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Of Mice and Men

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In various writings, including my previous commentary in this journal in 2003, I introduced a concept I call a "Gresham's law for ethics" (Rollin 2003). Recall that Gresham's law in economics affirms that, "bad money drives good money out of circulation." If one has an economic situation such as the one prevailing in Germany after World War I, when a wheelbarrow full of currency was needed to buy a loaf of bread, rational people will not pay their debts with gold. They will hoard the valuable currency and pay with the devalued currency worth next to nothing. Similarly, in the absence of anyone providing sound and reasonable articulation of possible ethical issues occasioned by new science or technology, bad pseudo-ethical formulations articulated by people with vested interests or with knee-jerk reactions will rush to fill the vacuum created in the social mind by the new technology.

In my earlier commentary, the issue that I used to illustrate this Gresham's law for ethics was the oft-enunciated claim that genetic engineering "violates species boundaries" or "violates species integrity," because we have no clear, undisputed notion of "species integrity" or "species boundaries" (Rollin 1995).

Typically, this ethical Gresham's law is instantiated for people when scientific innovation elicits strong emotions because it seems to threaten their religious worldview. A classic example occurred when the cloning of Dolly the sheep was announced in 1997. Dolly's creators were silent on the ethics of cloning animals, except for affirming—with no argument—that human cloning clearly was morally wrong. As a result, within one week Time Warner, Inc. (New York, NY) announced the results of a poll that indicated that 75% of the United States public believed that cloning the sheep had "violated God's will." How, we may ask, could cloning advocates respond to or refute such a claim? Shortly after that, American activist Jeremy Rifkin, who has made a career of opposing biotechnology, announced a pending coalition with fundamentalist Southern Baptists to block cloning. President Clinton's Bioethics Commission, heavily laden with religious leaders, not surprisingly condemned cloning. The report of that commission is a textbook case of confusing ethics with theology and aesthetics.

The article by Greely and his colleagues (2007) is a well-written attempt to consider the ethical issues growing out of proposed human neuron mouse experiments. It was undertaken at the request of the scientist proposing the experiments, and represents a noble effort at engaging ethical questions along with proposed scientific innovations. Failure to do so has historically plagued science, growing out of a tendency to see science as "value- and ethics-free" (Rollin 2006). Arguably, the failure of scientists to engage and articulate ethical issues is a major reason for rejection of biotechnology in Britain (Biotechnology and the European Public Concerted Action Group 1997). Yet despite the authors' laudable intentions, I do not believe they avoid Gresham's law fully, particularly regarding the most interesting issue occasioned by the proposed experiments.

Greely et al. (2007) find five possible issues attendant on the creation of the human neuron mouse: 1) sources of human tissue; 2) animal welfare; 3) public outcry; 4) insufficient respect for the human origin of cells used; and 5) conferring humanity on mice.

In my view, the first two indeed represent genuine ethical issues, albeit ones that have been widely discussed and certainly do not explain the maelstrom that these proposed experiments engender. The third and fourth issues move towards bad ethics. The last one, in my view, indeed comes closest to explaining why people are so upset with such experiments; however, in the form that these authors discuss this issue, it also approaches the Gresham's law template because the authors totally fail to translate it into ethical terms or analyze it ethically. Instead they simply acquiesce to the knee-jerk reactions they find, which are not rationally grounded.

SOURCES OF HUMAN TISSUE

Certainly, the source of human tissue is an issue, but it is not unique, new or even very important as a constituent of the human neuron mouse experiments. Every experiment using human cell lines raises the same question.

Stem cell research engenders much excitement when the tissue is derived from aborted fetuses. Yet it is difficult to argue that a society that allows abortion on demand and disposition of the resultant tissue as medical waste can generate legitimate *ethical* (rather than theological) questions about utilizing that tissue in a therapeutic way. And, in any case, the use of human tissues, as the authors point out, is governed by rules designed to assure consent and preservation of property rights. I suspect that even if one acquired the human tissue for these experiments from sources no one questions, for example from cord blood, this would not diminish the fuss over the human neural tissue implanted into a mouse brain. Thus, source of tissue entails an ethical issue, but one that surely does not loom large when people express "ethical concern" about the neuron mouse in particular.

ANIMAL WELFARE

Compared with countless experiments performed on animals, the risk of animal suffering in the human neural tissue experiments seems minimal and manageable, by early euthanasia for example. In creating knock-out animals, or in adding genes randomly, or in genetically engineering animal models of human disease, the risk of animal suffering is much more acute, particularly in the latter case, in which the purpose of the experiment is to create a suffering, defective animal, replicating a human condition wherein the disease symptoms may not be susceptible to amelioration. (I have argued this point about Lesch-Nyhan's syndrome) (Rollin 1995). Clearly, then, the animal welfare issues are not what excite attention here, a context in which there is no reason to project pain and suffering. Most people who object to such experiments would again not withdraw their concerns if assured that no animal suffering was involved. Thus it is certainly not animal welfare that makes these specific experiments so controversial.

