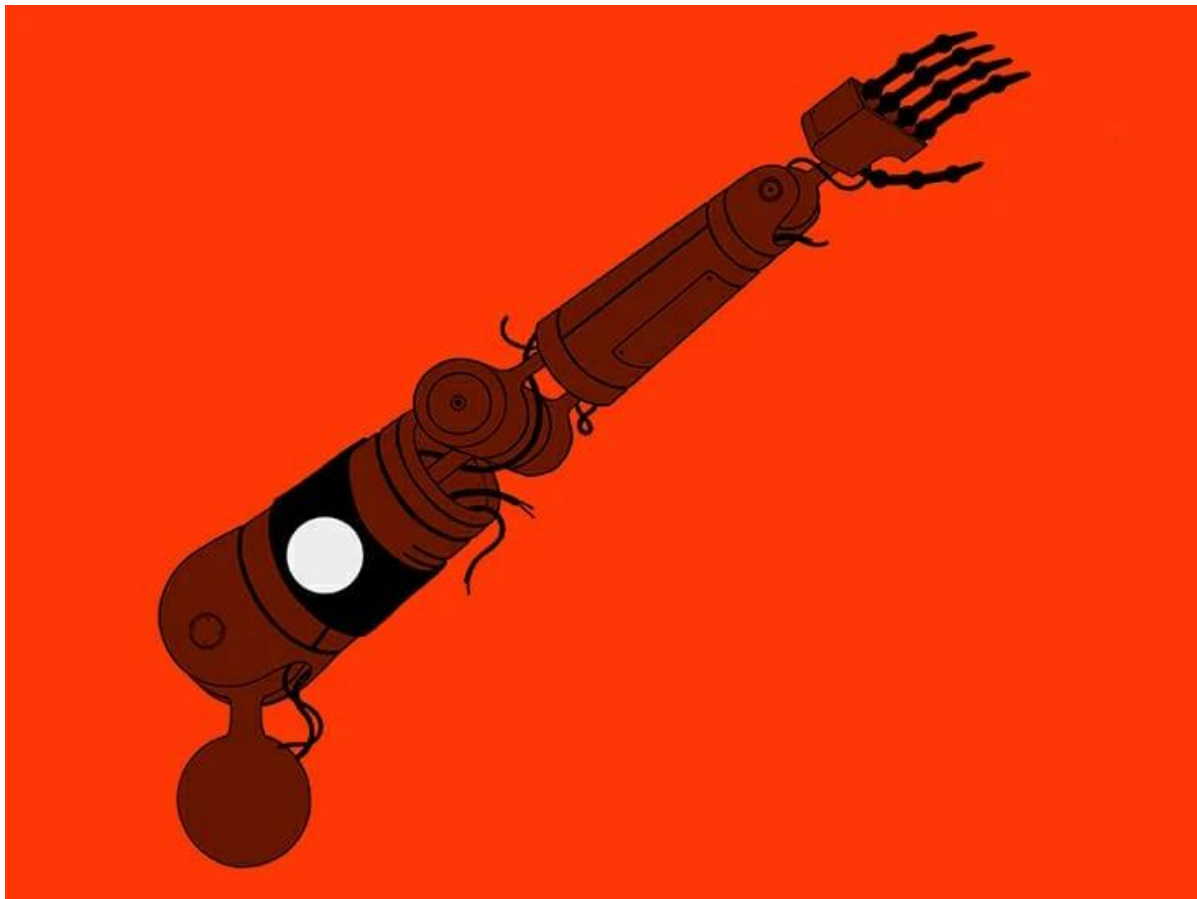


Engineered for Dystopia

Engineering is full of authoritarians who, predictably, take all
the wrong lessons from pop culture

David A. Banks

January 24, 2018



Cathryn Virginia

Some of the first people to be called “engineers” operated siege engines. A siege engine is a very old device used to tear down the walls of an enemy city. Depending on the century and the army it might have had a battering ram, a catapult, or even a simple ramp that would let soldiers jump over the walls. Engineering has long had a reputation as a “war-built” discipline, to borrow a phrase from scholars Dean Nieuwma and Ethan Blue. Masons and artisans built things. Engineers tore them down.

