



# Standing on a Slippery Slope

Getting Beyond Simplistic  
Definitions of  
“Open” and “Closed”

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## Abstract

The question at hand is what to make of the word “open.” It is oftentimes used as a prefix, thrown in front of a term or phrase to express a positive value or characteristic (i.e., an *open channel of communication*, an *open mind*, an *open countenance*, *open borders*, etc.). But, what are the true implications of the use of the word “open” in a technical context? For the user? For the innovator? For company strategy? For security? For society?

As it is used, “open” lacks clarity: it seems to be an intermediate connector between goals on the one hand and mechanisms on the other, a connector that can obscure the reasoning that takes us from goals to means. It also has no clear design orientation: it does not actually tell us what we should build or what regulators should do. And as a goal, it seems to imply an absolute rather than a balance among objectives.

We chose “open” as a theme of the CFP Spring 2010 Plenary in order to put some substance on the analysis of the use of “open” as a concept—while fundamentally arguing against too liberal a use of the word to inform strategy, competitive advantage, strategic partnership, product development or the design of the collaborative culture of a company.

## The “open source” movement

One important context in which the word “open” is used is “open source.” Open source is an important concept in software development, defined as a movement advocating for a development model in which any license related to the software cannot prevent anyone from using it (and modifying it) for any purpose. As the name suggests, a concept central to the open source movement is that the source code be made readily available. According to the Open Source Initiative (OSI)—an open source advocacy group —“open source doesn't just mean access to the source code.” OSI then goes on to list ten criteria with which the distribution terms of open-source software must comply.<sup>1</sup>

This list of criteria makes clear that derived work is acceptable but must maintain the integrity of the author’s original code. No further licensing is required, and a license cannot discriminate against people, against field of endeavor, against specific products or against other related software or technology. *Free Redistribution* is also a core tenet of the open source definition: “The license shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several different sources. The license shall not require a royalty or other fee for such sale.”<sup>2</sup>

The goals of this initiative, it seems, were ones of innovation, productivity, efficiency, and a distribution (or decentralization) of the mode of production and empowerment of a community of software developers and end users. These goals seem to run through the open source movement.

## OpenCola (open source is not just about software)



OpenCola is a brand of cola unique in that the instructions for making it are freely available and modifiable. Anybody can make the drink, and anyone can modify and improve on the recipe as long as they, too, license their recipe under the GNU General Public License. Since recipes are, by themselves, not copyrightable, the legal basis for this is untested. [1]

The original version 1.0 was released on 27th January 2001. Current Version is 1.1.3. Although originally intended as a promotional tool to explain free and open source software, the drink took on a life of its own and 150,000 cans were sold.

The Toronto-based company Opencola founded by Grad Conn, Cory Doctorow, and John Henson became better known for the drink than the software it was supposed to promote. Laird Brown, the company's senior strategist, attributes its success to a widespread mistrust of big corporations and the "proprietary nature of almost everything."

Source:

[http://en.wikipedia.org/wiki/OpenCola\\_\(drink\)](http://en.wikipedia.org/wiki/OpenCola_(drink))

<sup>1</sup> SEE: <http://opensource.org/docs/osd> (The Open Source Definition)

<sup>2</sup> Ibid.

## Is the Internet “open”?

The Internet is certainly not open source. But the Internet is defined by protocols, not software, and it is “open protocol,” in the sense that anyone can use the protocols without having to get a license. As the Internet was originally conceived, both the interfaces (i.e., the IP service) and the means to implement the service (i.e., any algorithms defined as part of the protocols) should be free of license or copyright constraint. Operationally, there should be no license or Intellectual Property Rights (IPR) barriers to being an Internet Service Provider (ISP) or a technology provider. Protecting the open protocols is a recurring issue: patents sometimes “creep into” standards. But the goal is that the Internet be open for anyone to use.

As well, the Internet was open to many uses. The packet transport service was *general purpose*, designed to support as many applications as possible. It did not favor specific applications. We designed for general use.

