

THE THEORY OF GENERATIVITY

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On several occasions, during the period that Jonathan Zittrain and I were working on our respective books, each of us had the opportunity to present his developing ideas to the other at some public event (in particular, at several memorable “Penn-Temple-Wharton” colloquia), and we used to joke that we were actually both working on different versions of the same book. It *was* just a joke, but as it turns out there was something to it; my book¹ is all about “generativity” (though I don’t use the term), and Zittrain’s *The Future of the Internet*² has more Jefferson in it than might be immediately apparent at first glance (though there are few explicit references thereto). Zittrain does tend to see the glass as half-empty, while I see it as half-full (following Jefferson, who once wrote to a friend that he found that “the flatteries of hope are as cheap, and pleasanter than the gloom of despair”³); but it is, at bottom, very much the same glass.

Consider the very first sentence of chapter 1 of *The Future of the Internet*: “Today’s Internet is not the only way to build a network.”⁴ It is a simple and obvious point, of course—but one whose implications are surprisingly rich, often counterintuitive, and thoroughly indispensable for understanding what the Net is and where it might be headed. Though it is not the first sentence of my book,⁵ it could well have been, and quite possibly it should have been. The focus of my book is largely retrospective, so I reframe the point as a question: Given all of the other ways to build networks and inter-networks, why did *this* one, and not some other, become the Big One—i.e., “the Internet,” the single, ubiquitous communications medium that conquered the planet?⁶ It is surprising—at least, it was

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1. DAVID G. POST, IN SEARCH OF JEFFERSON’S MOOSE: NOTES ON THE STATE OF CYBERSPACE (2009) [hereinafter IN SEARCH OF JEFFERSON’S MOOSE].

2. JONATHAN ZITTRAIN, THE FUTURE OF THE INTERNET—AND HOW TO STOP IT (2008) [hereinafter THE FUTURE OF THE INTERNET].

3. Letter from Thomas Jefferson to François de Marbois (June 14, 1817), in THOMAS JEFFERSON, WRITINGS 1409, 1411 (Merrill D. Peterson ed., 1984).

4. THE FUTURE OF THE INTERNET, *supra* note 2, at 7.

5. Which is, for the record, “It’s a strange new place, this ‘cyberspace.’” IN SEARCH OF JEFFERSON’S MOOSE, *supra* note 1, at 3.

6. *Id.* at 45 (discussing the exponential growth of the Internet over the past several decades).

But the interesting thing isn’t the slowdown [in growth around 1999]. It couldn’t have gone on for too much longer at the rate it was going in any event; at 5 percent a month, there would have been around 1.35 billion machines on the

surprising to me—how powerful a question this is when asked this way. The TCP/IP network that became “the Internet” over the last twenty-five years or so became what it did because it somehow managed to grow at a prodigious rate; as I put it, “It didn’t grow so fast or become so big because it was ‘the Internet’; it became ‘the Internet’ because it grew so fast and became so big”—because it managed to grow and to scale.⁷ So our task, if we want to understand it, must be to understand how and why it grew as fast as it did; these are not, perhaps, the sorts of questions law professors often ask (or are particularly well positioned to ask), but are necessary nonetheless.

The focus of Zittrain’s book, on the other hand, is mainly prospective; given that there are many ways to build an inter-network, *tomorrow’s* Internet might be different—possibly very different—than today’s. Our job, then, is to understand the forces that might cause it to change, to evolve along a different trajectory than it has taken up to this point, so that we can anticipate and perhaps forestall change that might destroy the very features that have enabled it to become so transformative and revolutionary a communications platform.

When Zittrain’s book first appeared, the editors of a student-run law journal (that shall remain nameless) asked me for a commentary/review, and I happily obliged. I began with what I thought was a summary of the three main premises on which Zittrain’s argument is built.

network by 2005, 25 billion by 2010, 165 trillion in the year 2025—more than a thousand Internet-connected computers for everyone on earth!