Nieuwma and Blue, experts in the field’s pedagogy and history, respectively, note that engineering labor has not strayed far from its military origins. Engineers are trained to “plug into chain-of-command decision making structures that direct and constrain the input provided by individual engineers and engineering generally.” Engineering students are taught that this is the *only* way to organize their work. Engineering is a collective endeavor that needs a team and those teams are usually corporations. Or, at least, that’s the mentality that corporate-led engineering accreditation organizations have fostered over the years.

Unlike medical professionals who have a Hippocratic oath and a licensure process, or lawyers who have bar associations watching over them, engineers have little ethics oversight outside of the institutions that write their paychecks. That is why engineers excel at outsourcing blame: to clients, to managers, or to their fuzzy ideas about the problems of human nature. They are taught early on that the most moral thing they can do is build what they are told to build to the best of their ability, so that the will of the user is accurately and faithfully carried out. It is only in malfunction that engineers may be said to have exerted their own will.

Modern society as we know it is predicated on the things engineers do and make, which means that a critique of engineers is ultimately a criticism of how we manage everyday life. At least, that was the argument made by terrorist Ted Kaczynski, the Unabomber, who, in a move that is uncharacteristic of most critics of technology, came down on a very definitive answer: *death to engineers*. Technology, Kaczynski concluded, will always limit freedom because technology requires predictable order to work properly. Kevin Kelly, the founder of *Wired Magazine*, largely agrees, stating in his 2010 book *What Technology Wants*:

The Unabomber was right about the self-aggrandizing nature of the technium. [“Technium” is Kelly’s patentable word for the “greater, global, massively interconnected system of technology vibrating around us.”] But I disagree with many other of Kaczynski’s points, especially his conclusions. Kaczynski was misled because he followed logic divorced from ethics.

Kelly’s objection is chilling: “Kaczynski confused latitude with freedom. He enjoyed great liberty within limited choices, but he erroneously believed this parochial freedom was superior to an expanding number of alternative choices that may offer less latitude within each choice.” He goes on to make a disturbing comment about Kaczynski’s current conditions in a supermax prison, calling it a “four-star upgrade” compared to a solitary cabin overlooking miles of national forests.

Throughout his book Kelly finds common ground with the Amish, Earth First! activists, and even skeptics of civilization itself, like Derrick Jensen. His argument is, in essence, that people terrified by technology are closer to the truth than most others; the only thing they get wrong is the median reaction to technocratic control: most people just accept such an arrangement. Unsurprisingly, Kelly is fine with this.

This is a common theme in Silicon Valley, and among engineers in general: their devotion is just as rabid as the Unabomber’s, but they’re safely on the winning side. Technology is ordering our lives and inflicting stricter, more authoritarian modes of control. For the modal engineer, this is a good thing. It brings order to entropy, limiting individual autonomy in favor of systems performance.

The false choices Kelly loves are the same ones adored by the likes of Matt Yglesias and Hillary Clinton. It is at the heart of the neoliberal political philosophy that refuses to die no matter how many times individuals in ostensibly democratic societies organize

against it. Kelly is at least refreshingly honest when he admits that neoliberal choice rhetoric is actually based in a radial, authoritarian form of societal control. Freedom looks like picking your jail cell—or your ride sharing app, or your smartphone, or over-priced health care—not choosing from a much larger set of more politically relevant life choices.

Of course no reasonable person should have to choose between agreeing with Derrick Jensen or Matt Yglesias, and yet would-be engineers find themselves in such a position when asked to think politically about their own field. Neoliberals, whether they choose a right-leaning “there is no alternative” rhetorical approach or a center-left “end of history” narrative, do a good job of coming off as the reasonable option. This is especially true when there is a cottage industry of Silicon Valley people selling disconnection from their own devices. The Nicholas Carrs and Sherry Turkles of the world provide a puppet opposition that leaves political power intact while finger-wagging at teenagers and working people. It is this double false choice that makes any sort of radical critique of engineering come off as Luddite rambling. Stick a pin in that last point for now though, while I unpack the contours of engineers’ authoritarian proclivities.

