Counterculture, cyberculture, and the Third Culture: Reinventing civilization, then and now

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1. Reinventing Civilization

Stewart Brand was raised in Rockford, Illinois, an industrial town specializing in heavy machinery, machine tools, and metal toys. He learned early to fear the Communists. "In the early '50s somebody compiled a list of prime targets for Soviet nuclear attack, and we were seven, because of the machine tools," Brand recalls. Like many children of his generation, he was awoken at night by nightmares about nuclear Armageddon. His diary from 1957, his freshman year at Stanford, records his continuing worries about Soviet invasion:

> That my life would necessarily become small, a gear with its place on a certain axle of the Communist machine. . . .
>
> That my mind would no longer be my own . . .
>
> That I would lose my will.

After his education at Phillips Exeter and Stanford, and a few years as an Army parachutist and photographer, Brand joined the emerging counterculture of the 1960s as a multimedia performance artist, producing experimental public events and mingling with the New York art scene. An intelligent, ambitious young man concerned with making sense of the postwar world, the gathering intimations of social change, and the perplexing questions of how to resist the pressures of bureaucracy and conformity, he turned to the writing of Marshall McLuhan, Buckminster Fuller, and the cybernetic theorists such as Norbert Weiner and Heinz von Foerster. Inspired by Fuller's *Operating Manual for Spaceship Earth*, Brand launched an ambitious project to expose the public to NASA's new photographs of the whole planet, to catalyze awareness of humanity's role as stewards of the planet.

In the late '60s Brand inherited a sum of money and developed his Earth photographs project into a business purveying tangible and conceptual tools to commune dwellers. After an extended tour of visionary communes in the Southwest (Drop City, Libre, the Lama Foundation, and others), he introduced the first *Whole Earth Catalog* in fall 1968, with NASA's Earth pictures on the covers. The *Whole Earth Catalog* is an eclectic compilation of resources, mostly available by mail order from various distributors around the country. Wood stoves, well-digging equipment and instructions, and home medicine manuals appear side by side with books on teaching, Taoism, electronic music, and the theory of cybernetics and feedback processes. The book opens with a page on Fuller—"The insights of Buckminster Fuller initiated this catalog"—and with a manifesto:

> We <u>are</u> as gods and might as well get good at it. So far, remotely done power and glory — as via government, big business, formal education, church — has succeeded to the point where gross defects obscure actual gains. In response to this dilemma and to these gains a realm of intimate, personal power is developing — power of the individual to conduct his

own education, find his own inspiration, shape his own environment, and share his adventure with whoever is interested. Tools that aid this process are sought and promoted by the WHOLE EARTH CATALOG.

Indeed these are the major themes of the *Whole Earth Catalog*: primarily provision of "Access to Tools" as the means to positive social change, but also a deep rejection of the existing system, and a fundamental faith in the individual. Brand describes his mission in this way: "Fuller, like McLuhan, was one of the people we were paying attention to. And Wiener was in there, Cage was a little bit in there. But the initial audience in my mind was communes, was people who were trying to reinvent civilization, and I was just trying to provide the tools with which to reinvent civilization."

The *Catalog* was republished yearly for a while, with more or less quarterly supplements full of corrections and suggestions from readers. In 1974, the supplement became a separate magazine in the same vein, called *CoEvolution Quarterly*. Its title drawn from the work of Brand's Stanford mentor, evolution expert and population-control advocate Paul Ehrlich, this magazine focused more on sustainability, on forecasting the future of the planet, and on appropriate technology. Cybernetics visionary Gregory Bateson became a major influence during this period, sharing the honor with Fuller.

CoEvolution Quarterly was the first to report on James Lovelock and Lynn Margulis's Gaia hypothesis, and then scooped the science journals by presenting the first scientific critique of the hypothesis in a 1982 article by biologist W. Ford Doolittle. (In his introduction to a 1980 Lynn Margulis interview by an admiring woman student, Brand takes the opportunity to comment indirectly on contemporary social movements: "Lynn's rampant non-feminist style in male-dominated science reminds me somewhat of Margaret Mead—she never slights someone for being male, only for being stupid.")

Brand had a long interest in computer technology. He was brought in as cameraman for Alan Kay and Douglas Engelbart's famous 1968 demo of the first computer pointing device. He wrote a *Rolling Stone* profile of Stanford computer game pioneers in 1972, stating, "Ready or not, computers are coming to the people. That's good news, maybe the best since psychedelics." But computers were a minor player in his publications until 1983, when, his publishing ventures failing, he took his literary agent's suggestion to create a *Whole Earth Software Catalog*. Despite a $1.3 million deal to produce the *Software Catalog*, a larger sum than ever before for a paperback, the catalog and its accompanying magazine, the *Whole Earth Software Review*, failed miserably. Nonetheless, it was a watershed in the history of the Whole Earth project.

The *Software Review* and *CoEvolution Quarterly* became the *Whole Earth Review*, focusing far less on ecology and far more on flexible business management, scientific ideas about complex systems and self-organization, and computer software and networking. This period also saw the launch of the WELL, the "Whole Earth 'Lectronic Link," a computer bulletin board for Bay Area folks to talk and network with each other. The WELL was staffed predominantly by former residents of the Farm, the rural community headed by Stephen Gaskin in Tennessee.

In the '90s, Brand became primarily involved with the Global Business Network, a think tank he founded together with executives and business consultants from Shell and the Stanford Research Institute, whose purpose was to advise corporate executives about new ideas and help them embrace flexible management strategies, network forms, and self-organizing processes.