The interesting thing is that it occurred at all, and for so long. There’s not much else on the planet that grew exponentially for this long a period, and nothing—at least, nothing I can think of—that did so at this astonishing rate. If some living organism, or some population of organisms, had managed to grow exponentially in size over the past thirty-five years at the rate the TCP/IP network did, we’d surely want to understand what was going on, and how it managed to do that.

So how did this network do that? How did the network linking a few hundred machines together in the early 1980s manage to grow so fast for so long? How and why did it become ‘the Internet’—*the* dominant global communications platform, connecting together hundreds of millions of individual machines (and, sitting behind those machines, probably more than a billion people)? Why *this* network?

Id.

7. *Id.* at 46. To see how counterintuitive it is to ask the question this way, and to think about the Internet this way, consider the common meme holding that “the U.S. government built the Internet.” It is an undisputed fact—and an important one at that—that the U.S. government provided critically important financial (and management) support in building the TCP/IP network. But the TCP/IP network didn’t become “the Internet” until the mid-1990s—not coincidentally, right after the U.S. government ceased its financial (and management) support of the inter-network. *Cf. id.* at 58–59 (describing government involvement in early Internet technology).

1. *It is the “generativity” of the global network of interconnected PCs—the “PC/Internet grid”—that makes it so remarkable and so transformative a technology.*

“Generativity is a system’s capacity to produce unanticipated change through unfiltered contributions from broad and varied audiences,”⁸ and the PC/Internet grid is the “consummately generative” technology.⁹ Open machines, capable of executing code produced by any third party, are all connected to the open network, the one that no one owns and that anyone can join at any open connection point.¹⁰ Code can come from anywhere and everywhere; it can be instantaneously distributed to every point *on* the grid; and it can be implemented and used by anyone connected *to* the grid—it is a recipe for an innovation-generating machine, the likes of which we have never quite seen before. Web browsers; search engines; online auctions; peer-to-peer file-sharing; Instant Messaging; iTunes; Amazon; Skype; Wikipedia; Flickr; Linux; Facebook; Slashdot; VOIP; YouTube; blogs; massively multiplayer online games; virtual worlds. Roll back the clock a mere fifteen or twenty years, and not a single one of those words or phrases would have made the slightest sense to anyone hearing this talk. That is a lot of new words, and a lot of innovation, for fifteen or twenty years—innovation piled on top of innovation piled on top of innovation—carried indiscriminately around the globe over the consummately open network (so that it can spur others to more innovation).

Hook generative machines up to the generative network, and the resulting system will, well, it will *generate*. The machines we call “telephones,” “televisions,” “radios,” “fax machines,” and “TiVos” (not to mention those we used to call “telegraphs” and “telexes”) can all be networked together, and all are capable of doing some wonderful things when they are networked together, but none of them has an “operating system” that is open to running third-party code, and none “produce[s] unanticipated change through unfiltered contributions from broad and varied audiences.”¹¹ The network that connects the generative machines to the generative network outgrew them all, precisely because it *is* so generative.¹²

Generativity, as Zittrain persuasively describes it, is a good thing. He groups its benefits into two distinct categories,

one deriving from unanticipated change, and the other from inclusion of large and varied audiences. The first good is its innovative output
The second good is its participatory input, based on a belief that a life

8. THE FUTURE OF THE INTERNET, *supra* note 2, at 70.

9. See Jonathan L. Zittrain, *The Generative Internet*, 119 HARV. L. REV. 1974, 1980 (2006) [hereinafter *The Generative Internet*]; see also THE FUTURE OF THE INTERNET, *supra* note 2, at 7–100 (developing these thoughts more fully).