On the other hand, if open source is about the ability to change the system, certain aspects of the Internet are actually really hard to change. The whole objective of interoperability means that there are certain aspects of the Internet that you cannot change.<sup>3</sup> So some parts of the Internet are open to change (one can add new applications and new technology), and others are not.

During the early years of the design, we did not use words like “open” or “neutral” to describe what we were creating. In the early days, our worries were about IPR and proprietary (undocumented) interfaces. For example, we had a lot of trouble in the beginning trying to persuade people that the protocols that routers use to talk to each other should be open and disclosed, as opposed to proprietary and under the control of what then might have been a monopoly router vendor.

The current discussion of “open” reflects a change in emphasis. The focus is now on what operators (ISPs) are doing (not protocol designers) and increasingly the focus is shifting to what governments are doing.

## The U.S. Federal Communications Commission takes on “open”

The FCC has been struggling for a while to explain how ISPs should behave and how to define what the Internet should be. The first shot at this was a set of principles released in 2005—before they formalized these as rules.

Following are the four FCC Principles:

- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to access the lawful Internet content of their choice.*
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.*
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to connect their choice of legal devices that do not harm the network.*
- *To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to competition among network providers, application and service providers, and content providers.*<sup>4</sup>

I refer back to these principles as an initial, perhaps flawed, attempt to articulate *objectives*. Versions of these FCC principles were later cast as “rules” and framed as explicit *obligations* for ISPs. In the process, the rules lost the articulation of the initial FCC objectives, and mutated from goals to mechanisms. But I think the initial version, cast as principles, is a better object of study.

For the purposes of this discussion, allow me to invert the framing device used by the initial FCC principles (**that broadband deployment and the open and interconnected nature of the public Internet lead to certain inalienable consumer rights**) in the following manner.

<sup>3</sup> Witness our problems today with IPv6.

<sup>4</sup> [http://hraunfoss.fcc.gov/edocs\\_public/attachmatch/FCC-05-151A1.pdf](http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-151A1.pdf)

If:

- *Consumers are entitled to access the lawful Internet content of their choice;*
- *Consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement;*
- *Consumers are entitled to connect their choice of legal devices that do not harm the network;*
- *Consumers are entitled to competition among network providers.*

Then, these consumer entitlements will:

- *Encourage broadband deployment;* and
- *Preserve and promote the open and interconnected nature of the public Internet.*

Is this FCC statement simply a fuzzy definition of open? Or is “open”—in this context—a code word for other goals? This loss of articulation is a serious issue—and has fundamentally contributed to the vagueness surrounding the use of the word “open” when discussing the Internet.

As a result, these principles are somewhat troubling (again, potentially flawed) and raise the following questions:

*What were the goals?* Clearly the FCC was concerned with the power of the ISPs. The principles are designed to balance the power of the actors and to get some sort of balance into the competitive landscape. You also see this notion of empowerment coming through in the open source movement. But that goal is nowhere in the principles.

*Were they trying to facilitate innovation?* It seems as if they might have been. There is a hypothesis embedded in these principles that a non-discriminatory platform may encourage investment. But, if in fact (for some reason) we completely froze applications on the Internet—but the consumer still had choice—it would still nominally comply with this requirement.

*Do these principles encourage broadband deployment?* If the consumer is entitled to competition, why will that encourage broadband deployment? If the consumer is

entitled to access the lawful Internet content of their choice, will that encourage broadband deployment? Why are these assertions true? I believe that there is no justification to assert that if these four principles hold it will encourage broadband deployment.

*Do these principles foster further interconnectedness?* The Internet is actually pretty well interconnected today. So what is the problem the principles are trying to address? The statement might be seen almost as definitional: a network that allows the consumer access to the content of their choice *must* be interconnected.

