

Animal enhancement: the legal framework of mixing human-animal materials in Switzerland and our «postanimal» future

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In July 2011, after nearly two years' work, the British Academy of Medical Sciences published a report asking for a stricter regulatory framework when mixing human and animal gametes. The report addresses questions concerning the insertion of human DNA or cells into animals [1]. A few months later, in September, the German Ethics Council published a similar report. It recommended allowing scientists to insert human genes into mice, but special permission should be given to insert it into apes. However, some practices are clearly banned: «introducing animal material into human germlines, producing human sperm or eggs in animals, and implanting animal embryos into humans.» [2]

In practice, ethical guidelines are not always followed or come after harm has been done. Indeed, a few days after the British report was made public, scientists admitted to have created more than 150 human-animal embryos secretly during the last three years [3]. Some scientists justify their actions claiming that making animals more 'humanlike' helps them find new cures for disease, new medication, and a better understanding of human genes. Others disagree, reminding us that to date, all cures from stem cells have come from adult cells, not embryonic ones. Some commentators fear that scientists have gone too far and humanity is on the verge of destruction or losing its dignity. What would happen if scientists started introducing human stem cells into the brains of primates? Do we have a moral obligation to improve animals? Before enhancing ourselves, should we enhance animals?

Our article proceeds in two stages. First, we examine the legal situation in Switzerland concerning mixing human-animal material. From four articles of the Federal Constitution we see that in Switzerland this research is strongly regulated, with clear boundaries on what may be done. In the second part, we introduce the topic of animal enhancement, which has been little discussed compared to human enhancement, yet may soon challenge the legal framework outlined in part one. Distinguishing between «transanimals» and «postanimals», we show that transanimals are already created and we argue that before *Homo sapiens* becomes some sort of posthuman, postanimals will need to be created first. Our aim is first to outline the current legislation concerning mixing animal and human material in Switzerland and second, to begin a debate about animal en-

hancement, which will challenge this legislation in the near future.

Mixing the human and the animal

When it comes to research with animals containing human material, there are several legal issues. In the Swiss Federal Constitution there are at least four relevant articles to be considered besides the generally applicable fundamental rights such as human dignity in Art. 7. These articles give guidance to the legislator for the more specific regulations in the federal or cantonal law. In addition to the law, there are several recommendations for researchers to heed, such as the ethical guidelines from the Swiss Academy of Medical Science (SAMS). In particular, the SAMS produced an Opinion on interspecies research in May 2009 [4].

Art. 80 of the Constitution requires the protection of animals, especially when it comes to animal testing (section 2b). To fulfill this constitutional duty, more specific legislation was established in a 2005 Federal Law on Animal Protection. In outline, this legislation specifies that experiments with animals need to be approved by the competent cantonal authority and an ethics committee. Animal testing will be allowed only if the researchers pursue a permissible purpose and if the experiment is inevitable and limited to the unavoidable minimum. Therefore the legislator distinguishes between four categories of severity (from stage «0» if the animals will not suffer at all; to stage «3» if the intervention is heavy and the animals will suffer pain or fear during the experiment). The more severe the interventions are, the more difficult it will be to get an allowance for the experiment. Experiments with a severe (i.e. painful) impact on the animal are only justified when there is significant knowledge for further research expected. So, if experiments with animals containing human material were to be carried out in Switzerland, they would need to fulfill the mentioned requirements for the protection of animals, which are led by the principle that the allowance of animal testing should be considered as the last resort.

In Article 119 of the Constitution and the federal legislation resulting from it, we find further restriction for research in the field of mixed animal and human mate-

rial. Section 1 of the mentioned articles requires that humans are protected from abuse in reproductive medicine and genetic engineering. Section 2 prohibits cloning and interventions in the genotype of human cells or embryos. Also forbidden is the fusion or injection of nonhuman into human reproductive material. Art. 36 of the Law on assisted reproduction specifies the consequences: researchers who create a clone, a hybrid or a chimera will be punished with prison sentences. Furthermore, Article 120 of the Constitution requires special protection for humans and their environment from the misuse of genetic engineering. Section 2 regulates the use of reproductive and genetic material of animals. Researchers have to respect the dignity of the creature. More detailed regulation of this issue is found in two laws: the federal law about environmental protection and the federal law on genetic engineering. In particular, genetic engineering always needs to be justified by legitimate interests such as the health of humans and animals or increasing scientific knowledge.

Animal uplift

Works of science fiction such as *The Island of Dr Moreau* (1896) and *The Planet of the Apes* (1963) have portrayed the enhancement or uplifting of animals. These tales are now being discussed along the debate of human enhancement: we have ways of uplifting animals to the extent that animals might become transanimals or postanimals. Some raise the question whether the cognition of great apes should be enhanced to the normal level functioning of a human [5], some argue that if human enhancement is considered a moral obligation, animal enhancement should be one as well, [6] and others argue that we should increase animals' rational faculties so they can manage themselves and their environment better [7].

In practice, before we can become posthuman, there is a good chance that we will first create postanimals, as new medical technologies are usually first tested on animals. Celia Deane-Drummond rightly predicts that, «some of the projected bioengineering technological developments will be tested out on other animals first. This is already happening with the inherited genetic engineering of other animals» [8]. Indeed, smarter, stronger, fearless and more resistant animals have already been created. Some have been genetically modified to glow in the dark. These animals have become transanimals; however, they have not yet become postanimals. Mark Walker explains the difference between the two. For him, the creation of postanimals, for example a postmonkey, would occur when his intelligence would have been boosted to such a point that the primate cannot be called a monkey any longer [9].

While some transanimals are already being created in order to find new cures and new drugs, it is unlikely that postanimals have yet been created in Switzerland, due to the strict regulation outlined in part one. Because the legal framework to experiment on a human

subject is also highly regulated and restricted, we predict that the creation of a postanimal will occur before the creation of transhumans or posthumans. Animal experimentation that leads to the creation of transanimals and postanimals foreshadow possibilities for the future of human species. Along these lines, Deane Drummond explains «that given the legal structures on experimentation on human subjects in most jurisdictions, it seems highly likely that the experimental basis for transhumanism will be tested out first through the use of experimental animal subjects. There are biotechnological developments in animals that are already in place, and these developments pave the way for what might happened in human beings» [10]. Now, some posthumans may be the result of human augmentations with technological changes of human biology, such as artificial intelligence, or uploaded consciousness. Here, these augmentations will be applied directly on humans, without prior animal experimentation. However, some posthumans might emerge as the result of genetic engineering, extension therapies, and enhancing drugs, which will need to be tested on animals. Therefore, this invites the question: when transhumanists dream of becoming posthumans, will they first have to create postanimals, and in doing so, will they truly enhance the lives of animals, or violate them?

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