

Lawrence Lessig's Code Version 2.0 is a fascinating read. He speaks articulately about issues I am passionate about with a deep intelligence and a vast insight. Even though I am well read and a bit of a news-junkie on these subjects, I found that Lessig had new angles to explore on even the most familiar topics. He discerns novel, timely, important, and well-supported themes from the evidence.

First, I will briefly summarize Lessig's ideas and illustrate them with examples of my own. I agree wholeheartedly with most of Lessig's ideas, but I've identified a few errors and a lot of omissions, some of which I will exemplify here. More importantly, Lessig's fresh perspectives and unique angles have inspired a few ideas of my own that are worth exploring, which I will also illustrate here.

In the introduction and Part 1 of Code, Lessig explains how the "real world" is governed by two sets of rules: the laws of nature, and the rules of man. Here, I will summarize some of his ideas, then illustrate them with examples of my own design.

Lessig opens with the concept that the laws of nature are inherent to the world; Things fall because of gravity— People have finite life spans and die. The rules of man are both social norms, and rules that have been codified into law by governments.

Lessig explains how the rules of "virtual worlds" and "cyberspace" are different. In cyberspace, the laws of nature are not inherent. The "laws of the nature of cyberspace" are created by man through technology. In Second Life, people can defy gravity and fly, teleport, and duplicate objects. These natural "laws" of Second Life are not inherent; they are defined by what is made possible by the "code" written by Linden Labs programmers.

Lessig explains many complex but less dramatic examples of how the "code"

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of hardware and software defines exactly what is possible and defines the very "laws of nature" of our Internet. Lessig's examples have inspired two simpler examples of my own design, which I will explain in the next four paragraphs.

In cyberspace, I *can* be in two places at once. I can be in two chat rooms at the same time, even while participating in other, private, "whispered" conversations. Furthermore, none of the people I converse with will know that I am participating in the other conversations unless I tell them. They will not see the others I am conversing with and will not be able to communicate with them. In the real world, this situation does not exist. Therefore, am I being rude by dividing my attention and participating in these conversations? Do the social norms apply?

Content traditionally held in books, etched into vinyl, chemically etched into film, or painted on canvas, used to be tied quite closely to the objects themselves. This is true to the extent that in English vernacular, the same words (book, album / record / tape, film, photograph, painting, etc.) are used to describe the content and the delivery mechanism. For most purposes, the "natural laws" of the objects applied also to the content. This is no longer the case.

Digitally, I can "magically duplicate" these objects at will, and "teleport them" to other locations and other audiences.... But I can only do so at a certain speed, dependant on my available bandwidth. Thus, the laws of nature, in cyberspace, are defined by technology.

This leaves many unanswered questions that our existing social norms and laws don't answer adequately. If I "teleport" an object to another person by copying it, and then erase/destroy my original, is that different from "loaning" the object? If I have a "reasonable expectation of privacy" in my home and in my postal mail, do I have that same expectation of privacy on my home computer, or in my email?

Lessig explains the rub. The rules of man, the social norms and codified laws, presume that the laws of nature are fixed, and already apply consistently to all of man's actions. However, the "laws of nature", in cyberspace, are inconsistent between virtual spheres of existence, and are defined by the writers of code and the nature of the technologies utilized.

Lessig goes on to explain that the "code" used to create virtual worlds was originally created by academics. That code created almost limitless anonymity and respected ideals of limitless freedom. The second generation of code writers defined cyberspace to enable commerce, and the automaton of capitalism created technology that is redefining cyberspace, limiting anonymity and limiting freedom to facilitate efficient commerce. Now, the third generation of code defining cyberspace is being written, this time largely by governments and corporate entities. The commercial entities are protecting commerce, and the governments are protecting their citizens and fighting crime with a post 9/11 mentality.

In the short history of cyberspace, the "laws of nature" in cyberspace have changed dramatically. Code is constantly being re-written to facilitate commerce and law enforcement, reflecting the (lack of) values that corporate entities and government in the real world hold, presuming that the "laws of nature" in the real world, and that the norms of the real world should apply. An anarchistic Internet would be a non-functional haven for spammers and botnet controlling Mafioso, and no one wants that. We do need to create code that allows the Internet / cyberspace to function. However when creating technology, when creating cyberspaces, it is important not to presume that the "laws of nature" already apply, and to explore options other than replicating the laws, norms, and code of the real world. It is important to recognize that cyberspace is not the "real world" and to consider what values should be carried into it, what values should be left behind, and how to code a new properly chosen, deeply considered set of values

into cyberspace.