### The fallacy of competitive pressure

As if the series of questions above are not enough of a contribution to the lack of clarity that surrounds “open,” the most glaring questions surround the role of competition in this debate. We should look hard at the logic of the assumption that *if consumers are entitled to competition among network providers, this consumer entitlement will preserve and promote the open and interconnected nature of the public Internet.*

Lurking in this statement is what I call the *fallacy of competitive pressure*. Several advocates make the argument that the reason we have to force the Internet open is that there is no competition (or not enough of it) and if there were enough competition we would not have to advocate for a more open model. For example, a group of consumer advocate groups, in their filing before the FCC in 2007, put forward the following language: “The root cause of this failure [inferior broadband access in the US] is the abandonment of the commitment to open communications networks and the reliance on feeble competition between, at best, two closed proprietary networks that possess and abuse market power. With inadequate competition and little public obligation, the cozy duopoly dribbles out capacity at high prices and restricts the uses of the network, chilling innovation in applications and services and causing a much lower rate of penetration of broadband in the U.S. than abroad.”<sup>5</sup>

Of course, the faulty logic of this argument is based on the undue assumption that the consumer would choose “open” if able to choose. If that is true, why were so many consumers happy with AOL in the early

<sup>5</sup>See: [www.freepress.net/files/fp\\_net\\_neutrality\\_noi\\_fcc\\_filing.pdf](http://www.freepress.net/files/fp_net_neutrality_noi_fcc_filing.pdf)

days of the Internet? There is no reason to believe that consumers, given the choice, will choose “open.” Innovation and change sometimes leave the consumer very, very frustrated with the cost, complexity and instability they can cause.

**Defining a spectrum**

I asserted earlier that one of the problems with the word “open” is that it seems to call for an absolute: “open” as opposed to “closed.” But in real life, there is a spectrum. Let us try some other words that might be associated with the end-points of this spectrum.



*Figure 1. A spectrum from “open” to “closed”—Where would different actors choose to be on this spectrum?*

I argue that the question is where different actors want to be on this simple spectrum from “open” to “closed.” As an innovator, you want to be close to the left, as you do not want anything in the way of impeding your ability to do anything you want to create value in the marketplace. But the generality of the Internet can be both a blessing and a curse. Since the design goal was to permit many sorts of interaction and communication; it follows that it can facilitate interactions that are both good and bad. If you are a security expert, do you pick anarchy or chaos? The Wild West? Surely you lean more towards the right end of the spectrum, where more control over “bad” behavior may be available. As a user, you might like a degree of predictability and stability, so why would you “vote” for totally open?

The reality of this spectrum raises a challenge any regulator must deal with if the justification of regulation is the lack of competition. If the logic of regulation is to force the system to be open because there is not enough competition, there is still a huge burden of proof surrounding the notion that competition is a fundamental driver of “open.” If

regulation is a substitute for market pressures, a regulator (or a thoughtful advocate) must develop a robust argument as to what a competitive market would select.

**“Open” through three lenses**

In a previous talk I gave, at the CFP meeting in fall 2010<sup>6</sup>, I discussed the work I have been doing in collaboration with the Political Science department at MIT<sup>7</sup>, looking at the relationship between cyberspace (whatever that word actually means) and future theories of international relations. I have taken away from that collaboration an analytical insight, which is to look at a given phenomenon through three lenses: security, economics, and social. Let me now apply these three lenses to this discourse.

**Security**

“Open” will always be problematic from a security perspective. The Internet is, by definition, exposed to all patterns of communication—good and bad. Security experts would like to block the bad patterns, and this objective takes you down yet another slippery slope: who gets to define “bad”? From the U.S. to the French to the Chinese, we can expect a wide variation across countries and purposes.<sup>8</sup>

**Economic**

There is a tremendously powerful belief that an open platform is a powerful stimulus to innovation and investment—with a market commitment to no licensing, IPR barriers, no “run-time” unpredictable impairments, etc.<sup>9</sup>

The advocates for innovation have also pointed to the “end-to-end” design principle as a stimulus for innovation and an argument for an open platform as well. Lawrence Lessig is famous for having suggested

