

Christopher J. Preston. *The Synthetic Age: Outdesigning Evolution, Resurrecting Species, and Reengineering our World*. Cambridge: The MIT Press, 2018. xx, 224 pages.

Ask not what you can do for your planet—conserving Earth the best you can. Ask what your planet can do for you—re-engineering a synthetic planet to serve you better.

Preston has a new worldview, convinced “that humans have utterly transformed the earth” (p. xiv). “The human stamp on the world is total.” We are entering the Anthropocene Epoch, a term in “honor” of ourselves and justified by “humanity’s outsized influence on the earth” (p. xv). In this “startling synthetic future” our advancing technologies “promise to remake the natural world” (p. xvi). “Humans stand on the verge of turning a world that is found into a world that is made.” (p. xviii) Preston wishes both to “celebrate” these powerful technologies and to worry who should make the decisions just how “full-throttle” we should go into the Anthropocene. (pp. xix–xx)

I inherited a tale from my grandparents. In the horse and buggy days, a man wanted to hire a coachman to drive his carriage. There were three applicants. He asked the first, “My house is up a long hill and at several places there is a cliff at the edge of the road. How close can you drive to the edge of that cliff?” The first applicant replied, “Sir, I can drive your carriage within a foot of the edge.”

Then he interviewed the second applicant. “Sir, I can drive your carriage within six inches of the edge.” Then he interviewed the third applicant: “Sir, I don’t know. But I would stay just as far from the edge as I could get.” He got the job. Preston seems fascinated with engineering a synthetic Earth as close to the edge as we can get without tumbling over into disaster. I prefer to stay as far from the edge as we can.

Preston organizes his book with successive chapters appraising what we can now synthesize. “Our penchant for constructing things . . . is the essential thing that makes us who we are. The desire to build objects and devices seems to be written into our DNA. The fact that we cannot stop ourselves from doing so has been the key to our spectacular success as a species.” Yet hitherto “nature has always placed limitations on our construction projects,” “Or so it has seemed” (p. 1).

Today we are “making new matter” (chaps. 1 and 2). “The powerful properties of matter that scientists can now hijack at the nanoscale clearly contain enormous potential. . . . Whatever you want you can have. Nanotechnology has potential application in almost any domain that *Homo faber* fabricates” (p. 8). Matter modified by nanotechnology is already used in thousands of applications and products. “Nanotechnology promises a level of intervention into nature that is more profound than anything preceding it, and in so doing the technology recalibrates the relationship between humans and the physical stuff of the world. . . . The material limits of familiar forms of matter no longer apply” (p. 11). We can use “repositioned atoms” to make novel materials and chemistries. Preston does show concern about

nano-robots, lest they get out of control. Also the uses of nanotechnology should be democratically evaluated.

Next we fabricate new life (chap. 3: “DNA on Demand”; chap. 4: “Artificial Organisms”). Sequencing genomes makes it possible “to engineer new genetic combinations. . . . Humans, not evolution, call the shots. . . . Synthetic biologists could start building complicated but useful gene sequences the likes of which nature had never seen before” (p. 42). Beyond that, synthetic biologists have created “designer organisms.” Humans have “themselves become the intelligent designers of life” (p. 54). Such artificial organisms are, of course, designed with human benefits in mind. “Genetic manipulation of the type that leads to synthetic organisms is exactly the right technology for a Synthetic Age” (p. 60). We are “outdesigning evolution” and “reinventing nature” (p. 56). Preston concludes by worrying about who will control and benefit (or be the losers) from this “wet nanotechnology” (p. 43).

The scale grows bigger. We can now fabricate “ecosystems to order” (chap. 5) and relocate and resurrect species (chap. 6). In the Synthetic Age, we will be “deliberately recomposing ecosystems so that they work better for us” (p. 70). We are now “the engineers and managers of a planet transformed by the artificial systems required to sustain us” (p. 71). This can include welcoming useful, non-native, invasive species into our “irreparably novel” ecosystems. We can design ecosystems better adapted for warmer climates. With “assisted migration,” we can proactively relocate species that cannot themselves “outrun climate change” (pp. 81–82). Maybe we will decide to resurrect some now extinct animals and plants, using CRISPR gene-editing. Europeans do have some interest in rewilding parts of their highly cultivated landscapes.

