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Non-Reductive Moral Classification and the Limits of Philosophy[1]

During moral reflection it is natural to think about the distances and differences between us, and in this way, to fashion definitions of who "we" are, who "others" are, and where we all stand in relation. In the target article, Piotrowska proposes a novel means for performing this reflective activity for interspecies chimera. She discusses an example where the introduction of 10^5 human embryonic stem cells (hESCs) into the brains of late-stage mouse embryos causes resulting adult mice to be smarter, and she wonders whether this effect should figure into moral reflection. She argues it should. On her view, a creature's moral status should be determined by multiple considerations: one should consider both whether it has certain morally relevant capacities and whether it arises from a species that we already vest with moral status.

In this commentary, I explore some of the implications of Piotrowska's approach. I suggest it might be extended in two ways, by considering additional morally relevant properties and by considering additional entities. Though both are promising, I focus on the implications of the latter. I suggest that extending Piotrowska's account in reasonable ways points to a potential weakness, which is that it may require us to think about the relationships between many entities that are typically excluded from moral reflection. However, I conclude that this is actually a strength, which I capture by considering Williams' view on the limits of philosophical ethics.

Given her conclusions, I interpret Piotrowska as arguing for a *non-reductive moral classification system*. Although Piotrowska offers two ordered criteria for determining moral status, her account could be extended by considering other moral properties, including genetic inheritance, sentience, rationality, moral agency (Liao 2010), or more fine-grained measures. Thus, we can imagine a future where to attribute status one identifies the constellation of properties an entity exhibits and then plots it in a non-reductive, capacity-based classification system for demarcating status. Whether an entity is mouse-dolphin, mouse-human, or superchimp—chimp-human with rational faculties (see Liao 2010)—in this future what matters is the ordered set of properties the entity exhibits.

Thinking about Piotrowska's non-reductive approach to moral classification in this way shows how it might be extended to cover more moral terrain, so to speak. It might also be extended to cover more entities than interspecies chimeras. Her example might be seen an instances where the introduction of some cells into an entity at one time causes a morally relevant change in the

capacities of the developed entity at a later time. So understood, Piotrowska's account says that what is morally salient are *both* the combination of distinct cellular assemblages under certain conditions *and* the transformation of these groups of cells into a novel, emergent whole. And her murine example is simply one of many cases where sets of cells are combined under certain conditions to produce something that neither would have become without their mutual combination.

So generalized, Piotrowska's approach can be applied to other moral controversies that arise when considering emerging biotechnologies. For example, under some experimental protocols, mouse embryonic stem cells (mESCs) can be combined with mouse embryos and gestated to produce pups that share DNA from both cell lines (Nagy et al. 1993). Imagine if mESCs were first combined with genetic material from another organism before this act, and the resultant entity exhibited differences in morally relevant capacities. If so, it is an open question whether the resultant entity would technically be an interspecies chimera, yet it seems clear that Piotrowska's approach for determining moral status is applicable. Similarly, a human somatic cell's nucleus can be removed and placed in an enucleated human ovary, and the resultant cell can be stimulated to generate stem cells. This research is currently prohibited in the United States on ethical grounds (Cunningham 2013). Under Piotrowska's non-reductive approach, determining whether these stem cells deserve moral status would require considering the capacities they exhibit rather than their origins, as current federal policy requires. A final example arises from research on the 'three-parent embryo' that has been hypothesized for incurable mitochondrial diseases that affect an estimated 1 in 200 children, causing a range of painful and debilitating symptoms of varying severity. One approach to curing these diseases is to modify *in vitro* fertilization such that healthy maternal mitochondrial DNA from a donor is combined with parental sperm and egg (Tachibana et al. 2013). Yet, because this technique requires manipulating human germline cells it appears morally problematic to some, given that the cells are of human origins.

Yet, if generalizing Piotrowska's approach seems like a promising new way to investigate moral issues arising from advancements in cellular biotechnologies, it also exposes a weakness in her account. Her approach encourages us to consider the extent to which the percentage of one cell type in a developed entity (0.1% human in Piotrowska's murine example) causes that entity to exhibit morally relevant capacities. While this may be a very useful way of morally classifying the world, it may also be one that incurs significant

epistemic costs. It may require us to know quite a bit in order to perform adequate moral reflection.

