# Open source capitalism

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The response to the banking collapse, rescued by governments they'd long bullied, and bailed-out by the masses facing austerity, inflation & stagnant-lending – has been somewhat muted. The Occupy movement revealed the scale of anger and illustrated the media-friendly potential of a mobilised and networked group, but was unable to offer a coherent alternative, split between reformists and revolutionaries, socialists and libertarians, the homeless and educated idealists.

If there was ever a time for the co-op movement to step forward with an alternative, it's now. Yet the world is very different from the one in which co-ops first emerged. Since before what some have called the early death cries of neoliberalism, a different order has been emerging, far from the co-op space. The values of the Rochdale Pioneers live on, but are most widely visible and active today in the networked world. Non-capitalist, collaborative forces not only thrive on the networked world, but also provide much of its infrastructure. From gaming to the maker culture, people are motivated by forces other than profit, while some of the most commercially successful web businesses have been built upon Marxist ideas of getting the means of financing, production and distribution into the hands of everyone.

The web, as the biggest experiment in decentralised global collaboration in history, is powered by two concepts – open source software and motivation via social rather than monetary capital – which have more in common with co-operative values than the free market. Noreena Hertz recognised in her essay for Co-Operatives UK[1] that co-ops are the 'open source version of capitalism'. For those coming from open source software development, it could also be said that *open source is the co-op version of capitalism.*

For open source communities the legal status of the vehicle co-ordinating large global collaborations seems less critical to success than the style of management and methodology used, and co-ops are rare. But while there are many thousands of open source products which may not need a legal structure to create or distribute them, there are not yet many open source services.

While co-ops and open source both exist within capitalism, they run contrary to its orthodoxy and could offer each other much: making the web more publicly controlled, and mobilising networked people to solve complex real world problems. Utilising motivators of human labour and innovation that are more powerful than the profit motive, and understanding how open source management empowers large decentralised collaborations to deliver solutions to problems, could be the key for co-operatives to not just flourish in the 21st century, but to address and solve many of the complex, interdependent problems facing the world.

1 Hertz, Noreena *Co-op Capitalism*, (2012), http://www.uk.coop/sites/default/files/co-op_capitalism_0.pdf

**The web is driven by non-market, co-operative forces**

*"Sometimes… non-market collaborations can be better at motivating effort and can allow creative people to work on information projects more efficiently than would traditional market mechanisms and corporations. The result is a flourishing non-market sector of information, knowledge, and cultural production, based in the networked environment, and applied to anything that the many individuals connected to it can imagine."*

Yochai Benkler, The Wealth of Networks[2]

Imagine an episode of the investment show Dragon's Den a decade ago. The budding entrepreneur begins to speak.

*"I want to make a publication where millions of the biggest creators, brains and celebrities in the world, the leading film-makers, artists, novelists, comedians, musicians, academics, technologists, journalists and business leaders will announce all their new work and ideas first. Many of them will provide a running commentary of their lives and work with photos, stories and videos – while they chat with each other and the rest of us."*

The incredulous dragons looks on - "well it sounds lovely but, how will you afford to pay them?". "Oh we won't... they'll do it for free."

They would have been laughed out of the room, yet Twitter's ability to motivate, without cash, billions of hours of labour investment from highly skilled individuals doesn't seem strange, showing just how much the world has changed since the web exploded.

Nor is it unusual to any web native that much online activity appears to exist outside of market forces, with hundreds of millions of blogs, photos, videos and pieces of software created and shared for free and whose creators – more often than not – are not expecting a financial return, and certainly weren't motivated by that to create them. On Flicker, over 200 million photos have been tagged with Creative Commons licenses[3] allowing people to re-use those photos – often in commercial contexts – for free, in exchange for only a credit.

It could be counter-argued that humans have been creating altruistically – or at least for reputational, peer-status for far longer than the web's existence - be it playing in a band, running a fanzine or painting watercolours – and that the web-based activities are nothing new, just more prominent due to network effects. But it isn't only personal creations that are being given away online – it's huge collaborative works.

The most famous is perhaps Wikipedia with 23 million articles in 285 languages, 100,000 volunteer contributors and over 450 million unique monthly visitors[4]. We might again imagine the pitch in the Dragon's Den – for an encyclopaedia bigger than Britannica which anyone could edit – being met with hysterics.

