
Network Celebrity: Entrepreneurship and the New Public Intellectuals

Fred Turner and Christine Larson

By conventional lights, Tim O'Reilly is not a celebrity. He has never acted onstage or on-screen, made a music video, or fallen down drunk on his own reality TV show. If he went into rehab or fathered a child out of wedlock, no paparazzi would hover outside his door. Nor is O'Reilly a public intellectual in the usual way. He holds no professorships, writes nothing for the *New York Review of Books*, and has rarely, if ever, appeared on a Sunday morning TV talk show. And yet O'Reilly is both famous and exceptionally influential. According to *Wired* magazine, he is “the guru of the participation age” (Levy 2005). *Inc.* magazine has called him “Silicon Valley’s leading intellectual” (Chafkin 2010). In a much-talked-about takedown for the *Baffler*, the acid-tongued Evgeny Morozov (2013: 66) put it this way: “The enduring emptiness of our technology debates has one main cause, and his name is Tim O'Reilly. . . . Entire fields of thought—from computing to management theory to public administration—have already surrendered to his buzzwordophilia.”

So what kind of creature *is* O'Reilly? On the one hand, he seems to be the prototype of the Northern California entrepreneur. In the mid-1980s, after a brief stint as a freelance writer, he began to publish how-to books for computer software. By the late 1990s, he was organizing conferences for tech world engineers and executives. By the early 2000s, he was gathering friends from all sorts of professional corners at his FOO Camps (for “Friends of O'Reilly”). Today his company, O'Reilly Media, is worth more than \$100 million, and O'Reilly (2011) himself has become a venture capitalist, investing seed funds in various high-technology startups including Foursquare, Bitly, and Instructables. On the other hand, O'Reilly has promulgated ideas that have traveled far beyond the tech world. He has been a

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spokesperson for open source development, for new modes of intellectual collaboration such as the “unconference,” and for the notion that social media and massive online collaboration have brought about a new era for the World Wide Web, “Web 2.0.” Though sometimes dismissed as bubbles of high-tech hype, these ideas have framed debates across the political and economic landscape, in America and around the world, for twenty years.

Neither O’Reilly’s form of intellectual influence nor its roots in the worlds of business and engineering appear within conventional accounts of intellectual fame. In large part, that’s because those accounts came of age in the second half of the twentieth century. In an era permeated by mass entertainment and mass media technologies, writers described celebrities as empty images thrown onto TV and movie screens and the pages of glossy magazines and public intellectuals as their muscular opponents. Public intellectuals were to be fiercely independent minds, committed to resisting the encroachment of mass consumption and mass media technologies. Intellectuals did not perform for the camera; instead, they wrote. And if intellectuals did sometimes take advantage of mass media, it was only as platforms from which to spread their insights.

By definition, then, American public intellectuals took arms against mass culture and, by implication, against both the logic of capitalism and the engines of industry. The case of O’Reilly suggests that we need to update that view, along with our understanding of the mechanics of intellectual celebrity, for the era of digital networks and social media. O’Reilly is what sociologist Ronald S. Burt (2005: 18) has called a “network entrepreneur.” Through his publishing business, his conference organizing, and his own writing, O’Reilly has built forums in which multiple intellectual communities can gather. Within those forums, computer programmers, executives, journalists, and even politicians have come to share understandings of how their lives and work are and should be organized. They have expressed those understandings in terms that O’Reilly has helped shape and export in turn. O’Reilly’s association with these terms, coupled with his extensive networks, has transformed him into a celebrity within the California tech world and in realms of business and politics far beyond it.

O’Reilly’s techniques are not those of the literary world, nor do they belong to the world of mass entertainment. They belong to the research culture of engineering. O’Reilly is in fact only the latest iteration of a kind of celebrity intellectual that first emerged within the collaborative academic research world that brought us digital technologies in the first place. In this article, we revisit the careers of two such figures, Norbert Wiener and Stewart Brand, before returning to O’Reilly himself. Though this may seem a random troika, it’s not: Brand built his career on

a model developed by Wiener, and O'Reilly intentionally followed Brand. Their three careers remind us that the culture of interdisciplinary entrepreneurship common to the laboratories of World War II and, more recently, of Silicon Valley grew up and spread alongside digital media. Together, entrepreneurial research culture and digital technologies have dramatically amplified the power of social networking to produce both ideas and reputations. In Wiener, Brand, and O'Reilly they have given rise to a newly influential kind of celebrity, the network intellectual. Unlike the mass media celebrities and public intellectuals with whom we're most familiar, network intellectuals build the social and intellectual communities that bring them fame. Within those communities, they help develop new social and institutional ties and, with them, new ideas and new turns of phrase. They then package this work in books and articles and speeches that promote the networks of people and ideas they've built and enhance their own standing, within and beyond them.

For network intellectuals, celebrity is not so much a matter of spectacular visibility, though they do sometimes achieve it. Rather, it is a matter of developing a virtuous spiral of network and reputation building. This spiral generates individual fame and also creates new hubs of public intellectual entrepreneurship within the worlds of commerce, engineering, and academe. At the same time, it can also amplify the influence of a particular cultural style. In the cases of Wiener, Brand, and O'Reilly, this influence has been the predominantly white, predominantly male cultural style of Cold War research engineering. Their histories demonstrate a powerful hidden capacity of networked forms of power—their potential to invisibly advance entrenched biases even as they put forth new ways of seeing the world.

Two Myths of Cultural Decline and an Alternative History

Before we can understand how this pattern came into being and why it matters, we need to step back and revisit two ubiquitous tales, one about the rise of mass culture and the celebrity, the other about the fall of the public intellectual. Together these accounts have structured our understanding of public life as a struggle between the mass and the individual, between unthinking consensus and critique, and between the spurious and the authentic. At the same time, they have focused our attention on two technologies and their associated cultures, one of mass media and the other of print. These accounts have inadvertently rendered invisible the simultaneous rise of a third culture, the culture of interdisciplinary research and engineering, and its impact on public discourse.

In the years immediately after World War II, most American analysts took a

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view of celebrity epitomized by historian Daniel J. Boorstin in his dyspeptic 1962 volume *The Image; or, What Happened to the American Dream*. When Boorstin surveyed the intellectual landscape of the United States, he saw an authentic, even heroic intellectual culture being washed away by a sea of mass media. According to Boorstin, movies, TV, and magazines surrounded audiences with projections of their own desires. In this context, as he famously put it, “the celebrity is a person who is known for his well-knownness” (Boorstin 1962: 57). Celebrities as a group were simply “receptacles into which we pour our own purposelessness. They are nothing but ourselves seen in a magnifying mirror” (ibid.: 61).

As the identity politics of the 1970s and 1980s took hold, along with the “active audience” tradition of media research, scholars and journalists came to view celebrity in a more benevolent light. Far from being empty vessels, celebrities could instead be defined by their personalities. The notion of the celebrity as a media “personality” is actually quite old, but in the wake of the 1960s it acquired a new veneer of individuality and authenticity.¹ Since the advent of the World Wide Web and social media, the shine has faded from that view, at least in the worlds of scholarship and journalism. In most contemporary accounts, the phantasmagoric media imagery that began to swamp literary culture and personal authenticity in Boorstin’s era has now drowned our personal lives in the waters of commerce (see Sternberg 2006; Marwick 2013). Scholars such as Mark Andrejevic (2008) and Eva Illouz (2007) have noted that digital media continue to deliver mass-produced images. But those images no longer aim simply to influence our feelings or beliefs. Instead, digital mass media engage us in interactive processes in which we must produce ourselves in terms of those images. To be successful online daters or social networkers, we must create photographs and data sets that brand our offerings to potential mates or friends. In the mass media era, we might have been able to turn the images off; today, with our media in our pockets and our friends on the screen, the images and our lives are one with each other and with the marketplace.