10. Zittrain, *supra* note 9, at 1993.

11. THE FUTURE OF THE INTERNET, *supra* note 2, at 70.

12. The parallel to those other “information systems” we classify as “biological” is, incidentally, quite precise: the most generative ones prevail, *because* they are the most generative ones. See IN SEARCH OF JEFFERSON’S MOOSE, *supra* note 1, at 62–68.

well lived is one in which there is opportunity to connect to other people, to work with them, and to express one's own individuality through creative endeavors.¹³

Those of you who are not deeply embedded in the world of cyberlaw scholarship might find it odd that, as Zittrain has put it elsewhere, the field "has struggled to identify precisely what is so valuable about today's Internet";¹⁴ you might be forgiven for thinking that, surely, those of us who spend so much time thinking about the Net would have sorted that out a while ago. We *had* sorted it out, but it was not until I read *The Future of the Internet* that I realized that. "Generativity" comes very close, I think, to capturing—in a single word!—what it is, a nice shorthand label for a crucial and complicated thought. Whatever else scholars in this field may think about the Internet and the legal problems associated with online conduct, and whatever their position on the many fundamental issues on which we often disagree—the proper scope of Internet regulation, the jurisdictional rules governing border-crossing activities, the nature of (and best way to safeguard) free expression in Internet communications, the proper scope of intellectual property protection, and so on—there *is* a rough consensus that recognizes, and appreciates, and even celebrates, this network's astonishing ability to generate innovative uses of itself.

When I prepared my earlier submission, I went even further than this; I declared that Zittrain's point about generativity was an "obvious" one. This made many who read my initial draft uncomfortable; it looked, to them, like I was taking a particularly nasty dig at a respected colleague's work. But nothing could be further from the truth; I meant it (and I still mean it) as high praise. "Stating the obvious"—articulating a proposition in such a way that (pretty much) everyone involved in the discussion agrees that it *is* obvious—moves discussion and debate forward in constructive ways. It settles things; it both reflects, and helps create, consensus so that all those involved in the debate can move on and move forward to other issues and other questions subsumed within the one that has now been resolved.¹⁵ It is a major contribution of Zittrain's book, and pointing out that it is obvious (in retrospect) is evidence of that.

13. THE FUTURE OF THE INTERNET, *supra* note 2, at 80.

14. *The Generative Internet*, *supra* note 9, at 1978.

15. "Stating the obvious" is a close cousin to a rhetorical device that Thomas Jefferson used to sublime effect: the *self-evident truth*, a proposition that is not merely "obvious" but *so* obvious that no supporting argumentation even needs to be provided.

2. *Generativity is neither an inherent, nor an immutable, feature of the PC/Internet grid; it is, rather, the result of a number of specific and identifiable design decisions implemented in code(s)—primarily, the PC operating system(s) and the TCP/IP protocols—which can be redesigned, reengineered, rewritten, and/or replaced entirely in such a fashion that the grid becomes a much less generative place.*

Right, again. “Today’s Internet is not the only way to build a network.”¹⁶ None of this, Zittrain reminds us, is inevitable. Generativity has been “designed into” the grid, a consequence (at least in significant measure) of both the Internet’s basic “end-to-end” architecture and the open architecture of the PC operating system. There are *lots* of other ways to design machines that can connect to one another over a network, and lots of other ways to design networks to connect those machines together. The global telephone and television networks (and fax, and telex, and telegraph, etc.) were, and in some cases are still, wonderful things in many ways; but the kind of innovation they stimulate was, and is, of a different and much lower order than that of the PC/Internet grid. The Internet remains as simple and stupid as possible, doing nothing more than moving bits from one point to another, with all of the processing of those bits—the message-reading, and message-interpreting, and message-checking stuff—taking place at the endpoints of the network.¹⁷ The “hourglass design”¹⁸ of the Internet’s protocol stack means that the network does not care what you’re doing “below” the network protocols (for example, what kind of physical hardware you use to send and receive bits), nor does it care what you are doing “above” the network protocols (for example, what kind of software you use to make sense of those bits that you send and receive); it stands in the middle of the hourglass, taking whatever bits your hardware delivers to it, and moving those bits to wherever it is directed to move them, and leaving all tasks of interpretation and processing to the recipient.

