

# Tragedy of the Commons

Net Forecasts – Peter J. Sevcik  
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We depend on the Internet for social, educational, and commercial endeavors. It is becoming as essential as municipal water systems and the electricity grid. Yet it suffers from a destructive phenomenon known as the “Tragedy of the Commons.”

The tragedy of the commons was first described by William Forster Lloyd in 1833. The villages of both old and New England were built around a central public area of land referred to as the commons. He observed that when the commons are used as pastureland available to all, cattle-owners have a short-term interest in increasing the size of their herds. But the size of the herds on the commons will soon exceed its carrying capacity. The commons will be doomed by overgrazing. Eventually, the cattle-owners suffer, abandon the commons and find a way to ensure a sustainable source of pastureland.

We have many examples of depleted or spoiled commons in the world today. There was an excellent discussion of this phenomenon by Garret Hardin in the December 13, 1968 issue of *Science*. The global resource depletion and pollution expansion he described a quarter century ago are even more serious today.

So there is something wrong with the Internet, and it has some relationship to the spoiling of the commons. But just what is the Internet commons and how is it being spoiled?

The often cited commons is freedom--freedom to say what you want to anyone you like. Complete freedom of expression without the need of a printer, publisher and distributor. This is a good aspect of the Internet, but it is not a commons that can be depleted. You can always have more ideas to post on a website or blog, and many people behind you will do the same. The ideas are not limited, nor is the canvas upon which they can be painted. Yes, some governments limit freedom of speech on the Internet; they are keeping some people from accessing the commons, but the commons is still there.

In order to qualify as a commons in the views of Lloyd and Hardin, the resource must be depleted to the point that the users abandon the area. Consider a home in Love Canal or cod fishing off George’s bank--both spoiled to the point of non existence. Here are some proposed Internet commons tragedies.

## **The Internet Commons**

What is being spoiled is the physical and logical identity of the user. It is too easy to impersonate an individual (email address) or an enterprise (website). This is how spam, phishing, viruses, and worms get started.

However, the address and naming space of the Internet is very large and not completely depleted with misuse. What happens is that people and companies move to another fresh area by changing their Internet identities. For example, by convention many people in higher education use completely disposable email addresses that are a seemingly random set of letters and numbers at school-dot-edu. This is analogous to the New England farmer leaving the village commons for open land on the western prairies. Eventually, population growth in all arable lands of the U.S. made this an unsustainable strategy. Will we run out of never used name and address space?

The most cited example of spoiling the commons is spam--traffic that must be processed by servers and transmission systems, and then is discarded. It is the garbage or pollution of cyberspace, and it is taking up a huge percentage of total email traffic. The resources it wastes are servers, routers and bandwidth. If these were truly a fixed commons, we would have run out of them long ago. Instead, the industry keeps growing these resources via newer and better technology. In fact, there are companies that make money at being the garbage cleaners of the Internet--spam filters. Spam is primarily an economics battle.

One more resource is being consumed by the Internet’s “bad stuff:” your PC. Remember that the Internet is fundamentally designed around a smart

active end station. You own that end station as a PC, PDA, smart phone, etc. In order for you to be a productive member of the Internet community, you must deal with all the bad stuff that assaults your PC. In fact, have you ever been so overrun with bad stuff that you had to reformat your hard drive, or worse, buy a new computer? If you did, you moved to a new patch of grass.

This may not be a true depletion of a resource because you can, and do, buy new computers. Again, it is an economics game in which vendors actually benefit.

But this problem should not be measured in physical resources like new hardware or bigger Internet pipes. You do other things to cope with using the Internet. You buy, install, update and run anti-virus software, adware cleaners, firewalls, etc. Administering and operating your Internet defenses takes time. It must be performed every day and it even takes time as you browse the Web or read email. This time adds up, and it's taken out of a fixed allotment of 24 hours per day. The most precise commons tragedy on the Internet is user time.

Our little consulting company spends an awful lot of time tending our software. The ISPs in our area can't find qualified people to hire to deal with the software. So money does not help. Some people just run out of time trying to cope.

This time cannot be accumulated, aggregated, or amortized. For example, someone may argue that 8 hours of work by one person spread across 500 users is less than one minute per user per day. But this is not a feasible proposition. That one worker does not have access to or control the desktops of 500 users. Furthermore, the maintenance time required per desktop is much more than a minute per day and growing. I know Internet users that have simply unplugged.

#### **Fundamental Fixes**

The tragedy of the Internet commons cannot be ignored. It must be addressed by the stakeholders. At least two such groups doing so, with differing strategies.

First, the major transport service providers are lobbying to turn the single service plane of the Internet into multiple layers: current best effort and

something "better." The Washington Post reported that John Thorne, a Verizon senior vice president and deputy general counsel said, "The network builders are spending a fortune constructing and maintaining the networks that Google intends to ride on with nothing but cheap servers. [Google] is enjoying a free lunch that should, by any rational account, be the lunch of the facilities providers."

Well Mr. Thorne, go buy some of those cheap servers and get into the search business if you think it is so easy. You have had a 100-year head start on Google to figure out how to make better money on your pipes. Verizon already enjoys the advantage of being a de facto monopoly of copper loops to homes in its huge service area. This is despite attempts to break up Ma Bell and then provide equal access to the copper in the Telecom Act of 1996. How much of an advantage does Verizon need?

Keep a close eye on the carriers' proposals. They will try to argue that their "better" services will somehow avoid the Internet's ruin of the commons. But remember that this is just an economics battle where they are trying to position themselves to make more money. They will not be able to keep spam, viruses, worms, phishing, etc., out of the "better" service. Thorne is correct – the carriers just want a free lunch.

Second come the players on the edge of the Internet--the major content providers. AOL and Yahoo have just announced a new "better" email service where companies pay a fraction of a cent to send messages. The fee includes guaranteed delivery to their subscribers and assurance (via a certificate seal) of the message's true origin. The goal is to limit spam and phishing. Of course, this can be extended to setting up authentication barriers for websites, on-line advertisement, etc.

There has been an outcry in the Internet community that this will be the end of the "openness" that fueled its innovations and growth. That may be true to some extent, but it is the only way to really deal with the tragedy of the commons. What AOL and Yahoo are doing is exactly what farmers did. They instituted the notion of private property and fenced their land to keep out the other farmers. It worked for farming and it will work for the Internet.

Certifying the source of Web and email traffic can be provided by many organizations. Furthermore, these groups should set up open standards and clearing mechanisms to permit interoperability among the legitimate edge systems. Yes, it means that some kid operating out of a bedroom can't be an ISP, Web host, or email service. We will still have an open market and competition among hundreds of legitimate suppliers of a truly better service.

### **Conclusion**

The tragedy of the Internet commons can only be addressed by the edge systems, not by the transport infrastructure. It is natural at this stage of the Internet's development to have a few strong edge players like Google, Yahoo and AOL lead in this transition. As long as they keep it open and smaller players quickly adopt the mechanisms, then we will

have set the stage for the next generation of innovation and growth. And maybe you and I will get some precious time back.

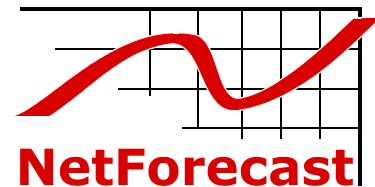
### **Companies Mentioned**

AOL ([www.aol.com](http://www.aol.com))  
Google ([www.google.com](http://www.google.com))  
Verizon ([www.verizon.com](http://www.verizon.com))  
Yahoo ([www.yahoo.com](http://www.yahoo.com))

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