In 1992, the *Whole Earth Review*'s managing editor, Kevin Kelly, was hired away to run a new magazine called *Wired*. He brought with him a whole network of Whole Earth contributors, including Brand, cyberspace civil-liberties promoter John Perry Barlow, virtual reality entrepreneur Jaron Lanier, and *Catalog* editor and cyber-futurist author Howard Rheingold. *Wired* was the primary print organ of the '90s dot-com boom. During Kelly's tenure as managing editor, the cover of *Wired* featured right-wing heroes Newt Gingrich and George Gilder, the latter in an enthusiastic promotion of telecommunication deregulation.

The Whole Earth catalogs and magazines have gone out of business; *Wired* still appears monthly. In the last few years, Brand has begun to promote nuclear power and genetic engineering as the best response to global energy and climate crises (and he has reaffirmed his pro-nuclear position, unchanged, just after the Fukushima disaster).

Brand now dismisses the back-to-the-land tradition that his *Catalog* originally served, and says that technology is the real legacy of the '60s:

> The communes that tried to go back to basics and just farm made a real good try at doing that, and some of them even learned a fair amount of basic farming. A book that we purveyed in the *Whole Earth Catalog* called Goat Husbandry was a very popular book—and it's a good book! You know, you can get the book, get a goat, and you can do it. Milk and everything. But it didn't play out very far. It was basically a different kind of dead end from what drugs were, whereas some of the technology, some of the alternative energy technology showed real promise. Solar energy basically took off gradually and takes off to this day. Computer technology obviously. And because the counterculture, hippie frame of reference was there for outlaws of all kinds, it basically swept right through the outlaw computer people, the hackers, and became their frame of reference, and a kind of a gift-economy, optimistic approach became then the basis for personal computers, personal computer software, then the Internet, and the web, and on and on. And that's the main legacy from the '60s as far as I'm concerned, is the open system approach to everything having to do with computers.

Brand's publications were an inspiration to more than one generation of social innovators and free thinkers. They were compelling and exciting. One long-time contributor describes the power of the *Catalog*: "Soon after I moved to Prague, I showed the *Last Whole Earth Catalog* to a friend in Bulgaria. She was fascinated but perplexed. 'Who is this for?' she asked. It took me a few moments to reply, as my first impulse was to say, 'everyone.' But instead I answered, 'It's for practical intellectuals.' She continued browsing through the *Catalog* with her eyes starting to moisten. Eventually she said, 'How I wish we had such people.'"

I read the *CoEvolution Quarterly* and *Whole Earth Review* whenever I could get my hands on them, from the age of ten or so onward, in my hippie childhood in rural Northern California. I thought they were great. When I was a college student in computer science, I was still an avid reader and dreamed of being part of a community of such kind people doing exciting, good work. I was in computer science partly because of those magazines' features on the liberatory potential of personal computing and digital communication. I was very slow to recognize that what I was reading there wasn't really congruent with things I deeply value, and that it was probably steering me astray as a guide to creative, ethical living.

As we have seen, the *Whole Earth Catalog* project began as a tool for the '60s counterculture, helping people work out how to create a new society, and ended up promoting computers, business and the dot-com boom, which has been a disaster not only for the people who lost their investments in the '90s but for electronics sweatshop workers, people living in areas poisoned by the fabrication and disposal of computer chips, people evicted in the Northern California real-estate bubble, and everyone on the bottom end of the widening gap in wealth it induced. Brand now promotes deeply anti-environmental technologies with the argument that they're the best alternative we have, because a truly better world isn't possible.

Plenty of '60s figures turned conservative in the Reagan years, so it's natural to think that Brand was one of them, and his magazine changed with him. However, I don't think that's the case. There may not seem to be much connection between '60s idealism and '90s high-tech innovation, but there are deep continuities. In this essay I argue that the market libertarian Brand of the '90s is the same Brand who was widely respected as a leader of the '60s counterculture and the '70s environmental movement; that his ally John Brockman similarly exemplifies a counterintuitive continuity between '60s hip and '90s techno-capitalist cultures; and that there is a strong contemporary social movement that traces directly back to the technophilic, futuristic experimental intellectual movements of the '60s that gave rise to these men. I suggest that anyone who wants to make a better world today must recognize the dangerous and powerful draw of this movement, not because it is deeply committed to individual freedom but because it values freedom at the expense of justice. I believe that it is possible, however, to create a new image of the "practical intellectual," one who does deeply satisfying, meaningful rebellious work to create a new world, guided by justice and solidarity as well as freedom and creative self-expression.

The original *Whole Earth Catalog*s begin with Buckminster Fuller, its patron saint and inspiration. Fuller's central position is that the modern world has such an abundance of know-how that if we choose, we can eliminate scarcity and depletion of resources by the intelligent application of design. When people understand that there is no more scarcity, he says, there will be no more war and we will enter a new era of peace and intelligent stewardship.

This ideology of design, with its faith in the power of ideas, and denial of the persistence of inequality and exploitation, is almost identical to the mythology of the dot-com era—that new technology can bring with it a new social order that will set everyone free without hardly trying, and power disparities aren't worth worrying about except where bad governments interfere with free thought and free speech.