All of this, Zittrain reminds us, can change. It is all written in code, not stone, implemented in PC and network hardware and software in any number of identifiable places, and code can be changed. PC operating systems do not *have* to allow execution of third-party code; nor do the Internet protocols *have* to call for the transmission of any and all bitstreams, from any and all sources, to any and all recipients. PCs can become “appliancized”—another very useful neologism we owe to Zittrain—to become more like TiVo boxes or iPhones.¹⁹ The inter-network can be made more “intelligent” than it is now; network routers can be programmed to do a *lot* more processing than they do now—to check for transmission errors, or for “spam,” or for hostile code (viruses and the like), or for “unauthorized” users, to “authenticate” messages on the basis of user

16. THE FUTURE OF THE INTERNET, *supra* note 2, at 7.

17. See IN SEARCH OF JEFFERSON’S MOOSE, *supra* note 1, at 80–89, 228–29.

18. See THE FUTURE OF THE INTERNET, *supra* note 2, at 67–71.

19. See *id.* at 54–60.

identity, or geographic location, to “discriminate” among messages based on their content or the identity of the communicating parties, etc.

Zittrain’s argument here is part of a larger “nature vs. nurture” debate in cyberlaw—another rather odd and interesting facet of cyberlaw scholarship that might be unfamiliar to outsiders. Much of Lawrence Lessig’s influential *Code and Other Laws of Cyberspace* was devoted to showing that the Internet has no “nature,” no “immutable” or “inherent” characteristics (and, in particular, that it is not “by nature” unregulable); we built it to be the way it is, Lessig argued, and we can build it differently if we want to.²⁰

But generativity, I would assert, *is* part of the Internet’s nature—at least, the nature of *this* Internet, the one we have today. Generativity is part of the nature of this network because this network would not be what it is—“the Internet”—were it not generative in the ways Zittrain describes. It is the Internet because it is big, and it is big (in substantial part) because it is generative. It does not get big without this critical feature embedded in its code(s). *This does not mean that it is immutable*—a common misunderstanding that plagues nature/nurture discussions whenever and wherever they crop up, whether the subject is the “nature” of human intelligence, the “nature” of the HIV virus, the “nature” of a tropical forest, or the “nature” of the Internet. It is surely in the “nature” of chlorophyll-bearing organisms (plants) to grow towards the sunlight, but as any gardener can tell you, that is hardly immutable. Our DNA is surely part of our “nature,” and it is the “nature” of many people—embedded unambiguously in their genetic code—that they produce an insufficient quantity of insulin; but again, that does not make that characteristic immutable. It does not follow that because the grid’s design is mutable, that it has no “nature.” This is just a semantic disagreement, I suppose, but semantics—*meaning*—matters; in cyberlaw, this misunderstanding has had the unfortunate effect of discouraging people from asking useful and important questions about the nature of the Internet.

So Lessig (and Zittrain) are surely correct about the mutability of the Net; the Internet is a built environment, and its design can be altered (to make it more regulable, to abandon end-to-end features, etc.), and some of these changes would make this a much, much less generative place—a bad thing, one would think (see proposition No. 1, *supra*).

But why would *that* happen? Who would want to kill the goose laying the golden eggs?

20. See LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* 30 (1999) (describing his aim of “crack[ing] one meme about the nature of the Net—that the Net *has* a nature” (emphasis added)); *id.* at 220 (“We stand on the edge of an era that demands we make fundamental choices about what life in this space . . . will be like. These choices will be made; *there is no nature here to discover*. And when they are made, the values we hold sacred will either influence our choices or be ignored.” (emphasis added)).

