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Review Forum

Lee M. Silver, *Challenging Nature: The Clash of Science and Spirituality at the New Frontiers of Life* (New York: HarperCollins, 2006), 444 pp., $15.95 (pbk), ISBN: 978-0060582685.

I first met Lee Silver in 1998 at the National Cathedral in Washington, DC, for a forum occasioned by the release of his book *Remaking Eden: Cloning and Beyond in a Brave New World*. We did not agree on much. For example, Silver wanted biotechnology to take charge of human reproduction and to fashion new humans. He called for a new science of 'reprogenetics', not old-fashioned parents, to 'remake Eden' by fabricating better babies (p. 9). And while praising 'fertility doctors' and their 'labor-intensive[ness]' in assisted reproduction, he chose to remain silent on women's labor in childbirth. I recall a profound disconnect. Silver told us how much he cherished his family, his wife and three children, 'all three created the old fashioned way'. His untamed life with his family was the core of his world, but he wanted something different for everyone else. That disconnect between being an enjoyer of life's 'natural' pleasure, and being an hubristic utopian promoter of science and biotechnology continues and even intensifies in Silver's *Challenging Nature: the Clash of Science and Spirituality at the New Frontiers of Life*.

Silver begins his visionary journey by taking us on a real-life voyage with his entire family to Bali, the Ganges, the Amazon, France, Russia, Brazil, and Peru, complete with superb videos, colorful photos, and vivid descriptions of biodiversity, and natural and cultural marvels. As he relates his personal experiences, nature becomes alive, dazzling, and inspirational. But Silver focuses on its dark side everywhere and asserts that only a trained molecular biologist can master nature and prevent its corruptive effects to benefit humankind (p. xv). Silver is no sentimental admirer of nature. Unlike Descartes, who thought nature, more often than not, points to what is good rather than harmful, Silver thinks there is nothing to be learned from following nature and listening to her 'order'. She produces 'errors' like fetal monstrosities (Chapter 6), and cannot be trusted. Thus, Silver avers, humans should take control of nature's evolutionary process through

> the *wise* use of biotechnology and, in particular, genetic engineering… Biotechnology could alleviate human suffering, increase the quality of life in all societies, and maximize the health of the biosphere. The alternative is faith in a Mother Nature who cares not for any creature or even any species. Humanity, in contrast, does care (p. xv).

Silver dislikes Leon Kass intensely because of Kass's belief that 'biotechnology is most immoral when it is used toward knowledge or the alteration of essential human

features such as happiness' (p. xii). In contrast, Silver argues that dehumanization is precisely the result of not applying technological expertise in seeking what we want—better health, a longer and better life, and greater pleasure. Silver insists that human diseases will be prevented or cured by science and by the manipulation of the body at its microscopic and sub-microscopic levels: 'With the combined use of stem cell and genetic modification technologies, clever scientists could someday attack every human disease, including brain disorders. A new era of biomedical innovation may be coming, but only if science, religion and politics can find common ground' (p. 130).

Silver views religion as a major impediment to scientific research and innovation. He laments that scientific progress is severely challenged by superstition and fear occasioned by religious beliefs. For example, Christian fundamentalists believe that humans have been ensouled by God at conception and therefore human embryos may not be created for stem-cell research that causes their destruction. Silver complains that such a proscription makes it almost impossible for biotechnology experts to create new forms of life. He also seems to believe that only an elite few like himself should be able to control the biological destinies of the many.

Silver does not limit his vision of scientific utopia to the lives of humans; animals also will share in our happy future. Silver specifically suggests new zoos be modeled on the outdoor bonobo enclosure at the San Diego Zoo. The implication (although he might deny it) is that a human zoo-like society could be an idealized (ideal?) world where individuals, living in a controlled environment, would go about their business without being burdened by the lack of jobs, food, or health care. Moreover, 'a single globalized human [zoo?] society will provide the means for all people—not just the people within the current borders of rich countries—to live free and healthful lives, taking advantage of the benefits that biotechnology can provide' (p. 348). Everyone will be equally happy, according to Silver, as the new society will promote social justice and democratic values. Utopia for some, for sure. Silver is confident that scientists will be able to unravel the way genes build a brain, and what causes the complexity of human behaviors. He is also convinced that these achievements will lead to a better understanding of human affairs, happiness, and what it means to be human.

Yet, I cannot help but think that even if Silver's dream world were possible, it would not be desirable. Bordering as it does on the *Brave New World* of Aldous Huxley, our lives would be dangerously controlled by the bureaucrats of life sciences, the molecular geneticists. As philosopher and physician Georges Canguilhem perceptively noted decades ago, 'science does not dictate norms to life…[and if] At the beginning we have the generous ambition to spare innocent human beings the atrocious burden of producing errors of life, at the end there are the gene police, clad in the geneticists' science' (1989: 280).

