Where Do You Want To Go Today? Have you ever heard that phrase before? It's actually been a hard one to miss. Microsoft's been asking that question repeatedly for at least a year or two. It refers to the option that is currently available to anyone with a computer to embark on 'Internet excursions' to 'new places'. It's a good question, one that has an impact on us all right now. And where we want to go today may directly influence where we can go tomorrow. It's our future, but in order for it to become what we want it to be, it will have to be secured with positive actions on our part, taken without the slightest hesitation. And if good people don't take action now, corporations like Microsoft will make their own assessments of what's good for us and make these important decisions without us. Is it the corporations that you want, determining what your options for tomorrow will be? Not me!

I recently read two items that definitely got my heart pumping. First, I laboriously plowed through a recent book called 'Code and Other Laws of Cyberspace' by Lawrence Lessig. This scholarly treatise made me struggle like a ten-year-old kid attempting to complete a college course in an afternoon. It even had small print! Nevertheless, I felt strangely compelled to consume its 234-footnoted pages as quickly as possible. My second reading was a letter from my dear friend Bea that began, "If the enclosed article doesn't scare you, nothing will". The article, 'The Doomsday Click' by Michael Specter, was from a recent issue of The New Yorker [May 28, 2001]. It asked the question, "How easily could a hacker bring the world to a standstill?" It's a frightening thought! I work with computers so I read it diligently.

Bea has been my special friend for several years now, mainly because her twelve-year-old granddaughter, Sonya, has been my computer buddy since she was two. Consequently, Bea has tested me over the years to make sure the computer's influence on Sonya was a positive one. Bea, a former schoolteacher now in her 70's, has raised her concerns about the 'dark side' of the Internet to me for at least the last three years. Now an article from no less than The New Yorker is stirring her up! Don't get me wrong; Bea's an exceptional person. She's adventurous, articulate and very politically aware. She now dabbles with her granddaughter's 'old computer' and has recently enrolled in an evening class to become more aware of just what PCs do and to keep up-to-date with the world around her; I take her concerns seriously.

Because of both readings, I was then left to ponder the following complexities. Even though I see Professor Lessig's ideas as extremely important to everyone, others may not be so enthusiastic. It just may be because of my current work in computers that I find his perceptions more fascinating than another person might. I certainly didn't feel that his words in his book were packaged for mass consumption; I felt that some thoughts were beyond scholarly and I became very torn. If people like Bea could easily put their arms around Lessig's themes, I knew
that they'd be championing the future issues of the Internet to their friends, to their children, to everyone! I thought that if I could distill the essence of Lessig's thoughts into some lighter fare, perhaps into just a few easily readable pages for the enjoyment of Bea and others, I might be able to help him spread his word further and, at the same time, accomplish a literary feat of definite Pulitzer proportions.

What has resulted is contained in the following paragraphs; it is my attempt at capturing the heart of Professor Lessig's magnificent work. By using his book's text directly, as well as some text from his article "Code is Law", which appeared in The Harvard Magazine, I've tried to spotlight his major arguments while faithfully summarizing and condensing his thoughts. I've also mixed in some of the many comments and reviews written on this book, along with a few of my own to help keep things straight in my mind. For those who consider themselves computer literate and wish to do their own research and analysis, there's a wealth of information on 'Code' available to you at:

http://code-is-law.org/reviews.html
http://bcis.law.harvard.edu:8081/~Code/guests
http://www.lessig.org/

Better yet, read Lessig's book! If not, turn the page; you'll find Lessig's ideas extremely interesting and worthy of your full attention.

**Code and Other Laws of Cyberspace ••• Simplified**

A few months back, when I started to read about Dr. Lessig, I had little knowledge of either him or his work; I only knew that he taught law at Stanford and had appeared as an expert witness for the Government in the most recent Microsoft antitrust trial. However, within the first few pages of his book, Dr. Lessig had posed several questions of constitutional law and its relevance in cyberspace and had vividly described the dark blending of government regulation and control with a growing world of electronic commerce. His thoughts excited me and sparked my first attempt at condensing his words to share with a few friends, appropriately enough, via e-mail. They were as follows:

We build liberty...by setting society upon a certain constitution...an architecture...that structures and constrains social and legal power, to the end of protecting fundamental values - principles and ideals that reach beyond the compromises of ordinary politics.... There is no reason to believe that the grounding for liberty in cyberspace will simply emerge. In fact...quite the opposite is the case... cyberspace, left to itself, will not fulfill the promise of freedom. Left to itself, cyberspace will become a perfect tool of control... the "liberty" present at cyberspace's founding will vanish in its future. Values that we now consider fundamental will not necessarily remain. Freedoms that were foundational will slowly disappear.

