Cybernetic Futures: Stanislaw Lem, Summa Technologiae

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(Review)

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Cybernetic Futures
Stanislaw Lem, *Summa Technologiae*

Andrew Pickering

Stanislaw Lem (1921–2006) was one of the great science fiction authors of the twentieth century. *Summa Technologiae* (translated by Joanna Zylińska. Minneapolis: University of Minnesota Press, 2013. Pp. xxii+410. $34.95), which appeared in Polish in 1964 and only now in English, is his major work of nonfiction. It is an extended meditation on the future of science, technology, and society, one that brings Lem’s formidable imagination to bear on his impressive knowledge of contemporary science. “Given what we know today, what could we imagine doing in the future?” is the organizing question. At this level the plot is familiar, but Lem’s imaginings are strange and wonderful because of the science he starts from. He was not very interested in new hardware or in changes of the human form (these were the days before genetic engineering), but he was evidently steeped in the cybernetics of his day, especially the work of British cyberneticians Ross Ashby, Stafford Beer, and Gordon Pask, who viewed the brain and other complex systems as evolving and adapting in a complex world.

What kind of a future does that sort of cybernetics conjure up? The cybernetics of that period was not like conventional sciences, such as physics or molecular biology, which is what gives *Summa Technologiae* its unusual thematics. One can read it as an important document in the history of cybernetics; one can also read it as the key to Lem’s science fiction—the fiction dresses the philosophy up with storylines. Personally, it explains why I have always found Lem’s fiction both intriguing and unsatisfying. Unlike other cyberneticians, Lem’s cybernetics is determinedly modern: he will have no truck with religion, spirit, mysticism, or transcendence, except as illusions that one can manufacture. In the end, there is nowhere else to go—we are stuck with matter as described by physics and chemistry and with our mundane selves. Unlike today’s transhumanists, say, his futurol-

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ogy is also modern in its cynicism: “the world is like a sick man who believes that either he is going to get better soon or die very quickly and to whom it does not even occur that he can, moaning as he does, . . . go on living until old age’ (p. 9). A nice antidote to science-hype.

Joanna Zylinska’s translation is both stylish and lively, but *Summa Technologiae* is not an easy book to read. Lem thinks like a chess grand master, half a dozen moves ahead. You think you have the hang of the current chapter, but then he leaps to a counterargument or another angle, and another and another, until the topic is no longer what it seemed. A clever man, but he must have been maddening to talk to. It is often unclear for whom the book is written. To explore epistemological issues of knowledge and probability, Lem tells a long and amusing story of a Mr. Jones and the lady-lodger kissing each other whenever the puritanical aunt leaves the house, but when it comes to biological computing, he writes as if for the cognoscenti. More importantly, cybernetic futurology is, as I said, unfamiliar—I did not know what the plan would be and I never had much of a feeling for where the book was going; it is more like a set of related forays that Lem cultivated from contemporary science.

What does Lem’s cybernetic future look like? The first substantive chapter opens up one of the book’s enduring concerns—the evolution of complex systems, including parallels and differences between biological and technological evolution, stressing the fact that over time, biology figures as a much more sophisticated designer than human technologists. Echoing Ashby (and, later, Stuart Kauffman), Lem argues that the appearance of life is what we should expect in the cosmos, which sets up the problematic of the next chapter: the absence of any sign of intelligent life beyond our planet. He comes at the question from all sorts of angles. Does evolution have to lead to brains? “We are inclined to overestimate the role of intelligence as a ‘value in itself’” (p. 62). Perhaps we fail “to ask Nature the right sort of questions. . . . the Intelligence we shall discover one day will possibly be so different from our ideas of it that we shall not even want to call it Intelligence . . . It does not look like intelligent activity to us because man favors a heroic attack on the surrounding matter. But this is just a sign of our anthropocentrism” (pp. 68–70; emphasis in original).