The *Whole Earth Catalog* of the late '60s was not friendly to left-wing politics. Consider one Jay Bonner's letter in the January 1970 *WEC* supplement:

> Sometimes I don't care about nothing, but right now I do. It sickens me to think that over 150,000 people are going to pick up the Whole Earth Catalog and thoughtlessly think it's great, like I did.

> The function of the catalog is to provide access of tools for and from the WHOLE Earth. Roughly 80% of the peoples of this Whole Earth are being sucked on by various capitalistic countries of this world. Yet for some reason the problems of these "third world" people are not even mentioned in the catalog. There are books and various publications written by educated and experienced writers on these problems and their solutions. I really don't think the title "Whole Earth" is quite adequate for the catalog at this point.

Stewart Brand, the man who originally created and conceived the idea of a Whole Earth Catalog and truck store, does not seem to share my feelings that these types of political books and various publications should be in the catalog. Once, while working with him on the catalog, I asked Mr. Brand if he would not carry any of a various number of politically oriented underground newspapers. Upon reply he told me that three of the first restrictions he made for the catalog were no art, no religion, no politics.

I would like to point out that, although Mr. Brand apparently does not think so, all of the three basic ground rules he set up for himself at the beginning and told me of little over three months ago, he has broken:

To start with art . . . Then we move on to religion . . . Lastly we come along to items of political significance. In this we find quite a few.

Handbook for Conscientious Objectors

The Population Bomb

Population Evolution and Birth Control

Birth Control Handbook

Atlas Shrugged

The Wall St. Journal and any number of "future" books.

I can understand why Mr. Brand makes such a distinction between, for example the Handbook for Conscientious Objectors, and a good book on Marxian theory, it's because he's a capitalist. The inclusion of books on such subjects would hinder catalog sales, and after all it's not serving the people he's interested in, it's making money, and believe me he has plenty of it. Besides, it's against all his economic beliefs.

Yes, Mr. Brand's personal feelings really show up in what should properly be called the "Stewart Brand Catalog." From all the 128 pages of the Whole Earth Catalog there emerges an unmentioned political viewpoint. The whole feeling of escapism which the catalog conveys is to me unfortunate.

. . . The idea of the catalog is a good one. The people need a Whole Earth Catalog, but not the one they're getting! If you feel at all the same, write Stewart Brand.

Stewart Brand's response appears in the same issue:

Jay worked with his brother Joe doing layout on the Fall Catalog and was not rehired for January production, because of too many technical mistakes on his pages. Jay is 17. (I'm 31. How old are you? It matters, more than any of us like.) Correct I have some money, thanks to parents, which I'm putting into work like the Catalog. My salary is $5/hr. The Catalog is non-profit, so our income . . . can only be spent on further educational projects. The capitalism question is interesting. I've yet to figure out what capitalism is, but if it's what we're doing, I dig it. Oppressed peoples: all I know is I've been radicalized by working on the Catalog into far more personal involvement with politics than I had as an artist. My background is WASP, wife is American Indian. Work I did a few years ago with Indians convinced me that any guilt-based action toward anyone (personal or institutional) can only make a situation worse.

. . . I'm for power to the people and responsibility to the people. . . .

The original *Catalog* is characterized by much the same libertarian ethos that we see in *Wired* in the

'90s: the domination by white men and silencing of other voices, the embrace of capitalism, the faith in social change through technological innovation and not through political deliberation and organizing, and, oddly considering its place as bible of the countercultural communes, a strong advocacy of individualism. (And what happened to "don't trust anyone over thirty"?)

2. Inventing Reality

These continuities in Stewart Brand's history make it clear that it wasn't just a case of a community leader losing his commitment to "the movement" at the beginning of the '80s.

Still, there was an important shift in 1983, when Brand and his publishing projects turned from the old focus on rural homesteading and whole-systems philosophy to the new focus on computer software. That shift seems to trace back to a conversation between Brand and his agent. This literary agent and change agent merits a close look in his own right. His career is curiously parallel to Brand's: an intellectual celebrity of the counterculture who transforms seamlessly into an icon of '90s popular technoscience, shifting from "hip" to (not to put a fine point on it) right-wing without any actual perceptible change in his politics.

John Brockman, representative to the nerd stars, actually enters the story well before the first *Whole Earth Catalog*. Brockman and Brand first became friends in the New York multimedia art scene of the early and mid-'60s. Brockman emerged as a producer of "environmental intermedia" events, rejecting the style of Allan Kaprow's participatory Happenings for a more passive process of immersion in sensory stimulation produced by new media technologies such as slide shows, strobe lights, and loud recorded sound. Brand and Brockman were both connected with USCO, a performance collective in upstate New York with a strong interest in new media.

Brockman was introduced to cybernetics by composer John Cage, and the connection led him to multiple major turning points. In the late '60s and early '70s, Brockman produced three ambitious works of philosophy, ultimately anthologized under the collective title of *Afterwords*. Drawing heavily from the ideas of cybernetics scholars like Norbert Wiener and Heinz von Foerster as well as particle physicists and neuroscientists, along with media scholar Marshall McLuhan, Brockman outlines a radical philosophy in which the idea of the individual is a delusion, as are mankind, words, consciousness, opinions, ethics, politics, and Brockman himself. There are only neural networks and the sensory impressions that shape and are shaped by them. As a result, it is very important how we shape our sensory experiences, for instance by the design of the media we use. Brand is one of Brockman's intellectual sources, quoted early in the first book of *Afterwords*. The *Whole Earth Catalog* reviews Brockman's first volume: "His book is an interpretation of recent work in brain-study, information theory, and art. It proposes that man is dead, replaced by a superior being—once he learns this—called invisible."