Taken as a whole, the historical trajectory we’ve sketched above can be summarized thus: a manipulative, commercial, mass consumer culture has all but washed away more authentic alternatives. Within this account, digital networking technologies are extensions of mass media. Before mass media, the story goes, culture could depend on authentic individuals and communities to make the images and sounds they needed for themselves; today we work to hollow ourselves out and to become what the media around us tell us to be.

1. For analyses of this process, see Gamson 1994, 1998.

Canonical accounts of the fall of the public intellectual echo this woeful tale of cultural collapse. In 1987 Russell Jacoby's book *The Last Intellectuals* set the tone for the next several decades of analysis. According to Jacoby, the last great generation of American intellectuals came of age in the 1950s. Jacoby included in that generation figures such as Mary McCarthy, C. Wright Mills, Dwight McDonald, and David Riesman, but not popular figures such as quiz-show contestant and Columbia professor Charles Van Doren or the middle-brow writers associated with the Book-of-the-Month Club. Jacoby's intellectuals were widely read, but not necessarily by the hoi polloi. Nonetheless, Jacoby described them as *public* intellectuals for three reasons: first, they wrote books and articles in a language that nonspecialists could easily understand; second, they tackled issues of widespread importance, particularly in the realm of governance; and third, possessing individual genius and a broadly critical orientation to the status quo, they wrote for little magazines and general interest publications. In Jacoby's view, this generation would be the last of its kind. The rise of American academe after World War II had lured the next generation into cushy sinecures, navel-gazing, and thickets of abstruse prose.

In the wake of Jacoby's book, scholars such as Richard A. Posner (2001) and Amitai Etzioni (2006) debated the degree to which public intellectuals had faded from the scene. But they left intact Jacoby's definition of a public intellectual as an essentially literary figure, a person wedded to the word in a culture increasingly saturated by images and a person committed to paper in a period immersed in electronic media technologies. While they sometimes allowed that public intellectuals might come in both academic and bohemian varieties, they also tended to reiterate Jacoby's charges against the postwar university (Etzioni 2006: 9; Posner 2001: 388). Finally, they left the origins of ideas themselves unexamined. In all of their accounts, ideas emerge more or less fully formed from inside the heads of individuals.

These accounts were true enough, so long as analysts stuck to studying writers whose careers fit these patterns. The late twentieth-century literature on public intellectuals aggressively ignored the worlds of engineering, technology, and commerce. It is virtually inconceivable that a Jacoby or a Posner would list a builder of electronic devices or a producer of something other than words as a public intellectual. Yet in postwar America, the public itself saw scientists and engineers in a different light. In the 1940s, technical experts had helped win the war; in the 1960s, they had helped win the space race. Fears of the atomic bomb and revulsion at America's role in Vietnam notwithstanding, scientists and engineers enjoyed substantial public prestige in the postwar world.

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Those scientists and engineers knew that ideas and reputations were not simply the products of individual genius but could be produced collaboratively. They also saw the university as a boon to that work because it fostered the interdisciplinary networks on which scientific and technical research relied. Funding, space, legitimacy—the university offered engineering and the sciences all of these. Moreover, as defense priorities shifted, the university became a conduit to the consumer marketplace and helped create new ways to sell the products of the laboratories, such as the silicon chip.

At a time when analysts were lamenting the power of mass culture and the decline of literary culture, a third culture—research culture—was rising in their midst. That culture had its own ways of creating intellectual frameworks for social action. And it had its own celebrities. To show how that system worked during and just after World War II, we focus on Wiener's role in coining and circulating the term *cybernetics*. We then leap forward to the 1980s and Brand's redefinition of *hacking*. We ultimately return to O'Reilly and the mechanisms by which he promulgated the notion that social as well as technical processes should be open source.

One note: Each of these figures has been the object of substantial biographical research. We don't pretend to offer new facts here. Rather, we aim to revisit the existing literature and tease out some of the social, technological, and communicative patterns that have marked these figures' rise to intellectual influence and personal prominence. By doing so, we hope to show that O'Reilly, Brand, and Wiener constitute three interlinked and especially visible examples of a mode of intellectual power and networked celebrity that has substantially shaped American public life. We also hope to call attention to the hidden ways that this mode of power may legitimate and help spread the demographic and cultural norms of particular social networks.

Norbert Wiener and the Making of Cybernetics

No intellectual movement dominated the postwar American intellectual landscape as completely as cybernetics. Its key concepts—feedback, homeostasis, information, and entropy among them—became the coin of the realm in disciplines ranging from ecology to political science. Its associated devices—computers, self-regulating automata, even prosthetic limbs—became emblems of new ways to order human-machine relations and even society as a whole. And no single person spoke for the cybernetic vision with the authority and the visibility of Wiener, a Massachusetts Institute of Technology (MIT) mathematician (see fig. 1).

