Internet Abstractions Meet the Law, Rubin H Landau

It was a dark and dreary morning last month, when in the damp cold comfort of my home office I attended an hour-long live lecture by Susan Crawford, a Professor at the Benjamin Cardozo School of Law. The subject was *U.S. Internet Access Policy,* one of the Educause Live Professional Development events, and, appropriately, the lecture was a web seminar (webinar) delivered over the internet using Abode Connect. This format permitted the participants to click our mice to ask questions during the talk, or to communicate with each other, all the while listening attentively and not interrupting the speaker. Although we did not see the speaker while she spoke, we heard her and saw her slides with no technical glitches (I was on cable modem).

As a theoretical physicist, who has spent many years thinking about and analyzing physical phenomena and computation, it is fascinating for me to learn how a legal scholar thinks about and analyzes a phenomenon on which that I too have worked. There were two aspects of the talk that remain with me still, and about which I will now rumble on. The first is how the internet means different things to different people, depending, in my analysis, on the level of abstraction with which they view the internet. (Crawford doesn't use the term abstraction, but I believe it appropriate and helpful to hackers like us). The second is how U.S. government's policy regarding access to and regulation of the internet differs (or maybe should differ) depending upon the level of abstraction used. Crawford has a number of papers on these subjects available on the internet (of course), with the one *Internet Think* [httlp:ssp.com/abstract=962596] most accessible to my non-legal mind.

In some ways it is hard to arrive at an acceptable answer to the question "**What is the Internet?**" because we were all alive while it was growing into its present form, and so we all think we know the answer. As is the case with religions [Eric Fromm] or elementary physics, the internet can be defined by displaying its various concrete manifestations (animals, idols, statues, and wires), as an abstract concept (a single invisible deity, a social community), or as a practically-necessary mix of the two (TCP/IP).

The concrete definition of the internet is in terms of the pipes and switches that carry the signals. This is the view advocated by the "telephone company", who Crawford calls the "telcos", and also, apparently, of many in the best congress money can buy. Yet even if this view is too simple, the connections that compose the internet are not simple, obvious, or inexpensive. First there is the nation's backbone, originally set up by DARPA and the NSF, which in reality is collection of different lines or networks connected together. This provides many ways to get from A to B. The NSF did originally require that the connections be made available to all qualified users on academic campuses, but then in 1995, after its importance had been proven, defunded the project and opened the internet up to commercial users. The backbone is composed of a large number of optical connections following the Internet Protocol (IP). On one end of the backbone is a pretty large collection of local connections from the content providers to the backbone. On the other end of the backbone are us, the end-users at the mercy of the local internet service provider who (for a healthy fee) connect the backbone to us all. It's this last piece that has been a problem for many of us, and still seems to be especially problematic if you live in a non-urban area, or do not have the money to buy in. In fact, history indicates that the telephone companies never appeared to see the internet coming or arriving, that they have not been willing to acknowledge its importance to American households, were quite satisfied to have us suffer with slow phone-line

modems because that required us to pay for multiple phone lines into our homes. And, happy in their way, the telcos did not move to digital service lines (DSLs), until the cable companies started providing broadband internet access with their cable modems. Whatever the history, it's these various pipes with which the telcos make their money and, surprise, surprise, tend to define the internet as these pipes. Even though the pipes are now used to connect computers and transmit data, the telcos will still argue that this is not all that different from people talking on telephones, or is it? It is not surprising that this concrete view of the internet in terms of hardware is considered to be the common sense one for many people, including the best congress money can buy.

A more abstract definition of the internet, but still involving some concrete constructs, is that given by the engineers who originally designed it. To them the internet is not just a bunch of wires and switches connected to each other, but is really the logical architecture underlying the internet. It is this architecture that allows you to connect your computer on one particular network to another particular computer on a very different network anyplace in the in the world. This is done by breaking up the information being communicated into packet-sized chunks, each chunk containing the address of where it came from and is going, and then sending the packets on their multiple ways, network link by link. This Transmission Control Protocol/Internet Protocol (TCP/IP) is the collection of rules that permit this sending and switching of individual packets, where, in contrast, the telephone protocol switches individual circuits for each call. In practice, the TCP/IP protocol is not restricted to computers, but can be used to connect any piece of equipment that follows the TCP/IP rules. Many applications can now be run this way, with the underlying architecture, not the applications, comprising the internet. In this view, the wires and switches of the internet can all be replaced, as can the applications, with the internet remaining unchanged. As Crawford documents it, the engineer who designed the internet did not envision, or possibly want, information being stored on the internet (it is not the Web), or having a central control of the communications. And considering how well TCP/IP, HTML, and HTTP has worked, it is reasonable to consider their views seriously.