In the Anthropocene Epoch, nature “should be reconstructed along better lines. The Synthetic Age presents an opportunity for humans to dramatically improve the biological and ecological world they inherited” (p. 80). Preston closes here with quite serious concerns about decisions concerning how far we humans ought to go. “Although it may be true that everything now is *influenced* by humans, it does not follow that every feature of the natural world must be *determined* by humans” (p. 101). Maybe, following Aldo Leopold, humans will wish to keep their planet more natural, respecting “the paleontological patent of nobility” (p. 85). One worry is that elements of wildness still lurk in the nature we suppose we have redesigned. We may be playing “ecological roulette” (pp. 84 and 98).

In the Synthetic Age, the vast majority of humans will enjoy their brightly lighted urban life (chap. 7). Humans are a flexible species, figuring out ways to live “in a world that no longer resembles the one their genes prepared them to find” (p. 110). But now Preston can worry about disrupting our inborn “circadian rhythms” when we can no longer see the night sky.

Next we re-engineer the sun and the atmosphere (chaps. 8 and 9). To fix global change, we may remake the skies above us, spraying stratospheric aerosols to reduce Earth’s albedo, reflecting solar radiation to cool the Earth. Remixing the

atmosphere, we might increase and brighten clouds over the oceans, or pull carbon dioxide out of the air. But whose hand is on the thermostat? Who will govern these solar and atmospheric engineers?

Preston closes with the prospect of “synthetic humanity” (chap. 10) and reaching “the transitional moment” (chap. 11). Creating and re-creating our genome, this synthesizing of ourselves “seeks to remake the human from the inside out” (p. 156). Becoming “posthuman,” we surpass ourselves. But do we have mind enough intelligently to re-engineer our genome? Maybe we can transfer our minds, and their remaking, to computers. The perils of these “inventions that reinvent us” (p. 162) escalate with the promises. “We need to think hard about where to go from this transitional moment” (p. 172). Preston is always thorough and insightful.

I have two main criticisms. First, Preston should have been more forceful about Anthropocene abuses of power. Preston repeatedly notices how the Synthetic Age is driven by economics and self-interest. He urges democratic decisions. But he forgets how “power tends to corrupt and absolute power corrupts absolutely” (Lord Acton). Ever since the Tower of Babel, building a tower to the sky and playing God, overweening arrogance has been doomed to corrosive collapse.

Second, Preston should have been more forceful about wild nature. Although there is discussion how much wild nature yet remains, and ought to remain, here and there in the book, discussion of wildness is relegated to a brief, puzzling postscript afterword at the end. Introducing chaos, “wildness, then, is a perpetually mixed blessing” (p. 177). Mark Woods, *Rethinking Wilderness* (Peterborough: Broadview Press, 2017) is a better guide to these issues. In a recent interview, Preston enjoins parents to teach their children “to really see the value of the world independent of us—and to do what they can do to make sure that that world endures” (Dan Cloer, “Reengineering Our World: A Cautionary Tale,” *Vision* [Summer 2018], <http://www.vision.org/interview-christopher-preston-synthetic-world-8531>). Would that Preston had advocated that much more forcefully in his *Synthetic Age*.

Humans are at their best when caring for this wonderland planet. We do not want a de-natured life on a de-natured planet. Does Preston want a synthetic Montana? Our best hope is for a tapestry of cultural and natural values, not a full throttle trajectory even further into the Anthropocene. Do not call it *synthetic*; call it *symbiosis*. Our future ought to be the Semi-Anthropocene, kept basically natural—with the natural basics—and entered carefully—full of cares for both humans and nature on this marvelous home planet. Would that Preston had driven as far from the edge of the synthetic cliff as he could.

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