Ultimately Silver enthusiastically adopts science as his religion and preaches that through science and its application we will self-direct our evolution (pp. 349-51). God, if such a being exists, may have set the process in motion, but is presently inactive, leaving scientists the task of creating the new human. But Silver is also somewhat pessimistic about what science may achieve in the near term: 'What a shame, the scientist in me thinks, that I won't be around to see how the story ends' (p. 351).

Silver may be right to foresee a long-term trajectory of our human future. But if he were more attuned to biodiversity, which he himself describes so brilliantly in his voyage, and more in touch with the lives of real people, he would agree—as he seemed to the first day I met him in the National Cathedral when he spoke so elo-

quently about *his* family, *his* travel, and *his* enriching intellectual life—that the real joy of being human is already abundant on this earth and is unlikely to be measurably improved by human cloning, genetic engineering, and species-altering interventions, or by building an Earth-sized human zoo.

References

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Lee M. Silver, *Challenging Nature: The Clash of Science and Spirituality at the New Frontiers of Life* (New York: HarperCollins, 2006), 444 pp., $15.95 (pbk), ISBN: 978-0060582685.

In *Challenging Nature* Lee Silver tries to undermine all reverence and respect for the human soul.

With a series of lively stories, he first describes the ubiquity of belief in spirits: a Balinese family mummify a body before releasing its soul through fire; an old Hindu woman is taken to die by the Ganges to gain a favourable reincarnation; a rabbi sits over coffee in Starbucks and tells Silver that God gives a human being its soul at the first breath after birth.

Silver goes on to outline the way in which spiritual beliefs emerge early in childhood, and explains how religious and spiritual experiences depend on brain function. For example, specific brain areas have been found, which, when stimulated, give rise to out-of-body experiences, mystical experiences, or visions. More controversially, he argues that spiritual beliefs are deeply embedded in the human mind because they once served the evolutionary function of increasing the sense of community among some tribes rather than others. This appeal to what sounds like group selection needs a lot more evidence but Silver does at least admit that this part of his argument is 'evolutionary speculation' (p. 69).

So is this widespread belief in a spirit or soul either valid or helpful to us now? No, it is neither, claims Silver, as he takes his readers through a series of bizarre and grippingly creepy examples of nature's creations. A teratoma is a rare benign growth sometimes found on a newborn baby. Often referred to as 'dermoid (skin covered) cysts', a better name for these growths would be 'monster clones'. They are usually genetically identical to the person carrying them, and inside may contain a cluster of human body parts, including muscle, bone, teeth, heart, and even a whole eye or electrically active neurons. It may be easy to think of these as mere lumps of tissue, rightly to be thrown in the bin, until you know how they are formed. In fact they originate as the baby's embryonic twin but never develop into a whole body. So teratomas really lie at one end of a continuum that leads all the way through to the least tightly bound of conjoined twins; twins who are treated as, and think of themselves as, two complete persons. Where on this continuum do freaks of nature end and real human beings begin? Where can we draw a line between one person with a growth and two people accidentally joined together? If you believe in souls, you have to decide which of these gets given a soul and which does not.

What amazes me is that anyone can contemplate these, or any of the many other extraordinary examples in this book, and go on believing in souls, let alone that these souls are given to us by a benign (or even compassionate) God. Yet people do go on believing. As Silver explains, the tendency to such belief is very deep rooted indeed, and people fear—quite unnecessarily—that human love, compassion, and respect are impossible without it.

Perhaps if the harm done by such beliefs were only that they cripple people's understanding of the world then it would not matter very much, but the harm goes much further than that. Silver argues that such underlying beliefs as the sanctity of life, the preference for 'natural' over 'artificial', or the fear of tampering with God's creations have led people in 'post-Christian' nations to reject GM foods, embrace harmful agricultural practices because they are deemed 'natural', waste huge amounts

of money on unnecessary vitamin supplements, and risk ill-health by relying on ineffective and even harmful 'alternative medicines'. All these idiocies, he claims, can be traced back to the natural tendency to believe that nature is essentially the harmonious, God-given backdrop against which human dramas are played out. The truth that people do not want to hear, he says, is that 'Mother Nature can be a nasty bitch' (p. 202).

Challenging Nature is very much an American book for American readers. The students Silver talks about are mostly religious, have high levels of spiritual belief, and think he is irreverent toward human embryos, quite unlike most British students. He describes intellectual battles in a country with a powerful Christian right and pro-life lobby, where experimentation on human embryos raises deep fears, where 'intelligent design' gets a serious hearing, and where most people are religious. These issues play out quite differently in other parts of the world where religion has less power, but, as he rightly points out, people all over the world cling to false beliefs and rely on pseudoscience.

