Essay

As commercial interest in open-source software development grows, an apparent conflict between the cultures of open source and capitalism threatens to derail the movement's momentum. But in fact, the character and operation of both are shaped at many levels by an important, shared ethos: the value of individual freedom.

Culture Clash and the Road to World Domination

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"Those who will be able to conquer software will be able to conquer the world."
—Tadahiro Sekimoto, President, NEC

The open-source or free-software movement took off in 1985 with Richard Stallman's idealistic and reflective "GNU Manifesto,"[1] drawn up in unhappy reaction to the spread of proprietary, closed-source commercial software. Frustrated by the dampening of an earlier atmosphere of open software collaboration, Stallman championed the notion of freely sharing one's work as a matter of principle, and he offered a brilliant legal tool to do so securely: the GNU General Public License.[2]

The open-source movement started with a few academics working on programming tools like text editors and compilers. As the value it offered grew and the idea of open source spread, the community of open-source developers and users ballooned dramatically. Stallman's ambitious vision of bringing forth an entire open-source Unix-like operating system with all the expected utilities and applications was achieved through the work of thousands of people around the world.

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Growing Pains

The tremendous value of open source has propelled it from the relatively narrow realm of research, teaching, and recreational programming to an ever-widening audience (of around 7 million by some counts[3]). Large companies—Internet service providers and Web-intensive companies in particular—are drawn by its low cost and high quality, using it for crucial infrastructure. Netscape, Oracle, Informix, and Corel are porting their popular commercial applications to open-source platforms. Industry-shaping companies such as IBM are blending their commercial products with open-source solutions like Apache. The major media outlets are noticing open source, too, with front-cover features and a growing body of news coverage.

This is an amazing success story, but it has not developed without wrinkles. The explosion in interest has aggravated an ideological conflict within the open-source community, threatening to bring a potentially crippling rift that could destroy or suppress productive partnerships and imperil the growth and progress of a movement with boundless potential.

From its inception, many within and outside the free-software movement regarded it as basically collectivist. This is understandable given its central notion of freely sharing the means of producing programs, and given its roots in antiproprietary, sometimes anticommercial sentiments. Other factors include the effects of sidebar arguments from influential founders like Stallman questioning the legitimacy of the concept of intellectual property, papers arguing that "software should not have owners," and the powerful connotations of the word "manifesto" in a founding document's title. Consequently, the movement is perceived by many as having an anticommercial, collectivist basis fostering a natural antagonism between it and the individualism and capitalism with which it is coming into increasing contact.

Perhaps this ideological conflict has been aggravated by a clash of cultures as the movement grew beyond its beginnings in academia: not just free versus proprietary, but academic versus corporate, hacker versus user, liberal versus conservative, and so forth—demographic contrasts we might expect to encounter as a fairly narrow, homogeneous group expands to include more of the diversity found in the larger world. Around the time that Linux architect Linus Torvalds appeared on the cover of *Forbes* magazine (10 Aug. 1998; http://www.forbes.com/forbes/98/0810/6203094a.htm), I began noticing an alarming reaction by some to the attention and participation of certain "outsiders." They were treated almost as interlopers, or Barbarians at the Gate: how dare capitalists enjoy and even embrace the open-source ideal—everything they stand for seems the exact opposite of open source!

Hackers: Individualistic Programmers

How can open source and individualism/capitalism coexist in peoples' value systems? We can begin to understand this apparent contradiction by focusing on the open-source community at the individual level. Do open-source hackers share a personal ethic? The key features to look for are what they value, and its correlate, what they consider virtuous. Such an examination reveals that, at least in their personal electronic lives, open-source hackers grapple with the world in a sharply individualistic way.

Value

Open-source hackers like to work on code and share their efforts with others, and their ability to do so depends on personal liberty in their electronic existence. They want the freedom to create without interference, to think and speak their minds without fear, to use their knowledge and the products of their labor as they see fit. Indeed, liberty is the whole point of securing access to the source in the first place: to have the power to learn, play, redesign, fix, audit, extend, or apply the code—as they choose.

Many companies are drawn by the low cost and high quality of open-source software.

With such power comes corresponding responsibility. For example, working on the code yourself makes you accountable when a mistake is made in implementation or your design doesn't solve the problem you had hoped it would. Yet hackers eagerly shoulder such personal responsibility for their electronic destiny. They act on their own judgment, undertaking the projects they deem necessary for the ends they judge worthwhile. They work on projects with the people they choose, solving their problems as best they can. And they live with the consequences

of all these individual choices for good or ill (though with its open, peer-reviewed nature and the ability to promiscuously leverage other peoples' best work, there is usually far more of the good than the ill).

