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The economics of sharing

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Technology increases the ability of people to share, but will they share more than just technology?

BY NOW, most people who use computers have heard of the “open source” movement, even if they are not sure what it is. It is a way of making software (and increasingly, other things as well), which relies on the individual contributions of thousands of programmers. The resulting programs are owned by no one and are free for all to use. The software is copyrighted only to ensure it remains free to use and enhance. In essence, therefore, open source involves two things: putting spare capacity (geeks' surplus time and skill) into economic production; and sharing.



Economists have not always found it easy to explain why self-interested people would freely share scarce, privately owned resources. Their understanding, though, is much clearer than it was 20 or 30 years ago: co-operation, especially when repeated, can breed reciprocity and trust, to the benefit of all. In the context of open source, much has been written about why people would share technical talent, giving away something that they also sell by holding a job in the information-technology industry. The reason often seems to be that writing open-source software increases the authors' prestige among their peers or gains them experience that might help them in the job market, not to mention that they also find it fun.

The characteristics of information—be it software, text or even biotech research—make it an economically obvious thing to share. It is a “non-rival” good: ie, your use of it does not interfere with my use. Better still, there are network effects: ie, the more people who use it, the more useful it is to any individual user. Best of all, the existence of the internet means that the costs of sharing are remarkably low. The cost of distribution is negligible, and co-ordination is easy because people can easily find others with similar goals and can contribute when convenient.

The question is, can sharing be used to supply more than just information? One of the most articulate proponents of the open-source approach, Yochai Benkler of Yale Law School, argues in a recent paper* that sharing is emerging for certain physical, rivalrous goods and will probably increase due to advances in technology. Where open source was about sharing information by way of the internet, what is happening now, Mr Benkler notes, is the sharing of the tangible tools of technology themselves, like computing power and bandwidth. This is because they are widely distributed among individuals, and sold in such a way that there is inherent (and abundant) unused capacity.

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Yochai Benkler's study of shareable goods was published in the *Yale Law Journal* last November. SETI@home harnesses the power of 4.5m computers.

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Consider computing power. By some measures, the world's most powerful supercomputer is not owned by NEC or IBM, but is a volunteer project called SETI@home that aggregates the spare processing power of around 4m computers. When an individual's PC is idle, a screen-saver application that users have downloaded kicks in and harnesses the computer's processor to decode radio signals in search of extra-terrestrial life. A basic PC chip is a rivalrous good, but it provides far more power than most computer owners ever use. So putting this spare capacity to use through sharing makes more sense, if this is as easy to do as it is with SETI@home, than letting it go to waste. Why do people not sell the capacity instead? Probably, this would raise the transaction costs to the point where it would not be worthwhile.

Moreover, via "peer-to-peer" systems, people exchange digital copies of music over the internet, sharing not only songs but, more important, the physical memory of their PCs. Tens of millions of people have used peer-to-peer systems, which account for more than half of all internet traffic. One reason why sharing is so commonplace is that there is enormous overcapacity in both computer memory and internet bandwidth (and because the songs themselves are "non-rivalrous"). Both memory and bandwidth are rivalrous, yet people have no choice but to buy more than they can usually consume themselves. And as with open source, sharing is made easy because the internet has made transaction costs so low.

Tune in and share

The phenomenon of sharing physical goods has important implications for a number of public policy debates today, most notably for regulation of the use of radio spectrum. Around the world, regulators have granted licences, giving mobile-phone companies the rights to use a specific band of the airwaves, often in exchange for billions of dollars. Spectrum is parcelled out in this way under the assumption that more than one signal on the same frequency results in interference. This has been true until recently, but today radios with cheap microprocessors can pick out competing signals intelligently, just as the human ear can make sense of a conversation in a noisy bar.

The result is that new technology has made the sharing of spectrum possible—radio waves could be a non-rivalrous good—if only this were legally permitted and engineered into the software that runs the wireless devices. Regulators have changed their approaches slightly by allowing secondary markets in spectrum, but this anachronistically still presumes exclusive, not shared, use.

Mr Benkler does not limit his analysis to computing and bandwidth, but tries to make a broader point in favour of sharing goods far beyond information technology. "Social sharing", he asserts, represents "a third mode of organising economic production, alongside markets and the state." However, with the exception of carpooling, he acknowledges he is hard-pressed to find instances where sustained sharing of valuable things is prevalent in the world outside information technology. For most goods and services, sharing will remain the exception not the rule. But Mr Benkler has identified an intriguing alternative.

* "Sharing Nicely: On Shareable Goods and the Emergence of Sharing as a Modality of Economic Production." *Yale Law Journal*, November 2004