INSUFFICIENT RESPECT FOR THE HUMAN ORIGIN OF THE CELLS

Whereas insufficient respect for the human origin of the cells may begin to capture some of people's reasons for being upset over this experiment, this issue appears to me to be bad ethics, or nonsense, masquerading as ethics. What is evidence for "lack of respect" besides the use—the very point at issue? And, assuming consent is obtained, is it not up to the acknowledged source of the tissue to decide what is a "respectful" use? Like all such appeals—including what I consider to be vacuous appeals to "human dignity"—it is difficult to know when (if ever) an aesthetic aversion or a theological one constitutes a genuine ethical issue. Once again, the people who object to the human neuron mouse experiments would most certainly not be appeased if (probably *per impossibile*) the researcher used his own brain tissue, a case in which we would obviously have clear evidence that the donor does not consider such use "disrespectful."

PUBLIC OUTCRY

Presumably public outcry is a prudential issue, not an ethical one. Teaching evolution or integrating schools created public outcry, yet these cases of outcry cannot be viewed as genuine moral issues, rather than simply knee-jerk responses emerging from unconsidered ideology.

CONFERRING HUMANITY ON MICE

The issue of conferring humanity on mice is clearly the issue arousing most people's negative reaction to these experiments. But what, exactly, is the genuine ethical issue occasioned?

Amazingly enough, many people in Europe have indicated an unwillingness to accept a pig heart in a xenotransplant even to save their lives. Such unwillingness seems to arise from an antiquated view of the heart as the seat of the soul. Surely this is not a genuine ethical issue (although there may be other issues relevant to xenotransplantation, such as animal welfare considerations); it is at best an aesthetic one.

We can similarly ask if something like the pig-heart case is operative here. As Greely et al. (2007) point out, putting human neurons in mouse brains does not create a human brain (or, presumably, a human mind). Does it create human consciousness in a mouse? We do not know, although the odds that it does are small. Does it augment the mouse intellectually? Again, we do not know. But suppose it does? The key question is what is the ethical issue this would raise, versus the aesthetic or "yuck" issue? Do we know *a priori* that a smarter mouse or a mouse with a higher level of consciousness would be a suffering, unhappy animal?

Indeed, suppose the mouse did acquire a "human intellect." What does this even mean in a mouse? Given the mouse life span of three years at most, coupled with its lack of a sociocultural life with other such mice, it surely could not develop a mind like ours, which is strongly conditioned by language. At most, perhaps, it could possibly reach the level of apes taught signing, a series of experiments that have not raised a moral tumult, except when the apes are sold to toxicology laboratories or are suddenly deprived of the chance to use their newly acquired skill. And even if the mouse did develop language, surely the only issue would be its isolation from others possessed of similar abilities, an eventuality that could be forestalled by creating a group of such creatures if any are to be made. The key point is that it is surely incumbent on the authors of this paper to discuss fully what if anything is morally wrong with making a mouse with a "human intellect."

Yet, Greely et al.'s (2007) discussion is in fact very superficial, and their unargued conclusion is "don't do it," if we could indeed humanize a mouse intellect. But why not? The National Research Council statements quoted by the authors—that we need to be wary of giving animals "characteristics that are valued as distinctly human" or "human characteristics that would be ethically unacceptable to find in an animal"—are classic question-begging (Greely et al. 2007, 27). Indeed, if the animal did not suffer or become unhappy, we could presumably learn a great deal about animal forms of life from such a being, and thus one could generate a justification for such an experiment. Greely et al. affirm that such experiments should be undertaken—"if at all"—only for the gravest of reasons, but leave aside a discussion of what counts as a "grave reason."

In my view, however deliciously seductive the image is, we cannot think of the augmented animal as a human in a mouse body. Rather, it is at most a smart mouse. Thus "conferring humanity on a mouse" is a hyperbolic misnomer. In any case, there is no discussion provided of what is ethically wrong if it were a human in a mouse body. Presumably, ethics would arise in terms of how it were treated; surely one could

not for example morally kill it at will if life per se mattered to it, i.e., if it were aware, in Heidegger's felicitous phrase in *Being and Time*, of the "possibility of the impossibility of [its existence]".

The only argument of substance the authors discuss is that we would have problems identifying the moral status of such a being since we currently assume that the class of full moral objects is essentially coextensive with the class of normal humans. Animal ethics is of course challenging that assumption—a mouse with augmented or even human intellect would make the discussion and resolution of that issue more pressing.

In sum, though the intent of this article is laudable and there is much to value in it, there are some weaknesses that need to be addressed if we are not to be haunted by Gresham's law for ethics. Much of what upsets people, even a great many people, is not necessarily the purview of ethics.

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