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The Death of Cyberspace

Lawrence Lessig*

1999 is an oddly rich year for remembering. In Berlin, the city that is my home this year, it is the tenth anniversary of the fall of the Berlin Wall. It is the fiftieth anniversary of the rebirth of Germany. It is the fiftieth anniversary of Mao's China. And it is ten years since the image of a brave but foolish Chinese student standing defiantly before a tank became for us the image of Tiananmen.

It is also for us an anniversary of a different sort. It is a decade since "Internet time" began. Though it's harder here to mark moments, and though of course the Internet technically lived long before 1989, it was not until the early 1990s that the Internet became an idea in the minds of ordinary people. In CERN, Tim Berners-Lee was just describing the protocol that would become the World Wide Web. Microsoft was just readying release of Windows 3.

Decades are good lengths of time for marking moments of reflection. They are long enough to give perspective, yet not so long as to absolve responsibility. If it was the last ten years, then they are years that we are in a sense responsible for. If it is the next ten years, then they are years we should certainly be responsible for.

In the next few minutes, I want to think about this responsibility and this change. The decade of the 1990s has been the decade of an important kind of freedom. But we need to understand how.

To understand how, I want to begin long before the decade began. I want to begin where the Republic began, with a passage from a letter of Thomas Jefferson that, in an important way, captures both the hope and the error of our time. Said Jefferson:

If nature has made any one thing less susceptible than all others of exclusive property, it is the action of the thinking power called an idea, which an individual may exclusively possess as long as he keeps it to himself; but

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the moment it is divulged, it forces itself into the possession of everyone, and the receiver cannot dispossess himself of it. Its peculiar character, too, is that no one possesses the less, because every other possess the whole of it. He who receives an idea from me, receives instruction himself without lessening mine; as he who lites his taper at mine, receives light without darkening me. That ideas should freely spread from one to another over the globe, for the moral and mutual instruction of man, and improvement of his condition, seems to have been peculiarly and benevolently designed by nature, when she made them, like fire, expansible over all space, without lessening their density at any point, and like the air in which we breathe, move, and have our physical being, incapable of confinement, or exclusive appropriation. Inventions then cannot, in nature, be a subject of property.¹

Jefferson's hope is the dream of the Enlightenment: That ideas, and their creativity, were subject to a different law of nature. Property, or ordinary property at least, gets consumed. If you harvest my field, I cannot. If you use my car, then I am unable to. Ordinary property is subject to these constraints of nature. To the dismal science of economics, which must use price to allocate the scarce, scarcity incents production.

But ideas are different. They live, as Jefferson said, according to different rules. He who receives an idea from me "receives instruction himself without lessening mine, as he who lites his taper at mine receives lite without darkening me." Ideas spread without control, and culture and knowledge with it, because they live life under different rules. Nature protects ideas, since ideas cannot, in nature, be a subject of property.

It is important for us to think a bit about what this enlightenment picture was. For we are likely to miss the essence of its magic. We think of Jefferson as the idolizer of the yeoman farmer, frugal yet profitable in his small yet productive farms. But the part of Jefferson that I am talking about was not the farmer part. This part of Jefferson was the creator. This part of Jefferson thought the greatest in man came from his creativity. It came from his ability to build the new, in music, in art, in government. This part of Jefferson idolized the inspiration of genius, in all the ways that genius got expressed. This is the ideal of the Enlightenment – that education would inspire something new.

But out of what? Out of what do we build the new? From what resources? Using what ideas?

Here's where the economy that Jefferson spoke of becomes so important. We build new ideas out of old ideas. We create by taking what's been created

1. Letter from Thomas Jefferson to Isaac McPherson (Aug. 13, 1813), in VI WRITINGS OF THOMAS JEFFERSON, 1790-1826, at 180-81 (H.A. Washington ed., 1854) (quoted in *Graham v. John Deere Co.*, 383 U.S. 1, 8-9 n.2 (1966)).

before. We erect on top of foundations laid by others – a foundation of ideas laid by others. And a free society is that society where this building is something anyone can do. Ideas get to run free – that is their nature – and anyone gets to pick up an idea and carry it along.

This is the picture of science: Of thousands working in parallel on a common problem – whether the structure of the polio virus, or the cure for the common cold – thousands working, in different institutions, with different incentives, all allowed to carry on this work because nature makes it impossible to capture an idea, and keep it from others.