Lessig's ideas are absolutely brilliant. However, in a few spots, his articulation is clouded and contradictory. Lessig makes occasional use of the words "good" and "evil" without clarification, and often in the context of cyberspace. After explaining how the "laws of nature" don't apply in cyberspace, I don't see how concepts of "good" and "evil" would apply there either. I have philosophical objections to the words in general, but in the context they are particularly unclear and troublesome.

Although Lessig's explanations are complex, they are simplified technologically. Presumably, this simplification is maintained to appeal to a wide audience. However, occasionally they are oversimplified so much that his explanations stretch the boundaries of truth. On page 20, Lessig explains a theoretical crime fighting computer worm that infects computers and reports criminal activity to law enforcement. He ponders if this violates fourth amendment protections against unreasonable search without suspicion, and questions if the fourth amendment was designed to protect the privacy of the individual, or to protect the individual from bearing the burden of a disruptive search. In the real world, it would be impossible to search without violating privacy, and it would be impossible to search without creating a disruption.

Lessig states that since the user doesn't know that the worm is there, the search may not be burdensome. However this is incorrect. Any worm, any process/program, running on any device (computer, cellphone, etc.) does create a burden— on the device. A computer can only do so many things at once once, and that worm is stealing processor cycles, stealing time (and electricity) from the device, and thus from the device's owner.

Lessig also states that since the worm *only* reports back the specific criminal evidence that it was assigned to look for, and does not report any other

information, it may not be invasive of privacy. While I certainly agree with this, Lessig doesn't highlight the potential for abuse. He points out that we could protect privacy by requiring warrants to use such a worm. However, if the person being searched does not know that the search is happening, the suspect does not have the opportunity to question if a warrant has been issued. If the search happens in secret, a check in the system is missing. Although the constitution doesn't specify a suspect's right to be aware of a search, the laws of nature assume that certain types of searches would be detectable. In cyberspace, the laws of nature are different.

Lessig also misses the opportunity to point out that worms and other kinds of malware (viruses, trojans, etc.) thrive in systems that share the same design. If all users on a given network are running Microsoft Windows, a worm exploiting a Microsoft Windows vulnerability will spread easily. However, if many different operating systems and software systems are on a given network, then any given vulnerability is not ubiquitous, and any exploit is less effective.¹

Therefore, if we want to create an Internet that utilizes robust immune systems against malicious attacks, we need to create the "code" of the Internet, the nature of cyberspace, as one that runs a wide variety of hardware and software. A technically diverse Internet is a resilient one. However, today's hardware and software, today's "code" is only guided largely by that third generation of code writers, the commercial and government interests, and it is not being created with ideals of diversity in mind.

This brings me to a major political theme that is missing from Lessig's message, the anti-corporate theme. The forces of capitalism, more specifically, the forces of big-business, backed by, backing, and often guiding the forces of

¹ Genetically identical plants and animal populations utilized by the modern factory farm industry experience parallels situations, allowing particular infections to spread easily through populations with genetically identical immune systems.

government, are what pushes this third generation of code writers to mold cyberspace so differently from its original vision. The corporate influence and globalization has a standardizing effect on media, on technology, and on life. While it is true that businesses of all sizes need a regulated Internet to function effectively, it is large the needs and the power of large corporations that are forcing these issues of privacy, of anonymity, and of security.

Network consolidation has created communications companies of unprecedented size, that have the lobbying muscle to influence government, and need a close relationship with government to profit. Legal issues aside, why has the code of cyberspace, the "nature of things" changed so far as to allow the NSA to effectively wiretap all US Internet transmissions? Because AT&T has consolidated other companies and grown large enough control almost every major nexus of Internet traffic in the US. Why has is the 1998 Digital Millennium Communications Act (1998 DMCA) ineffective at protecting "fair-use"? Why does the DMCA trample on Internet culture? Because Viacom, Disney, and other massive conglomerates, have consolidated huge swaths of the entertainment industry, and have the capacity to automate the DMCA "take-down process" with an army of lawyers that steamroll the rights of individual bloggers.