The most abstract view of the internet is probably that of the group of visionaries that Crawford call the "netheads". These are people like Vannevar Bush, Doug Engelbart, Norman Wiener, and J.C.R. Licklider who foresaw the impact of communications and computation on a human level, and helped make devices and interfaces so that people could interact on a personal level with computers and information. In this view the internet is more than just a medium, it is a state of mind, it is the social worlds and creative conversations that the internet permits, and also the controls and interactivity that humans have via their communications.

These three different views of the internet are not just of academic interest (although there is nothing wrong with academic interests as far as I am concerned), but also influence how different groups in society view the internet and want to regulate it. As Crawford pointed out in her webinar, historically, the government viewed telephone companies according to the principle of *common carrier* which permits charging for the service of transport, but requires equal access for all (something missing for rural internet users). In contrast to telephone networks (or bus lines), broadcast networks are not viewed as common carriers, and consequently are regulated with regards to content, access, political fairness, and decency. This regulation is more restrictive than how the government handles the press, which has bill-of-rights protection. Of course the internet does transmit news, entertainment in various forms, personal communications, etc., and so its regulation is not clear.

In 1971 the FCC wanted to keep ATT from extending their telephone monopoly over to a computing and networking monopoly, and so ordered ATT out of the "data processing" business, and required that ATT let other companies use ATT's networks on a common carrier basis. (I suspect that this is one of the reasons that the US is significantly behind other countries, like South Korea and Japan, in computer networks). As we have painfully lived through, there resulted some clumsy separation of data from phone communications, and then a really confusing transition to the internet. Crawford concludes that history matters here because it determines what sort of regulation will be used (often a problem for the government with new technologies), and that the protection of free speech should include being able to

communicate that speech over a network. This gives some context to the 1996 FCC regulation that information is not covered by the common carrier precedent, and that information transfer should be unfettered by state or federal regulations. However, the FCC did not address access as a right.

If we put all these analyses together, then it becomes clear that some problems can arise because regardless of what the internet is, its switched packets all travel on the same wires owned by a company that is in the legitimate business of making money. These packets can be carrying many different kinds of information, such as email, video, music, data, documents, news stories, blogs, phone service, instant messaging, spam, or pornography, but all look the same from the outside. Yet if the packets contain news, then internet is like a newspaper, and so it should have certain protections associated with freedom of the press. But if the packets contain pirated versions of music, then the internet is being used to transport stolen goods across state and possibly national boundaries, and it can be argued that the owners of the wires should not be assisting the crime. Similarly, communities have legitimate demands of protection of their children from the pornography or predators within the packets. Furthermore, is it right that the owners of networks, who often happen to have interests in entertainment companies as well, should be permitted to slow down the transfer of their competitor's products, as long as they are not denying them access? (common carrier requires equal access, not speed). In fact, Crawford points out that Bell South wants to charge Yahoo more for packets than other users..

From the legal viewpoint, it appears that how the internet gets regulated, and who has access to it, depends upon how the internet is defined, and on what historical precedent goes with that definition. The common carriage principle provides for liberty of travel, and maybe it's too much of a stretch to apply it to a general purpose, global communications network? It's clear that no one person or body is in charge of the internet, which may be a beautiful or a scary thing, and so regulation or control (the original meaning of cyber) is not simple to enact. There are groups arguing for government protection from spam and pornography (technically possible with filters or membranes), and there are also groups (possibly leftovers from, or inheritors of the original Unix community) arguing that sharing of information and freedom of access is how the internet was founded, and should be retained via the principle of net neutrality. And the phone company can rightfully argue that fiber optics connections are expensive and so they law gives them some right to protect their investments.

So what is the conclusion? Maybe this is one of the subjects, like religion, where everybody believes so strongly that the other guy's understanding of the details is faulted, that agreement on general principle becomes impossible. Or maybe this is one of those areas, also like religion, where the wisdom of the fathers say that the best thing for the government to do is to separate itself as much as possible. I agree with Crawford conclusion that there are legitimate reasons for the government to exercise some regulation of the internet, but that society and technical progress is best served if that regulation is kept to the essential minimum.

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