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The Future of Human Enhancement

By Eben Harrell

Modern science already offers ways to enhance your mood, sex drive, athletic performance, concentration levels and overall health. But is such medically driven self-improvement always a good idea? Nick Bostrom, the director of the Future of Humanity Institute at Oxford University, believes it's time to open the ethical debate surrounding human enhancement — a term that is growing to include genetic, pharmaceutical and technological ways to improve our physical and mental abilities and even dramatically extend human life. He recently edited a collection of essays on the subject, *Human Enhancement*, and in an e-mail exchange explained why our future holds great promise — and grave danger. (See the top 10 medical breakthroughs of 2008.)

You believe it's time to have this ethics conversation. Why?

For the most part, the ethical discussion is running ahead of reality, which is as should be. However, we already have alertness enhancers (caffeine, modafinil), athletic enhancers (steroids, EPO), sexual-performance enhancers (Viagra), immune enhancers (vaccinations) and concentration enhancers (Ritalin). One can expect improved versions of these to become available in the short term. In addition, memory enhancers are currently in clinical trials. Perhaps there will be compounds that facilitate trust — such as Oxytocin — and encourage pair bonding, or improved diet pills, or treatments that slow the rate of aging and increase sustainable mental energy. Each intervention has to be judged on its merits, the benefits weighed against the costs and risks.

Even small enhancements can have profound impacts, right?

There are approximately 10 million scientists in the world. If you could improve their cognition by 1%, the gain would hardly be noticeable in a single individual. But it could be equivalent to instantly creating 100,000 new scientists.

You recently completed work on whole-brain emulation. Could you discuss that and its relationship with human enhancement?

Whole-brain emulation is a hypothetical future technology which would enable human minds to be "uploaded" from biological brains onto computers. This is a radical technology that's a long way off. It is nevertheless worth analyzing now because if it is developed, it would have profound consequences in relation to enhancement. For example, a mind that runs as software on a computer is not subject to biological aging. Such a mind could also be sped up by moving it to a faster computer. Backup copies could be made for safety. And so forth. But it is important not to conflate these more remote possibilities with what is possible today or in the near future.

One of the popular arguments against radical human enhancement is that you shouldn't meddle with nature. Do you agree with this view?
The view that the human genome is perfect just the way it is, is absurd. Even a cursory look at human history reveals there is also much in human nature that is horrifically bad. When a species with our track record thumps its chest and declares itself to be already perfect — with zero room for improvement — it is hard to know whether to laugh or cry. However, it doesn't follow from this that we will necessarily improve things if we start mucking around with our genes. We could make things worse.

Conversely, what are the most persuasive arguments in favor of human enhancement?
There are intellectual arguments, but on a gut level, what is most persuasive for me personally is comparing the best times of my life with the worst times. The difference is pretty big. So I ask, Why can't it be like the best times more often? Then I observe that there are all kinds of biological constraints that make this difficult or impossible. Some form of enhancement would be needed to mitigate these constraints.

You also do work on existential risks to humanity: asteroids, full-scale nuclear war, etc. Do you feel that Utopia or eradication both seem to be plausible outcomes in the next century?
The president of the Royal Society, Martin Rees, puts the chances of our civilization surviving at 50-50. That's in agreement with estimates from other scientists who look at existential risks. How we handle the challenges of this century could determine the future of humanity — and whether there will be one.

See pictures from an X-ray studio.

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