Less visibly than Wikipedia but of wider impact, collaborative non-profit systems make up most of the architecture that powers the web and the digital economy. Tim Berners Lee's decision to release HTML into the public domain is considered to be the prime cause of the

2 Benkler, Yochai (2006), *The Wealth of Networks*. Yale University Press. http://www.benkler.org/Benkler_Wealth_Of_Networks.pdf
3 http://www.flickr.com/creativecommons/
4 http://en.wikipedia.org/wiki/Wikipedia

web's success after similar proprietary systems emerged and failed in the preceding decades. Today anyone can contribute to and comment on discussion about the development of HTML through the the Worldwide Web Consortium. Open source software, which broadly means software that can be freely shared, edited and rewritten (though is not necessarily free) powers much more. There is the Linux operating system on which most servers run; the Apache server system which hosts the majority of websites[5]; the Android mobile operating system (built on Linux) which powers more smartphones than the iPhone; the majority of web browsers – from the Mozilla engine behind Firefox and WebKit engine behind Safari and Chrome[6]; the overwhelming majority of content management systems such as Wordpress, Drupal, Joomla and hundreds more[7]; most coding languages - from PHP which powers Facebook and Wikipedia, Python which powers Google and YouTube to Ruby powering Twitter and Hulu[8].

This isn't for lack of commercial competitors – Microsoft and other giants have battled to gain market share, spending tens of billions on proprietary browsers, servers, tools and languages – yet have mostly lost out to software that is open, free and normally created and driven by volunteers who have never met each other collaborating from their computers around the world.

In other words, in 2010 $2.3tn of trade in the G20 alone was dependent on systems and software built and maintained outside of the capitalist concept of competition and financial incentive as the best driver of innovation and productivity. "If it were a national economy, the Internet economy would rank in the world's top five, behind only the U.S., China, Japan, and India"[9].

So what's driving this activity? Economic orthodoxy, right back to Adam Smith, is that the market and profit is the best motivator of human invention and productivity. What happened?

In his book *Drive*, summed up at an RSA lecture "*The Surprising Truth About What Motivates Us*" [10] Daniel Pink pointed to a major MIT study from 1969 that found money motivated people only up to a certain level. Beyond this, performance deteriorated, regardless of the poverty or nationality of those being tested. The conclusion was that once people have their basic human needs covered – food, shelter, the ability to provide for their family and so on, money was no longer an incentive for better work – indeed the more money that was at stake, the worse decisions people made. "The best use of money as a motivator, is to pay people enough to take the issue of money off the table so that they are not thinking about money, but they are thinking about work" he said.

5 http://trends.builtwith.com/Web-Server/Apache
6 http://www.w3schools.com/browsers/browsers_stats.asp
7 http://w3techs.com/technologies/history_overview/content_management
8 http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html
9 Boston Consulting Group, *The $4.2tn opportunity* (March 2012). https://publicaffairs.linx.net/news/wp-content/uploads/2012/03/bcg_4trillion_opportunity.pdf
10 Pink, Daniel, *Drive* (2010), USA http://www.youtube.com/watch?v=u6XAPnuFjJc

Pink describes three key factors that motivate people once basic financial needs are addressed and which lead to both better performance and personal satisfaction:

•**autonomy –** our desire to be self-directed, shaping our own lives

•**mastery –** our urge to get better at something

•**purpose –** our desire to work on something with meaning, values or a greater impact.

From Wikipedia to the open source movement, people have autonomous roles, and the chance to become better at something – be it their knowledge of a subject or coding skills. There is also a strong purpose – to help educate the world or provide useful software for people who can't afford it. As Pink points out, the people who volunteer for these projects, often up to 20-30 hours a week, are mostly highly-skilled and in-demand individuals with jobs.

Of course this activity is from a mostly educated minority of the population – can similar non-market motivators be seen in the wider population? An obvious space would be the three billion human hours spent each week playing video games – an activity with huge autonomy and mastery, alongside a clear purpose – that for the period of playing the game at least – is normally to defeat 'evil' or solve problems.