3. *Security vulnerabilities—traceable ultimately to the very features of the PC/Internet grid that make it generative—will be the crucial lever in causing consumers and government regulators alike to demand a safer and more secure (albeit much less generative) environment, one that hardware and software manufacturers and network service providers will be only too happy to provide.*

This leads to what Zittrain calls the “dilemma,” or better still the “paradox,” of generativity: “[W]ith an openness to unanticipated change, we can end up in bad—and non-generative—waters. . . . [T]he most natural reactions to the generative problem of excess spontaneity and individuality will be overreactions, threatening the entire generative basis of the Net”²¹ Furthermore, Zittrain postulates the following:

The most plausible path along which the Internet might develop is one that finds greater stability by imposing greater constraint on, if not outright elimination of, the capacity of upstart innovators to demonstrate and deploy their genius to large audiences. Financial transactions over such an Internet will be more trustworthy, but the range of its users’ business models will be narrow. This Internet’s attached consumer hardware will be easier to understand and will be easier to use for purposes that the hardware manufacturers preconceive, but it will be off limits to amateur tinkering.²²

Zittrain’s point here is, to my eye, more profound than has been generally recognized—perhaps, again, a function of the fact that it is, in retrospect (but only in retrospect) too straightforward. It is not simply that people can and will use open PCs, connected to an open network, for ill as well as for good; nor is it that there are many—government regulators who “would welcome and even encourage a PC/Internet grid that is less exceptional and more regulable,”²³ prior-generation innovators looking for ways to make things more difficult for next-generation innovators, status quo defenders of all kinds—who will inevitably seek opportunities to clamp down on, and rein in, this maddeningly chaotic and generative regime. It is, rather, that generativity is itself both the good *and* the ill, at war with itself, bearing within itself the seeds of its own destruction. It is an old story—familiar to fans of Wagner’s “Ring” cycle and Sophoclean tragedy. Generativity *is* vulnerability. The same generative characteristics that “primed [the Internet] for extraordinary success . . . now position it for failure.”²⁴ In addition, “[t]he response to the failure will most likely be sterile tethered appliances and Web services that are contingently generative, if generative at all,”²⁵ the spread of “Internet-aware appliances that exploit the

21. THE FUTURE OF THE INTERNET, *supra* note 2, at 99–100.

22. *The Generative Internet*, *supra* note 9, at 1977.

23. *Id.* at 2002.

24. THE FUTURE OF THE INTERNET, *supra* note 2, at 149.

25. *Id.*

generativity . . . but that are not themselves generative,”²⁶ and the “appliancization” of the PC itself.

As Zittrain himself has candidly acknowledged,²⁷ there have been many prior reports of the Internet’s imminent death, and they have all, to paraphrase Mark Twain, been greatly exaggerated. As the old joke has it, nothing is harder to predict than the future. There is even, I suspect, some unspoken but powerful dynamic within our field (and possibly other fields in the law) that brings such doomsday predictions to the surface—if everything is going along just fine, what need is there for the intellectual goods that we law professors provide? But for what it is worth, while I remain skeptical of most dystopian predictions (including this one), too many parts of Zittrain’s account of things strike me as persuasive, and seem to be growing more persuasive over time, for it to be so easily dismissed. I look at the Net differently when I try to look at it through the lens that Zittrain has provided, and, much the way one sees a particular word popping up everywhere immediately after learning its definition, it is difficult to look around the Net and not see increasing user demand for a more secure and virus/spam/malware-free communications environment, and the spread of the information appliance. I am less certain than Zittrain that this is “cauteriz[ing] the essence of the Internet and the generative PC,”²⁸ but I do wish my libertarian friends took the argument more seriously than they have.²⁹

26. *The Generative Internet*, *supra* note 9, at 2015.

27. *See, e.g., id.* at 1997 (noting that while “[t]he notion that code is law undergirds a powerful theory . . . some of its most troubling empirical predictions about the use of code to restrict individual freedom have not yet come to pass”); *id.* at 1999 (noting that “the central fears of the ‘code is law’ theory as applied to the Internet and PCs . . . have largely remained hypothetical”); *id.* at 1979–80 (seeing “no discernable movement toward the locked-down dystopias” predicted by digital-rights-management opponents).