Virtue

Open-source hackers value personal liberty, but what do they consider virtuous? Do their virtues tend to help them flourish while embracing the liberty they desire, or does what they consider virtuous actually work against their interests in a mismatch of means and ends?

Virtue among hackers fits their strongly individualist outlook: they prize intelligence, knowledge, technical skill, personal productivity, dedication, solid engineering judgment, and creativity.[4,5] And the tremendous success of open-source hackers offers strong evidence that their concept of virtue helps them in seizing the liberty they value and thriving under its responsibilities. Over the last decade and a half, the open-source community has tackled a broad range of projects across many problem domains, and industry-leading results have quickly emerged, judging by the standards of features, security, and stability.

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Beyond the pragmatic utility of the code, hackers traffic in other individualistic values, granting and receiving recognition and praise for their productive achievements. Peer repute is important, and merit reigns supreme in their world. Egalitarians need not apply because hackers know and have no desire to ignore the bare fact that not all programmers are equal in ability and ambition, not all designs are equally effective, and not all ideas and projects are as interesting and worthy. Recognition goes to results, not to intentions or mere talk. "Let's see some working code" is a common, friendly challenge issued to someone debating a design choice. And hackers thrive under the light of such scrutiny; it is their culture—not imposed, but sought and enjoyed. People join this community of ability and achievement as midgets among giants, hoping to build themselves up to a higher level of personal skill and accomplishment, maybe even aspiring to someday earn that prized title, hacker.

These values impart a strong cultural impetus to recognize developers' code as theirs—not nobody's, and not everybody's. Probably the gravest offense one can commit in the hacker community is to remove another person's name from a project's code or history, stealing their due credit.[4] This strong sense of ownership is further evidenced by the fact that the author always chooses whether and how to share open-source code. Other people never receive it "by right," as they would under a collectivist organization. Torvalds captured this spirit when he said, "He who writes the code gets to choose the license, and nobody else gets to complain." People who see open source as essentially collectivist have to overlook the crucial fact that open-source code is never received "by right" from its author.

Open Source: Another Spontaneous Order

If open-source hackers are strongly individualistic on the personal level, then how do they interact with one another? Examination reveals that the systemic structure of open source flows consistently from its participants' individualistic values. Furthermore, open source has an important feature in common with capitalism's free markets that can help us understand how the community works and why it is so effective: spontaneous order.

One of the most remarkable things about the open-source movement is its utter decentralization—no authoritarian figurehead dictates what shall be worked on, by whom, and how, at any level. Many people see complicated systems and assume that they are designed and directed, that someone must be in charge. But from the smallest projects through the most ambitious worldwide efforts, nobody in open source has any authority beyond what the self-organizing collaborators may freely grant. People work on what they want for their infinitely varied personal reasons, yet tremendous order, organization, and cooperation emerges to meet sometimes very large, challenging, widely shared goals.

Its distributed nature makes open-source development more robust and effective than an authoritarian organization because there is no single point of failure. Missteps and calamities are localized and recovered from more quickly. Decisions are made closer to the relevant information so there is faster progress with fewer missteps in the first place. Its decentralized organization helps the open-source community consistently produce powerful, robust, useful soft-

ware solutions, from GNU Emacs to the Linux kernel. To borrow a little language from the economists, the individually chosen, self-interested activities of thousands of open-source developers give rise to a spontaneous order of cooperation, one analogous to that which emerges in capitalist free markets.

But how does it work? What shared, key factors cause such useful order to spontaneously emerge out of peoples' needs and wants? The answer: cooperation, and the motivation to use it.

Cooperation

In both open source and capitalism, the strongly individualistic ethic fosters a view of people as ends in themselves rather than merely a means to someone (or something) else's ends. The dignity and worth of every person must be respected, and cooperation rather than coercion is the preferred, encouraged, and only acceptable way for people to deal with one another—a win–win relationship is preferable to a win–lose one. The more cooperative and less coercive a system is, the more effective and productive it tends to be, because people who intend to cooperate and trade to mutual gain must all work to bring something of value to a relationship, while predators bring nothing of value, only a threat. What then fosters cooperation in open source and capitalism?

Capitalism as a social system respects and defends individual human rights, notably the right to property. The current American- and European-style mixed economy is not entirely capitalistic, because some people and businesses can use government power to secure special advantage over others—by lobbying for taxes, regulations, incentives, subsidies, and so on. To the extent that people and companies can use government power to indirectly compel others in economic matters, capitalism is undercut. The defense of rights upon which capitalism rests entails prohibiting physical force or fraud; individual rights are rights to action, and physical interference is the only way to violate them.[6] Such a prohibition does more than simply allow people to cooperate, as most any social system does; it is expressly designed to leave people no option besides persuasion and free association in their dealings with one another.