In her book *Reality is broken, Why Games Make us Better and can change the world"*[11] video games designer and activist Jane McGonigal, argued that gaming contributed positively to human motivation and development, suggesting that we should play more games to best solve the problems of the world. Games are able to use fun in a way create the right head-space needed to solve problems – readiness to collaborate, ingenuity and lateral thinking, confidence that success is possible, mastery and a refusal to be defeated despite regular failure[12]. She pointed out that the average young person in a country with a young gamer culture will have spent 10,000 hours by the time they are 21 playing games, the same amount of time, roughly, as spent in secondary school, and much of which has involved learning, problem solving and often collaboration.

Games don't pay cash rewards but they do incentivise human labour – and many contemporary web-sites see 'gamification' - the use of video game-like rewards and ranks in web services and social networks – as the best way to build their popularity. The red buttons on Facebook saying how many new friends, messages or activities have recently occurred, or the number at the top of Twitter explaining how many followers you have – all tap into a similar part of the psyche as a score in a video game and indeed they are usually placed in a similar part of the screen.

11 McGonigal, Jane, *Reality is Broken* (2012), http://realityisbroken.org/2010/11/06/watch-videos/

12 http://venturebeat.com/2011/02/16/are-video-games-a-waste-of-time-3/

**Where are the co-ops online?**

*"We need real open alternatives to cloud apps like Facebook. I don't mean hosted open source. I don't mean a better WordPress. I don't quite know what I mean, but I know I don't mean Zurker. I think the future has yet to be invented"*

Daniel Packer[13]

For all its open and collaborative foundations, the web has a monopoly problem. From Facebook with social, eBay with auctions, Amazon with shopping, Twitter with micro-blogging, Paypal for payments, YouTube with video, Google with search, Apple with music, and so on – the market leader is typically one company, in a system where the biggest tend to get bigger.

While these companies produce some wonderful world-changing things, monopoly positions are clearly dangerous, making it easy to distort prices, censor, manipulate or flatten innovators. Amazon, for instance charges publishers 65% of the cover price to sell Kindle books over £8, nearly double the commission they took on physical books, and do that because they are in end-to-end control of their market. YouTube has been known to downgrade in search results videos that don't include their adverts. Apple's App Store has frequently run into trouble for censoring software they didn't like, such as one that reported on casualties from drone attacks[14].

And while Facebook might be full of people sharing, writing and discussing for motives other than cash, and the service itself might use PHP and have open source software powering it – their management's legal obligation is to make a profit for their shareholders. Private equity and venture capital allowed them to scale as quickly as needed in order to keep outgrowing the competition – but only under the expectation they can turn the private and personal experiences of nearly a billion people into a commodity that can be advertised against. As the saying goes, you have the right to remain silent on Facebook, but anything you do say may be taken down and used in advertising against you.

(I briefly imagine Alexander Graham Bell pitching the telephone to Dragon's Den under a similar business model... "we'll be making this telephone free for everyone. And to pay for that we'll listen to your phone-calls and interrupt them with related adverts. We'll record them forever in a mostly public place, while the information we collect we'll share with companies and any government who asks". Even the Dragons would have baulked.)

Since Facebook's rise to dominance there have been a number of attempts at more open alternatives. Even before it launched there were open source social networks people could host themselves, and services like Ning that let you host your own. In 2010 a group of NYC coders raised $200,000 from crowd-funding site Kickstarter to create a distributed social network that could (in principle) allow thousands of different websites – from newspapers and blogs to shopping and industry sites – to each host a bit of a bigger social network that would connect all of them. The source code is open, but in August this year the Diaspora

13 Packer, Daniel, *Zurker, Proof we were desperate* (May 2012) http://danielpacker.org/zurker-proof-were-desperate/
14 http://www.guardian.co.uk/technology/2012/aug/30/apple-blocks-us-drone-strike-app

founders handed over control to the community (leaving the future in question, with no legal entity or management structure fully responsible for it).