28. THE FUTURE OF THE INTERNET, *supra* note 2, at 60–61 (citing U.S. GEN. ACCOUNTING OFFICE, COMPUTER SECURITY: VIRUS HIGHLIGHTS NEED FOR IMPROVED INTERNET MANAGEMENT (1989), available at www.gao.gov/cgi-bin/getrpt?IMTEC-89-57; PATRICIA WALLACE, THE INTERNET IN THE WORKPLACE: HOW NEW TECHNOLOGY IS TRANSFORMING WORK 33 (2004)).

29. *See, for example*, Posting of Adam Thierer to PFFBlog, http://blog.pff.org/archives/2009/11/oh_farts_the_droid_the_iphone_the_lessig-zittrain.html (Nov. 12, 2009, 18:15 EST), the latest in Adam Thierer’s libertarian critique of what he calls Zittrain’s “unwarranted cyber-Chicken Little-ism and hyper techno-pessimism.” Thierer’s criticisms are often thoughtful and well placed. But he’s missing something, something to which all libertarians concerned with the Net’s future should attend to more closely. It is true that “the Apple AppStore has [over] 100,000 apps available for downloading, making it the largest applications store in the world. And back in September, Apple announced that more than two billion apps had been downloaded from the App Store in its short existence. That’s Billion with a ‘B.’” *Id.* The reality, he says, is this: “*tons of innovation is occurring across all of these devices and platforms regardless of how ‘open’ or ‘closed’ they may be.*” *Id.* Perhaps—closed platforms can produce remarkable innovation. But the AppStore will stock only those applications approved by Apple and is unlikely to offer Chinese Internet surfers, say, a tool to allow them to “tunnel” through the “Great Firewall of China” so that they can access information that the Chinese government would much rather they didn’t see; we needed the generative Internet for that. A proliferation of closed appliancized systems may produce wonderful, and wonderfully innovative, applications, but the quantity of innovation

What, then, is to be done? My own gifts for prescribing public policy are quite limited, and I will spare you my wilder flights of imagination. The critical question, it seems to me, is whether Zittrain is correct when he writes that “[g]enerative systems are not inherently self-sustaining when confronted with these challenges.”³⁰ I am not sure how he knows that, or how anyone *could* know that. We are not always as adept at moving complex systems in the directions we would like them to move as we think, while at the same time their self-protective powers may be far greater than we can understand. Zittrain may be underestimating the generative powers of this system to circumvent and disable attempts to lock it down and rein it in.

But there is a fascinating program—one that is truly Jeffersonian in spirit—at the core of Zittrain’s book. It will, I predict, be largely (and possibly entirely) ignored by commentators and critics inside and outside the academy, on the “left” and on the “right” of the Internet policy debates, so I want to feature it here. Zittrain does make a number of specific proposals about, appropriately enough, the Law—about regulating “net neutrality,”³¹ about copyright protection for online works,³² about privacy law,³³ and the like, and these will no doubt command (and surely deserve) serious attention. But Zittrain is very clear—they will not, under any circumstances, save the Net from itself. Only a “society” composed of people of goodwill can do that.

[S]ometimes the absence of law has not resulted in the absence of order. Under the right circumstances, people will behave charitably toward one another in the comparative absence or enforcement of rules that would otherwise compel that charity.

....

... When people can come to take the welfare of one another seriously and possess the tools to readily assist and limit each other, even the most precise and well-enforced rule from a traditional public source may be less effective than that uncompelled goodwill. *Such an approach reframes the project of cyberlaw to ask: What are the technical tools and social structures that inspire people to act humanely online?*³⁴

is not the sole measure of the value of generative systems; it is their ability to produce unanticipated and *uncontrollable* change that the libertarians, of all people, should be celebrating, and it is the susceptibility of closed systems to control that should be of more concern. “[L]ock down the device, and network censorship and control can be extraordinarily reinforced.” THE FUTURE OF THE INTERNET, *supra* note 2, at 125.