Also featured in Brand's *Catalog* are the two volumes of Brockman's catalog, *real time (a catalog of ideas and information)*. Ed Rosenfeld, *real time*'s other editor, recounts, "John Brockman and I were friends in the early 1970s. We both admired the *Whole Earth Catalog*, especially the first section: Understanding Whole Systems. We thought that a 'catalogue' focusing on those kinds of interests would make a great book."

Real time focuses much more on collecting sources of scientific ideas, communication technology, and media theory, and far less on the hippie lifestyle resources.

Meanwhile, Brockman's immersion in the New York artist and intellectual circles spun off a lucrative career for him:

> The circles widened, so there was Heinz von Foerster, who was the dean of the world cyberneticists, there was Gregory Bateson, Stewart Brand. Almost all these people were authors, as I was; I'd read all their books, and no one in New York had a clue that there was something happening, that there was a consciousness or mindset that had evolved, and you could connect all these people. . . . you know, there are ways to put it together and to see a cohesive whole, and they were bestselling authors, and they were getting screwed by the publishing industry. So I was, ah, dragooned into becoming an agent, because I had a business background, and they said, "Why don't you just go back and look after our interests. It'll take you an hour a day," and I thought it would be a nice way to pick up some money while I wrote books, and I found out very quickly that I was sitting on an oil well that I couldn't control, and that was thirty years ago.

In time, Brockman has emerged as the premier representative of science and technology figures who write books. Since the '70s, Brockman has picked up a stellar roster of clients in the sciences, including Richard Dawkins, Jared Diamond, Steven Pinker, Daniel Dennett, and of course, Brand, Rheingold, and Kelly. He more or less invented the field of computer books in the early '80s, the failed *Software Catalog* being only a bump in Brockman's road to success. He invented the word "digerati" to promote his clients, and regularly publishes collected volumes of his clients and friends' contributions to the public sphere.

Brockman's own major public work after his early books is his 1991 essay "The Third Culture." This piece argues that contrary to C. P. Snow's hopes, the famous dichotomy of the two cultures – the sciences and the humanities – is being resolved, not by greater understanding between the two groups, but by the emergence of a new third-culture figure, the scientist who speaks directly to the public. Humanities scholars are dismissed: "Their culture, which dismisses science, is often non-empirical. It uses its own jargon and washes its own laundry. It is chiefly characterized by comment on comments, the swelling spiral of commentary eventually reaching the point where the real world gets lost."

Brand is quoted in this essay: "Science is the only news. When you scan through a newspaper or magazine, all the human interest stuff is the same old he-said-she-said, the politics and economics the same sorry cyclic dramas, the fashions a pathetic illusion of newness, and even the technology is predictable if you know the science. Human nature doesn't change much; science does, and the change accrues, altering the world irreversibly."

In a 2003 follow-up essay titled "The New Humanists," Brockman quotes at length from *National Review* columnist and Joseph McCarthy biographer Arthur Herman, arguing that rejection of the West and of civilization has become "the dominant theme in intellectual discourse":

> This new order might take the shape of the Unabomber's radical environmental utopia. It might also be Nietzsche's Overman, or Hitler's Aryan National Socialism, or Marcuse's utopian union of technology and Eros, or Frantz Fanon's revolutionary fellahin. Its carriers might be the ecologist's "friends of the earth," or the multiculturalist's "persons of color," or the radical feminist's New Amazons, or Robert Bly's New Men. The particular shape of the new order will vary according to taste; however, its most important virtue

will be its totally non-, or even anti-Western character. In the end, what matters to the cultural pessimist is less what is going to be created than what is going to be destroyed—namely, our "sick" modern society....[T]he sowing of despair and self doubt has become so pervasive that we accept it as a normal intellectual stance—even when it is directly contradicted by our own reality.

No, the world is not sick or in decline, it is getting better, thanks to science. Jaron Lanier, prophet of virtual reality, applauds this essay: "Bravo, John! You are playing a vital role in moving the sciences beyond a defensive posture in response to turf attacks from the 'postmodernists' and other leeches on the academies."

Both Brockman and Brand are subtle, elusive characters whose belief systems can be hard to pin down. Brockman has hardly abandoned his early radical views of reality. He outlines his point of view in a 1987 *Whole Earth Review* interview: "Reality is a process of decreation. It's what people say it is. The world, the world that we know, is not necessarily out there, it's invention—human invention—an invention created by a finite number of people throughout history. I thought it would be interesting to track such people living today and find out what they're thinking about."

Brockman also ran an elite evening salon throughout the '80s called the Reality Club, during the time of these aggressive attacks on postmodernists and science scholars. He says the name of the Reality Club is a pun, and continues to use the closing lines of *Afterwords* as a motto: "Nobody knows, and you can't find out." You might take him for a postmodern relativist or social constructionist. But he simultaneously makes these aggressive arguments for reality and science, against the purported solipsism of the academic establishment.

In Brockman's edited books, he and his contributors keep coming back to this issue—many agree not only that science is the only intellectual field that matters, but that it's won, and the humanities are marginal and irrelevant. This line of argument combines the authority of science with a right-wing defense of European heritage, and includes direct attacks on left-wing politics, and the strong assertion that anyone who is in touch with reality must believe that modern society is good and getting better. Both Brand and Brockman argue that science, not politics, is the way to change the world.

