduct stem cell research without destroying embryos but that some scientists deliberately continued to destroy embryos. Murphy's conception would here deliver the weird outcome that those scientists would *now* be allowed to destroy embryos because the embryo loss would no longer be extensionally necessary while they would have been previously not allowed – namely the very opposite verdict that one would have reasonably expected even from Murphy's own point of view.

C. As we said, for a defense of in vivo embryo loss through DDE, one needs the bad effect (embryo loss) to be proportional to the good effect (procreation). And indeed Murphy argues that the bad of embryo loss is not out of proportion with the good of having children.

This, indeed, does not sound implausible on the face of it. But rather than considering this point at face value, we should see that the defense of in vivo embryo loss through DDE is a step in an argument against embryo loss in stem cell research. And that wider argument is funded on the premise that embryos are either persons or potential persons or anyway near enough to persons to be deserving of some moral status. This premise is very clear in Murphy's argument too: "In the discussion that follows, I will treat all conceived human organisms as persons" (6). So embryos, at least for the sake of the argument under discussion, are persons.<sup>iii</sup> But if embryos are indeed persons, then it is not at all clear that the DDE proportionality condition will be met. Murphy cites two different estimates on in vivo embryo loss, and according to both the number of embryos who die in the course of in vivo conception is greater than the number of children who are born (3, 19). If embryos are persons (and babies too), then according to these estimates in vivo conception kills more persons than it gives birth too. This is obviously still different from the claim that in vivo conception kills more person than it creates – as that claim is necessarily false if all are thought to be persons. Still, the sacrifice of persons involved in in vivo conception is, on this argument, very great: this practice kills more persons than it does not kill, for example.<sup>iv</sup> It

---

<sup>iii</sup> Here I do not discuss the issue of personhood and related questions in the abortion debate about the status of embryos and fetuses; but I have done so elsewhere (15, 16, 17, and 18).

<sup>iv</sup> Here I don't mean to argue that the sacrifice involved would be obviously immoral but only that it is not obvious that the proportionality condition would be met because the sacrifice is very significant. An anonymous referee pointed out to me, for example, that even if more persons died prematurely after birth than did not die prematurely after birth, we would still think it was worth creating persons, at least if there was no alternative. I am not sure about this: could we really justify such great sacrifice of persons? Could we legitimately conceive and bring to bear a baby knowing that her chances of after-birth long term survival would be less than 50%? How many potential parents would still do that? Also, maybe it would still be *worth* creating persons to avoid the extinction of humanity but the practice would nonetheless be immoral: the survival of the human kind must not be necessarily reduced to an ethical issue. These remarks are not meant to be conclusive but only to clarify that the proportionality condition is not at all obvious in in vivo conception. And normally in double effect cases the proportionality condition is very obvious, as in the five against one of the trolley problem.

will not do, here, to propose that one drop the premise according to which embryos are persons. Because once that premise is dropped, then the argument against stem cell research that DDE is supposed to defend no longer holds – at least in the form under discussion.<sup>v</sup>

## 2. *Double Effect*

So far I have only argued that Murphy's particular appeal to DDE is problematic. That does not mean, it will be objected, that one cannot appeal to DDE at all. In the rest of this article I look at alternative possible appeals to DDE, arguing that the problem is the Doctrine itself and not simply its application to embryo loss. We have shown the problems with Murphy's attempt to argue that the embryo loss involved in in vivo conception is not intended while the embryo loss involved in stem cell research is intended: his appeal to extensional necessity misrepresents DDE. What could we rather appeal to in order to distinguish between intended means and merely foreseen side-effects?

Here is a more promising classic suggestion from Michael Bratman, who identifies three roles for intention: (i) 'posing problems for further reasoning', (ii) 'constraining other intentions', and (iii) 'issuing in corresponding endeavouring' (13).<sup>vi</sup> Terror Bomber's intention

---

<sup>v</sup> On the issue of proportionality, see also Devolder's already mentioned forthcoming critique of Murphy (8). Here I don't have the space to take issue with Devolder's critique as well as with Murphy's argument, so I limit my discussion to the latter. Let me just say that my critique is more radical than Devolder's in two crucial respects: firstly, it goes at the heart of the application of double effect to embryo debates and the supposed distinction between in vivo and in vitro in challenging the idea of unintended in vivo versus intended in vitro, and not just the issue of proportionality; secondly, my argument challenges the use of double effect in this debate in general and not just Murphy's particular application.