Then a change of gear. The next chapter starts with some pedestrian philosophy of science and the scientific-information explosion since World War II. Lem worries that we will never be able to process all the information that comes our way, thus missing important discoveries—unless we are saved by the sort of “intelligence amplifier” that Ashby wrote about in the 1950s, a machine somehow cleverer than its designer. Another quick leap gets us to the “biological computing” (not named as such) of Beer and Pask—the idea that adaptive natural systems are themselves brains, inasmuch as they can control and adapt to changes in many variables, which we might harness as intelligence amplifiers. This is perhaps the single most
amazing idea in the history of cybernetics and Lem pursues it very far, even into the realms of morality and ethics. He convincingly evokes scenarios in which the biological black box, with the best will in the world, acts back on the human race in ways we would not choose—for example, by increasing the supply of some chemical (without really knowing it) that reduces the human birthrate and thus obviates economic collapse. The modernist in Lem sees this as a disastrous outcome, a warning about the dangers of the cybernetic “ruling machine” (p. 108). That would be enough for one chapter, but Lem ploughs on. A few pages later, we are into psilocybin, placebos, mystical states, and Indian yoga (echoing Grey Walter here), and the fact that “even when there is no ‘mystical emergency service,’ it is entirely possible to evoke them” (p. 115). And, oh, an awful lot more.

The next substantive chapter swerves off into “phantomology”—the creation of visions and experiences. We start with a kind of super virtual reality based not on optical inputs, but on direct inputs to the human nervous system. Lem presents this matter-of-factly as a scientific possibility and then niggles away at it. It could drive us mad or make us completely non-productive—“social suicide.” How would we tell the artificial from the real reality: Are you really reading this review? (He comes up with some answers that I would not have thought of; try the one on page 201.) Virtual sex, now a staple of science fiction, is gestured at here and there; at one point, Lem sketches out the plot of The Matrix avant la lettre. This all seems a bit fanciful, as well as fascinating, but then the plot twists into a discussion of art and entertainment technology that seems more relevant today than it was back then, including the idea that violent role-playing games might function as a “training ground” (p. 207) for real life.

But why, Lem then asks, bother to go through the nerves? Why not act directly on the brain? This gets us to rituals, hallucinogens, alcohol, orgies, and even James Olds’s laboratory rats with electrodes implanted in the pleasure centers of their brains. Finally, Lem elaborates on Norbert Wiener’s most original idea: namely, if everything is information, we could think it possible to record a complete human being and send the data down a telegraph line to be reconstituted at the other end. Of course, if we can make one copy, we can make thousands, which undercuts conceptions of human identity in ways that would have made even Jean Baudrillard boggle. If there are thousands of me, which one is me? Do I, this one, matter anymore?

The following chapter, “The Creation of Worlds,” is less promising than its title. A section on automating science and “information farming” remarks that “a machine that would copy, with utmost exactitude, every material phenomenon would be a universal plagiarizer” (p. 240; emphasis in original)—a suggestive line of thought in these days of “big data.” Next, Lem extends Ashby’s Design for a Brain (1952) to imagine an evolutionary chemical computer that would both interrogate its environment and read out
knowledge about it. Finally, he argues that while heaven does not exist, there is nothing to stop us from creating a phantomatic place of “immortality and eternal justice” (p. 284) and somehow attaching it to the here and now.

The last chapter, “A Lampoon of Evolution,” includes Lem’s sarcastic and amusing commentary on the shortcomings of this worthy process, while adding that “[w]e just want to become more perfect designers than evolution ever was” (p. 346). But this does not take us far. A nice discussion of John von Neumann’s notion of self-reproducing automata operating at the molecular level leads up to the observation that while it might take an electronic computer thirty hours to simulate some aspect of a biological cell, the cell itself “solves the same problems in fractions of a second—naturally, without an electronic or neural brain” (p. 311). A sort of hylozoistic wonder at the performativity of nature (à la Beer) is not far below the surface here. Despite some ventures into the possibilities of solid or gaseous life, however, many of the concluding pages dwell on rather familiar medical and prosthetic uses of feedback devices. A section headed “Cyborgization” offers few surprises for contemporary cyborg fans.

Zylinska says that she has been “thoroughly Lemmed” (p. xix) by the work of translation, and I know what she means. I find myself trying to strike up half-formed conversations about the book at random moments. I think that means it is important.