This is the picture of philosophy: Of thousands working on a common set of problems – problems that define paradigms in philosophy, whether the problem of free will, or the problem of intent – where each generation gets to add its contribution, layering its contribution onto that of the generation before, adding something new by building on the old.

This is the picture of music: Of thousands working in a tradition, whether classical, or jazz, or rock – everyone free to create new music within that tradition, taking parts from the old, and adding slight variations to the old. Inventing, not by bringing something wholly new to the field, but by innovating on what went before.

This is the picture of writing: Of thousands working in a tradition, whether defined by genre, or by an age, where creativity is always additions to a past. Where one marks the new through a slight variation on the past.

There are a number of ideas that are bundled into these pictures that it is important for us to identify and keep separate. One is the idea of a common problem – a problem, or project, that is open to any of us to pursue. If you want to write jazz music, you don't need permission from Guild of Jazz Musicians. If you want to complete the work of Bertrand Russell, finally finding a foundation for mathematics, you don't need the permission of Russell's estate. The polio virus is as open to you to understand and engineer as it is to me. Nothing in the virus creates a distinction between us. A virus is in the common. It is – to use a term that will be meaningful to some now, but to everyone by the end of this short talk – *open source*.

The creative operates on projects that are in the commons. That is the first idea. The second is that the creative operates by taking in the old, and transforming it into the new. This economy, like any economy, has an input. That input is the old. Jazz is written based on jazz; work on the polio virus is built upon work on the virus; we have a problem to work on about the foundations of mathematics because Russell tried to build a foundation for mathematics. In each of these domains, there is something we mark as creative. But the creative is always a modification, or addition, to the old. The ideas in the

public domain or, as I will call it, in the commons, are essential to creativity. The larger the commons, the greater the input into the creative.

Now Jefferson's thought was that these two elements would go together. That it was in the nature of things that there would be thousands who could work out a tradition; and that the inputs to this tradition would essentially be free.

But the two hundred years since Jefferson wrote have shown us how contingent his vision was. While formally, anyone can hazard a guess at the nature of the polio virus, realistically, only those working in a lab do; and while formally anyone can be hired by a lab, realistically, only those with the proper education are. And while formally anyone can get an education, realistically, not everyone can pass biology. Thus formally a problem might be in the commons, but practically, it will only be a small set of people who actually are able to pick the problem up, and work it out.

And historically, of course, it was not just talent that distinguished between those who could work on a problem and those who couldn't. In some societies, the government determines who can work on what problems. Science in the Soviet Union was not a project in the commons. Nor, for that matter, were atomic energy or the study of encryption projects in the commons in the United States. If you try to do research on the nature of atomic weapons outside of federal control, you are quite likely to find yourself right quickly within federal control – namely the control of a federal penitentiary. And for much of our history, if you wanted to work on encryption, you worked for the government – that was where the money was, and that's where the experts were. If you tried to take what you learned and release it to the public, you yourself would be removed from the public. Science here was controlled.

But more than politics controls what problems are really, or effectively, within the commons. Think about more practical limitations. Say it's 1970, and you want to write a political column that is critical of both the Republican and Democratic parties, and that is sympathetic to communism in Cuba. You can write all you want, and you might find a mimeograph machine to copy ugly blue copies of what you say. But you're not likely to find a way to get your ideas published broadly – to, for example, a nationwide audience. National papers like the *New York Times* or the *Wall Street Journal* were just becoming national at the time, and such a column was certainly not about to find its way onto the op-ed pages of the *Times*.

Two constraints are operating here, hand-in-glove. The one is purely economic – publishing and distribution costs lots of money, and our hypothetical Castro-phile is not likely to have lots of money. The other is editorial – because only a bit gets published, there must be people who decide what bit

does get published. Those people decide what gets published based on what they believe is true, and which truths will maximize the income from their publishing venture.

These constraints together restrict our hypothetical writer. He can create, but to little end. He can write, but with little important success. The problems of world politics may be in the commons, but these institutions that rationalize economic scarcity keep the problems effectively far from our writer.