<sup>vi</sup> Here I just use Bratman's planning theory of intention rather than critically engaging with it. I have discussed Bratman on intention at length elsewhere (20, 21, and 22).

will (i) pose the problem of how he is going to kill the children: "Terror Bomber must figure out, for example, what time of day to attack and what sorts of bombs to use" (13). (ii) Terror Bomber's intention will also be incompatible with other possible strategies. Terror Bomber may not, for example, implement a plan to deploy some troops if this deployment would result in the enemy evacuating the children: "So Terror Bomber's prior intention to kill the children stands in the way of his forming a new intention to order the troop movement (13). (iii) Terror Bomber will also guide his conduct so as to cause the death of the children: "If in midair he learns they have moved to a different school, he will try to keep track of them and take his bombs there" (13).

Those roles, on the other hand, do not apply, according to Bratman, to Strategic Bomber's attitude towards killing the children: Strategic Bomber will not engage in practical reasoning about how to kill the children; if further intentions of Strategic Bomber should be incompatible with killing the children, that will not be a prima facie reason to disregard them; and, to put the point crudely, if the children move, Strategic Bomber will not follow them.

Similarly, a couple trying to conceive through sexual intercourse will not engage in practical reasoning about how to kill embryos; if their further intentions should be incompatible with killing embryos, that will be no reason to disregard those intentions; and, finally, if for some reason the embryos appear to be surviving, the couple has no reason to react to this turn of events. Indeed, the couple will normally not be in a position to monitor whether or not there is embryo loss; and the fact that this state of affairs makes no difference to the couple suggests that indeed they are indifferent to embryo loss and therefore that they do not

intend embryo loss. The problem is that we can say the same of the stem cell researcher: should embryos somehow survive her research intact, she will not 'go after them'. Similarly, the researcher will have no reason to disregard intentions which are incompatible with killing embryos; and the researcher will not engage in practical reasoning about how to kill embryos. So this analysis of intention does not warrant the claim that *in vivo* conception does not involve the intention to kill embryos while stem cell research does.

Here it could be objected that the latter claims misrepresent the empirical facts about how stem cell research is conducted, and that because of the way in which stem cell research is conducted a stem cell researcher does indeed need to, for example, engage in practical reasoning about how to kill embryos. So let us then look in some more detail at how stem cell research works:

HESCs are derived *in vitro* around the fifth day of the embryo's development. A typical day-5 human embryo consists of 200-250 cells, most of which comprise the trophoblast, which is the outermost layer of the blastocyst. HESCs are harvested from the inner cell mass of the blastocyst, which consists of 30-34 cells. The derivation of HESC cultures requires the removal of the trophoblast. This process of disaggregating the blastocyst's cells eliminates its potential for further development. (19)

Let us remember that we are assuming that embryos are persons. On that assumption, an opponent to stem cell research could compare the above procedure to removing vital organs from an adult human being in order to save the life of many other adult human beings and then ask whether it would be at all plausible, in this alternative case, to claim that the

surgeon who removes the vital organs did not intend the death of the adult human being in question. The idea being that it is preposterous to claim that the surgeon did not intend to kill the person from which she is removing vital organs. But let us put that to the test of the three roles of intention: does the surgeon need to engage in practical reasoning about how to kill the adult human being in question? No, she only needs to deliberate about how to remove the required organs. Will the surgeon kill the adult human being in case the patient would miraculously survive the successful removal of the required organs? No she wouldn't because she is only interested in the organs. Yes, but the surgeon knows that the patient will die. That's true, but let us not forget that this epistemic condition does not distinguish the two cases: we know that there will be embryo loss in in vivo conception too.<sup>vii</sup>

Indeed, the in vivo conception case seems to be even worse, like if our surgeon would have to perform lethal surgery on various different people before she got the one whose organs will do the job. Similarly, a couple will have to cause the loss of various embryos before one develops into a foetus and then a child. Indeed, there is another disanalogy between in vivo conception and the original surgeon which, again, does not reflect well on in vivo conception. Not all embryo loss caused by in vivo conception will ultimately result in a baby (couples may give up, split up, die, etc.): this is as if the surgeon would perform the lethal surgery many times without even being sure that she will finally get the passing organs.

---

<sup>vii</sup> An anonymous referee for this journal has suggested to me that one moral difference between in vivo conception and the transplant case may be that each of the embryos receives the best chance at survival while the patient from whom we take the organs stands no chance to survive. Coming out of the transplant analogy, the idea would be that an embryo in stem cell research stands no chance to survive while each of the embryos receives the best chance to survive in in vivo conception. The problem here is that this suggestion alters the necessary epistemic balance between the two cases by suggesting that death is only sure in one case but not in the other. But across cases the number of deaths must be supposed to be equal and therefore the probability of death in the one case must also be equal between the two scenarios.

It may be objected that showing that we can't effectively distinguish between in vivo conception and stem cell research by appeal to DDE is not enough, because there may be other ways, independent of DDE, to draw that distinction. This point would bring us too far from the topic of this paper, but I want to briefly discuss at least the most important alternative, the distinction between actions and omissions and the related distinction between killing and letting die. On this interpretation, one would argue that only the stem cell researcher kills embryos while a couple trying to have children does not *kill* embryos – merely letting embryos die. But I really can't see how one could defend this position in this particular case, whatever one thinks about its general merits: the couple freely and actively engages in an activity that she knows will cause the death of embryos the same way in which the researcher freely and actively engages in an activity that she knows will cause the death of embryos. Both are clear cases of action rather than omission.