Tech entrepreneur Nick Oba attempted to launch a co-operative owned social network, Zurker, and got a lot of blogosphere interest at the time of the Facebook IPO in mid-2012. Zurker offered members shares on signing up and referring friends so they could own a part of the site and share in its success. He received widespread coverage but ran into problems, with a user-interface far behind Facebook's while he seemed to underestimate the unique conditions that supported Facebook's success (like Twitter and YouTube, Facebook managed to first quickly saturate a small, relevant market to the point where everyone 'had to have it' - in that case Harvard). Oba himself was frustrated at the management challenges of member voting:

*"I'd say the biggest [challenge] is developing a system, which allows democracy to function without degenerating into anarchy. A lot of folks equate member-driven democracy with a simplistic voting system – post a bunch of ideas, vote them up or down. But democracy is much more complicated than that, and any solution will have to be an ultra-sophisticated and carefully designed organism."*[15]

Most people's understanding of technical process is limited and open to them easily misunderstanding the trade-off between design, user interface, database architecture and code in building sites, given most of this is hidden from view. One-member one vote over key decisions in such a service could mean experts get ignored and bad decisions made.

Zurker is currently offline and development seems to have stopped - which is not uncommon given how many new web start ups come and go. What is most interesting is the level of publicity the service got once the idea was first widely discussed,with dozens of articles and bloggers wanting to support such a co-op, in spite of criticisms. A writer for Wired magazine said they found the proposition "compelling, disruptive even. Zurker appeared to be flipping the status quo on its head. I enjoyed the notion of being rewarded for investment in time and engagement" though ultimately advising readers to 'be wary' of the site.[16]

A YouTube owned by filmmakers and cinemas could be just as popular and exciting as an Amazon owned by authors and independent book-shops – but in both cases success would only occur if the new services could match functionality and stability, with an easy way for people to migrate and a strong reason to do so beyond the virtuous (i.e. unique functions or features).

Another approach would be to educate and promote the benefits of switching to a co-op for existing web services, while encouraging new start-ups to consider taking that approach, and to make it easier (and clearly beneficial) to do so.

15 http://www.wired.co.uk/news/archive/2012-05/18/nick-oba-defends-zurker
16 http://www.wired.co.uk/news/archive/2012-05/02/zurker

**A breakthrough in managing large collaborations**

*"While cheap Internet was a necessary condition for the Linux model to evolve, I think it was not by itself a sufficient condition. Another vital factor was the development of a leadership style and set of cooperative customs that could allow developers to attract co-developers and get maximum leverage out of the medium.*

*But what is this leadership style and what are these customs? They cannot be based on power relationships—and even if they could be, leadership by coercion would not produce the results we see."*

Eric S Raymond, the Cathedral & The Bazaar[17]

There's much that can be said about the open source movement, and most people outside of the tech world seem to stop at the idea that 'it's free'. Except it often isn't - as Richard Stallman, who initiated the free software movement in 1983 is regularly at pains to express - free lunch or beer is different to free speech[18]. The freedom at its heart is the ability to see the code, to edit and change it if you need to and to copy it as you need. If applied to hardware, a DVD player would be easily upgradable into a BlueRay by the owner, or the iPhone 4 innards swiftly swapped for the iPhone 5 (or an Android), leaving the case intact.

But in the context of co-operatives, what is most promising about open source is the methods by which vast global, largely decentralised groups of people - who are mostly unpaid volunteers - collaborate on creating complex solutions to quite specific problems, that frequently don't just equal, but surpass proprietary alternatives. That some of these solutions become billion dollar profit making companies like RedHat, some commercial free services like Wordpress and others non-profit cash-rich giants like Mozilla is perhaps secondary to the means by which open source projects bring about these solutions.

The world is clearly full of problems that require vast numbers of people collaborating and sharing knowledge across countries and education levels to solve, and where there is often scarce resources to support that. Without addressing the management process first, the idea of adding collective ownership and democratic control over decisions would appear to be creating a further challenge to those addressing environmental or social problems on a large scale.

Open source projects are optimised to deal with this, and since Linus Torvalds created Linux, an operating system as large, stable and useful as Windows or Mac, demonstrated they could scale rapidly to very complex systems with a fraction of commercial resources.