And not just writers. The same constraints would limit a film producer. If it were 1970, and you wanted to make a full-length film about the war in Vietnam, you would be constrained not just by the politics of the film, but also by the sheer expense and burden of its production. Editing requires extremely expensive equipment; only a few places would have this equipment; only the few would be allowed to use it.

And then there are constraints more human. No expensive equipment stops people from being composers. Anyone who sets his mind to it can learn to compose. But both the learning, and the translation of what is composed to performance, were, in the 1970s, prohibitively expensive. To learn to speak the language of music well enough to write; to write well enough to earn an orchestra to play that music – these were the rewards to very few of the very few who could afford to try.

The point in all these examples is very much the same: The creative may be open to everyone in a formal sense; it may be the "nature" of ideas that I can use yours without you being the worse for it. But in a real sense, for most of our lives, there were other, very real constraints on the power of people to create. These constraints were economic – publishing limited by the cost of publishing; film producing, by the cost of production; they were educational – only those with an education, and only a few were open to an education; they were political, or institutional – only those in certain institutions; and they were personal – only those who learned the language of composing, for example, could engage the art of composing.

They together constrained the creative. Nature may have made ideas free; but other forces countermanded nature.

If you want to understand the real meaning of the freedom that the 1990s gave; if you want to understand what is truly amazing about the revolution we are currently living; if you want to see why Jefferson would have called it important – then you should understand it against the background of this power to create: this conspiracy of nature, and these forces that countermanded Jefferson's nature.

For the power of the digital revolution is not that you can buy books at amazon.com in just one-click; nor is it that you can surf a billion web pages,

or spam a million innocent souls for just \$50. The power of this digital revolution is that it removed, in its first generation, many of these constraints on the creative. Ideas would flow free, Jefferson said; the net made that possible.

- Writers don't need the permission of publishers to publish; everyone with a net connection can be a publisher.
- Scientific progress need not happen within single institutions, or small communities of scholars. It can be shared, and advanced, on a network that reaches broadly and without discrimination.
- Music can be written; machines can translate it; composers need not spend decades writing scales before they can make music.

The revolution of the last decade was a revolution in the constraints that made Jefferson's picture just an ideal, or effectively unreal. The revolution was the removal of the economic, and practical, limitations that limited creativity. A thousand flowers can now bloom, because the architecture of the digital revolution has protected a significant part of this growth from the economics of real world constraints.

It is important to think about just what in the net makes these changes possible. Nature in this world does more than nature in Jefferson's world. The architecture of the net makes it possible to distribute widely and cheaply; no bottleneck need constrain this publication. The architecture of the net makes it possible to coordinate widely and extensively; no organization, or hierarchy, is needed to make a common project possible. And the character of digital media makes it possible for images to be managed cheaply, cheaply edited; no studio, or expensive film, need limit that possibility.

The nature of the net, its *architecture*, its character, these together make possible this extraordinary power of creation. They together deliver the Jefferson revolution. They make real the promise of creativity.

I have detailed the elements of this real revolution – I have tried to make them plain, and clear – because in my view, this revolution is about to end. This extraordinary promise of creative power vested in many, in the independent, in the different – this promise is about to end.

It is going to end not because the Internet will end. Rather it is going to end because law is about to kill it. What I do, what the people I train do, what hundreds of thousands of extremely well paid people like the people I train do – we, lawyers, are in the process of killing it.

We are not killing it because we are evil. Or at least not the ones I train. The death is coming about not through conspiracy or malice. Rather the death comes from a confusion we lawyers have, encouraged as we are by clients with lots of money, about the role of property in the process of creativity. And in the remaining minutes of this brief hour, I want to sketch this confusion, and show how it is countering Jefferson's revolution.

The outline of my argument is this: We lived in a world where economic constraints sapped from most the ability to live the creativity that Jefferson imagined. The initial architecture of the Internet took that constraint away. My claim is that law is in the process of recreating the constraints that the Internet removed. Not through economic scarcity, but through a system of rights, called intellectual property rights, that will systematically skew the creative process: Back to those who hold the most, away from those just now enabled.

But more, first, about this confusion.

We live in the post-cold war era. We hold dear certain ideas we think of as lessons from that war. One of these ideas is the sanctity of property. We believe that property is the engine of freedom. We watched for two generations as whole regions of our world decayed because their governments denied the importance of property. We celebrate this year the tenth anniversary of the liberation of those people from the tyranny of those systems. We believe that at the core of that liberation was the embrace of the importance of this idea of property. At its core, that is, we believe that this prosperity comes from the embrace of property.