They take a side in the academic culture wars of the time, and it seems to be the conservative side, against "political correctness," but if so, there seems to be more than one conservative side: this is not about defending the European literary canon against multiculturalism; in fact, it's not even conservative, in the sense that Brockman and Brand want to change everything, not keep it the same. But they are certainly aligned with the right in their attacks on leftism, dismissal of political critique, and vehement embrace of the Enlightenment values of reason, individual initiative, and the grand narrative of progress through scientific discovery. This is strangely ironic, since the culture wars tend to be characterized by conservatives attacking the legacy of the '60s, and Brand and Brockman are icons of the '60s counterculture.

In all the public intellectuals' contributions in Brockman's collections, even those who are not scientists or computer specialists, I have seen no engagement with postmodern critiques of science, or with specific postmodernist scholars, or other critiques of science for that matter. The humanities are simply caricatured in the ways we have seen (also ironically, since science is supposed to be superior because it makes claims backed by evidence).

3. Rebuilding the Living World

The story of Stewart Brand and the Whole Earth publishing projects is analyzed masterfully by Frederick Turner's 2006 book *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism*, a major source for this chapter. Turner spotlights the *Catalog*'s joining of high-tech research and counterculture ideology. Making this connection, he says, allows the two to legitimate each other, connects disparate communities—cybernetics and computer researchers and commune dwellers—and makes possible what he names a "contact language" that allows ideas to cross over between the two domains. This connection was crucial in redefining the image of the computer from a tool of centralized regimentation and oppression to a tool of personal and political liberation, and this hybrid image was central to the mythology of the dot-com era.

Brand's "New Communalists," as Turner labels them, left the cities for rural communes, but also studied cybernetics and electronics, hoping to use new technologies—not only LSD and guitar amplifiers but also new media and communications technologies—to reintegrate the whole self, create community, and make a new society. These hopeful pioneers became the computing innovators who have, in fact, more or less reinvented civilization by creating the personal computer and the software tools that comprise today's Internet.

Turner identifies a number of ironies in the history of the Whole Earth project, in addition to the shift from opposing centralization and hierarchy to promoting government deregulation and concentration of political and economic power. While espousing equality and focusing heavily on futurism and models of global trends, they ignored trends of increasing wealth disparity from the 1970s to the '90s and "created a rhetoric that masked them"; they consistently obscured existing hierarchies of power, from Stewart Brand's dominance of the publishing projects to the impacts on workers of the "flexible" business practices they promoted. It also pioneered a business model, beginning with the original Catalog and continuing with the WELL, that blurs the line between the company and its customers, essentially encouraging customers to create the product, and then selling the customers and their work to each other and keeping the profits. Today, of course, this is how Google, Facebook, and a thousand other online businesses work. I would add to this list of ironies the shift from serving visionary rural communitarian projects to promoting "virtual community," while contributing to the destruction of real communities in the Bay Area and worldwide by the dot-com economy and neoliberal economics.

The *Whole Earth Catalog* contributed to the transformation of the counterculture into a form of consumer identity in obvious ways. It also, of course, promoted economic globalization, at first metaphorically and later literally.

The original *Catalog* fit neatly into a general move away from Vietnam War activism, the New Left, and the rising militancy exemplified by the Black Panthers and the Weather Underground, and toward an emphasis on lifestyle and changes in consciousness. As it developed, it tracked changes in countercultural ambitions through the back-to-the-land shift of the late '60s, through the replacement of systemic critique by self-realization in the '70s, to reabsorption by mainstream business in the '80s, and into the digital utopianism of the '90s and beyond.

The *Whole Earth Catalog* surely had multiple constituencies, from East Coast universities and art scenes to rural Western homesteads. But a crucial one, if not the primary demographic, was

technically-minded young men, and a smaller number of women, in California, the young explorers who became the creators of personal computers, their software and the networks that connect them.

When the *Catalog* went out of business for the first time in 1971, Brand threw a Demise Party at the Exploratorium in San Francisco, at which the audience (as a whole) received a surprise gift of $20,000 in cash and was left to decide what to do with it. After much discussion most of the money ended up entrusted to a man named Fred Moore, to work out how to spend it later. Fred Moore went on to become a founder of the Homebrew Computer Club, which included future Apple Computer creators Steve Jobs and Steve Wozniak, and among whose ranks were also the first known pirates of Bill Gates and Paul Allen's proprietary software.

Moore and Lee Felsenstein became part of Resource One, a local project funded in part by the Demise Party's money, and aiming (in Fred Turner's words) "to establish public computing terminals at several locations in the Bay area, with an eye toward creating a peer-to-peer information exchange." *Whole Earth Catalog* staffers were involved in the 1972 creation of the People's Computer Center in Menlo Park, California, a place for the public to gain access to the means of computing.

The People's Computer Center and Resource One are alive and well in the form of today's hackerspace movement, which is now creating a global network of physical spaces, like San Francisco's Noisebridge, where people are invited to come together freely to learn about technology and create their own.

It's more accurate to describe the *Whole Earth Catalog* as a document of this early populist technology movement than as a creator of it. Regardless, that movement, which is still alive, growing and changing in multiple forms, was always part and parcel of the "consciousness or mindset" to which Brockman alludes. It includes the older cybernetics theories, ecological concern, Fuller-style architectural iconoclasm, Taoist and Zen non-duality, and commitment to learning, innovating and changing the world for the better—a movement, that is, distinct from "the movement" that opposed the draft, patriarchy and capitalism. Brand's and Brockman's histories illuminate this movement's history in many ways.