30. THE FUTURE OF THE INTERNET, *supra* note 2, at 65.

31. *See id.* at 178–81.

32. *See id.* at 188–93.

33. *See id.* at 185–88.

34. *Id.* at 129 (emphasis added) (citing W. Bradely Wendel, *Regulation of Lawyers Without the Code, the Rules, or the Restatement: Or, What Do Honor and Shame Have To Do with Civil Discovery Practice?*, 71 FORDHAM L. REV. 1567 (2003); James Q. Whitman, *Enforcing Civility and Respect: Three Societies*, 109 YALE L.J. 1279 (2000)).

“Generosity of spirit” he calls it elsewhere in the book; it is “society’s powerful first line of moderation” and will be the “deciding factor in whether our current infrastructure can endure”:³⁵

Our generative technologies need technically skilled people of goodwill to keep them going, and the fledgling generative activities above—blogging, wikis, social networks—need artistically and intellectually skilled people of goodwill to serve as true alternatives to a centralized, industrialized information economy that asks us to identify only as consumers of meaning rather than as makers of it.

....

... Our fortuitous starting point is a generative device in tens of millions of hands on a neutral Net. To maintain it, *the users of those devices must experience the Net as something with which they identify and belong. We must use the generativity of the Net to engage a constituency that will protect and nurture it.*³⁶

Zittrain unabashedly and unashamedly talks of “netizens” and “netizenship,” of the need for Internet users to find and to act in accordance with a new sense of personal responsibility for, and participation in, the online communities of which they are a part and which will need their active and engaged support in the coming years. As someone who, many years ago, took a pummeling at the hands of colleagues for putting forth the outrageous and absurd idea that we could do well to think about the Net as a separate place, with its own law made by those who participate in online interactions and within online communities, I was distinctly surprised and pleased to hear this particular note sounding so clearly in *The Future of the Internet*.

It is a decidedly eighteenth-century program, one that Jefferson, perhaps even more than the other members of the Founding generation, would endorse heartily. “Civic virtue,” it was called by the radicals who engineered the American Revolution, a disinterested concern for the common good and a sense of connectedness to one’s fellow citizens in the new polity, “flow[ing] from the bottom up, not from the top down,”³⁷ and they were well aware that their revolution would fail utterly without it.³⁸

35. *Id.* at 246.

36. *Id.* (emphasis added).

37. JEAN M. YARBROUGH, *AMERICAN VIRTUES: THOMAS JEFFERSON ON THE CHARACTER OF A FREE PEOPLE* 103 (1998).

38. *See, e.g., id.* at 102–05 (noting Jefferson’s belief that “self-government in [the] broad sense would not be possible without some conception of civic virtue, . . . [and that] [i]n a liberal republic, the most important virtues, both moral and intellectual, flourish outside the political arena”). For a similar sentiment, see GORDON S. WOOD, *THE RADICALISM OF THE AMERICAN REVOLUTION* 104–05 (1st ed.1991):

Liberty [would be] realized when the citizens were virtuous—that is, willing to sacrifice their private interests for the sake of the community.

....

Precisely because republics required civic virtue and disinterestedness among their citizens, they were very fragile polities, extremely liable to corruption. Republics demanded far more morally from their citizens than monarchies did of

“Without virtue and self-sacrifice republics would fall apart.”³⁹ In Gordon Wood’s words, “The sacrifice of individual interests to the greater good of the whole formed the essence of republicanism and comprehended for Americans the idealistic goal of their Revolution. From this goal flowed all . . . that made their ideology truly revolutionary.”⁴⁰

It was a program calling for the reformation and reconstitution of *society*, not (merely) of institutions and law:

The revolutionaries aimed at nothing less than a reconstitution of American society. They hoped to destroy the bonds holding together the older monarchical society—kinship, patriarchy, and patronage—and to put in their place new social bonds of love, respect, and consent. They sought to construct a society and governments based on virtue and disinterested public leadership and to set in motion a moral movement that would eventually be felt around the globe.⁴¹