<sup>6</sup> See: <http://cfp.mit.edu/events/oct10/CFP-Munich-2010-Slides/CLARK.Slides.CFP.Oct10.politics-of-architecture.pdf>  
<sup>7</sup> This “three lens” approach in an analytical insight I have taken from work I am doing with the MIT-Harvard multidisciplinary Minerva Project on “Explorations in Cyber International Relations (ECIR).” SEE: <http://web.mit.edu/ecir/home.html>.  
<sup>8</sup> Jonathan Zittrain, in his book *The Future of the Internet—and How to Stop It*, talks about the tension between the open system (which he calls the “generative” system), the secure system and a possible third system in the future. His book, of course, is worth a look—but you can also watch his talk from the CFP 2011 Spring Plenary as well ([http://cfp.mit.edu/events/may11/CFP\\_Spril\\_2011\\_Video/Jonathan\\_Zittrain-MIT\\_CFP.mp4](http://cfp.mit.edu/events/may11/CFP_Spril_2011_Video/Jonathan_Zittrain-MIT_CFP.mp4)).  
<sup>9</sup> SEE: Barbara van Schewick’s *Internet Architecture and Innovation*—which lays out in more detail a foundation for this argument.

this idea.<sup>10</sup> As a strict constructionist (and having been one of the authors of the original end-to-end paper in the early 1980s), neither the word “open” nor the goal of innovation appears in the original paper.<sup>11</sup> What we were discussing in the paper as the “end to end” principle was a means to “the correct operation of reliable protocols.” The principle gets overburdened at times with faith-based arguments, which in fact do not survive a reading of the primary text.

## Social

The third lens through which we want to contemplate “open” is the social (or societal).

From this perspective, the rhetoric gets overloaded very quickly. “Open” is quickly associated with freedom, free speech, and a functioning civil society. As examples, we turn to two quotes from Secretary of State Hillary Clinton’s 2011 speech on Internet freedom:

*“Liberty and security, transparency and confidentiality, freedom of expression and tolerance make up the foundation of a free, open, and secure society as well as a free, open, and secure Internet where universal human rights are respected, and which provides a space for greater progress and prosperity over the long run.”*

*“I urge countries everywhere instead to join us in the bet we have made, a bet that an open Internet will lead to stronger, more prosperous countries.”<sup>12</sup>*

The second quote implies that the use of “open” will lead to a “stronger” and “prosperous” country. This sentence, I believe, links “open” to more specific goals. “Liberty and security, transparency and confidentiality, freedom of expression and tolerance” are described as the foundation of the left end of the spectrum. But I argue that security sits more comfortably toward the right of the spectrum. As a result, there are two diametrically opposed ideas embedded in the Secretary’s statement. Once again, the word “open” is code for a linkage between a set of characteristics on the one hand and a set of goals on the other—which obscures the actual logic and

reasoning of the speech. More specifically, it is hard to see how “Liberty and security, transparency and confidentiality, freedom of expression and tolerance make up the foundation of a free, open and **secure** Internet.” This statement makes it seem that “open” is a consequence, not a means.

Once we start talking about freedom, there are new words we can add to our spectrum: Liberty and Order. From a political philosophy perspective, “pure liberty” is some sort of a Hobbesian village (which is an unpleasant experience) and political scientists acknowledge that society needs some tools to impose order in order to achieve the liberty it seeks. Here, the rhetoric obfuscates once again the fundamental questions: what are the goals? Prosperity, it would seem; but by what means? Some mix of liberty and security—is this the same as “open” and “control?” The question, from a political philosophy perspective is, is what balance of liberty and order give us the desired outcome? Again, the preferred outcome will not be at one end of the scale or the other.

## The centrality of freedom: The Free Software Foundation

Richard Stallman is the intellectual leader of the Free Software movement. In his deliberations with the open source community, he concluded that “open source” was the wrong term. Open source is really describing a development methodology, and that is not his concern. He is concerned with freedom. So he created the Free Software Foundation, thereby creating a schism within the religion.

The Free Software Foundation uses the word “free” rather than “open.” They say “Free as in speech, not free as in beer.”

The four freedoms are described as:

**FREEDOM 0:** The freedom to run the program, for any purpose.

**FREEDOM 1:** The freedom to study how the program works, and change it to make it do what you wish. Access to the source code is a precondition for this.