The Free Software Movement originates in the nationwide community of idealistic early computer users. Its platform is that software should be freely shared and adapted, not controlled and sold. To date it has given us three of the world's top five web browsers, the software behind most of the websites on the Internet, the powerful Linux operating system, and massive, incontrovertible evidence for the ability of voluntarily cooperating humans to get serious work done in the real world without a profit motive.

The Free Software Movement's offshoot, the Free Culture Movement, extends the same ideals to free circulation of music, literature, journalism, film and video, educational materials, and anything else that is eligible for copyright.

In the early '90s the Cypherpunks organized to bring unbreakable cryptography from secret agencies to the masses. (Their name derives from science fiction's "cyberpunk," a hybrid of the hacker and punk esthetics.) They imagined (and many still do) an extreme libertarian utopia, in which the flow of money is untraceable, speech is absolutely free, and censorship and taxation are impossible because anyone at a computer has access to complete privacy and anonymity. The

Cypherpunk's Manifesto spells out their attitude toward changing the world: "We don't much care if you don't approve of the software we write. We know that software can't be destroyed and that a widely dispersed system can't be shut down."

A loose movement that we might call "liberation technology" holds that information technology can help democratic social movements to overcome repressive regimes in their countries. For instance, it was widely claimed after the Tiananmen square massacre that democracy activists in China were able to get news in and out of the country despite censorship because they had the use of fax machines, an updated version of the Soviet bloc's samizdat. Activists create and provide software to help people in places like China and Iran to circumvent restrictions on access, help citizens to report government abuses while hiding their identity from retribution, and allow opposition movements like Tibetan nationalists and Burmese democracy activists to communicate using private, encrypted email. Some of these efforts, for instance in support of the recent uprisings in Iran, have been partially backed by the U.S. State Department. Meanwhile, WikiLeaks's Julian Assange, a former cypherpunk, is now using his expertise and connections to turn liberation technology against the United States and its allies.

Peer-to-peer filesharing on the Internet has effectively brought the music and movie industries to their knees. When people can easily download music, first-run movies, and software for free, using free software like BitTorrent, FrostWire, or SoulSeek, they often choose not to pay for the products.

Oddly, out of all these interlinked movements, it is advocates of illegal file sharing who have made the move into traditional politics, organizing Pirate Parties in several European countries— political parties, that is—and the original Piratpartiet has become Sweden's third largest party in just a few years since its founding, and won two seats in the European Parliament. Their platform includes blanket opposition to copyright and patent law and to laws (anti-terror laws, for instance) that infringe personal privacy.

Wikipedia, the online encyclopedia written collectively by its readers, is now about twenty-five times the size of *Encyclopædia Britannica*, and a comparison done by Nature found the two to be roughly equal in accuracy. Wikipedia is widely cited as a triumph of "commons-based peer production," meaning creation of a product by an open, self-organizing community of often volunteer workers. Using terms such as "crowdsourcing," "wikinomics" or "p2p," the success of Wikipedia and free software is named by a number of advocates as a model for a new way of organizing labor based on uncoerced creation of commons, possibly even as an alternative to wage labor.

The impact of free culture and peer production movements is now percolating into the sphere of academic research, in the form of the open access and open science movements. Open access is simply the application of free culture ideas to research, resulting in the position that published research should be accessible to the public and free for reuse. Open access is a reaction to the current system dominated by corporate publishers, whose expensive journals effectively can't be accessed by anyone without a university position, and whose copyrights prevent researchers from reusing and adapting the figures and text of the articles they draw on.

The open science movement is more multifaceted, encompassing scientists' use of blogs as "open lab notebooks," science wikis for collaborative peer production of research, online sharing of data,

and a general ethic of sharing information quickly and freely rather than holding it back in order to establish priority by publishing in a peer-reviewed journal. This is more or less just the ideals of the free software movement translated to the practices of science, or, from another perspective, simply the original ideals of science updated to the era of the Internet by way of the free software movement.

So far in this new decade (I write this in the end of 2010), open science, and the more general idea of "Science 2.0," seem to have found their strongest foothold in the infant field of synthetic biology. Synthetic biology, according to its practitioners, is the practice of "rebuilding the living world" from the bottom up, by designing new organisms' genomes from scratch rather than the comparatively conservative genetic engineering techniques of inserting foreign genes into existing species. Synthetic biology researchers are currently receiving funding from the United States Department of Energy and other bodies in the U.S. and Europe, and from private sources including genome entrepreneur J. Craig Venter. They are working in newly formed departments of Biological Engineering at MIT and Stanford, at UC Berkeley and BP's Energy BioSciences Institute, and in numerous biotech startups.

The synthetic biology community is home of what is probably the most advanced online "Science 2.0" initiative, a very active wiki website called OpenWetWare.org. Many researchers use the wiki daily to share their data, software, and unpublished results with each other and maintain densely updated research logs. OpenWetWare creator Drew Endy is additionally working to create an online Registry of Standard Biological Parts, an online database from which gene experimenters can freely upload and download gene sequences they have found useful. Proponents predict that synthesis of DNA molecules from arbitrary gene sequences will soon become cheap and easy enough that individuals can do it in their garages. At that point, these free software-inspired online databases of "biological parts" will allow private actors to create a broad range of organisms of their own design, unconstrained by precedents or regulations. Endy is a gifted coiner of phrases: he has memorably declared his intentions to "rebuild the living world" and to "reimplement life in a manner of our choosing."