I have no argument with this view in general. I have no quibble with the importance of property to the free market system, and no hesitation in associating the free-market system with freedom generally. I am the son of a capitalist; I was raised on the ideals of the market; I spent many months wandering through the former communist nations when they were communist nations, all the while believing that if only the state would free the people – by recognizing and protecting property – their creativity, and potential, would be realized. I believed then, as I believe now, that about the non-virtual economy, this much is certain: that strong and powerful property rights are an important part of the engine of prosperity.

But now I want you to take note of an undeniable fact about our own recent history. It is commonplace to argue that the Internet revolution has done more to spur the American economy than any other single influence in the past ten years. Depending upon the numbers you credit, up to 25% of the growth of the American economy can be directly attributed to the Internet. The Internet has been the center of our prosperity. At a time when prosperity seemed a dream from the past, it has given us again extraordinary excitement and hope.

Yet let's not forget an important fact about the character of the Internet. No space more shamelessly ignores the sanctity of property. Pundits used to say of USENET that it was the single largest copyright violation in the world; I think we should be more general. Cyberspace is the single largest location of violations of intellectual property precepts of any place in human history.

This space was born upon the denial of intellectual property's premise. It was fed on a diet of ignoring the claims of property and control that the IP lawyers insisted upon. It thrived not by hoarding or protecting or sheltering ideas, and creativity; it thrived by giving it all away. In contrast to real space, where theft is policed and criminals go to jail, cyberspace is that place where theft produced prosperity.

Let me show you how. At the core of the technologies that spurred the growth of the Internet is the technology we call the World Wide Web. The web is a protocol for linking documents on the Internet; it permits hyperlinks among documents, or did so at first. Now it is more properly thought of as a platform, upon which an extraordinary amount of commerce gets done.

The core of that technology is in effect a programming language – really a text mark-up language, but one that functions as a programming language. Web pages get built in something called HTML; and browsers interpret HTML when they render a web page as a web page.

Now copyright law protects HTML code, just like it protects the code of Windows 95. Technically, if you copy someone's HTML source code, and take it, you have violated their copyright, just as if you copy Word or WordPerfect, and take it, you have violated the copyright of Microsoft or Corel.

But the World Wide Web was built on just such takings. And indeed, it was designed to facilitate them. Every browser even today allows you to reveal the "source" of an HTML document; every browser allows you to copy that source, and then, with an editor, to modify it as you like. The web was built on a platform that encouraged the "theft" of other peoples' works. And it was because of that encouraging, and because of this theft, that HTML became so quickly the programming language of choice. This was an economy grounded on sharing; and this sharing produced the Internet.

The web is not an exception; the web is the rule. The Internet was born not in corporations, or law firms. The Internet was born among researchers. These researchers had as their ideal not IPOs, or beautiful houses in the valley. These researchers had as their ideal perfecting a network of connection. The very protocols of the Internet were protocols of connection; they were open, and free, and available for the taking. Like HTML, this was code, but not code protected by corporations; this was code that was shared and common.

Here too, the sharing produced growth. Coding is complex; getting it right is hard; open code, and shared code, make it possible to get it right much more easily.

And thus the great irony of the past decade. As the East is learning the prosperity of property, the West is enjoying the prosperity of no property. As the East is constructing systems for protecting property so as to rebuild an

economy and society, the West is building an economy and society in a space where property does not reign.

Yet we haven't yet noticed this. Instead, as this prosperity rages about us, there are those who cry "the sky is falling." From the start of the Internet revolution, there have been those who have screamed that the economy will die unless intellectual property is better protected. While we have seen the greatest growth in the technology sector ever, there have been those who have said that unless we protect IP better, no investment will be made. While millions have written web pages, and coded code for the net, there have been those who have said only in a world of safe and secure property will prosperity occur.

These chicken littles have had their effect. For in the last few years, the United States Congress, while asserting that it wants to leave the Internet alone, has passed some of the most protective IP legislation ever in the history of intellectual property. It has extended the terms of copyright; it has ratified the broad set of protections that IP grants; it has endorsed systems that enforce the law in the code of the Internet; it has made resisting this enforcement a felony.