My first thoughts were that this was pretty heady stuff; this book seemed to raise as many questions to me as it answered! And who really cares about cyberspace anyway? Whose values were we talking about - and what were they? What is
cyberspace and why does it matter to me? What can I do? But it was after receiving Bea's note that I decided that I should try to break his message down into a simpler form, with the help of Lessig's own words, for the benefit of both of Bea and myself and anyone else that I might get to read it.

Traditionally, we've lived only in the real world - "real space" - that's the place where you and I are right now, in an office, in your home, or maybe out in the backyard. It is a world that's defined both by laws that are man-made [by governments] and by others that are not. For example, limited life is not a man-made law. We will all die eventually; man-made laws can't change that. But cyberspace is a place, too, "a new landscape where the rules have been rewritten" and "a place that is, finally, beyond regulation by mere governments." People 'live' and interact there. Some of them experience all the same sorts of things there that they've also experienced in real space; some experience more. These are not just a few isolated individuals playing some high-tech computer games. They're real people like you and me and they're experiencing 'life' in cyberspace. Their experiences are in groups, in communities, among people they know or among strangers; these are just people in the most traditional sense that have sometimes come to know and respect and love each other's existence in another 'world', in cyberspace. That's a possibility that didn't exist 30 years ago.

Cyberspace was born of a communications research project in the Defense Department in the 1970's, when multipurpose networks of packet-switched data displaced the architecture of control of single-purpose telephone networks. More simply stated, the telephone system began to go 'digital'. Thus, the one-to-many communication architectures of traditional publishing [television, radio, newspapers, books] began to be supplemented by a world where 'everyone could be a publisher'. People could associate and communicate with each other in ways that they had never dreamed of before. Cyberspace promised a new kind of society that real space could never allow - freedom without anarchy, control without government, consensus without power. The belief was that "cyberspace was essentially, and unavoidably, free and that government could not regulate it. Cyberspace, by its very nature, was free." That perception was flat wrong.

Today, cyberspace, now better known as the Internet, is still seen by many as a democratic wonderland, a place of unfettered free speech, business competition, and creativity. However, Dr. Lessig doesn't view it quite that way; in writing 'Code', he has demonstrated how the basic Internet of the past is "changing from a libertarian's utopia to a place that's controlled by commercial interests that could kill the innovative culture that fostered the Internet we see today". He's examined how the relationships of the technology [which he also refers to as architecture or code] along with social norms, markets and laws regulate people's behavior and explains:

- how each of these limit individuals' actions
- how these forces work directly or in combinations
- how improvements in technology can dramatically alter the composite constraint on people's conduct

What 'Regulates' and How •••
In his book, Lessig uses simple stories to (1) demonstrate just how 'real space' is related to 'cyberspace' (2) to identify those characteristics that describe just how such virtual spaces work and (3) to focus on the issues that surround the Internet's future.

For example, in real space there may be several constraints that one might face that would regulate your decision on whether to smoke or not. One constraint is legal. In most places, there are laws that regulate smoking. If you're under age, you can't buy cigarettes and if you're in prohibited areas, you can't smoke them even if you have them and are old enough. But law rarely regulates a smoker's freedom, particularly within the US. After all, there are no 'smoking police' to monitor whether you smoke or not. Rather, smokers in America are more likely to be regulated by social norms. Norms say that one doesn't light a cigarette in a car, or in a private home, without first asking the owner for their permission. Similarly, norms say that others can ask you to stop smoking at a public restaurant in the US while European norms may be completely different. However, in either case, it's the norms that are actually regulating the behavior of smokers.

But laws and norms are not the only forces that regulate smoking; the market too is a constraint. The price of cigarettes and the choices available are also constraints upon one's ability to smoke. There is also the technology of cigarettes that is to be considered. For example, unfiltered cigarettes present a greater constraint on smoking than filtered ones do, that is if you are worried about your health. How the cigarette is built, how it is designed, is sometimes describes as its architecture. A complete view of 'regulation' considers all these forces working together. The constraints are distinct, yet they are plainly interdependent. In this example, each force can support or oppose the other; we can call each constraint a 'regulator', and we can think of each force as a distinct modality of regulation. This same model also describes how the regulation of personal behavior is accomplished in cyberspace.

Cyberspace is not a place; it is 'many places'. The character of these many places is not identical. They instead differ in ways that are fundamental. These differences come, in part, from the differences in the people who populate these places. But the demographics alone do not explain the variance. The exchanges and interactions of these people form 'virtual communities' that differ from the communities that they occupy in real space. The architecture of the Internet equalizes people, embodying them with attributes that they may or may not have in real space. Features provided by the architecture of cyberspace can enable classes of people, who were previously considered disabled in real space. For example, deaf people and mute people using computer terminals on the Internet cannot be distinguished from anyone else using it. And with Braille hardware and adaptive software, the blind can 'see' too. It's the closest thing to a parallel world that I've ever experienced.