For example, consider the following apparently innocuous case of symbiosis. The human body contains 10 times more microbial cells than human cells, and 100 times as many microbial genes as human genes. Knowledge of the human microbiome and metagenome, as these bacteria and their genes have come to be known, has lead to speculations that different health states might be caused by differences in human's microbiome populations (Turnbaugh et al. 2007). Recent research suggests that such changes may even affect brain activity (Tillisch et al. 2013). Thus, it seems possible that each and every person owes some of his or her cognitive abilities to our many friends, who in fact outnumber us cell-to-cell in our own bodies.

It is unclear how Piotrowska's account might apply to this case symbiosis. One approach would be to fashion important distinctions between *symbiosis* on the one hand and *chimera* on the other. There might be something integral in relationships between the human-derived cells in the mouse that will develop increased cognitive skills that is different than the microbial cells in the gut of a human being who will also develop increased cognitive skills because of her bacteria. Indeed, in the murine example the 'foreign' cells are introduced in late-embryogenesis, and in the microbiome example the 'foreign' cells are introduced some time during adulthood. Thus, refocusing on the narrow context for which Piotrowska's approach is targeted might provide a response to considerations of how it might be extended.

However, I believe that an alternative strategy is more promising, which is underscored by a final example. Consider that for every one of those bacterial cells in our body, there are 10 times as many viruses or viral-like particles, which constitute what scientists have called the "dark matter" of biology (Youle et al. 2012). These entities exchange genetic material rapidly between *everything*—other viruses, bacteria, and hosts—and they do so at extremely high frequencies and in ways that influence the development of morally relevant capacities. For example, artificially reducing specific virus-like particles in pregnant mammals causes maternal-fetal conflict and subsequent miscarriage (Dunlap et al. 2006). Thus, it may be not only the percentage of non-human cells that an entity contains that determines its capacity to exhibit morally relevant properties, but also the percentage of sub-cellular biologic entities as well.

If it is the case that that morally relevant properties may be promoted by a concert of inter-cellular and inter-organismal activities, as the examples I have considered suggest, then I believe this highlights the utility of widening the scope of Piotrowska's proposed system of non-reductive moral classification.

When morally classifying entities, we will be well served by focusing on where they come from, what they are constituted of, and what they are capable of. Yet, merely recognizing *that* these multiple foci are needed does not indicate *how* to put together such a classification scheme or whether it is possible to do so such that cases like the microbiome or biological dark matter are excluded or should be excluded. Thus, simply proposing that our classifications are non-reductive is insufficient; we will also need to be mindful of how proposed classifications sort and rank capacities.

Having raised this issue, I conclude by suggesting a resource for developing a rich classification system like that implicit in Piotrowska's account. In his studied reaction to the peculiar institution that is moral philosophy, Bernard Williams proposes that ethical theory may be improved by more attention to ordinary language, especially language that expresses moral convictions and obligations in particular social groups. He suggests that by attending to the way we use "thick ethical concepts," like "*coward, lie, brutality, gratitude,* and so forth," we will be able to characterize the conditions under which ethical knowledge is attainable, and we might also be able to characterize points of convergence between ethical knowledge and scientific knowledge (Williams 1985, 140ff.). For Williams, if moral philosophy is understood solely in terms of all-encompassing moral theory, then there are significant limits to philosophy. However, on his account, an alternative approach is conceivable. It is one where philosophy becomes more of a method than a discipline; and it is one where philosophy endeavors to unpack the terms we use when describing our reasons for action. Perhaps this sort of conceptual structure is one within which Piotrowska's account could be readily embedded. Perhaps, then, one way to see her account is as a proposal for an alternative, non-reductive framework for classifying a bit of the moral terrain that fits well within a larger proposal for acknowledging the limits of philosophy, and of ethics, and for overcoming them.

References

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Notes

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