Zittrain is no more certain than anyone else how to engage that constituency or create those social adhesives—that’s just not in our professorial arsenal of tricks (which is why I predict that this central element of Zittrain’s program will occasion little more than the raised eyebrow and the condescending snicker). But it is what we need.⁴² As Lon Fuller put it some fifty years ago,

their subjects. In monarchies each man’s desire to do what was right in his own eyes could be restrained by fear or force, by patronage or honor. In republics, however, each man must somehow be persuaded to sacrifice his personal desires, his luxuries, for the sake of the public good. Monarchies could tolerate great degrees of self-interestedness But republics could never resort to such force. In their purest form they had no adhesives, no bonds holding themselves together, except their citizens’ voluntary patriotism and willingness to obey public authority.

39. WOOD, *supra* note 38, at 105.

40. GORDON S. WOOD, *THE CREATION OF THE AMERICAN REPUBLIC 1776–1787*, at 53 (1969).

41. WOOD, *supra* note 38, at 229. For a comprehensive and enlightening discussion of the crucial distinction between “society” and “institutions,” see especially DANIEL J. BOORSTIN, *THE LOST WORLD OF THOMAS JEFFERSON 186–90* (Beacon Press 1960) (1948).

42. See Center for Democracy and Technology, *A Call to Defense and Celebration of the Online Commonwealth: Common Values and Shared Duties on the Internet*, http://petition.cdt.org/?page_id=5 (last visited Mar. 31, 2010), to which Zittrain (and I) are both signatories:

We believe that the people of the Internet are, collectively, the killer app. . . . Our new Online Commonwealth is not founded on physical resources, geographic territory, financial capital, or even human labor. It emerges from attention and effort expended in increasingly diverse roles that channel our efforts into pursuit of goals defined by the many different groups with which we collaborate every day. These groups make the world wealthier and wiser every day precisely because they have many different, diverse, and decentralized goals. But all groups should share one core value—respect for and deference to other groups that refrain from imposing harm on others. The Internet enables people with very different values to coexist peacefully, online, precisely insofar as all groups respect this principle, and we oppose any claim by any group—public or private—that seeks to impose its own will on those whose welfare it doesn’t seek to serve and who have not consented to its claim to govern.

[L]ike many other precious human goals, the rule of law may best be achieved by not aiming at it directly. What is perhaps most needed is not an immediate expansion of international law, but an expansion of international community, multiplying and strengthening the bonds of reciprocity When this has occurred—or rather *as* this occurs—the law can act as a kind of midwife—or, to change the figure—the law can act as a gardener who prunes an imperfectly growing tree in order to help the tree realize its own capacity for perfection. This can occur only when all concerned genuinely want the tree to grow and to grow properly. Our task is to make them want this.⁴³

The Online Commonwealth is continuously under threat—both from those who would stifle its creativity and those who abuse its liberties. Who will defend it? We all must do so.

We are releasing this call on One Web Day, September 22, [2009,] to reaffirm our shared commitment to the values that have enabled the Internet to prosper. We are all citizens of countries and states, members of families, employees of companies, participants in churches and clubs. But we are also, importantly, members of the shared, global Online Commonwealth, and we reaffirm our shared commitment to defend and celebrate this marvelous collective creation.

See also Posting of C.A. Yeung to Under the Jacaranda Tree, <http://underthejacaranda.wordpress.com/2009/10/08/internet-human-rights-declaration/> (Oct. 8, 2009) (posting a translation of the Internet Human Rights Declaration written by fifteen Chinese intellectuals and acknowledging the “arrival of netizen activism” and the netizens’ responsibility to participate in public affairs and to “care about freedom of speech on the Internet”).

43. Lon L. Fuller, *Adjudication and the Rule of Law*, 54 AM. SOC’Y INT’L L. PROC. 1, 8 (1960).