The Price of Precaution of Human-Pig Chimeras for Transplantation Purposes

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Abstract

In response to Koplin and Wilkinson, I argue, first, that the uncertain clinical prospects of human-pig chimera based transplantation makes the reason to spend resources for clarifying whether or not such practice might imply serious ethical breach due to enhanced cognitive capacities of the chimeras rather weak. This as the benefits of further pursuing this avenue of research is so uncertain, so that taking even very unclear risks of serious ethical breach (thus in need of clarification for justification of the research) is not worth the price in terms of spent resources. Secondly, I argue that, as there are some reason to pursue this avenue further (and thus investigate the risk in question), the analogy to the notion of halting all farming of larger animals for food does not hold up. The reason is that we do not need to probe any further any comparable risk to know that such farming practices should be halted.

A fundamental underlying issue to the question discussed by Koplin and Wilkinson in this paper is formulated when they write:

> We should therefore be confident that human-pig chimeras would lack morally relevant cognitive capacities before setting out to use them as a source of transplantable human organs. This leaves open the question of *how* confident we should be before it is ethically acceptable to generate human-pig chimeras a source of transplantable organs. One way of unpacking this question would be to imagine that there is some probability X that the chimeric animals have cognitive capacities that are equal to cognitively normal humans, and that the wrongness of killing them would be equivalent to the killing of a child to harvest their organs. The question, then, is what value of X would be sufficiently low for generating chimeras to be acceptable? [4, p. ?]

This particular solution, however, is a dead end – as a large debate regarding the ethics of precaution and risk has demonstrated [2, 5]. There is no ethical theory that provides the requested distinct probability number here assumed to be available, and even if we had one it would not settle the issue at hand. This is due to the fact that any probability given can be based on varying quality of evidence – thus varying widely in confidence – and thereby awakening the basic decision theoretical problem of the value of information: no theory *t* saying that action *a* should be undertaken only on condition *c* will provide an answer to how to proceed when it is undecided whether or not *c* is met. This moves the question to the issue of what should be done to ensure whether or not *c* is met or not, but none of that regards *a*, or can be answered by *t.* This as the question has nothing to do with the question of what the probability of *c* is, but rather with the question of how confident we need to make that any claim with regard to the probability of *c* is correct in order to be justified to do *a*.

In my book *The Price of Precaution and the Ethics of Risk*, I discussed this problem at length, concluding that how much effort should be put into become confident that we (probably) act rightly depends on various aspects of the stakes of the situation – what I called "the price of precaution" [7], and I have recently returned to address some especially tricky aspects of this basic challenge for any ethical approach to risk and precaution [6]. The price of precaution includes both direct (morally relevant) costs and risks of such costs that result from producing evidence to increase confidence that *a* is morally right, and the opportunity cost of delaying *a* while amassing this evidence. The relevant question to ask if therefore: to what extent is it worth paying this price in the case of farming human-pig chimeras that might have significant moral status for human transplantation purposes? In order to answer that question, one would have to go into a lot of detail regarding what more exact investigations are needed to get relevant evidence, what that would require in terms of resources spent and risks taken, and how serious it is to delay a possible transplantation practice that might be made possible by human-pig chimeras. This will lead to further complications, as it is far from certain that any transplantation practice based on this technology will ever see the light of day[1] and, even if it does, it is presently unclear what alternative options for meeting the needs actualizing transplantation will then be available (and whether the pig-human chimera solution will be recommendable in that light). In short: it is highly uncertain if there are any significant opportunity costs that would add to the price of precaution, but that of course also means that it is uncertain whether or not we should at all be pondering this avenue in the first place. But,

[1] For instance due to the challenge of possible PERV-transmission and -activation that could cause deadly human pandemics, which is still daunting in spite of recent attempts at overcoming it using gene editing techniques [1, 3, 8]. In my own humble opinion, this uncertainty is still the most morally pressing with regard to xenotransplantation, much more pressing that the eventuality of off-target cognitive enhancement of human-pig chimeric individuals

then again, only closer and very detailed analysis will be able to paint the full picture here, so I'll close no doors before the evidence is on the table.

Where does that leave the alleged precautionary symmetry between this issue and that of farming large animals akin to pigs for food (assuming, rather unrealistically, that this practice is not already settled to be seriously morally wrong)? Since there is quite clear that there is no opportunity cost to speak of to stop this practice immediately, without any further investigations into the moral status of these animals, I claim that the symmetry claim does not hold up to scrutiny. The main reason is that we do not need to farm large animals for food at all (as there are perfectly viable alternatives), while there is still significant uncertainty regarding if producing human-pig chimeras for transplantation might come to have some value. For this reason, it is worth paying some price of precaution to investigate the latter area, and this price increases if the prospect of important future transplantation practices being on the line increases. But it not worth paying any such price before we stop all current animal farming for food.

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