Along with the institutionally-supported "synbio" community, an outsider movement has arisen, behind names like "DIYBio," "Biohack," or "BioPunk," to make "garage biotech" a reality. A project called BioCurious has raised, via public microfunding facilitated by online fundraising site Kickstarter.org, its $35,000 target to create a biotech hackerspace in the San Francisco area for homebrew bioengineers. A Biopunk Manifesto has been circulated and presented to the FBI's biosafety experts and academic biotechnicians:

> To paraphrase [cypherpunk] Eric Hughes, "Our work is free for all to use, worldwide. We don't much care if you don't approve of our research topics." We are building on the work of the Cypherpunks who came before us to ensure that a widely dispersed research community cannot be shut down. [. . .] we are acutely aware that our research has the potential to affect those around us. But we reject outright the admonishments of the precautionary principle, which is nothing more than a paternalistic attempt to silence researchers by inspiring fear of the unknown.

Brand's cultural pioneers, leaving the Haight-Ashbury to reinvent civilization on the homestead, became the hacker pioneers, subverting copyright law and using the Internet to create new forms of global commons and to bypass authoritarian governments' restrictions on communication.

Brockman's "invisibles" who have learned the truth about reality's moveable feast became his scientists and inventors who reinvent reality by making new tools for thinking and communicating. Now the "open system approach" to computing is becoming an open approach to science, which will empower everyone who has the time and access to remake reality, not only by studying it or making communication tools, but also by rebuilding the living world itself, without the hindrance of rules and regulations.

This is not empty hype, any more than eccentric predictions about networks of personal information devices were in the 1970s. Scientists will create new microbes that excrete food, medicine, and gasoline substitutes. Some of them will have unforeseen impacts on existing plants and animals' habitats, just as genetically modified organisms have done already, but more so. Unaffiliated individuals will use cheap, empowering biotech tools to make their own experiments and living products, and some will have large-scale impacts. Eventually, there will probably arise a biological analogue of Wikileaks—an idealistic and populist intervention, and one that is globally disruptive, places innocent people in danger, and is imposed on the world without participation in the decision and without accountability. We can also expect biological counterparts to the personal computer and the Internet—radically disruptive inventions that pull us all into a new world in which we have to adjust to a new texture of daily life whether we like it or not, and we will have no say in whether they are in fact desirable changes. We can be even more confident of biological versions of Google and Facebook, and sooner—proprietary products that centralize power over our daily lives in the hands of a few hyper-powerful corporations on a scale that we can hardly imagine in advance.

A fundamental value is being obscured in these visionary projects, from the People's Computer Company to BioCurious: technological innovations are not an unalloyed good; they can have immense consequences for people and communities not involved in their creation, and it is not liberating to impose massive changes on passive victims without their participation. This is the problem with Brand's sponsorship of Access to Tools, with Brockman's promotion of one-way communication from scientists to the public, and with high-tech visionaries' crusade for open access, freedom, and transparency.

Notably, both Brand and Brockman have made their fortunes portraying communities they are not part of. Brand never lived on a commune, and does not write software (though he deserves recognition as an accomplished practical systems thinker), and Brockman is neither a scientist nor a creator of technology. More to the point, the people and institutions that are creating new science and technology are generally based in the most developed nations, and are not directly affected by the impacts of their work on less powerful communities around the world: those communities tend to have little or no say in the decisions that set the directions of research and technological development.

Justice requires everyone affected to be included in deliberation, or at least to have a voice. Liberation requires accountability, or at least exposure to the consequences of our choices. To live as if we were gods and "good at it" requires we have the strength of character to forgo choices that are clearly bad ones. It includes the responsibilities of stewardship and solidarity.

The social movement that is rising, traceable through these generational shifts and back to Buckminster Fuller's generation of wild-eyed engineers and cyberneticians, is a fundamentally technocratic one that trusts technically smart people to make the best decisions about how and

whether to reinvent the world. Technically smart people have created internal combustion and its apocalyptic climatic consequences; X-Rays, Thalidomide and DES; uncounted ubiquitous pollutants, toxins and carcinogens; and, of course, the apocalyptic dangers of the atomic bomb. It doesn't take a specialized education to understand the consequences of social and environmental changes due to new inventions, and to take a position on which changes are desirable. Technocracy has not served us, and it will not serve us better in the future. A fair, wise alternative is difficult to imagine, but this is what we need to do.

In filmmaker Lutz Dammbeck's documentary on technology, networks and opposition, Brockman tells how he first met the computer:

> I got a call from A. K. Solomon. He was head of biophysics at Harvard and [. . .] [he said] "a group of us would like to invite a group of artists to come and spend a couple days in a seminar," you know, to talk about mutual interests. So I was invited to put this together, which I did. And then they took us to see the computer. There was a room, and everybody there was wearing white coats, and they were cold, and we were cold, watching the computer. And all these cards and, you know, file cards, and I just stood there like a kid with my nose against the window. And it was so exciting. And I have no idea why.

Why is the computer so exciting? Computers are an immensely powerful platform for scientific exploration and discovery, and of course enable new forms of communication that are inducing intense social change and making new forms of cooperative politics possible. They are also like a drug, at least for some, that can induce an intense trance state and deep dissociation. The seduction of the computer can take precedence over hunger, pain, the presence of other people, daily responsibilities, and at times, over careful weighing of impacts and consequences. Even without the hypnotic effect of the computer, the draw of abstraction can be compelling. It reminds me of J.R. Oppenheimer's famous testimony on the creation of the atomic bomb: "When you see something that is technically sweet, you go ahead and do it and argue about what to do about it only after you've had your technical success. That is the way it was with the atomic bomb."

