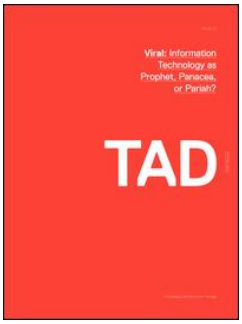

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John J. Parman

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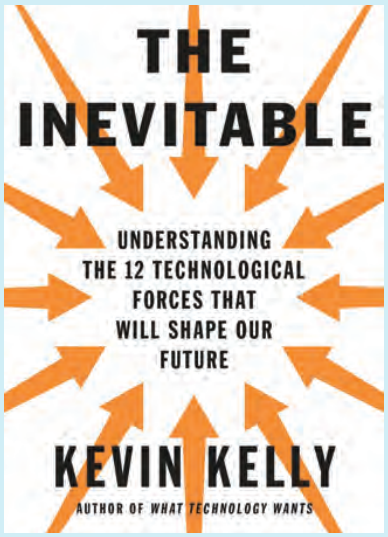


The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future

Kevin Kelly
Viking, 2016
336 Pages
$28.00 (paperback)

Kevin Kelly, the founding executive editor of the tech magazine, *Wired*, summarizes his thoughts and theses about tech's future in a new book, *The Inevitable: Understanding the 12 Technological Forces That Will Shape Our Future*. As he makes his way through such topics as hyper-interactivity, the end of privacy, the rise of artificial intelligence and robotics, and the scaling effect of data agglomeration, Kelly is always cognizant of tech's dystopian potential, yet he remains optimistic. Let's consider this.

As the book's title suggests, Kelly believes that resisting tech is futile. Moreover, civilization will temper any untoward consequences. He posits, for example, that the democratization of content creation, in tandem with platforms for sharing and even funding it, will be rescued by the curating function of humans and/or artificial intelligence-driven algorithms. The goal is for content to find its perfect audience, which seems benign and "frictionless," but risks—as critics of Facebook have noted—spoon-feeding each audience a tailored viewpoint. The ubiquity of smart devices, another win for democratization, can be hacked and sifted to enable unobtrusive social control.

In my view, technology is inherently "political." I put the word in quotes to emphasize that it is subject both to the vagaries of human, often hierarchical manipulation and to formal structures that are politically established and administered. Tech in a corporate sense is also closely tied to global capitalism for funding and commercial exploitation. As Giovanni Arrighi noted in 2009, global capitalism has historically sought to define and operate within "non-territorial spaces-of-flows" that resist local/national regulation.[1]

Kelly's optimism about tech may relate to its origins in engineering, mathematics, and the sciences—fields that view the world to varying degrees as "problems to be solved" pragmatically and abstractly. Horst Rittel skewered this view in 1969, showing that an entire class of "wicked" problems falls outside these fields' provenance.[2] Nassim Nicholas Taleb reinforced this in 2001 with his distinction between moderate and extreme risk. He argued against the hubris of "quants"—traders in financial instruments who believed they could leverage the tools and methods of "fintech," financial engineering, to beat the market.[3] Paul Feyerabend, Rittel's rough contemporary, argued convincingly that the scientific method itself is a fiction and that science is political.[4]

Together, Arrighi, Rittel, Taleb, and Feyerabend provide a corrective to tech's optimistic narrative. Arrighi implies that tech is just one more manifestation of global capitalism. Rittel and Taleb point to the irrationality of our species and the randomness of events that undermine tech's attempts to "tame" its problems. And Arrighi, Rittel, and Feyerabend reject its claims to float above politics, even as its disruptions roil the established order.

Tech optimism, like global business's animal spirits, reflects perennial confidence that "there's a fix." Kelly's rehearsal of tech trends mostly sticks to this script. Where the book becomes interesting is when he gets to the tension between hierarchies and networks.

Hierarchy's Dilemma

The real-time adventure that is Chinese national politics hinges in part on whether the ruling party can maintain command-and-control in the face of a networked populace and enterprises that need to range free in order to transform its export-based economy.

The CCP is not the only large, networked organization facing this dilemma. Kelly notes that global enterprises in general are shifting from products to platforms, a shift that requires them to "act more like governments … in keeping opportunities 'flat' and equitable" (153). Even a product-focused enterprise can only function in today's networked world "by keeping its hierarchy from fully taking over," he adds (153).

"The proper dosage of hierarchy is just barely enough to vitalize a very large collective," Kelly says of this dilemma. "We've learned that while top-down is needed, not much of it is needed" (152–53). While noting the limits of tech-aided "democratization" (or "open source"), which he characterizes as "the brute dumbness of the hive mind" (153), Kelly still believes that tech can pull us collectively into a future that has resolved the dilemma:

> The exhilarating frontier is the myriad ways in which we can mix out-of-controlness with small elements of top-down control. Until this era, technology was primarily all control, all top down. Now it can contain both control and messiness. Never before have we been able to make systems with as much messy quasi-control in them. We are rushing into an expanding possibility space of decentralization and sharing that was never accessible before because it was not technically possible. (152)

In describing global, networked enterprises, Kelly uses the word *governments*, but he really means *governance*. These organizations have to cede most of their decision-making, order-giving power to "nodes" that are largely autonomous and self-managing. Governance makes this sharing of power possible by providing the guardrails that keep things humming with minimal static.