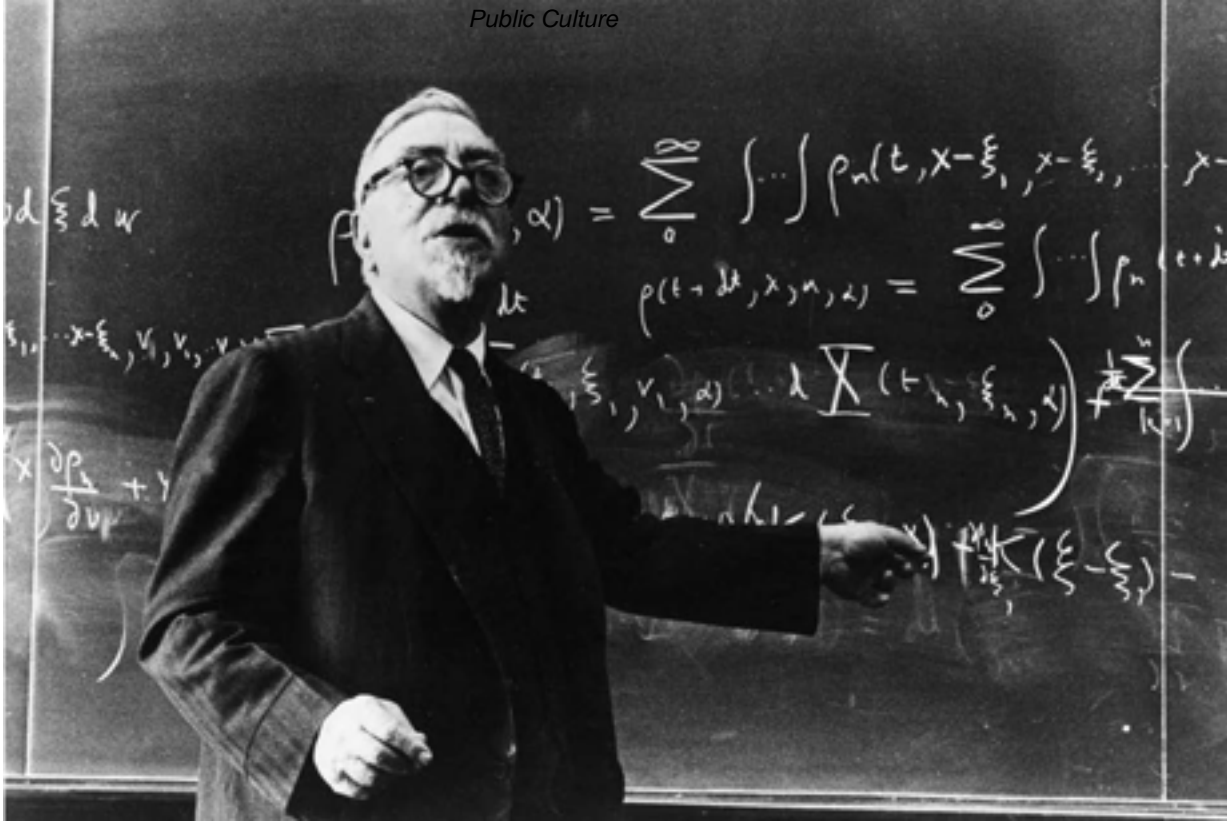


Figure 1 Norbert Wiener in class at MIT. Courtesy MIT Museum

The question is, why Wiener? As a number of historians have noted, the field of cybernetics could not have sprung from any individual mind. As Robert Lilienfeld (1978) has shown, postwar cybernetics emerged alongside other robust theories, including systems theory, information theory, operations research, game theory, and computer simulation research, each with its own inventors. Even so, cybernetics managed to subsume all of these and to become what Geoffrey Bowker (1993: 107) has called a “universal discipline.” And in both the popular imagination and much recent scholarship, cybernetics has a single progenitor: Wiener.

How did the rotund and shambling Wiener, among all the well-connected, smooth-talking intellectuals of his day, become the public face of cybernetics? And what can that process tell us about the mechanics of networked intellectual celebrity?

A review of his writing, together with the rich secondary literature on Wiener and cybernetics, suggests that the answers to these questions have three chronologically overlapping parts. First, as a professor of mathematics at MIT during World War II, Wiener was the right person at the right place at the right time to

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see a new intellectual and social culture emerging. Second, he took advantage of his location to build and join interdisciplinary networks with which to work on particular wartime and postwar research projects. Those networks informed his ideas and, once he had articulated them, spread both the ideas and word of Wiener's own abilities into other arenas. Third, Wiener wrote articles and books that served as what Bruno Latour (1987) has called "immutable mobiles"—documents recording the intellectual work accomplished by Wiener and his networks that Wiener branded with his own name and sent forth into the public domain. Each piece of this process—preexisting structural legitimacy, network crossing and network building, and creating and circulating immutable mobiles—ultimately increased the impact of the others. Together they helped make Wiener a star far beyond the walls of academe.

By his own account, Wiener encountered the principles and individuals that would become the core of cybernetics by virtue of his employment at MIT. Though this might seem like an obvious point, it is nonetheless important: before a person can take up the entrepreneurship that characterizes networked intellectual celebrity, he or she must have sufficient personal and institutional standing to be recognized by potential allies. Wiener had taught at MIT since 1919 and worked particularly closely with his MIT colleague Vannevar Bush on his differential analyzer in the early 1930s. Thus when President Franklin Roosevelt appointed Bush head of the National Defense Research Committee (NDRC) in the summer of 1940, Wiener was able to reach out to Bush directly and to correspond about possible research and funding opportunities (Conway and Siegelman 2005: 104).

When Wiener ultimately decided to work on problems of targeting and ballistics prioritized by Bush, he took a modest grant from the NDRC and drew on the full range of intellectual and material resources at MIT (*ibid.*: 107). As a mathematician, Wiener lacked expertise in machine systems, so he sought out an electrical engineer named Julian Bigelow. Together they modeled the four parts of the anti-aircraft prediction problem—the pilot, the airplane, the anti-aircraft tracking device, and the human gunner on the ground—as a single system. Drawing in part on an engineering-driven understanding of human behavior, Wiener began to think of the pilot as acting like a servomechanism, at least from the ground gunner's point of view (Galison 1994: 252). Drawing on his own training in mathematics, he began to model the interactions of each part of the anti-aircraft system in quantitative terms. Together the notions that human and machine actions could be modeled in the same language (mathematics) and that one could conceive of a human being as an information mechanism would become founding principles of cybernetics.

So too would interdisciplinary collaboration. In 1933 Wiener met Harvard Medical School professor Arturo Rosenblueth, a neurophysiologist. Over the next decade, Wiener became very close to Rosenblueth. As Wiener and Bigelow worked on their anti-aircraft predictor, they consulted with Rosenblueth, who in turn saw in the servomechanical behavior of the enemy pilot a mode of self-regulation common to neurological processes within the human body. In a coauthored article titled “Behavior, Purpose, and Teleology,” Rosenblueth, Wiener, and Bigelow (1943: 19) argued that in many situations, it was the feedback process that allowed human beings to govern their behavior and to turn it toward particular goals. Machines too could be trained toward particular ends through feedback, as could animals. By framing purposive behavior as governed by feedback, Rosenblueth, Wiener, and Bigelow introduced a theory that not only covered the human and the nonhuman but also implied that each could become a model of the other. People, other animals, machines—all could be imagined as systems seeking information from the world in the form of feedback, processing it, and then moving forward in search of further feedback.

Historian Allen Newell (1983, quoted in Bowker 1993: 109) has argued that this 1943 article as much as any other event was the origin of cybernetics. If so, then it is doubly important to recognize that its core insights emerged out of collaborative interactions made possible by the rich intellectual ecology of Cambridge, Massachusetts, and by Wiener’s own entrepreneurship. When he brought together an electrical engineer and a neurophysiologist, Wiener bridged a series of intellectual and social gaps between three intellectual fields. Sociologist Burt (2005: 16–17) has called such gaps “structural holes” and shown that all sorts of advantages accrue to the entrepreneurs who bridge them. By bringing together Bigelow and Rosenblueth, Wiener set the social terms in which a new, universal language of behavior and purpose could be developed—a language that would in turn span the fields represented in the group. By writing their article, Rosenblueth, Wiener, and Bigelow locked down and legitimated their shared understandings and made them available for export to readers in other networks. Wiener himself facilitated their spread by bringing members of these networks together, in person. In December 1944, Wiener asked mathematicians John von Neumann and Howard Aiken to help him convene a meeting focused on the relationship between electronic computing and neurophysiology. When they met at Princeton the next month, the attendees developed a set of intellectual frameworks that could encompass work across their diverse disciplines.

Wiener later described the process thus: “Very shortly [after the meeting began] we found that people working in all these fields were beginning to talk the same

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language, with a vocabulary containing expressions from the communication engineer, the servomechanism man, the computing-machine man, and the neuro-physiologist. . . . All of them were interested in the storage of information. . . . All of them found that the term *feedback* . . . was an appropriate way of describing phenomena in the living organism as well as in the machine” (Wiener 1956: 269, quoted in Conway and Siegelman 2005: 148).

As Peter Galison (1999: 138) has argued, “trading zones” have been central features of scientific and engineering life since World War II. When researchers from several fields convene within a laboratory, they must develop a “pidgin”—a shared language with which to get their work done. Though the meetings Wiener and his collaborators convened took place far from the laboratory, they bore within them the logic of the scientific trading zone. At the same time, they conferred special advantages on those who could see across the holes between the disciplines in the room. By virtue of Wiener’s experiences at MIT and his role as convener, he was able to recognize and promote a term that would meet the needs of the group, the term *feedback*. In essence, he was able to help the network ratify and embrace as its own an intellectual conclusion to which he had already come.

The Princeton gathering in turn helped set the stage for the first of what would come to be called the Macy conferences. These meetings, which took place every year from 1946 to 1953, became to the field of cybernetics as a whole what the antiaircraft predictor project had been to the notion of circular causality: a meeting ground at which representatives of multiple intellectual networks could gather and develop a shared language for future action. The pidgin developed at the 1946 Macy meeting helped transform cybernetics from a theory about individual people and machines into a theory of regulation that could be applied to whole societies.