While Silver does a great job of exposing the dangers of belief in the soul, in the end he is not entirely immune to the temptation himself. When it comes to consciousness, he, like so many others, seems to fall back into dualist talk, implying some kind of inner-conscious self. He describes the cerebral cortex as 'the seat of consciousness' (p. 85) and the frontal lobes as 'the location of our conscious existence' (p. 77). So, is there an 'us' who lives in this location, or sits in the mental seat? Perhaps this is just another example of the almost irresistible tendency to invent selves and souls of one kind or another. Rooting out the myth really is as hard as Silver tells us, but this book will surely help, and I remain optimistic that he is wrong when he says that 'spiritual beliefs are fundamentally ineradicable from humankind' (p. 79).

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Response to the Reviews of *Challenging Nature* by Evelyne Shuster and Susan Blackmore

I extend my kind appreciation to both Dr Shuster and Dr Blackmore for their scholarly reviews of my book, *Challenging Nature*. In this response, I will first consider Dr Blackmore's comments before moving on to those of Dr Shuster. Dr Blackmore indicates her agreement with my argument that religious and spiritual experiences emerge from brain function, and that the responsible neural networks are encoded—to a large degree—in the human genome. But the very fact that some people reject supernatural claims tells us that spiritual experiences cannot be simply an unavoidable byproduct of essential brain functions. Rather, the evidence points to the likelihood that spiritual susceptibility is encoded in specific genetic systems that evolved actively in response to positive selection.

In *Challenging Nature*, I speculated on two categories of selective forces that could have operated in favor of spirituality in earlier human societies. First are direct benefits to individual human beings who had become aware (through the evolution of language abilities) of the anxiety-evoking inevitability of death. Contemporary empirical evidence supports the notion that belief in a spiritual afterlife is a tonic for this form of anxiety, leading to prolonged life on earth and increased reproductive output.

Once susceptibility to spirituality had evolved, I speculated, a second category of selective forces could come into play through the institutionalization of religious rituals at the tribal level. Here, Dr Blackmore chides me for appealing to group selection. Actually, I agree with her that group selection is a vague and discredited idea. But group selection is not needed to explain the selection of tribal phenomena if members of any one tribe are more closely related to each other than they are to members of other tribes. This condition of differential relatedness is likely to be maintained if tribal division occurs preferentially along kinship lines (which is to be expected in situations where nuclear families define smaller units within the tribal realm) (Lehmann *et al*. 2007: 6736), and migration between tribes is restricted (which will certainly be the case when dominant tribes slaughter the male members of conquered tribes). In fact, William Hamilton, the intellectual father of kin selection, first explicated this model of human tribes in 1975.

At the boundary of the local group, however, there is usually a sharp drop in relatedness. If migrants (or whole groups) are very mobile, leading to an 'island' rather than a 'stepping-stone' situation, this drop may be such as to promote active hostility between neighboring groups. Even though these groups have some relatedness, as practical limitations to distant migration naturally ensure, the contrast is still such that a minor benefit from taking the life of an outsider would make the act adaptive.

The scholarly disagreements between Dr Blackmore and myself are minor, if they exist at all. In contrast, Dr Shuster and I tend to view the world through different colored glasses. Dr Shuster is worried that biotechnology will give scientists the power to control humanity. I believe that biotechnology will give individual people greater freedom to control their own destinies. It is true that molecular biologists will understand the molecular biology of life better than other people, but other people

can learn enough to make independent decisions concerning the use or non-use of the effected technologies, just as they do today with medicines and other advanced technologies about which they do not have expert knowledge.

When Dr Shuster writes that 'the real joy of being human is already abundant on this earth, and is unlikely to be measurably improved…' I find myself in total agreement concerning my own life and the lives of other lucky people (including, I suspect, Dr Shuster). But this blanket statement does not cover tens or hundreds of millions of people who come up short in the genetic lottery. Certainly, many people in poor countries could lead happier lives if they had the resources that are available to us, but Dr Shuster does not seem to acknowledge the fact that past development of technology is what allows our lives (mine and hers) to be as joyful as they are. Why not expand technology's boundaries further so that even more people are given the opportunity to be brought under the umbrella of joy?

Finally, I am intrigued that Dr Shuster sees my description of the outdoor bonobo enclosure at the San Diego zoo as a metaphor for a single future humanity that is confined to a global zoo (although I deny that I had any intention to draw such a connection). The point of my San Diego story is that if bonobos were actually able to make an informed choice, they would have every reason to choose the zoo over the jungle. And if righteous ethicists (or bonobo philosopher-kings) told them that the jungle was where they really belonged, whether they liked it or not, it would be an assault on their freedom. I believe that individual people should ultimately have the right to make their own decisions about how they want to live their lives. Without a doubt, an unfortunate consequence of such freedom is loss of traditions and potential cultural homogenization: future adventurous families would be unable to travel the way mine has. But, in my opinion, the alternative totalitarian future is far, far worse.

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