Looking beyond traditional enterprises for a model, Kelly picks Wikipedia. The choice speaks of course to his background

as the editor of a tech publication, but it points to what he calls "the new collectives" (152) that are consciously nonhierarchical, yet maintain just enough hierarchy to uphold their foundational standards and reasons for being.

The Importance of Governance

To me, the argument for networked collectivities that use tech-enabled flatness to reset the balance of power is the most interesting part of Kelly's book, but achieving this is far from inevitable. Tech has long been split between open source and autonomous teams—the aspects that depend on an absolute minimum of hierarchy—and the gods of command and control. This split is not unique to tech, of course.

In the last decade of his life, Horst Rittel worked on IBIS—issue-based information systems—an initiative that anticipated the enormous computational power tech now possesses. IBIS amounted to a collective memory bank that, prompted, would inform any current debate with a relevant history of the issues and the decisions taken. Rittel argued that the most interesting problems, the real challenges humanity faces, are only resolvable temporarily or provisionally. Along with Buckminster Fuller, he saw that tech could make information both universally, "instantly" available and germane to the issues at hand. Rittel and Fuller both saw information as fodder for open-ended, democratic problem solving, not as grist for top-down social control.

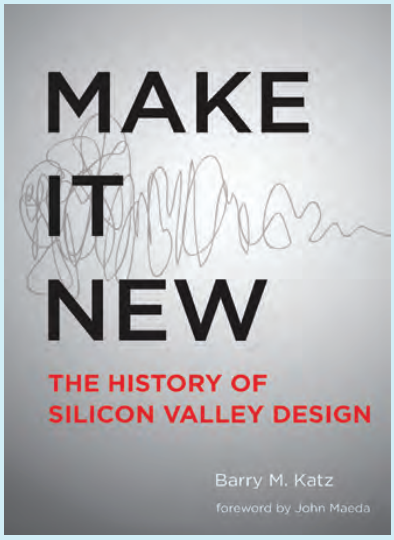
A social compact unites and activates a networked enterprise like Wikipedia. Tech facilitates its radical flatness, enabling it to achieve the light touch that Kelly argues is needed to support and accelerate a network's creative or productive potential. But governance is key: Wikipedia has the equivalent of a Constitution and Bill of Rights.

Never have we needed that governance more than now. Tech on its own won't provide it, but it could give us faster, more transparent ways to model, test, and strengthen new social compacts that let networked communities deal collectively and democratically with the "wicked" problems we perennially face. "Politics," being human, is irrational, and governance is the best we've managed as a species to compensate. Kudos to Kelly for pointing to it; I hope his next book forgoes the trends and focuses on it.

John J. Parman is a lead editor in Gensler's Integrated Communications Studio and an adviser to the Design Innovation Committee of Gensler's Board of Directors. He is an editorial adviser to *Architect's Newspaper* and writes for *Arcade*. In 1983, he cofounded *Design Book Review* with Elizabeth (Laurie) Snowden and Richard Ingersoll.

Notes

1. Giovanni Arrighi, *The Long Twentieth Century* (Baltimore: Johns Hopkins University Press, 2009), 82. Arrighi's "non-territorial spaces-of-flows" points to the cloud and digital connectivity.
2. Horst W. J. Rittel and Melvin M. Webber, "Dilemmas in a General Theory of Planning," *Policy Sciences* 4 (1973): 155–73.
3. Nassim Nicholas Taleb, *Fooled by Randomness* (New York: Random House, 2001).
4. Paul Feyerabend, *Against Method* (New York: New Left Books, 1975).



Make It New: The History of Silicon Valley Design

Barry M. Katz
MIT Press, 2015
280 Pages
$29.95 (hardcover)

In the past decade, "design thinking" has taken the world by storm, exhorting individuals, companies, and academic institutions to better teach, learn, and execute its foundational activities of observing and noticing, framing and reframing, imagining and creating, and prototyping and experimenting.[1] But, it is from Barry Katz's wonderfully crafted history of design in Silicon Valley that a true picture of the emergence of what we know today as "design thinking" first appears. He opens that history with Hewlett-Packard and its initial forays into design in the 1950s, giving us an early view as to what resulted when industrial designers brought a user-centered perspective to the table: "The [HP-35] design brief … was framed not by the technical criteria of allowing the user to execute transcendental functions using a pseudo-multiplication algorithm displayed in Reverse Polish Notation; it was, rather, defined by the physical criteria of building 'a shirt-pocket-sized scientific calculator with four-hour operation from rechargeable batteries at a cost any laboratory and many