In his landmark 1997 essay, *The Cathedral and the Bazaar*, Eric S Raymond explored what made these projects so successful and characterised software development as being either like a *cathedral*, from a small closed group of developers, or a *bazaar*, where code is developed over the Internet in view of the public. He had previously "believed there was a certain critical complexity above which a more centralized, a priori approach was required. I believed that the most important software… needed to be built like cathedrals, carefully

17 Raymon, Eric S, *The Cathedral & The Bazaar* (1997-2000). http://www.catb.org/esr/writings/homesteading/cathedral-bazaar/
18 http://www.gnu.org/philosophy/open-source-misses-the-point.html

crafted by individual wizards or small bands of mages working in splendid isolation, with no beta to be released before its time."

This contrasted with the approach he saw with Linux: "Linus Torvalds's style of development —release early and often, delegate everything you can, be open to the point of promiscuity— came as a surprise. No quiet, reverent cathedral-building here—rather, the Linux community seemed to resemble a great babbling bazaar of differing agendas and approaches… out of which a coherent and stable system could seemingly emerge only by a succession of miracles."[19]

Raymond concluded that Torvald's approach was critical to Linux's success and went on to test this with his own projects finding that it was far better at creating good, bug-free software. Torvald's claimed his decentralised approach came about because "I'm basically a very lazy person who likes to get credit for things other people actually do." In reality, his approach of 'egoless programming' had broken Brooks Law, which stated that adding extra developers to a late software project only made it later, as the increased communication between multiple people only slowed things down. Instead bazaar-model open source projects tend to improve as they grow in size. "Treating your users as co-developers is your least-hassle route to rapid code improvement and effective debugging" said Raymond because "given enough eyeballs, all bugs are shallow".

What then are the qualities of bazaar-style open source management, and how could this be applied to real world problems?

A sociable, engergised lead developer with 'an itch to scratch' - a problem they want to solve.

"It is not a coincidence that Linus is a nice guy who makes people like him and want to help him."[20]

There's no shortage of people with ideas and in open source, projects tend to form around someone with a problem who has made a good start. Applying this to real world problems - it can't be enough that someone wants to address climate change in order to attract volunteers and momentum - they'll need to have made some groundwork to motivate people around them. In the absence of a pile of money to pay them, they would probably need either an existing project or an inspiring film, TV series or book around which to motivate people -some position of experience and respect within the appropriate community. And they would need to be able to use that authority in an egoless way.

A decentralised approach to management – bottom up rather than top down.

*"why is the sea ruler of a hundred streams of the rivers? Because it lies below them."*

Lao Tsu, the Tao te Ching[21]

For much of the history of Linux, new updates were being approved and added to the system solely by Torvalds over email with a philosophy known as 'release early, release often'. This approach prioritises getting new features out fast, rather than waiting until a system is perfect before release. It shifts quality control from the central manager or maintainer, to the users and depends on a system for them to notice and fix bugs.

19 http://www.catb.org/esr/writings/homesteading/cathedral-bazaar/index.html#catbmain
20 http://www.catb.org/esr/writings/homesteading/cathedral-bazaar/ar01s10.html
21 Tsu, Lao, *Tao Te Ching*, translated by Jane English & Gia Fu Feng (1989)

This works well with software with an open code base, but may be more challenging in real-world situations where the requirement is for something that works fully at first use – i.e. a hospital or transport system. Still, most businesses evolve over time in response to customer demand, changing conditions in the market, regulations, investors, staff expertise and personal interests and so on. This is particularly true in the media and information sectors, which may be why Wikipedia, the most famous non-software product to employ open source licenses, decentralisation and management, is such a success. Raymond explains:

"Linus was keeping his hacker/users constantly stimulated and rewarded — stimulated by the prospect of having an ego-satisfying piece of the action, rewarded by the sight of constant (even daily) improvement in their work... Given a large enough beta-tester and co-developer base, almost every problem will be characterized quickly and the fix obvious to someone."[22]

Many web-native publications run on this basis - people submit articles, news and content (often for exposure and a backlink), an editor approves it, adds to the front page - maintaining a little control on the process and in turn bringing a larger audience to the writer's work than they would have got on their own blog. Commenting on articles provides a level of feedback from readers, while a Twitter, blogosphere or Facebook backlash is the next step of complaining about an offensive of false article – while publications that don't respond to this feedback fall from popularity.

With non-digital projects - such as campaigning or vaccinating millions of people - there will be problems emerging regularly, which in some cultures could be seen as a direct challenge to the management and be met defensively. Under Torvold's bazaar model they would instead be seen as the best way to improve the service, with the system designed to encourage and support this.