The meeting included representatives of anthropology, psychology, and neuro-physiology, as well as game theorist von Neumann. Together they discussed the principles that Rosenblueth, Wiener, and Bigelow had laid out in 1943, but this time, participants Margaret Mead and Gregory Bateson took them further. Drawing on their fieldwork in New Guinea, they argued that circular processes of feedback worked through interpersonal relations and through the mechanisms of culture to give unity to whole societies. Suddenly, a series of strange likenesses became visible to the participants: human beings and animals both resembled information machines; cultures too were information systems, as were whole societies. For a moment, it looked as if all the world’s systems—natural, mechani-

cal, and social—mirrored one another and could be modeled and managed with communication technologies.

In a 1948 book that helped make Wiener famous around the globe, he gave that aperçu a name: cybernetics. Or, rather, he named it on behalf of the network out of which it had emerged. Wiener alone has long been credited with coining the term *cybernetics*. In the introduction to *Cybernetics; or, Control and Communication in the Animal and the Machine*, however, he took great pains to credit Rosenblueth with helping coin the term in the summer of 1947 and offered a detailed history of the work that had given rise to the field, scrupulously crediting each member of the Macy network for his or her contributions (Wiener 1948: 7–39). At the same time, like a scientific P. T. Barnum, he gathered these performers under his own big top, while working to forestall charges of intellectual imperialism by arguing that he and Rosenblueth had responded to a need made visible by the Macy network. They had “become aware of the essential unity of the set of problems centering about communication, control, and statistical mechanics”; at the same time, they could find no language that might treat that unity as a whole (Wiener 1948: 19). “We have been forced to coin at least one artificial neo-Greek expression to fill the gap,” wrote Wiener. “We have decided to call the entire field of control and communication theory, whether in the machine or in the animal, by the name *Cybernetics*” (ibid.).

Burt (2005) notes in his account of network entrepreneurship that when entrepreneurs stand astride several networks, a variety of rewards come their way. First, they can see the forest for the trees and can therefore name it, as Wiener did with cybernetics. Second, because they belong to the networks in question, they can collaborate individually with network members on particular projects even as they tuck those projects under their own individual umbrellas. In the introduction to *Cybernetics*, Wiener (1948) simultaneously acknowledged the contributions of McCulloch, von Neumann, Bigelow, and Rosenblueth and wrapped them in a flag of his own weaving. From this point forward, individual projects related to feedback, homeostasis, information machines, and particular branches of neuroscience would all be labeled as part of a larger cybernetic project. As the person who named that project and defined its network, in print at least, Wiener would become its standard bearer. Conversely, as Bowker (1993: 116) has pointed out, the fact that the key terms of cybernetics could be deployed within multiple disciplines and, even better, across them allowed cyberneticists to increase their legitimacy and to access a wider variety of resources than they might have as isolated specialists.

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The efflorescence of projects calling themselves cybernetic in the wake of Wiener's 1948 volume testifies to the truth of Bowker's insight. By the mid-1960s, cybernetic theory could be found at the center of political science, management theory, economics, psychology, urban planning, and performance art. As cybernetics' influence grew, so did Wiener's public visibility and his range of presumed expertise. His byline appeared in the *Atlantic Monthly*; readers clamored for his memoirs; journalists sought his opinions on everything from city planning to nuclear war (Light 2003: 35–37). Wiener's increasing celebrity allowed him to extend the reach of the cybernetics network's ideas and to tighten his own association with them. In 1950 Wiener took the flickers of cybernetics as a universal discipline that had appeared at the 1946 Macy meeting and made them the basis of a follow-up to his book *Cybernetics*. In *The Human Use of Human Beings*, Wiener (1950) argued that what had first emerged as a theory of communication and control in the individual, whether human or machine, should now be seen as a theory of control applicable to whole societies. Even as he expanded the reach of cybernetics, Wiener almost imperceptibly shrank the role of the Macy network in shaping the vision he described. In 1948 he had devoted a dozen pages to his debts to Rosenblueth and his Macy conference colleagues. In 1950 he noted merely that *cybernetics* was a term that he, Wiener (ibid.: 9), had "christened in an earlier book."

To be clear, we are not suggesting that Wiener intentionally erased his collaborators from the story of cybernetics or that he sought to put himself up on a public pedestal. On the contrary, we take him at his word, from his 1943 article right through his 1950 book. By his own account, Wiener was moving among interdisciplinary networks, spotting intellectual and linguistic holes and filling them. It was important work, and it made him a celebrity. At the same time, the vision of the world he promoted was a vision of the very world he came from, and it was a vision of a world that had Wiener and men like him at its center.

Stewart Brand and the Redefinition of Hacking

A little more than a decade later, Brand, a multimedia artist and publisher, brought Wiener's networking tactics into the counterculture. In the early 1960s, Brand had encountered cybernetics through Wiener's books and the downtown New York performance art scene (Turner 2006: 41–68). In 1968 he and his then wife Lois knit the multidisciplinary, collaborative ideals of cybernetics into the fabric of one of the signal publications of the American counterculture, the *Whole Earth Catalog* (see Turner 2006; Kirk 2007). Over the next four years, the catalog went

on to sell more than a million copies, win the National Book Award, and make Brand an international countercultural celebrity. By the early 1980s, however, the American cultural landscape had shifted dramatically. The counterculture had largely melted away, at least as a self-conscious social movement. Ronald Reagan, conservative governor of California in the late 1960s and enemy of all that many in the counterculture stood for, was now the president of the United States. Brand had likewise faded from view, editing the influential but comparatively small-circulation *CoEvolution Quarterly* from offices in a Sausalito, California, boatyard.

In 1984 Brand redeployed Wiener's networking techniques and transformed both his own public standing and the public's view of computing. In the early 1980s, microcomputers had just begun to leave the office and migrate to the home desktop. Dial-up modems had brought networking home as well. A series of news stories and feature films had begun to focus on a strange and threatening creature: the hacker, who, armed with uncanny programming skills, might steal your data and corrupt your computer. In one 1983 movie, *War Games*, hackers even threatened to launch a nuclear Armageddon. Building on the tactics that Wiener had used to develop cybernetics, Brand redefined hacking as a creative prosocial process in three stages. First, he leaned on his countercultural legitimacy and his long-standing peripheral participation in the tech world. Second, he spotted multiple networks of hackers, journalists, and counterculturalists and created a forum in which to bring them together, the 1984 Hackers' Conference. Third, he watched as the ideas and reputations developed in that forum traveled out from it in immutable mobiles such as newspaper and magazine stories. Ultimately, Brand was able to leverage the networks of people and ideas he brought together at the Hackers' Conference to create one of the first and most influential virtual communities, the Whole Earth 'Lectronic Link, or WELL. By the 1990s, both he and the WELL would become internationally visible emblems of the kind of networked sociability bubbling up on the Internet (see fig. 2).

Brand came to the Hackers' Conference with modest but long-standing legitimacy in the San Francisco Bay Area computer community. Though the counterculture of the 1960s had largely disappeared, many in Northern California



Figure 2 Stewart Brand in 2007, sporting the top hat he wore as a counterculture emcee in the late 1960s. Screen capture from *The Trips Festival Movie* (2008), directed and produced by Eric Christensen

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remembered Brand's place in it.² They also remembered a 1972 article he wrote for *Rolling Stone* about programmers at Stanford's Artificial Intelligence Laboratory—perhaps the first piece ever to cover computer scientists like rock stars. Finally, they noted that Brand's intellectual engagement with cybernetics shone through the *Whole Earth Catalog* and its follow-on publications.