In conclusion, I have defended the argument that if the embryo loss involved in stem cell research is morally problematic, then the embryo loss involved in in vivo conception is similarly morally problematic. I have argued that appeals to the Doctrine of Double Effect fail to make a case for a morally relevant distinction between embryo losses in the two cases because one cannot make sense of the distinction between intended embryo loss in stem cell research and merely foreseen embryo loss in in vivo conception. Importantly, I have presented a general challenge to the distinction between intended harm and merely foreseen harm in general and not only a challenge to its particular application to this one case.<sup>viii</sup>

---

<sup>viii</sup> As a general challenge to double effect, this has admittedly been very brief and quick. But I have challenged the Doctrine of Double Effect in much more detail elsewhere (23, 24, 25, 26, 27, and 28).

## References

- (1) Finnis J. A philosophical case against euthanasia. In: Keown J. ed. *Euthanasia examined: ethical, clinical, and legal perspectives*. Cambridge: Cambridge University Press 1995:23–35.
- (2) Holm S. The ethical case against stem cell research. *Cambridge Quarterly for Health Care Ethics* 2003;12:372–383.
- (3) Brock DW. Is a consensus possible on stem cell research? Moral and political obstacles. *J Med Ethics* 2006;32:36–42.
- (4) Harris J. *Enhancing evolution: the ethical case for making better people*. Princeton: Princeton University Press 2007:173–4, 175.
- (5) Sparrow R. Saviour embryos? preimplantation genetic diagnosis as a therapeutic technology. *Reprod Biomed Online* 2009;20:667–74.
- (6) Murphy TF. Double-effect reasoning and the conception of human embryos. *J Med Ethics* (forthcoming).
- (7) Mangan JT. An Historical Analysis of the Principle of Double Effect. *Theological Studies* 1949;10:41-61.
- (8) Devolder K. Embryo Deaths in Reproduction and Embryo Research: A reply to Murphy's double effect argument. *J Med Ethics* (forthcoming).

- (9) Boyle JM. Toward Understanding the Principle of Double Effect. *Ethics* 1980;90:527-538.
- (10) Woodward PA. ed. *The Doctrine of Double Effect*. Notre Dame: University of Notre Dame Press 2001.
- (11) *Double Effect* entry of the Stanford Encyclopedia of Philosophy (<http://plato.stanford.edu/entries/double-effect/>, accessed on 11.10.12).
- (12) *The Doctrine of Double Effect* section of PhilPapers (accessed on 11.10.12).
- (13) Bratman M. *Intention, Plans, and Practical Reason*. Cambridge, Mass.: Harvard University Press 1987.
- (14) Bennett J. *Morality and Consequences*. The Tanner Lectures On Human Values 1980.
- (15) Di Nucci E. Abortion: Strong's counterexamples fail. *J Med Ethics* 2009;35:304-305.
- (16) Di Nucci E. On how to interpret the role of the future within the abortion debate. *J Med Ethics* 2009;35:651-652.
- (17) Di Nucci E. Fathers and Abortion. *The Journal of Medicine & Philosophy* (forthcoming).
- (18) Di Nucci E. Killing Foetuses and Killing Newborns. [dx.doi.org/10.2139/ssrn.2016772](https://doi.org/10.2139/ssrn.2016772)
- (19) *Ethics of Stem Cell Research* entry of the Stanford Encyclopaedia of Philosophy (<http://plato.stanford.edu/entries/stem-cells/>, accessed 14.10.12).
- (20) Di Nucci E. *Mind Out of Action*. VDM 2008.
- (21) Di Nucci E. Simply, false. *Analysis* 2009;69:69-78.

- (22) Di Nucci E. Rational Constraints and the Simple View. *Analysis* 2010;70:481-486.
- (23) Di Nucci E. Double Effect and Assisted Dying. *British Medical Journal* (letter, 7.2.2012).
- (24) Di Nucci E. Self-Sacrifice and the Trolley Problem. *Philosophical Psychology* (forthcoming).
- (25) Di Nucci E. Double Effect and Terror Bombing. *GAP.8 Proceedings* (forthcoming).
- (26) Di Nucci E. The Doctrine of Double Effect and the Trolley Problem.  
[dx.doi.org/10.2139/ssrn.1930832](https://dx.doi.org/10.2139/ssrn.1930832)
- (27) Di Nucci E. Too Close to Call: Double Effect (submitted).
- (28) Di Nucci E. Ethics without Intention (book manuscript).