It should be said that many people who choose the engineering profession are motivated by an earnest desire to help people. Many of the engineering students I have had the pleasure of teaching have been some of the most compassionate and politically astute people I have met. The particularly sharp ones are also, speaking generally, the ones who already feel ostracized from the professional community they have only barely met. They notice that the career fairs are dominated by military contractors and vigorously apolitical tech companies. They chafe at the needlessly imposed hierarchy and sacrifice-the-body-for-the-mind culture.

Without the baseline assumption that chaos reigns without imposed order, engineers would be tempted to ask if they are interfering by building something, rather than improving lives by default. This happens even in the more design-oriented classes that encourage creative thinking and open-ended problem solving. In one such class I worked with, students were asked to spend a semester working in teams to design an organization. Despite working independently on radically different projects, every single group made competition an integral part of their design. I don’t say this to sneer at my own students, I only bring it up because it is illustrative of how pervasive and deep this thinking goes. Even after everyone had shared their projects, none of them even noticed the shared competitive elements of their design until I asked them about it. Some defended competition as a natural sorting mechanism of quality. Others looked disturbed, having never noticed that they were reproducing an antagonistic dynamic they knew how to critique.

Engineers in league with lanyard-wielding means-testers are bad enough, but that predilection for control can go into even deeper, darker places. Diego Gambetta & Stefan Hertog’s unfortunately titled *Engineers of Jihad*, published in 2016, explores how and why engineers’ politics skew in this authoritarian direction. Despite the book’s baiting title, Gambetta and Hertog also show that engineers were vastly over-represented

in the Nazi party, and the leadership of contemporary American and Russian neo-Nazi organizations. Osama Bin Laden was an engineer, but so was Aryan Nation founder Dick Butler and Sheriff's Posse Comitatus leader Wilhelm Schmitt. The correlation is striking: "the overrepresentation of engineers occurs in vastly different social and economic contexts" and they show up in "many different unrelated radical groups." Not only are engineers over-represented they "appear more firmly committed to their cause, as shown that they are less likely to defect from Islamist groups and by their commitment to the nascent Nazi movement."

Gambetta and Hertog point to the potency of frustrated expectations as one of the main causes of engineers' participation in right-wing extremist groups. Engineering requires precision and money to be done right—and neither of those things are easily found in war-torn regions. Spending years abroad studying in wealthy nations with the desire to bring prosperity to your homeland through vast public works, only to find someone has used your sacred knowledge to destroy it, can understandably breed resentment and anger.

What's more concerning though, is the metaphysical similarity between authoritarians and engineers. They share an aversion to ideas, phenomena, and even people who do not fit into neat categories. It is this desire for a well-ordered world that comports so nicely with fundamentalist tendencies. Things work, be they bridges or societies, when all the components are predictable and behave the way they are told. Demanding recognition outside given categories, radically changing the environment a system must work in, and dismantling long-held practices and theories are equally frustrating for the aspiring dictator and the aspiring engineer. It is that tradeoff between latitude and freedom, as Kelly puts it, that is at the center of the authoritarian–neoliberal–engineer Venn diagram.

What Gambetta and Hertog are not clear on, is whether engineering attracts authoritarians or makes them. Of course, the answer is probably a mix of individuals' self-selection and the cultivation of the qualities that lead to the sorting in the first place. But if I had to choose which factor was stronger, my money is on the latter: that there is something about engineering pedagogy that encourages authoritarianism.

Some students are attracted to engineering's style of thinking, but many are lured in by their opposite: the fun things (particularly American) grade school teachers call engineering: open-ended tinkering with electronics, playing with robots, and building things out of balsa wood. Quite often, these students are disappointed when they get to college and find themselves in a world of black-and-white schematics where there used to be colorful LEGOs. Nieusma and another colleague Michael Lachney have called this sudden change, noted by education experts, as exactly what it is: "a bait-and-switch."