In 1983 Brand's literary agent, John Brockman, secured a \$1.3 million advance for Brand to publish a *Whole Earth Software Catalog*. Designed to resemble its countercultural namesake, the software catalog aimed to help readers find computational tools in the same way they had once found tools for communal farming. Rather than establish new offices for his new project, Brand brought production of the software catalog—and the computer-industry journalists he had recruited—into the offices of his journal *CoEvolution Quarterly*, where as a result the emerging culture of personal computing mingled daily with the longer-standing counterculture. For example, the editor of the *Software Review*, a magazine-style companion to the software catalog, was Richard Dalton, an experienced computer writer who would go on to write a column for *Information Week* and to serve as an information technology consultant for a number of Fortune 500 companies. The review's managing editor was Matthew McClure, a former head typesetter for the *Whole Earth Catalog* who had recently returned to the Bay Area, broke, after ten years on a commune. Brand and his colleagues created a second cultural mingling point online. Using dial-up modems and asynchronous messaging, they established a private conference through which software reviewers from around the country could submit their work for the software catalog.

One of these reviewers was Kevin Kelly, the future executive editor of *Wired* magazine. In 1984 Kelly found his way to a brand-new book by journalist Steven Levy, titled *Hackers: Heroes of the Computer Revolution*. Levy had chronicled the adventures of three generations of computer hackers, the first emerging at MIT in the late 1950s and the last in Northern California in the early 1980s. Far from the demons depicted in the popular press at the time, Levy (1984: ix) argued that hackers had long been “adventurers, visionaries, risk-takers, artists.” Above all, Levy argued that though they had never met, members of all three generations shared a single set of six values, a “hacker ethic”:

1. Access to computers—and anything which might teach you something about the way the world works—should be unlimited and total.
2. All information should be free.

2. Brand himself retained his connection to the counterculture to such a degree that he wore his 1960s top hat when he appeared in a 2007 documentary.

3. Mistrust authority—promote decentralization.
4. Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or position.
5. You can create art and beauty on a computer.
6. Computers can change your life for the better. (Ibid.: 27–33)

Kelly brought Levy's book to Brand, and they decided to create a conference to bring the three generations of hackers together. As Kelly (2001) later recalled, he and Brand wanted to see whether hacking was "a precursor to a larger culture," and they wanted to "witness or have the group articulate what the hacker ethic was." In this sense, their mission resembled Wiener's at the 1946 Macy conference. Like him, they had spotted a gap between networks—in this case, between generations of hackers and between computer professionals, journalists, and former counterculturalists. And like him, they also saw a set of ideas to which the network might be drawn were it gathered together. True, they hadn't articulated those ideas themselves. Levy had done that. Yet, thanks largely to Brand's strategic position at the edge of the computer industry and his preexisting legitimacy within that community, they were able to recognize Levy's book not simply as an important read but also as an opportunity for intellectual entrepreneurship.

That November they invited some 150 hackers to Fort Cronkhite, an old military post turned meeting center just north of San Francisco, along with a number of journalists and former communalists associated with the *CoEvolution Quarterly* and the *Whole Earth Software Catalog*. The guest list included any number of luminaries and luminaries-to-be in the computer industry: Steve Wozniak of Apple; Richard Stallman, the MIT hacker and free software theorist; and Ted Nelson of Xanadu project fame. Some worked alone, part-time at home; others represented institutions such as MIT, Stanford, Lotus Development, and various software makers. Almost all were white men, like the organizers. Most had come to meet other programmers like themselves. Brand and Kelly offered them food, computers, audiovisual supplies, and places to sleep—and a regular round of facilitated conversations.

In the process, Brand and Kelly created a trading zone not unlike the one created at the first Macy conferences. At the Macy meetings, participants worked to rearticulate their individual research projects and the interests of their home disciplines in a language of feedback and homeostasis brought to the gatherings by Wiener, Rosenblueth, and Bigelow. At the Hackers' Conference, participants worked to reimagine the nature of hacking in terms set by Levy's description of the hacker ethic and Brand's own countercultural ideals. Levy's hacker ethic had emerged within academic computing and on the edges of the commercial world

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almost three decades earlier. At that time, sharing software and hardware openly improved everyone's profits. By the mid-1980s though, the computer and software industries had grown far beyond their origins. In this new era, said Brand (1985: 49), information-based products embodied an economic paradox: "On the one hand . . . information wants to be expensive, because it's so valuable. The right information in the right place just changes your life. On the other hand, information wants to be free, because the cost of getting it out is getting lower and lower all the time. So you have these two fighting against each other."

In subsequent years, the phrase "information wants to be free" cascaded through discussions of networked computing and the new economy. And as the person who coined it, Brand became a highly visible representative of a utopian vision of the Internet. The change in Brand's reputation, though, emerged thanks to his ability to let others have the stage. At no point was the Hackers' Conference a platform for Brand. Rather, it was a forum in which hackers themselves could take ownership of the discussion. Throughout the conference, for example, participants discussed different ways they had wrestled with the tension between profit and social service. The debate became especially heated because, according to the "hacker ethic," certain business practices—like giving away your code—allowed you to claim the identity of "hacker." In part for this reason, participants in the morning-long forum "The Future of the Hacker Ethic," facilitated by Levy, began to focus on other elements of the hacker's personality and to modify their stance on the free distribution of information goods. By the end of the hacker ethic session, most in the room had agreed to disagree on the question of business practices. But they agreed that being a hacker—in this case, being the sort of person who was invited to the Hackers' Conference—was a valuable thing. In the popular press, hackers had been characterized as potential terrorists. Gathered together in the hills of Marin County, California, hackers could see themselves as something finer. Lee Felsenstein (2001), a programmer at the meeting, later recalled feeling empowered: "Don't avoid the word *hackers*. Don't let somebody else define you. No apologies: we're hackers. We define what a hacker is . . . nobody else. That little bit of cultural identity [was] extremely important" (see fig. 3).

And yet it was ultimately Brand rather than Felsenstein who would receive public acclaim for framing the politics of information. Brand had given Felsenstein and his colleagues free rein and full ownership of the conference. As its convener, though, he had also put himself in a position to export the views they developed. Much as Wiener's colleagues had once found that the term *feedback* could be borrowed from engineering and applied across their disciplines, the par-



Figure 3 Attendees at the Hackers' Conference, as they appeared in the pages of the *Whole Earth Review* in May 1985. Left to right: Mike Coffey, Steve Capps, John Draper, Doug Carlston, Andy Herzfeld, and Dick Heiser. Photograph by Matt Herron, courtesy of Take Stock

ticipants at the Hackers' Conference found that Levy's redefinition of the term *hacker* applied across their multiple generations and professional practices. They did so, however, within a social world brought together by Brand. Within that world, the notion that "information wants to be free" connoted much more than an economic proposition; it conjured up echoes of an entire generation's search for personal liberty. And in press accounts, writers and filmmakers who had attended the event broadcast that connection far and wide, with several either quoting or paraphrasing Nelson's exclamation "This is the Woodstock of the computer elite!" (e.g., Schrage 1984). Despite the fact that Brand had had almost nothing to do with computing between 1972 and 1982, he was hailed as one of the "luminaries of the personal computer 'revolution'" (Markoff, Robinson, and Shapiro 1985: 354).

