**The Techno-Realist Manifesto**

* Nicholas Agar & Stuart Whatley, *Project Syndicate*, Nov 28, 2024

Amid a confounding mix of hype and genuinely valuable innovation, today’s entrepreneurs, scientists, and other experts betray an abiding belief that technological progress will make us healthier, wealthier, and wiser. But there are strong reasons why we should not bet everything on future world-changing breakthroughs.

HAMILTON – “It’s actually going to be easy to cure aging and cancer,” [insists](https://smartless.simplecast.com/episodes/david-sinclair-Wa1S0YoB) David Sinclair, a researcher on aging at Harvard University. Similarly, Elon Musk [continues](https://www.cnbc.com/2020/12/01/elon-musk-highly-confident-spacex-will-land-humans-on-mars-by-2026.html) to [claim](https://www.ndtv.com/feature/elon-musk-says-humans-will-be-living-in-a-city-on-mars-in-next-30-years-5683708) that he will soon land humans on Mars and deploy robotaxis en masse. Major corporations have [set](https://www.technologyreview.com/2021/07/08/1027908/carbon-removal-hype-is-a-dangerous-distraction-climate-change/) carbon-neutrality targets based on highly optimistic forecasts about the potential of carbon-removal technologies. And, of course, many commentators now [insist](https://www.rolandberger.com/en/Insights/Publications/Why-AI-changes-everything.html) that “[AI changes everything](https://patmcguinness.substack.com/).”

**Amid such a confounding mix of hype and genuine technological marvels, are entrepreneurs, scientists, and other experts getting ahead of themselves? At the very least, they betray a strong preference for** [**technological solutions**](https://www.theguardian.com/technology/2013/mar/09/evgeny-morozov-technology-solutionism-interview) **to complex problems, as well as an abiding belief that technological progress will make us healthier, wealthier, and wiser. “Give us a real world problem,” writes Silicon Valley doyen Marc Andreesen in “**[**The Techno-Optimist Manifesto**](https://a16z.com/the-techno-optimist-manifesto/)**,” “and we can invent a technology that will solve it.”**

But, as we note in our book [*How to Think About Progress*](https://link.springer.com/book/9783031689376), this attitude is heavily influenced by what we call the “horizon bias”: the propensity to believe that anything experts can envisage accomplishing with technology is imminently within reach. We owe this optimism to technology’s past successes: eradicating smallpox, landing a man on the moon, creating machines that can outperform chess grandmasters and radiologists.

While these highlights dwell permanently in our collective memory, offering strong inductive evidence for the power of human ingenuity, we forget (or are oblivious to) all the times that technology promised to solve some problem but didn’t. Just as history is written by the victors, the story of technological progress features mainly the breakthroughs that panned out, creating the impression that Technological Man consistently accomplishes whatever he sets out to achieve.

The horizon bias affects us all, but it is most consequential in those with enough expertise to be able to offer scientific and technological solutions to big challenges in the first place – especially if they are trying to sell us something. The hazard lies in convincing yourself that you can anticipate every discrete step needed to reach an ambitious goal like “curing” cancer or colonizing Mars. Such “knowing” instills confidence in the speaker as much as it inspires hope in the non-expert listener.

Moreover, it is one thing to promise tourist trips to Mars, and quite another thing to claim that you will invent a time-travel machine. The first ambition at least seems doable, and that is more than enough for any optimist to run with. Mere possibility can be a powerful force in forecasting and decision-making, because we usually fail to recognize that our sense of possibility expands with ignorance. The less you know about biology or space travel, the more you believe can be achieved in those fields. *For all we know*, anti-aging research really will allow people who are alive today to live for hundreds of years.

This is the blind spot that Silicon Valley hype-artists love to exploit, especially after breakthrough moments like the release of ChatGPT or the success of mRNA vaccines against COVID-19. It is on such occasions that we look to the horizon and embrace or revise our ambitions. Perhaps the science behind the vaccines will also [offer](https://www.nature.com/articles/s41571-024-00902-1) “the cure” for cancer? When even the experts are saying “*For all we know*, this latest advance could swiftly lead to X, Y, and Z,” that is a legitimate reason for the lay public to get excited.

But this is a facile mode of thinking: because we can only speculate about the later stages of the sequence needed to reach a hoped-for destination, we have a license to gloss over the messy contingencies that are inevitable in the course of research and development. Succumbing to the horizon bias, we can say things like, “All we would need to do to address climate change is ramp up R&D in carbon-capture technologies until we have found a way to make them affordable and viable at scale.” Precisely because we don’t yet know what technical and scientific advances this would require, we can imagine it as eminently feasible.

Doing so feels better than conceding that a problem may remain beyond our control, or at least for longer than we expect. But we should resist the temptation. **The persistence of the horizon bias means that there is both a rational and an ethical case for maintaining a realistic skepticism about technology**. **Too much confidence can create moral hazard. Why worry about carbon emissions if we can anticipate that direct air capture or some kind of** [**carbon-eating nanobot**](https://www.motherjones.com/environment/2015/02/free-air-carbon-capture-may-save-planet/) **will eventually be deployed to reverse climate change?**

Moreover, we should be wary of a psychological tendency that leads us systematically to overestimate our ability to solve big, generation-defining problems with technology. As the bibliographer of science fiction I.F. Clarke [put it](https://books.google.com/books/about/The_Pattern_of_Expectation_1644_2001.html?id=4cQiAAAAMAAJ) almost 50 years ago, we harbor an “eternal desire that the power of man over nature shall always be as instant and as absolute as his will.” Modernity has made it both easy and exciting to imagine technological solutions appearing out of nowhere. Though we know we should not bet everything on such expectations, it is all too tempting to envision solutions that would make problems like climate change, pandemics, and cancer just go away.

**This tendency can hamper our ability to prepare for an intrinsically uncertain future. Proper preparation demands that we not rely on a grievously biased sample of past experiences. As we confront big global problems, we must avoid acting like gamblers who remember only those rare occasions when they hit it big, not the more numerous occasions when the house swallowed their money.**

To be sure, the horizon bias does not imply that technological solutions to civilizational problems won’t emerge soon. Some lone genius could crack the problem of cancer or climate change tomorrow, falsifying pessimistic claims about the future. Nonetheless, claims about what our rational expectations ought to be will remain valid. If you announce that you have just bought a lottery ticket and simultaneously bid on a mansion that you cannot afford, no one will commend you for your financial judgment, even if you win.