Those students who brave out the bait-and-switch still make up a diverse cohort but it is increasingly the case that the STEM fields are not only crowding out other subjects in curriculums, but are increasingly being lobbied for, to the disadvantage of other college majors. LinkedIn founder Reid Hoffman and Zynga co-founder Mark Pincus are pushing hard to get the Democratic party to run candidates who would

support a universal free engineering degree. No other degrees, just engineering. In 2012, Florida's Board of Governors, the cadre of Tea Party fundamentalists appointed by the Governor tasked with running the state's university system, floated the idea of letting schools set different tuition prices for different degrees with humanities degrees being more expensive than those in STEM fields. *Choices!*

This all comes at a time where tech companies say they are embracing the liberal arts. Steve Jobs, towards the end of his short life and apropos of seemingly nothing except imminent death, decided to devote the end of a March 2011 keynote to a discussion of liberal arts and the humanities. "Technology alone is not enough." A skeletal Jobs intoned, "It is technology married with liberal arts—married with the humanities—that yields us the result that make our hearts sing." (The thing that made our hearts sing that morning, by the way, was the iPad 2.)

Most of the talk of the liberal arts in technology rarely goes further than justifications for letting the children of petit-bourgeois parents major in literature. I got a liberal arts education and it taught me that America is an apartheid state and capitalism is beyond reform. I doubt Jeff Bezos wants me to make an app about that. Tom Slee, in a recent *Boston Review* article covering two new books on the subject of liberal arts majors in Silicon Valley sees one of two possible options: "join together in harmony," as Scott Hartley argues in *The Fuzzy and the Techie* or,—as Ed Finn prescribes in *What Algorithms Want*—develop a sort of checks-and-balances system between engineers and their critics. Hartley's thesis sounds like more of the same. Finn's idea would require establishing a political power base for critics and curators—and ever since the Gingrich-led Congress killed the Office of Technology Assessment in 1995, no such institutional power has existed in this country. Regardless, either scenario is unacceptable because engineering itself must change, not just its relationship to other fields or institutions.

The subservient role of the critical disciplines to engineering, has left the door open for a particularly robust version of hegemonic ideology. That is, without conscious training in more critical fields of study, engineers interpret media as technocrats even in the face of obvious satire. This means that when engineers take inspiration from the world around them, as we all do from time to time, they are unlikely to pick up on even heavy-handed warnings about technological avarice.

Stuart Hall, one of the founding fathers of Cultural Studies, famously observed that media is encoded with ideology, but then must be decoded by an audience to be meaningful. Audiences might accept a dominant frame, or they might provide a resistant reading and take away something very different than what dominant ideology would want you to think. One could decode fifties sitcoms as tales of feminist empowerment or interpret *CSI* as one long warning about the subjectivity of DNA evidence.

Hall and other Cultural Studies scholars, on the whole, assumed (or perhaps hoped) that resistant readings would skew toward the liberatory. Engineers have called that into question by ignoring the obvious warnings found in movies like *RoboCop* and *Minority Report*. The people at Axon (né TASER) have interpreted both of these

movies as roadmaps for utopia, not obvious warnings of a path toward dystopia. Ava Kofman, writing in *The Intercept*, describes a company that is proudly dystopic in its corporation mission to bring surveillance and new forms of non-lethal weaponry (read: torture) to America's streets.

"No longer is the question whether artificial intelligence will transform the legal and lethal limits of policing," warns Kofman, "but how and for whose profits." She points to Axon's LinkedIn page and "a little-publicized Law Enforcement Technology Report released earlier this year" that are replete with science fiction references. The LinkedIn profile describes their headquarters as a fusion of *Star Wars*, James Bond, *Get Smart*, *Star Trek*, and *Men in Black*. The report goes into great detail about the business's roadmap to developing *RoboCop* and *Minority Report*-style technology: predictive policing algorithms, exoskeletons, and facial recognition.

One need not graduate *magna cum laude* with a philosophy degree from Vassar to understand how profoundly dumb it is to compare your workplace to *Get Smart* or think that *Minority Report* is a tale about the benefits of machine-assisted policing. What, exactly engineers are resisting when they read these media is basic human decency. Someone at Axon must look at their TASER X26C with "Electro-Muscular Disruption technologies" and say, "wow that really makes my heart sing."