Within a few months of the Hackers' Conference, the mix of computer programmers, journalists, and counterculturalists Brand and Kelly assembled in Marin had redefined hacking in terms set partly by Levy's book and partly by the image of the freethinking, footloose back-to-the-landers of the *Whole Earth Cat-*

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alog. They had also restored Brand to the vanguard of cultural change agents. In the next two years, the *Whole Earth Software Catalog* would be unable to keep up with rapid changes in the computer industry and would fold, but Brand would go on to establish the WELL. Its first citizens would include representatives of each network that he had brought together at the Hackers' Conference. The WELL, in turn, like the Hackers' Conference, or for that matter the *Whole Earth Catalog* before it, would become a prototype of a media-technology-enabled, highly networked and yet highly individualistic way of living—a way of living that would have been quite familiar to the scientists and engineers of midcentury MIT.

Tim O'Reilly and the Open Source Paradigm

If Wiener and Brand built the prototype for a new type of intellectual celebrity inspired and enabled by research culture, O'Reilly transformed that prototype into a standardized production model, a scalable, repeatable process for developing ideas, visibility, influence, and, ultimately, profits. In doing so in the heart of Silicon Valley during a critical period in the development of digital culture, O'Reilly set an example that would become emblematic of a broader Silicon Valley working style and cultural philosophy. Throughout his rise to networked celebrity, O'Reilly followed the pattern set by Wiener and Brand, pushing ideas and reputations of others into the spotlight, while drawing them together under his own tent, and even branding them with his own name.

When O'Reilly graduated from Harvard, it would have been hard to predict that the tiny technical writing business he launched in 1978 would one day be worth \$100 million and that O'Reilly himself would spearhead national debates on the future of health care and government, prompting powerful CEOs to say, as Google's Eric Schmidt did, "Tim can really make a whole industry happen" (quoted in Chafkin 2010). Nevertheless, in the 1980s, it took only a few years for O'Reilly's programming guides to become required reading for serious technologists around the globe. Hundreds of thousands of readers first learned about the Internet through the company's 1992 *Whole Internet User's Guide and Catalog* (a deliberate echo of Brand's *Whole Earth Catalog*, as O'Reilly later noted). Within a decade, the company's technical conferences were drawing tens of thousands of attendees, and big thinkers in technology and other fields were vying for invitations to its annual FOO Camp. The term *Web 2.0*, suggested in the early 2000s at an O'Reilly and Associates brainstorming session, inspired a series of global conferences and became general parlance, with 9.5 million references on Google by 2005. Meanwhile, O'Reilly spun off an investment fund and a separate media

company, Make Media, publisher of *Make* magazine and producer of the popular Maker Faire gatherings worldwide. In recent years, O'Reilly has organized and presided at high-profile events in publishing, government, and health care. Through it all he has promoted the ideas of others under the auspices of his own name, through either O'Reilly Media or FOO Camp (see fig. 4).

From the company's earliest years, O'Reilly consciously drew on a mind-set and a model provided by the counterculture in general and Brand in particular, whom O'Reilly (2006) would later describe as "one of my earliest and most important mentors." O'Reilly grew up in the Bay Area. After college, he submitted freelance articles to Brand's *CoEvolution Quarterly*, which the magazine accepted but never published. When O'Reilly formed O'Reilly and Associates in 1978, he looked to Brand's work for inspiration, recalling later that "a huge amount of the O'Reilly sensibility, a mix of practicality and idealism, was learned from the *Whole Earth Catalog*" (ibid.).

Like Wiener and Brand, O'Reilly became the spokesperson for an emerging community and a set of related ideas, and like them, he promoted those ideas and networks, and himself along with them, in three stages. First, he built legitimacy within the technical community by skillfully aggregating and brokering the programming expertise of those around him. Second, he converted that legitimacy into convening power. Doing so allowed him to draw together separate networks, initially within the technical community and later far beyond, by creating high-profile events and face-to-face forums. Third, he disseminated the ideas and the reputations that key contributors developed at those events, through the books he published, the thousands of blog posts and essays he wrote, and the press attention he garnered, as well as through hundreds of talks and speeches and his influential Twitter feed, which counted 1.7 million followers by 2013. This



Figure 4 Tim O'Reilly on the cover of *Inc.*, May 2010. Photograph by Patrick Fraser, patrickfraserphotography.com. Used by permission of *Inc.* magazine, © 2014. All rights reserved

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dissemination occurred through products branded with his own name, including O'Reilly Media, the *O'Reilly Radar* (his blog, written by several contributors), and FOO Camp, thus extending his networked intellectual celebrity along with the ideas and reputations he promoted.

Ultimately, O'Reilly's version of network celebrity culminated in a full-scale, replicable business model. That model has earned tens of millions of dollars in revenue and provided seed funding and guidance to promising start-ups.

Building Legitimacy

Where Wiener leaned on the institutional credibility endowed by MIT, O'Reilly, like Brand, built his own legitimacy by joining an emerging community. When a friend asked for his help authoring a technical manual for Digital Equipment Corporation in 1978, O'Reilly had never even seen a computer, but his prose skills, honed through his freelance work (including a biography of sci-fi author Frank Herbert), proved useful in bridging the gaps between corporate software developers and end users (Chafkin 2010). O'Reilly, and the writers he gathered around him, explained the intricacies of UNIX, Perl, Linux, and subsequent systems and languages with a straightforward, readable style that won the respect of the technical community.

From the start, O'Reilly and Associates (which changed its name to O'Reilly Media in 2004) consciously traded on its position of network entrepreneurship, aggregating the knowledge and experience of both corporate vendors and a wide range of developers and packaging it in highly recognizable O'Reilly programming guides, distinguished by woodcuts of animals on the covers. "We wait for the dust to settle, for the holes in the 'obvious' to become apparent," O'Reilly wrote in 1997. From the company's start, he explained, "our job was documenting the things that needed explaining" (O'Reilly Media 2011: 103). By intelligently collecting and rearticulating the community's knowledge, O'Reilly and his writers began to make an entire emerging community visible to itself. It is no exaggeration to say that programmers around the country began accumulating virtual menageries of the animal-covered O'Reilly programming guides on their shelves. This visibility and respect among the emerging community afforded O'Reilly early opportunities for trend spotting, spurring him to launch new ventures including the world's first commercial Internet site, Global Network Navigator, which he later sold to AOL. Such ventures in turn boosted his visibility within various networks of programmers.

In 1989 O'Reilly moved the company from Boston to Sebastopol, California, and in 1991 he published its first guide to the relatively new Perl programming language developed by programmer Larry Wall. The guide quickly became essential, especially as new versions of Perl allowed ordinary programmers to tinker and extend the language for their own purposes. As thousands of coders added their individual contributions to the Comprehensive Perl Archive Network, launched in 1995, it became evident that the powerful but sprawling language needed not just a book but a strong social network within which developers could help each other (*ibid.*: 59).

To fill that hole, O'Reilly and Associates launched the first Perl conference in the fall of 1997, drawing roughly one thousand Perl programmers from around the country to San Jose, California. The event transformed programmers' understanding of their social and institutional milieu. "Prior to the first Perl Conference, we spoke of Perl gurus and Perl programmers; but after it, we spoke of the Perl community," said one attendee (quoted in O'Reilly Media 2003). To stress the growth and advantages of collaborative programming, O'Reilly invited programmer Eric Raymond to speak about his experiences with collaborative, "bottom-up" programming, compared to corporate, "top-down" software development. Raymond's influential talk, titled "The Cathedral and the Bazaar" (later published online as an essay and as a book by O'Reilly), drew the attention of the larger technical world. In January 1998, Netscape CEO Jim Barksdale cited Raymond when he announced that the company would release the source code for its web browser (Kornblum 1998). The announcement created a stir both in the technology trade press and in the mainstream media. Because of O'Reilly's central position as technology publisher, conference convener, and explainer of emerging technologies, he became a go-to source for reporters. "Tim started to receive calls from the press about this mysterious 'freeware,'" wrote open source developer Guido van Rossum, creator of scripting language Python, in the *Linux Gazette* in April 1998. "He realized there was an opportunity to increase the press's awareness of open source software."

