

## Will the bicultural revolution save us?

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**The biotech revolution** may represent the most significant cultural transformation in human history—one that moves beyond improving life to altering human nature itself. Unlike previous revolutions that sought to enhance the human experience, today’s biotechnologies are oriented toward redesign. Though not yet fully realized, these developments are accelerating, fueled by scientific ambition and extraordinary financial investment. In this context, leadership must be defined not only by strategic action but by moral discernment—by the ability to navigate, respond to, and shape the cultural forces at work.

### Tools: The Emerging Technologies of the Biotech Revolution

Recent advances in genetics and epigenetics now make it possible to identify fine-grained variations in DNA that correlate with everything from disease risk to intelligence. Gene-editing tools like CRISPR allow scientists to modify embryos and even explore de-extinction, while epigenetic research has opened new possibilities for reversing aspects of aging and repairing damaged tissues. Digital data can now be encoded into DNA, collapsing the boundary between biological and informational systems.

In parallel, brain-machine interface technology is developing at a remarkable pace. Non-invasive devices can allow paralyzed individuals to control wheelchairs, while more advanced implants—such as those pursued by Neuralink—enable direct brain-to-computer interaction. These raise complex questions around autonomy, cognition, and the security of the self.

Organoid intelligence offers a biological inversion of artificial intelligence: lab-grown neural tissue, when linked to digital systems, can perform computational tasks like playing video games. These “brains on a dish” suggest the emergence of living machines whose intelligence arises from organic matter rather than code.

Material interventions expand the landscape even further. Nano-robots capable of targeting individual cells, exoskeletons designed to increase human strength, and surgical innovations like genetically modified organ transplants and uterine transplants are already in use or under development. The long-term implications of these tools extend well beyond medicine, pressing against questions of embodiment, identity, and the ethical limits of innovation.

### Goals: What Are These Tools Aiming to Achieve?

The boundary between therapy and enhancement—once a central concern of bioethics—is now fading. Technologies once framed as restorative are increasingly being applied to elevate human function beyond natural limits. Philosophers like Nick Bostrom describe this ambition as becoming “better than well”—not just healthier, but fundamentally reimagined.

One primary goal is **lifespan extension**. While modern medicine has raised the average lifespan, the biological maximum remains relatively unchanged. Some researchers, like George Church, are challenging that limit through genetic and pharmaceutical interventions that have

significantly extended life and reduced disease in animal models. These breakthroughs raise the possibility of not only living longer but restoring youthfulness—inviting new questions about access, generational equity, and the meaning of aging itself.

Efforts are also focused on **cognitive and moral enhancement**. Beyond memory or attention span, some researchers envision technologies that guide or enforce ethical behavior through biochemical or digital means. Whether through pharmaceuticals, brain implants, or wearable feedback devices, these tools risk shifting moral discernment from the realm of character into the realm of programming.

Finally, there is a growing pursuit of **pleasure and well-being**. From mood-enhancing drugs to immersive virtual experiences, the goal is not just the alleviation of suffering but the engineering of satisfaction. Yet the deeper concern is whether pleasure, when uncoupled from meaning, becomes hollow—or even addictive.

## **Concerns: What's at Stake in Pursuing These Goals?**

Extending human life presents clear biological and social risks. Rejuvenating cells may also increase the risk of cancer, and if radical longevity becomes accessible only to the wealthy, it may deepen inequality. Longer lives could also stall generational renewal, concentrating power and limiting opportunity for the young. More profoundly, if decline and dependence are erased, we may lose some of the very experiences that cultivate love, humility, and interdependence.

Cognitive and moral enhancements raise urgent ethical dilemmas. Who defines what counts as moral? What happens to conscience and freedom when moral decisions are guided or enforced by technology? Tools intended to support ethical behavior could easily become instruments of control—or erode moral agency altogether.

Pursuing well-being through stimulation rather than formation risks severing pleasure from depth. Manufactured happiness bypasses the slow formation of character, and without need, novelty, or struggle, pleasure loses its shape. Detached from purpose, it becomes insatiable—and more akin to addiction than joy.

Suffering, by contrast, retains a paradoxical power. Though unwelcome, it can reveal what is true, refine what is good, and deepen the capacity to love. Rather than something to be eliminated, suffering—when rightly received—can become a source of growth, connection, and grace.

## **Final Reflection**

The talk closes with the story of Gabe, the speaker's son, who survived a catastrophic car accident at age sixteen. Despite extensive neurological damage, he found solace in Psalm 71: *"As for me, I will always have hope."* He had the verse tattooed on his side, saying he needed it "for when my heart forgets." Years later, after returning to school and completing the John Muir Trail with friends and his father, he added the second half of the verse: *"I will praise you more and more."* His story is a living reminder that human dignity is not found in enhancement, but in memory, love, perseverance, and hope.