Weapons dealers aside, we all are familiar with the way technology rags giddily compare any new gadget to those seen in science fiction, albeit with far less overt fascist day-dreaming. Flip phones were compared to *Star Trek* communicators. iPads and voice assistants have gotten similar, "It's like you're on the Enterprise!" treatments. Comparisons like these make it seem like we just so happen to be achieving, in fits and starts, some guaranteed future when, in fact, technologists really are aping television shows they saw as kids.

Brian Merchant, in his book *The One Device: The Secret History of the iPhone*, quotes Chris Garcia, the curator of the Computer History Museum: "The tricorder and the communicator are direct influences, and I've spoken to several innovators who have specifically cited *Trek*." Similarly, the telecom parts manufacturer Qualcomm recently declared a winner in its X Prize contest to see who could build a "medical tricorder" that could detect vital signs and a range of diseases. Robert Picardo, who played the holographic doctor in *Star Trek: Voyager* was there to hand out the giant ceremonial check and everything.

Engineers don't merely attempt to reproduce what they see on screen verbatim (oftentimes mistaking dystopia for a product roadmap). They also produce their own source material that gets filtered through pop culture only to arrive back in reports and position papers. Back in 2012, I co-authored an article with Arizona State University professor Joseph Herkert about the U.S. National Academy of Engineering's report, *Grand Challenges for Engineering*—an immensely dry document save for one unexpected reference to *Live Free or Die Hard*, the fourth installment of the Bruce Willis *Die Hard* franchise. The authors of the report warned that the United States

was in danger of experiencing the main plot of the film: a wholesale hijacking of the nation's digital infrastructure.

Live Free or Die Hard began life as a 1997 *Wired* magazine article that describes the war games state actors play to prepare for cyberwarfare. The takeaway is summarized nicely in a quote from a professor from the Naval Postgraduate School: "We have spent billions in the last few decades on large, expensive aircraft carriers, strategic bombers, and tanks. The information revolution suggests nothing less than that these assets have become much more vulnerable and much less necessary." The war machines of past aeronautics engineers are the unguarded targets of today's software engineers.

After ten years of writing and production both pre-and post 9/11 the article becomes a big-budget summer action movie. The final product, we argued, had a very clear message: If you care about cyber security, you had better do it the way engineers tell you to. Radicals who question the value of the system as a whole (represented in the film by the patently un-radical Justin Long) and nostalgic moderates that wish to be left alone (Willis' John McLane) are actually just as dangerous to everyone's collective livelihood as the terrorists themselves. Herkert and I concluded. "Conversely, the established order should be ready to sacrifice itself for the wellbeing of the younger class of knowledge workers that (literally as well as figuratively) hold the passkeys to our digital infrastructure."

The engineers' worldview and the fiction that is created as a critique to engineers' creations forms an Ouroboros of destruction in the name of engineers' own job security. Engineers' work begets fiction, begets new engineering projects, begets fiction again, which in turn begets position papers about the possibility of it all going wrong. Each step requires additional funding, that cannot wait because the latest threat is already overdue. Charlie Brooker makes a *Black Mirror* episode about it, and then another engineer reads dystopia as a new product idea and so on. The engineers are still operating the siege engines, but they are also the ones building things back up, all the while warning us of the new siege engines they're building. Perhaps, instead of such fictions, we should have more stories about engineers coming to terms with the consequences of their creations.

All of this might be less worrying if there was a robust and popular movement against this authoritarian engineering establishment that manufactures its own worst enemy. What we have instead are people who prescribe block chains and disconnection sleepaway camps. The former conflates encryption and privacy tools with confronting the corrupting influence of power. The latter clutch their pearls at teenagers and wax nostalgic about conversations and deep thinking.