A unique aspect of cyberspace is that when individuals are in it, they are occupying places in real space and cyberspace simultaneously. Consequently, some have a desire to want to know which space rules, which space is responsible, which space really has the jurisdiction over them. The answer is both. Even when someone is subject to the norms of a cyberspace community, they are living simultaneously within a 'real space' community. It's somewhat similar to being an American citizen and a Floridian at the same time. The community norms of both must apply, as both
spaces do have jurisdiction. The problem for the lawyers to work out is how these norms apply, given that the subject to whom they apply may be in both places at once. Now this isn't a totally foreign situation. Did you ever buy something while you were on vacation and have it mailed to your home in another state to avoid paying state's sales tax? The Internet takes the problems that multiple jurisdictions can create and ratchets them up a notch or two!

Initially, the Internet was built for research, not for commerce. (Indeed, until 1991 the National Science Foundation forbade its use for commerce.) Its protocols were open and unsecured; it was not designed to hide. A person typically entered the Internet only by way of a personal computer or a computer terminal. On that basis, one might conclude that cyberspace is only of interest to people that chose to enter it, but that would be totally wrong. Ours is the age of cyberspace, and everyone that is involved in any form of commerce is already touched by cyberspace, like it or not. The business worlds that are serving our daily needs are relying more and more on the efficiencies of computers and communications. And like every age, the age of cyberspace has its regulators, its threats to its liberty. And as commerce requires the Internet's architecture to become an architecture of trust, the openness of cyberspace will disappear and 'code', its regulator, will change the Internet to make it more regulable.

The Regulation of Code

The Internet's regulator is code - the software and hardware that make cyberspace what it is. Its code, or its architecture, sets the terms on which life in cyberspace is experienced. It determines how easy it is to protect personal privacy or how easy it is to censor free speech. It determines whether access to information is general or whether specific information is zoned [where access to it is limited]. It affects who sees what, or who or what is monitored. The architecture of cyberspace can regulates in a host of ways, ways that one cannot begin to see unless you begin to understand the nature of such code and how it works.

Our code, this architecture, is changing and as it does, the true character of cyberspace is changing as well. It's changing from a place that protects anonymity, free speech and individual control to a place that makes anonymity harder, speech less free and individual control the province of just a few 'experts.' Unless you can learn to understand how cyberspace can imbed or displace those values that we cherish from our constitutional tradition, we will lose control over those same values; the code of the Internet, the architecture of cyberspace, will ultimately displace them.

How Code Regulates Cyberspace

The basic code of the Internet implements protocols that enable the exchange of data among interconnected networks. The exchange occurs without knowing the contents of the data or without any true idea of who the sender of a given piece of data is in real life. Code is neutral about the data and ignorant about the user. In some contexts, this unregulability is a virtue. For example, on the Internet this feature protects free speech. It codes a First Amendment into the architecture of
cyberspace, making it relatively hard for governments or powerful institutions to control who says what. However, if one were trying to prohibit the distribution of pornography, this could be viewed as a vice. But as of right now, because of the enormous impact that it can have on businesses and markets, the most important contexts of regulation of the Internet in the future will be seen in how it affects worldwide Internet commerce:

- Where its architecture doesn't enable secure transactions
- Where the sources of interference to commerce can easily hide
- Where items like illegal copies of music are easily distributed
- Where items like computer software is easily pirated

In these contexts, commerce will not view unregulability as a virtue, as it will interfere with commerce's ability to flourish. And there is no thought that is more dangerous to the 'future of liberty' in cyberspace than 'a faith in a freedom that is guaranteed by code'. Code is not fixed and code can change. Other architectures can be layered into today's basic protocols that will make the Internet fundamentally regulable and allow commerce to flourish. Today, commerce is already building these other architectures that can and will transform the character of the Internet. What will this mean to you and me? Let's talk about it.

East Coast and West Coast Code •••

The laws that the Congress passes or enacts are also referred to as code. These statutes say in words how we should behave. Some direct people, some direct companies, some direct bureaucrats. It's a process as old as government itself, the use of commands to control. This is a Washington D.C. phenomenon that is referred to as East Coast Code. The other code that we speak of is the instruction set that is imbedded in the software and hardware that makes cyberspace work. This is West Coast Code, or code in a modern sense. Normally, these codes get along quite well, each regulating within their own domain, with East Coast Code able to do very little to control West Coast Code. But this interaction has changed. As commerce writes the code and it becomes the product of companies, it can be controlled by East Coast Code since Government can control commercial entities when it is deemed necessary by the people.