If the decisions that decide what our world will be like are made without accountability by a few privileged experimenters in Europe and the United States, and they are made by doing whatever is technically sweet and worrying about the consequences later—or by doing what is technically sweet and seems like a good idea to the inventor—we are facing a future of great violence and injustice. (And it would be terribly sad if the greatest legacy of the 1960s turns out to be yet another form of self-destructive, addictive behavior.)

In hacker circles and other Petri dishes for cultural experimentation such as Burning Man, the word "do-ocracy" has become popular. It stands for an ethic of self-organization in which anyone who decides to do something is empowered to do it, and to make the decisions about how to do it. For instance, if I decide to build a temporary plumbing system for the Burning Man desert encampment, anyone who thinks it should be done differently has less say than I do because I'm the one who's putting the work into making it happen. This is a simple, powerful form of practical anarchy that works well for getting things done.

However, it doesn't work well for resolving conflicts between people who want different things to happen; it doesn't protect people who have less ability to do things because of unequal access to time, or to resources, or unequal physical ability; and it is no help to people who believe that

certain things just shouldn't be done at all. It also happens to be the way technology is managed in the current world. The decisions whether to create a new technology are in the hands of the creators and their funders; anyone who has the time or resources can create or fund a new invention; and anyone who thinks it shouldn't happen, for instance because we don't want to give some maladjusted high-school kid the tools to create a renegade bacterium that will eat our entire biosphere, is just out of luck.

Do-ocracy is popular partly because it offers to fulfill the promises of Wikipedia and Linux, that we can make a better world together, all acting as equals, and throw off the chains of oppressive institutions. What is the alternative, anyway? Making laws against things? Making people get permission from some kind of central authority before they can learn things and use their creative spirit to try out new ideas? Social change movements on both the left and the right (and in other directions) agree on the need to devolve power downward and create horizontal forms of self-governance. It is important to address these problems in an antiauthoritarian way.

I believe that this is in fact a fundamental challenge of antiauthoritarian social movements. We must be able to offer a plausible way to hold people accountable for the damage they do. We have to have a way for those who are affected to participate in deliberation about what will be done to their communities. This may be a part of the ongoing project of understanding how communities manage commonly held resources—the biosphere is one of our largest commons—or it may be more usefully seen as simply a fundamental problem of self-governance. Humans are generally agreeable, and these problems may be largely solved by people becoming aware of the issues involved in their decisions, and by their becoming more directly connected to and aware of the communities impacted. We may do well to cultivate a general ethic of responsibility and accountability, so that people who violate the norm have to face the disapproval of their community. Overall, though, the problem is unsolved and must be addressed if we are to responsibly claim to provide a promise of a better world.

The technological social movement that Stewart Brand names as the "main legacy from the '60s" is powerful, liberatory, wildly successful, idealistic, and in some ways astounding, but it is at the same time deeply flawed, incomplete and dangerous. Its good parts are very good, and it can be an invaluable springboard to a much better social movement—one in which we continue to create entirely new forms of collaboration, sharing, democratization and bottom-up empowerment; establish new forms of solidarity and community; discover how to coordinate effectively on a global scale; create powerful, fluid horizontal network structures; and develop reliable processes of accountability that allow us to protect the things that we hold most sacred without surrendering the power of enforcement to an elite class of masters.

Many readers will have noticed by now that we've fallen into a kind of looking-glass world of politics here, in which "conservative" right-wing values include smashing the state, building a new world in the ashes of the old, and championing the liberal ideals of Enlightenment science and democracy. This contrasting, putatively "progressive" alternative is focused on conserving traditional values such as accountability, responsibility, and the integrity of existing communities and places. It's generally only free-market libertarians who insist that "left" and "right" are obsolete, but in this context of a clash between competing systems of radical antiauthoritarian values, it seems clear that the traditional dichotomy between rational, progressive left versus traditional, religious right is unhelpful at best.

There are many legacies of the '60s, and other generations' experiments in collective liberation. The pro-technoscientific social movements are only a few of the many seeds that were planted in the hippies' creative explosion. Their champions have gained a great deal of power, partly by denying the importance of the crucial work of their contemporaries that also continues: movement organizers, peace advocates, feminists, antiracists, spiritual syncretists, psychotherapists, consciousness expanders, alternative educators, science studies scholars, critics of Enlightenment, and pioneers in collective process.

Those less-exposed traditions are exactly what we need now, to fully embrace the challenges of reinventing the world. We need to turn our creativity and passion from simple techno-lust to the fuller and more satisfying challenges of developing effective ways to thrive together, care for each other, and realize our massive potential in a flourishing natural world and within peaceful, compassionate, fair social relations. Our "practical intellectuals" must not only be technically savvy, but also socially intelligent, humble, and able to listen to and take leadership from others who are different and have different needs and perspectives. We must make it possible for them to work and think within a functioning global community and be accountable to the communities that are affected by their work. The final impact of the '60s movements has yet to be determined, and if we are willing to take on the hard questions about justice and accountability, it can ultimately be much greater, more human, and part of a far more beautiful and livable future than it will be otherwise.

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