Building Forums: The Open Source Summit

O'Reilly's visibility to the press, as well as his legitimacy among the technical community, gave him the convening power to create a series of "network forums," gathering places in which "members of multiple communities could collaborate and come to think of themselves as members of a single community" (Turner

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2006: 5). Like Wiener and Brand before him, he assembled a group of people with common interests, embedded in different language communities. On April 7, 1998, he invited fourteen men, all programming gurus leading different aspects of the “free software” movement, to a summit in Palo Alto (O’Reilly and Associates 1998). As O’Reilly (2001) later recalled: “By bringing together people from a whole lot of projects, we were able to get the world to recognize that free software was more than GNU and Linux; we introduced a lot of people, many of whom, remarkably, had never met; we talked shop; and ultimately, we crafted a new ‘meme’ that completely reshaped the way people thought about the space” (O’Reilly 2001). Attendees at what would later be called the Open Source Summit included Wall; Eric Allman, creator of sendmail; Brian Behlendorf, a primary developer of the Apache web server; Van Rossum, developer of Python; Linus Torvalds, developer of Linux; Phil Zimmerman, author of the privacy utility PGP; and representatives from the Electronic Frontier Foundation and the Mozilla Foundation. The list of attendees later posted on O’Reilly’s website revealed a group that resembled their host in fundamental ways: all were men; most were white, from the West Coast, and of an entrepreneurial bent. Wiener and Brand had focused intently on societal transformation; O’Reilly and the open source group emphasized *both* the societal *and* the business opportunities before them. Some of their discussions focused specifically on business models for open source, and one specific purpose of the meeting was to find ways to explain the benefits of openness to venture capitalists (Raymond 1998).

While their underlying motivations differed, O’Reilly’s tactics at the summit mirrored those of Wiener and Brand. O’Reilly convened a select group working in different enclaves of software development and skillfully served as master of ceremonies, forging a new community; one attendee claimed that only “Tim O’Reilly’s talents as moderator” allowed the group to reach consensus in just one day of discussions. By convening and conducting the conversation, O’Reilly was able to recognize and promote the adoption of a pidgin term that allowed these programmers, and eventually leaders in many other fields, to rearticulate their projects and interests in language that highlighted connections across communities. In this case, the term was *open source*, coined by Christine Peterson of the tech think tank the Foresight Group (see Open Source Initiative 2013). According to attendees, the term *open source* sounded welcoming, liberal, and liberating and managed to sidestep the negative baggage carried by *free software*, a term that for Silicon Valley funders sounded uncomfortably close to *nonprofit*.

Open, O'Reilly (2012) later wrote, was a term that could "create a big tent that a lot of people want to be under." It was a tent pitched by, and ever after associated with, O'Reilly himself.

Exporting through Immutable Mobiles

The summit group voted to adopt the term *open source* to describe their projects in the future. O'Reilly's visibility and relationships with the media allowed him to summon an elite group of technology reporters for a press conference. Attendees including reporters from the *Wall Street Journal*, the *New York Times*, and other major publications introduced the term *open source* to the general public (Williams 2002: chap. 11). The press conference allowed the summit group to reach across networks, to name its movement and make it visible beyond the technical community. As O'Reilly (2001) later recalled: "We made connections between open source and related concepts that help to place it in context. For example, the concept from *The ClueTrain Manifesto* of open interaction with customers, and the idea of 'disruptive technologies' from Clayton Christenson's book *The Innovator's Dilemma*, link open source to trends in business management."

The press conference, and the writings that came out of it, succeeded beyond anything the summit leaders could have imagined. Within months, attendees Torvald, Wall, and Behlendorf were featured in *Forbes*, with other business publications following suit. O'Reilly himself helped build and extend the reputation of those who participated, publishing in January 1999 a book called *Open Sources: Voices of the Open Source Revolution*, which included essays from seven of the summit participants. Unlike Wiener, O'Reilly did not simply give credit to those who participated; he gave them their own platform and voice, publishing and distributing their thoughts. Later that year, O'Reilly published Raymond's online essay as a book, *The Cathedral and the Bazaar*. These works traveled far and wide, an immutable mobile that helped spread the influence of the community out of which it emerged. As the ideas traveled, so did the O'Reilly and Associates brand name. O'Reilly's ability to spread ideas and reputations eventually created a self-perpetuating cycle: the growing reputations of participants granted them guru status, enhanced their credibility, signaled their interests to potential allies and followers, and encouraged participation in future network forums where more reputations and ideas were developed.

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A Bigger Big Top: Promulgating Forums

The Open Source Summit was just the first, and smallest, of the network forums that O'Reilly convened to disseminate the open source movement. As his reputation as a convener and spokesperson for open source grew, O'Reilly was able to bring together larger and larger groups. In 1999 O'Reilly's Perl conference, now renamed the Open Source Conference, drew more than a thousand programmers, entrepreneurs, and journalists. Over the next five years, the O'Reilly name became ever more closely associated with the open source movement. In 2004 O'Reilly and Associates became simply O'Reilly Media (often shortened to "O'Reilly" in press releases). This dropping of "associates" seems a striking parallel to Wiener's 1950 omission of references to the collaborative aspect of cybernetics.

Also like Wiener and cybernetics, O'Reilly helped position open source as something akin to a "universal" field. In one essay, O'Reilly explained how the "open source" concept served as a thread connecting user reviews on Amazon.com to viral marketing to the manipulation of the stock market by online message boards. "What started out as a software development methodology," he wrote, "is increasingly becoming a facet of every field, as networked-enabled conversations become a principal carrier of new ideas" (O'Reilly Media 2011: 27). Just as cybernetics appeared to be a "universal" field half a century earlier, open source and its successor meme, the idea of a collaborative "Web 2.0," provided a framework that seemed to apply far beyond programming. Ten years later, O'Reilly was still broadening the tent of open source, convening meetings and conferences like the Gov 2.0 Summit, which brought leaders from technology firms, state and national government, universities, and other fields together to discuss "open government."

Lather, Rinse, Repeat: From Prototype to Production Model

By this time, O'Reilly had pushed the network celebrity model far beyond the prototype developed by Wiener and Brand. Seeing the power of convening conversations around big ideas, and then spreading those ideas and reputations through immutable mobiles, O'Reilly Media began to reproduce the model over and over again. When the dot-com bust hit, O'Reilly slashed his publishing staff, while renewing his efforts to monetize his convening power: conferences were still generating revenue despite the recession. After 2001, at the nadir of the bust, O'Reilly sat down to brainstorm new conference ideas with his associates John Battelle and Dale Dougherty: Dougherty coined the phrase *Web 2.0* as an umbrella term for the boom in collaborative websites and user-generated content that was qui-

etly moving onstage (O'Reilly 2005). Equipped with a new "big tent" term, the company reproduced the pattern with a vengeance, launching its first executive conference, called the Web 2.0 Summit, for five hundred invited technology and business leaders in 2004, followed by a mass version of the event, the Web 2.0 Expo, in 2007. Again, the company spread the word through immutable mobiles, though this time through digitally enabled forms far more mutable than books and magazines. To promote the Web 2.0 concept and its participants, O'Reilly released blog posts, short essays, and white papers; by 2005 he calculated that Web 2.0 generated more than 9.5 million results on Google (ibid.). While the company would release three books about Web 2.0 in 2007, this time they were secondary to the plan. O'Reilly had recognized that books and magazines were no longer essential to the spread of knowledge. "People don't care about books," he told *Wired*. "They care about ideas" (quoted in Levy 2005). As the word spread, so did the conferences, with versions launching in several European cities and continuing until 2011. By then, O'Reilly was applying the 2.0 concept to launch conferences in publishing, government, and more.

