



James C. Peterson

## Part II: Evangelicals, Neural Organoids, and Chimeras

In the March editorial, I briefly described four points of contact between evangelicals and the ethics of developing human neural organoids. The topic was raised by a working group at the National Academy of Sciences that consulted with me on possible concerns. A frequent first step in seeking to understand any malady is to find or develop an animal or lab model. Seeking to address Alzheimer's, depression, autism, and other neural issues, human neural organoids have been grown now to the point of significant neural activity. In the March editorial, we listed some of those concerns and left more detail for this issue on the moral status of animals and human beings, and distinguishing absolute and *prima facie* principles.

Jesus directed his people to love their neighbors as themselves. When in human development is there a neighbor present to love? While not as monolithic as sometimes assumed, according to the Pew Research Center,<sup>1</sup> roughly two-thirds of evangelicals consider human embryos to be present human persons as embryos. By this view, the human embryo is a human person with potential, not just a potential person. The embryo is already a human being because it has all the individual genetic information and means for design and development to be born—if supported and allowed to. This reading of moral status entails not sacrificing human embryos to obtain stem cells. Granted, their moral standing is not absolute any more than an adult's moral standing is absolute. One could end the life of a human embryo, say in surgery for an ectopic pregnancy whereby a life is saved even as another is foreseeably lost.

Seeing the embryo as a human person has no objection to obtaining and using stem cells from induced pluripotent stem cells (iPSC). How would this perspective address SHEEFs? A SHEEF is a "synthetic human entity with embryo-like features." It temporarily functions like an embryo, but does not have the genetic instructions to develop beyond the

embryo state. If a human being is present because all the necessary genetic information is present for an individual to grow to birth, then a SHEEF, which is designed without that further development information, would not seem to meet the minimum standard of this view of already being a human being. It would be human tissue without what is needed to be a human being.

The one-third of evangelicals who do not see a person present from fertilization, most often hold a threshold developmental view, a view more akin to the early church consensus through to fairly recently. As taught by Saint Thomas Aquinas, there is not an ensouled body (a person) until there is a body to ensoul. Aquinas saw this point of formation, as Aristotle defined it, as forty-five or more days into pregnancy. With more information available now about development, those who argue for formation as the first actual presence of a fellow human being usually do so either at the first heartbeat that develops about a month after fertilization, or at the start of brain activity roughly two months after fertilization. By these views, procedures such as a morning-after pill or prenatal genetic diagnosis (PGD) done with good reason, can be appropriate because the intervention is before a fellow human being is present.

Beyond matters of life and death, the neighbor love that seeks to help others to flourish, including the vulnerable or marginalized, calls one to avoid inflicting suffering. Suffering can include pain, frustration, and loss of opportunity. We all experience consciousness, but to date we do not know how exactly to measure it externally. That is already a challenge we have with comatose patients who have had a clear history of consciousness. So how can it be measured for a subject who has never been conscious but may be developing toward it? Granted, it would be desirable to keep increasing the similarity of neural organoids toward more human-like physiology and experience, to provide a more applicable research

model for testing drugs and new therapies, but models similar enough to study autism or schizophrenia, might be complex enough to experience neural pain or eventually, the pain of frustration and loss. The desire to articulate language in thought, and the desire to communicate, are hard wired into the human brain. The pain of not being able to articulate language, or not being able to communicate, or to expect a body but not have one, would be genuine pain in an organoid that is complex enough to simulate the structure of a human brain but isolated from a human body. We should be vigilant not to create a chimera or organoid that consciously experiences suffering or may be approaching that experience. A being complex enough to be able to experience some kind of suffering, but anesthetized, would be high risk and thus difficult to justify. Enhancing the intelligence of nonhuman animals beyond species-typical norms, or conferring human-like cognitive capacities, would create a mismatch in the animal, or worse, a locked-in experience to the degree human.

As we do science, we usually do not know what is going to be the most fruitful avenue of investigation. Taking that into account, one might think of the above obligation not to harm a subject, by the standard philosophical definition of a *prima facie* obligation. An absolute prohibition has no exceptions. Most of our medical ethics principles cannot be absolute. For example, “do no harm” is transgressed dramatically when we do open heart surgery, but it can be justified harm if the obligation not to harm is *prima facie*. A *prima facie* obligation is a genuine obligation, but it is not absolute. It cannot be broken lightly, but under certain circumstances and guidelines, it can be overridden. In this case, that might be that one has an obligation not to inflict intentional harm on a fellow creature (with the highest fellow standing for a primate) unless that obligation is overridden (1) by a higher moral concern, for example, ridding us of Alzheimer’s or autism, (2) as a last resort—the alternatives are found to be inadequate, (3) as minimally as possible—this is not authorizing limitless intervention, and (4) by the pursuit of amends—healing, if possible, and consolation for the subject who was in some way harmed.

So, returning to the application of the March editorial, from an evangelical perspective, research using unconscious tissue inside an animal model or in a lab setting is welcome. In parallel to raising food,

harvesting a porcine heart valve to replace an ailing human heart valve, is already welcome, as long as no suffering was inflicted on the animal source. The animal was part of God’s creation too. If we could develop a way for an animal to grow a whole human organ such as a kidney for transplant to a human, that would be welcome, if the animal has a good life and suffering is avoided in obtaining the organ. Growing a human organ or some portion outside of a human body, for study or transplant, would also be welcome. Growing brain tissue not networked to the point of potential suffering, in an animal host or lab, for transplant to a human being to support a damaged brain, or for study, would be welcome.

The likely boundary for evangelicals will be against enhancing the intelligence of nonhuman animals beyond species-typical norms, or conferring human-like cognitive capacities to an entity, because these would cause suffering from a mismatch in the animal, or worse, a locked-in experience to the degree that there is presence of humanity. Scientific research and medical technologies, animal models and sources, building lab tissue models and sources, including neural organoids for research, are welcome practices toward understanding, healing, and stewardship, as long as they do not involve killing a fellow human being, or cause an unjustified negative experience for any living creature. This latter concern might be met at a *prima facie* level. †

### Note

<sup>1</sup>Religious Landscape Study, “Views about Abortion among Evangelical Protestants by Religious Group,” Pew Research Center, 2014, <https://www.pewforum.org/religious-landscape-study/compare/views-about-abortion/by/religious-family/among/religious-tradition/evangelical-protestant/>.

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*Editor-in-Chief*