And not just Congress, but the courts as well. The federal courts have husbanded a revival in strong patent protections. These patent protections have been extended to software, and to business methods that are written in software in cyberspace. There are patents for selling software on the web; patents for running reverse auctions on the web; patents for ecommerce on the web; patents for just about every activity you might dream to engage in on the World Wide Web. Cyberspace is being littered with claims of intellectual property; it is becoming filled with suits demanding payment before progress can continue. And at the same time, these demands are being supported by a Congress that is increasingly captured by this ideal of property.

There isn't the time here to sketch fully how these IP rights work; I haven't the space in this hour to let you see fully the complexity of their claims. If I have time, I have time only to raise doubts in your mind. To get you to ask some very obvious questions.

For some things are undeniable. While these lawyers race around filing patents for every idea; while the politicians prance around, promising protection for Hollywood, funded with the campaign contributions of Hollywood; while Congress passes laws turning those who built the Internet into felons; while they do all this claiming that unless they do it, the Internet will not grow, there is one undeniable fact that they cannot escape:

The Internet was born with none of these protections. The greatest growth that our economy has seen in the past hundred years happened in a world where property rights were practically invisible. The revolution that

defines the last ten years was a revolution that came about without these laws. The laws, these protections, the patents, these rights – all of these are coming long after the revolution has had its effect.

In my view, this explosion of legal protection – the extraordinary extension of the power of the state, this turning of every idea into property, this work that lawyers are doing in cyberspace – all this will have a devastating effect on cyberspace's future.

But I want to be clear about the nature of the devastation.

I have no doubt that there will be an Internet in ten years. I have no doubt that I'll be able to buy books, and music, and watch videos on that Internet. I have no doubt that life on that Internet will be far more convenient and simple than life is now. It will be fast, and flashy; there will lots of corporate endorsement.

But this explosion of lawyers' work will have an important effect on the space. For what it will do is reempower those who were disempowered by the Internet originally.

The explosion of copyright won't mean nothing gets written; it will simply mean that what gets written will get written by those who control copyrights. The material, and its derivatives, will be the inputs into other work, but that other work will be the work inspired by the owners of the inputs.

The same is true about software: The explosion of patents in software and business methods won't mean that investment in software will end. Patents aren't a problem for people who hold large portfolios of patents themselves. When IBM discovers it needs to use a technology held by HP, it simply trades access to its patents for the access to HP's. Large institutions – who can afford expensive lawyers – will be advantaged relative to the small. And institutions will be advantaged relative to open source software. The explosion of patents will mean the recreation of the large institutions of coding. For only they will be able to afford the transaction costs of inventing.

And the same is true about creation in film. As everything becomes propertized – as every image becomes owned by someone else – the very act of producing a film requires an army of lawyers to negotiate the rights. That means not that film won't get made; it means instead that film will only get made by those who can afford the lawyers. The independent will die, or get sucked into a system where a few large organizations hold the rights to large collections of images.

In all three cases, the explosion of IP rights is having the very same effect. It creates huge costs of negotiating, and it therefore benefits those who can negotiate more easily. It makes it harder for the independent, or the unaffiliated, or the critical, or the poor, to create; it reinforces the power of the

institutional, or the affiliated, or the bland to create. It kills the world the Internet created; it recreates the world that existed before the Internet was born.

We live at a time when we haven't the rhetorical resources to resist this explosion of rights. We won the cold war; we believe property is the savior; we vilify or, worse, laugh, at anyone who questions the savior. And so deep is our reverence for this institution of property that when a phenomenon as significant as the Internet occurs, we don't even notice that it happens without the support of property. We don't even notice that it happens because it was a space free of strong property. And because we don't notice, it seems natural to us to support the work of lawyers who now argue that unless we recreate in cyberspace the strong protections for IP that protect real property in real space, that cyberspace will die.

Cyberspace *will* die, or at least the cyberspace that we know. It will be killed by these institutions that would recreate the 1970s in HTML. It will be killed by an institution that will disable once again the independent, unaffiliated, critical, questioning creativity that the Internet of the last ten years produced.

This brief flash of extraordinary creation. This return of Jefferson's ghost will end.

ARTICLES