While the Web 2.0 conferences attracted mass audiences from different walks of life, another, more elite O'Reilly network forum was feeding speakers and ideas into the Web 2.0 circuit, again under the O'Reilly name: FOO Camp. Created around 2002, FOO Camp was an invitation-only event for about two hundred leaders and thinkers from all corners of the technology industry and many others besides. Most camped on the grounds of O'Reilly Media's Sebastopol campus. Brand himself attended the first FOO Camp and several subsequent camps. The camps had, and have, no preset agenda; instead, potential speakers race to write their names and panel ideas on a floor-to-ceiling foam board on the first day. One female attendee wryly described this as "male alpha geeks running at the wall with Sharpies, trying to stab each other" (Anonymous 2013) (see fig. 5).

Now O'Reilly had established a network forum of insiders from across industries, vying for invitations that might lead to speaking gigs at the bigger conferences, perhaps even a TED talk. Author Andrew Keen (2007: 13) skeptically described FOO Camp as "part Woodstock, part Burning Man," a place where "the countercultural Sixties meets the free-market Eighties meets the technophile Nineties." This combination of counterculture and research culture was not lost on the organizers of FOO Camp. As Jim Stogdill (2012), head of the *O'Reilly Radar* and *Strata* businesses, posted in 2012: "We aren't Von Neumann and Wiener at the Macy Conferences, but I hope that in our own place and moment we are creating interdisciplinary collisions that are similar in kind if not scale of



Figure 5 Proposing panel topics at Friends of O'Reilly (FOO) Camp, 2009. Courtesy of the photographer, Scott Beale

import.” Stogdill here underplayed the influence of FOO Camps on Silicon Valley, where a combination of strong reputation and smart ideas can launch start-ups and attract venture funding—perhaps even from O’Reilly Alpha Tech Ventures, which has seeded companies such as Bitly and Foursquare. Where Wiener and Brand developed a pattern, O’Reilly was able to both monetize and popularize it. Dozens of “unconferences” now populate the tech and business world; even the White House has embraced the unconference approach, conducting twenty gatherings around the country with minority communities to identify local and national concerns affecting Hispanics, African Americans, and other minorities. This is not to say that O’Reilly pursued this three-step pattern strictly for profit. Indeed, in his talks and essays, he often likens a company’s profits to a car’s gasoline—necessary, yes, but hardly the end goal (“You don’t think of your trip as a series of gas stations,” he has said on more than one occasion) (O’Reilly Media 2011: 83). Rather, O’Reilly’s perfection of the network celebrity process represents the fusing of purpose, meaningful work, and money in a specifically Silicon Valley approach to life and business.

Conclusion**Network Celebrity**

With O'Reilly, Brand, and Wiener in mind, how should we think about intellectual celebrity today? And, more particularly, about the role of media and media technology in shaping both celebrity and intellectual influence?

One thing seems clear: Our predigital definitions of these phenomena have for too long depended on turning a blind eye to the worlds of business and engineering and on maintaining an allegiance to literary culture. As a result, they have become strangely anti-intellectual. In the literary model of intellectual work, virtually all the social conditions of intellectual innovation are submerged in discussions of individual genius. Media technologies are simply platforms for the distribution of ideas from one head (that of the intellectual) to others (those of the public).

The twentieth-century ideals of literary intellectualism can't help us see the powerful new dynamics shaping American public intellectual life today, nor can they help us recognize the genre of celebrity represented by Wiener, Brand, and O'Reilly. All three of these figures have had the kind of intellectual influence once claimed for the lions of the essay and the manifesto. They have also enjoyed the national and even international visibility once accorded to America's leading novelists. Yet they have done so by adopting the processes of collaboration that sustain the world of engineering. They have been network entrepreneurs, building forums, creating and circulating texts, and so reframing debates and building their own reputations simultaneously. They have each celebrated the socially transformative power of communication technologies. But they have also helped turn digital communication networks into prototypes of the social style by which they themselves shape the world. For these three figures, ideas emerge communally and go on to be modeled and circulated by digital technologies. As key exemplars of those who have brought social and technological networks together, Wiener, Brand, and O'Reilly have each accrued the kind of prestige reserved for celebrities in other fields. In their world, as in ours, media technologies are never only platforms for the dissemination of ideas and reputations. They are models of the social worlds inhabited by the network entrepreneurs who promote them.

Here we perhaps come full circle. In the twentieth century, many analysts believed that only the literary intellectual could stand sufficiently outside the circles of corporate and political power to challenge their orthodoxies. This belief turns out not to have been entirely true. Though their ideas have since become commonplace in corporate and political circles, Wiener, Brand, and O'Reilly have each challenged central orthodoxies in their respective eras. What we should fear

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now is not only the power of states and corporations but also the dynamics of networks themselves.

Though they create celebrities who wield a rippling influence on cultural trends, business developments, professional standards, and definitions of success, networks can be invisible to those who don't belong to them. Because they are largely self-organized, such networks tend to both mirror and amplify the power of the cultural styles of their members. In O'Reilly's case, the interpersonal and professional style of the West Coast, male alpha geek, eager to stab others with his Sharpie, dominates not only FOO Camp but also the ideology of entrepreneurship for which it stands. And this too is a truth about networks: all too often, they turn away from the rules and policies that govern bureaucracies—rules that often explicitly protect fair and equal treatment—and toward the cultural norms that govern their members' lives. These norms can carry with them generations of prejudice. Wiener's laboratories at MIT, Brand's Hackers' Conference, and O'Reilly's FOO Camp have all been disproportionately stocked with well-educated white males. While it is hard to imagine that any of these groups would have explicitly turned away women and minorities, it is not hard to see how women or people of color might, at the very least, feel unwelcome within them.³

To the extent that ideas and the power to transform them into common sense are emerging today within such social networks, and to the extent that digital technologies are amplifying their reach, network intellectuals have an extraordinary if often invisible power to enlist the rest of us in their worldview. Their power and their celebrity no longer come from the ability to express ideas in words or the ability of mass media technologies to broadcast images around the world. Rather, they come from the ability to build new social networks, to generate new ideas, new language, and new identities within them and, ultimately, to promulgate these networks' labors—all in such a way that entrepreneurs can come to stand before the public as emblems of the worlds they have helped create. Celebrities in this model are hardly empty vessels. Rather, they are full to the brim with the cultural assumptions and social aspirations of the communities they represent. And digital media technologies are much more than mere platforms. Thanks to the work of intellectual entrepreneurs such as Wiener, Brand, and O'Reilly, they have become symbols themselves, of the power of particular social networks to organize our lives.

3. O'Reilly Media has acknowledged the lack of women speakers at its conferences and publicly issued a commitment to diversity but also points to the dearth of women in technology as an exacerbating factor. See the WomenWhoTech.com Twitter petition, "Tim O'Reilly: Add More Women Panelists to Web 2.0" (2007).

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Fred Turner is an associate professor in the Department of Communication at Stanford University and the author of several books, including *The Democratic Surround: Multimedia and American Liberalism from World War II to the Psychedelic Sixties* (2013) and *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (2006).

Christine Larson is the Rebele First Amendment Fellow and a PhD candidate in the Department of Communication at Stanford University.