Alternative Architectures •••

What makes the Internet 'free' and unregulable today is that (1) it is hard to identify who someone is and (2) it is hard to know the character of the content being delivered over it. But both these features are changing. Architectures for certifying facts about the user such as [over 18? male or female? nationality? wage group?] and rating its information content like [antigovernment? pornography? racist?] are being implemented without the mandate of any government. It's being done for commercial purposes. Nevertheless, this could facilitate an extraordinary degree of control over our behavior in cyberspace, depending upon how these architectures are designed and who actually designs them or controls their design.

What an architecture enables and how it limits its control are choices to be made.
But who sets the limits and whose choices are they? Consider the need for identification or certification; we have many such architectures in real space today. A police check of your driver's license is to certify that you are who you are [name, address, photo] and that you are licensed to drive. You give the police identifying information in order to certify your right to drive. In cyberspace, certification technologies could be more narrowly tailored to selectively certify individual facts about you without revealing others [least-revealing] or designed to provide a blanket certification [where there is no simple option to limit what is revealed]. The difference between these two architectures is that one enables privacy and one doesn't. Since the certification architecture depends on who chooses the code, the choice depends upon what incentives they face [such as cost]. If 'protecting privacy' is not an incentive [if neither the market nor the law has sufficiently demanded it], then the code will not provide it and your privacy will not be protected. The choices to be made about code and law will be choices about our future values. Concerned people must play a role in their selection.

Making Choices

Obviously, we should care about what values emerge and we, the people, should participate in choosing the code that will safeguard those values that we desire. But we live in an era that is skeptical about self-government, an era obsessed with leaving things alone, and keeping government out. This is understandable, given the traditional character of our government's regulation. With all its flaws, it no doubt seems best to keep government at arm's length, but that is a particular indulgence that is extremely dangerous to us now. People write code; code regulates. It is not a choice between 'regulation' and 'no regulation.' There will be code; code can implement values or not; it can enable freedoms or can disable them; it can protect privacy or can promote monitoring.

A Positive Government Role

This is the obvious point that many might miss: when government steps aside, it's not as if nothing takes its place. It's not as if private entities have no interests or have no agendas that they pursue. Will we collectively allow the writers of code to select our values for us? Will we leave the market to regulate the Internet of the future? I hope not. It may be proper to let markets develop first, but just as the Constitution checks and limits what the Congress does, so should our constitutional values check and limit what the markets do also. If you think that no government involvement is the more appropriate path to take, you might want to consider this:

Unless we interrogate the architecture of cyberspace as we interrogate the code of Congress, challenging the constitutionality of code - be it East Coast or West Coast - the relevance of our constitutional tradition will fade and the importance of our commitment to our fundamental values, through a self-consciously enacted constitution, will also fade.

Since commerce has an obvious interest in creating an architecture of regulation and since governments might influence the net to create the requirement for some sort of identification or traceability, an ID-enabled world that facilitates regulation
will evolve. These need not be governmentally issued IDs; any ID will do to enable local regulation of Internet behavior. Cooperation between nations would facilitate international zoning and an architecture of international control, similar to the real world we live in. While some governments would adopt technologies to block net access, regardless of cost, others would not go to great lengths to control access.

The higher the cost of regulation, the less likely it will be pursued. But just because perfect control is not possible, that does not mean that effective control isn't possible. Just because locks can be picked doesn't mean that locks are useless. Isn't it clear that the government should be doing its part to insure that this evolving architecture is kept consistent with important public values? If commerce is motivated to define the emerging architecture of cyberspace, isn't it the role of government to insure that those public values that may not in commerce's interest are also built into any cyberspace architecture in the public's interest? You should have no hesitation in answering 'yes' to that question. As our world is now, code writers are increasingly lawmakers! Our goal must be to understand the code writer's power, too, and to question whether or not it is being properly exercised. The government must be involved.

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In the closing of Bea's note to me, she lamented:

"I still keep taking computer classes, but still miss the old-fashioned library card catalogue. When we fuddy-duddies are gone, the world will be run by robots."

My God, Bea, I hope that's not our future. That's all the more reason for you to become even more involved with cyberspace and why we need you to speak up today for the traditional values that you and others hold so dear! Remember, there have been terrible problems that have affected the real world and many of them also defied technological or absolute solutions. But it is as a society that we can collectively work to stave off such problems and we do it quite successfully in many cases. And that's something that we can continue to do, even in the brave new world of cyberspace!

And with those closing comments, I believe that I've covered just about everything I have to say about the future of the Internet. Any wonderful insights or amazing thoughts that you have come across in reading these pages should most certainly be attributed to Professor Lessig; any oversights or omissions are definitely mine.

Please pass this paper on to those people who you consider to be friends; the one's who aren't afraid of working toward a better world. Its contents may help them to understand that there's a great deal at stake in cyberspace's future for all of us. Encourage them to take some action that will promote our traditional values to cyberspace and to the world at large. Ask them to care about tomorrow.