When the TSA announced plans to require passengers to remove books and other reading materials my friend and colleague Nathan Ferguson shared the announcement on Facebook with the note, "this is why you need strong encryp— oh, wait." The program was short-lived and only affected a few airports but the joke is telling nonetheless: privacy advocates have spent so much time hyping and developing encryption technologies that we are in danger of ignoring the politics that make encryption necessary in

the first place. That 1997 *Wired* article bemoaned the fact that malevolent software was “easy to duplicate, hard to restrict, and often frustratingly dual-use, civilian or military.” The same can be said in the opposite direction. Every time a new privacy invention is produced under the auspices of individual privacy, that technology is no doubt also useful to the powerful entities that we want privacy from.

As for the pearl-clutchers, we would do well to interrogate their class allegiances. As I argued a year ago in an essay about Sherry Turkle’s body of work, critics who write about the importance of disconnection generally show “a dedication to a fairly conservative worldview where the pace of work and the environment in which it takes place should be set exclusively by bosses acting as wellsprings of morality.” Busy parents and lonely kids are often the biggest targets of invective for finding escapism or connection on screens while corporate bosses are celebrated for mild changes to governance structures so as to require in-person meetings instead of Skype calls.

Equally important is to reckon with the trends in our culture that give us people like James Damore, the former Google engineer who wrote a memo decrying Google’s diversity initiatives as a “politically correct monoculture that maintains its hold by shaming dissenters into silence.” He was quickly fired and —irony of ironies for someone that describes himself as “centrist with libertarian inclinations—has taken the issue up with the National Labor Relations Board. The memo’s contents should surprise no one with a cursory knowledge of Silicon Valley’s culture. And here I am not necessarily talking about the retrograde gender politics per se, but the science he brings to bear to defend his positions.

Rather than consult anthropology and sociology to study an issue that is distinctly social and cultural, the links that pepper his ten-page manifesto are mostly evolutionary psychology, cognitive science, and sociobiology. The very premise of his memo is that biology trumps society in the formation of individuals. This is an idea that is shared by both the reactionary right that has welcomed him as a righteous cause célèbre and the ostensibly liberal left whose popular views on society and individual behavior are pulled from similar fields. The mainstream liberal is fed a steady diet of *Radiolab*, *The TED Radio Hour*, *Hidden Brain*, *Invisibilia*, *Note to Self*, and *Freakonomics Radio*, all of which heavily favor the same sort of logic—humans behavior is largely determined by biology and best studied using statistical analyses using big data—that Damore used. Damore, like the Unabomber, only differs from the Silicon Valley consensus in that he has a different take on the same set of basic premises.

So what is to be done with the engineers who see their profession as a means of expressing care through building things? The first step is to cultivate that very mindset: building things as a form of care. Engineers need to think of their work as both a humble contribution to the ongoing social order but also as an imposition—as a normative statement with politics and consequences. This has to be done in the universities that confer engineering degrees and in the workplace. Such changes are already underway at Purdue University, where the School of Engineering Education

hired Donna Riley as department head. Her work has been at the center of recognizing the political valence of engineers' education and changing it for the better.

In times like these it is important to remember that border walls, nuclear missiles, and surveillance systems do not work, and would not even exist, without the cooperation of engineers. We must begin teaching young engineers that their field is defined by care and humble assistance, not blind obedience to authority. Without this crucial first step, organizing engineers' labor in Silicon Valley and elsewhere may only yield counter-productive results. After all, police have benefited from some of the most powerful union representation and that has not proven liberatory for anyone. It is only after the engineering profession takes its place among other professions—ones that recognized their power and created systems of independent review and accountability—and comes to terms with its relationship to ethics and morals, can it be trusted to organize. Only then can we trust them to leave the siege engines behind and join us in building something new.

David A. Banks is co-editor of *Cyborgology*, editor-at-Large at *Real Life Magazine*, and co-chair of *Theorizing the Web*. He writes about cities, politics, and expertise in the age of social media.

The Ted K Archive

David A. Banks

Engineered for Dystopia

Engineering is full of authoritarians who, predictably, take all the wrong lessons from
pop culture

January 24, 2018

<thebaffler.com/latest/engineered-for-dystopia-banks>

www.thetedkarchive.com