I could go on with many, many examples. While my interest in these legal issues is driven by my socio-political values, Lessig's seems to stem from his love of the law. He never hints at a political ideology, and instead tries to illuminate systems of technology, of law, of power– of code, as he sees them. There is no call to action. No clear plans are laid out. Lessig seems to prepare logistically for a battle, but he fails to identify the enemy, and fails to rally the troops or provide them with a plan.

It would be very easy to tie all of Lessig's themes together into a socio-political message, but he does not. Perhaps, again, he is trying to appeal to a wider

audience. Perhaps he didn't want to cloud his incredible explanations of complex systems with a call to action. It is an unfamiliar approach, and something that I should try in my own writing.

Lessig brings up many other points that I wish to explore further. On page 20 he states that the first generation of the Internet "enables lives that were previously impossible, inconvenient, or uncommon", that it created communities of interest that could not exist in the real world. He also comments on the fact that on the Internet, people with disabilities are not hindered socially by those disabilities. The blind, deaf, and even "the ugly" communicate online without the effects of prejudice. Lessig doesn't, but I would extend "ugly" to include the socially awkward, divergent thinkers, and extreme personalities.

I certainly identify most of the individuals in my social circle as divergent thinkers and extreme personalities. Many of us are currently or were as teenagers socially awkward. And, certainly as teenagers at least, we are not a group that exudes traditional ideals of physical beauty. In an earlier time, we would have been nerds. Today, we are geeks. There is an important distinction between the two terms. The former is a loner who fails to understand social norms. The latter is a group of empowered individuals who create their own social norms, and redefine society.

These types of people, in another time, would have only formed a community based on an artistic/musical subculture. We would have been beatniks, hippies, or punks, and if we were in New York City, we would have lived in Greenwich Village. Today, we live in Williamsburg. Wearing either tie-die or a Mohawk hairstyle, we are geeks.

When did the (non-teenage) dominant ideology tip to embrace individuality, and a deep understanding of systems and technical knowledge as a means to an end? When did geek become chic? Is it because of the multitude of millionaires

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created by the dot-com boom? Is it because we geeks, the first generation of networked computer users, have aged to the point in our professional careers where we are the creators of media, the creators of culture? Or is it because the nerds are no longer alone, but have formed an (exclusive?) community? These are ideas I would like to explore.

Also– as cyberspace incorporates audio and video, and as advancing technologies enable more audio/visual media, is the Internet getting less cerebral? Will the you-tube video blog and video chat marginalize the blogosphere and text chat rooms? Ray Charles could not have gotten his first record contract after the age of MTV. Physically attractive authors sell more books. As technology allows our media saturated, celebrity obsessed culture to bleed into cyberspace, will the communities I found as a child and adolescent be tucked away into the back corners of the Internet where they are difficult to reach? Has this happened already? Is there anything that can be done to reverse this trend? (Or would a be a futile and misguided effort to drag the values embodied by the "code" of yesterday into today's technical reality?)

The last idea I want to highlight is Lessig's concept of "latent ambiguity" in the law. Returning to the fourth amendment example, Lessig explains that since the forth amendment protects against unreasonable search without a warrant, but does not specify if the citizen is being protected from that invasion of privacy, or the burden of a disruptive search, there is a "latent ambiguity" in the law. Because of the nature of reality– if the government is searching someone's home, it is both an invasion of privacy and a disruptive burden; The US constitution did not specify exactly what it was protecting. It didn't need to. It was irrelevant. But in this new world, the "laws of nature" don't apply, and the law has become ambiguous and needs re-defining.

Lessig asserts that the US does not have strong institutions in place to deal

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with these "latent ambiguities", and I agree. The courts are designed to interpret and apply law. Constitutional amendments require incredible effort and consent. While constitutions provide the bedrock of governments and law, the laws of nature have first provided a solid footing for constitutions. Now the rug has been pulled from under those constitutions.

While I am very familiar with the challenges presented by latent ambiguities, identifying them as such is novel– and quite useful. This concept of latent ambiguity can provide a great clarity to understanding constitutional issues, and can be easily utilized to add another angle to constitutional issues, and to clarify the nature of government institutions and the challenges we face, even outside of cyberspace. I am surprised that Lessig does not pursue this line of thinking. The laws of nature didn't include mechanized and nuclear weapons at the time the second amendment was written. At the time, the laws of nature had very clear definitions of "life". The courts have occasionally tried to fill this institutional void, which has given rise to the term "judicial activism".