**FREEDOM 2:** The freedom to redistribute copies so you can help your neighbor.

<sup>10</sup> SE: Lessig, Lawrence, *Code: And Other Laws of Cyberspace, Version 2.0*

<sup>11</sup> Saltzer, J., Reed, D., and Clark, D.D., 1984. “End-to-end arguments in system design.” *ACM Trans. Comput. Syst.*, Vol. 2, No. 4, Nov., pp. 277-288.

<sup>12</sup> *Internet Rights and Wrongs: Choices & Challenges in a Networked World*, Remarks—Hillary Rodham Clinton, Secretary of State. George Washington University

Washington, DC, February 15, 2011.

<http://www.state.gov/secretary/rm/2011/02/156619.htm>

**FREEDOM 3:** The freedom to distribute copies of your modified versions to others. By doing this you can give the whole community a chance to benefit from your changes. Access to the source code is a precondition for this.<sup>13</sup>

These freedoms look a lot like open source, but they have been cast in different terms—not in terms of the rights of the developers or the process of source development, these are cast as freedoms of the individual. So his goal—freedom—shines more clearly and directly through the framework than does the less well-defined “open”.

### Conclusion

So what do we make of the word “open”? From this discussion, it is clear that:

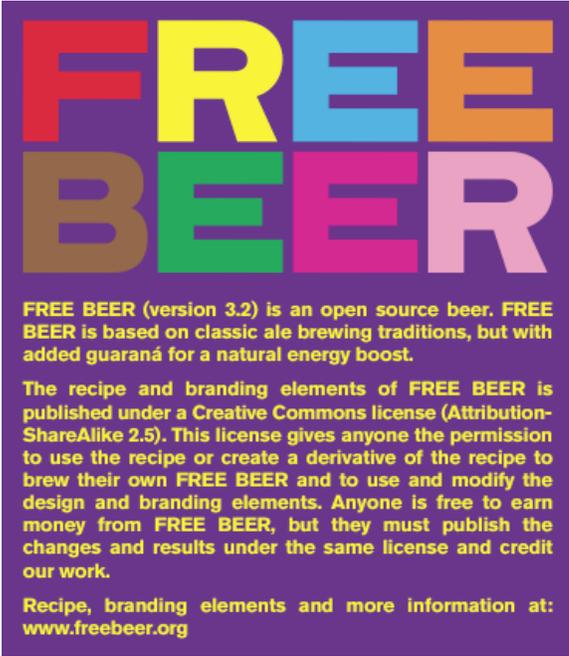
“Open” is used as an intermediate connector between goals on the one hand, and technical mechanisms and characteristics on the other. I conclude that the use of this word can obscure the logic that should link goals to ways of achieving them.

“Open” does not actually tell us what we should build or what regulators should do. It is not foundational, not operational, and, more often than not, does not make any sense.

“Open” implies that we are trying to be at a far end of an open/closed spectrum—and we are not. We are trying to find a place along the spectrum. The Internet has never been neutral—and the FCC figured out that the phrase “net neutrality” was not felicitous because it suggests an absolute outcome to the open/closed spectrum discussion.

To put some substance on an analysis of “open” we must consider it in relation to social goals such as freedom or innovation. We must then consider different approaches to achieving these goals—for example what degree of regulation gives us the stability so that we can have the freedom we seek. We should remember that most users (and more generally most citizens) do not seek a world free of all control. Being “totally open” is not always a good thing.

It’s free as in FREE BEER, not as in free beer



**FREE BEER** (version 3.2) is an open source beer. **FREE BEER** is based on classic ale brewing traditions, but with added guaraná for a natural energy boost.

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Recipe, branding elements and more information at: [www.freebeer.org](http://www.freebeer.org)

To illustrate how concepts of the free software movement might be applied outside the digital world, freebeer.org “was created by students at the IT University in Copenhagen together with Superflex, a Copenhagen-based artist collective.”

See: <http://freebeer.org>

<sup>13</sup> <http://www.gnu.org/philosophy/free-sw.html>