The world of open source exists within the context of governments and laws that protect people (to varying degrees) against violation of their rights. The most prominent interface point is the reliance on copyright law by open-source software licenses like Stallman's GNU General Public License. That alone suffices to foster cooperation in the open-source community, but there is another factor: because the vast majority of interactions occur over the Internet, it is nearly impossible to coerce someone. How would you make them do anything? On the Internet, people can easily choose whom they will and will not deal with. Even more than in the wider world of our mixed economy, persuasion, mutual gain, and broad freedom of association are the natural norm.

Motivation

Both open source and capitalism make it difficult to coerce your neighbor, but why would people bother to choose cooperation over doing nothing? What important parallels are there between open source and capitalism in the system-wide operation of incentives?

At the individual level, the recognition and protection of property rights helps motivate self-interested agents to act because they have a reasonable expectation of enjoying the fruits of their labor, whether ultimately economic, psychological, or some of both. Open-source pioneer and evangelist Eric Raymond identified the hacker culture at the core of open source as being a "gift economy" rather than an "exchange economy."[4] In free markets, most participants produce something of economic value (widgets, software, service, information) and trade it for another, largely economic value. However, open-source hackers likewise produce something of economic value but then share it for something of psychological value (such as peer repute, altruistic satisfaction, or engineering pride). Seeing this tremendous resource, some pragmatic open-source participants like Netscape are releasing their proprietary code under open-source licenses in the hope of attracting hackers' considerable talents in peer review and further development.

Its distributed nature makes open-source development highly robust and effective.

But even in this gift culture, sustained output from a population of developers is only possible if they trust that people outside the gift culture will not exploit their efforts and generosity in surprising or distasteful ways. They need to know that their wishes regarding how their work may (and may not)

be used will not be violated, that no one can take and use the product of their best efforts at whim.

Stallman's innovative open-source software license solved this problem. Relying on copyright law, the GNU General Public License was designed to encourage participation in this gift culture while structuring distribution requirements so that commercial concerns could not gain financially from the value of open-source code per se. They would have to earn their gains through added values such as packaging, distribution, training, documentation, consultation, and support services.

On a system-wide scale, capitalism and open source both draw attention and resources to where they are most needed, proportionately, automatically, without central direction. Incentives in both realms are naturally aligned such that the more universal and pressing the need or want, the greater the rewards for a solution, and the more attention and resources that are willingly directed toward finding and enacting that solution. In free markets, the price system both signals needs and supplies this escalating incentive to entrepreneurs and inventors. In open source, exposure to a defect or needed development signals a need to developers, and widespread exposure to it increases the incentive and likelihood that someone will clearly identify it and develop a solution. The result in both cases is a system-wide, self-balancing deployment of resources that puts an indispensable principle to its best use: "given enough eyeballs, all bugs are shallow."[7]

These incentives naturally increase participation and output in both systems. In capitalism, accumulating wealth and knowledge increases the benefits of specialization and trade, which fuels growth in wealth and knowledge, further increasing the benefits of specialization and trade. Likewise in open source, more and better code gives people and companies more reason to use, fix, and extend it. This leads to even more parties seeing the software as valuable, which results in even more extensions and improvements.

The Ultimate Resource Unleashed

Our original question of how open source and capitalism can coexist in peoples' value systems no longer seems so vexing; it rests on the false assumption that there is a fundamental clash between the two. Far from exhibiting a collectivist nature, the open-source community and its members have a distinctly individualist bent. Reflecting a shared view of people, the overall organization and mode of operation of open source shows a spontaneous order closely analogous to the spontaneous order that emerges in capitalist free markets. Both rest on the idea of individuals as ends in themselves with regard for people and their choices. Both reward productivity and achievement. Both respect individual property. These factors create a kind of systemic encouragement for people to turn their minds loose in peaceful and productive ways on the challenges of life, and that is precisely what drives the tremendous success of both open source and capitalism.

To those in the open-source community feeling unease at the growing contact with the "outside world" of capitalism, I ask you to consider the idea that the two realms are actually the same under the surface: that there is a fundamental affinity between them, that they are both based on the same strong and right principles. In short, I ask you to consider the idea that you are not being compromised on the road to world domination, but that you are in fact succeeding spectacularly. ❖

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