This might also require a culture shift where failure was more acceptable. One reason people persist to solve problems in video games is that failure can be quickly laughed off, and coders seem keen to find ways to improve other people's buggy code in open source and all welcome that. Open source is also protected from collective failure, for if a project fails, the open license allows anyone else to take the code and try again.

<u>An open license for the code – distributing the assets to all</u>

*"Perhaps in the end the open-source culture will triumph not because cooperation is morally right or software ``hoarding'' is morally wrong (assuming you believe the latter, which neither Linus nor I do), but simply because the closed-source world cannot win an evolutionary arms race with open-source communities that can put orders of magnitude more skilled time into a problem."*[23]

Co-ops are well positioned to apply open source thinking as the idea all members can contribute to improving the service or product is central. At the same time, co-ops sometimes have tensions between management and members: management would rather not seek approval for every decision, while members need to feel the direction is moving as they want in order to invest their energies. Open source projects seem to avoid this conflict, even though they may have a few core developers – often just one – who will know the code and

22 http://www.catb.org/esr/writings/homesteading/cathedral-bazaar/ar01s04.html
23 http://www.catb.org/~esr/writings/cathedral-bazaar/cathedral-bazaar/ar01s11.html

integrate submissions of updates. There may be thousands of contributors, but there is still a central 'maintainer' who has a near totalitarian control over the direction of the project.

Arguably what keeps management responsive to their users/members, and their members feeling their voluntary work isn't at risk of going to waste through bad decisions, is that with an open license (like the GPL or MIT)[24] at any point anyone can take the software and 'fork it' into a new version they can adapt and work on. The core maintainer is just a maintainer, not a feudal overlord owning the land on which all else toil for free.

If it's felt that the maintainer isn't active or responding to users, then the project can split and a new version can continue separately, with a new name (as happened with Mambo becoming Joomla). This creates what is sometimes called a benevolent dictatorship - whereby the totalitarian authority of the maintainer is beholden to the collective needs of the contributing members, knowing they can leave at any point. The project maintainers, be it Matt Mullenweg for Wordpress or Dries Buytaert for Drupal have final say, but they have only got where they are – and stay there – by being responding to user needs and motivating developers.

This same freedom powers Wikipedia – if the management began to let the quality of editorial suffer, a group of disgruntled users could fork the entire site and run it under a new name with a different approach.

Wherever the creating, storing and copying of digital information is the main building asset of an organisation, the bazaar approach could be applied, and a co-operative seems a perfect vehicle to structure that within.

Where it is more challenging to consider is with physical goods. It would be as if a branch of the Co-op in Glasgow didn't like the direction from head office and so could change the name of the shop and continue running – but with the logical paradox that such a split wouldn't create any loss of stock, money or resources from head office or the store - just a loss of human skills. The bazaar model is easy to apply to with services, information, creative and intellectual property, where ideas, brands, content, designs, management approaches and so on can be shared – but is harder with limited physical goods and resources (until 3D printers become widespread).

Understanding which parts of capitalism would best adapt to a co-operative open source approach seems less of a priority than replicating open source's success at uniting people's selfish instincts to achieve a collective positive goal. Raymond calls this a free market not of cash but ego boosting ('egoboo') activities:

*"connect the selfishness of individual hackers as firmly as possible to difficult ends that can only be achieved by sustained cooperation… Many people (especially those who politically distrust free markets) would expect a culture of self-directed egoists to be fragmented, territorial, wasteful, secretive, and hostile. But this expectation is clearly falsified by (to give just one example) the stunning variety, quality, and depth of Linux documentation. It is a hallowed given that programmers hate documenting; how is it, then, that Linux hackers generate so much documentation? Evidently Linux's free market in egoboo [ego-boosting]*

24 http://en.wikipedia.org/wiki/Open-source_license

*works better to produce virtuous, other-directed behaviour than the massively-funded documentation shops of commercial software producers."*[25]

Version control – handling 'co-operation without co-ordination'

The final vital key to an open source project using the bazaar approach is called a version control system - a practical way to share the changes that any individual makes through the whole system. Torvalds created a system called Git to handle this, which powers GitHub where the majority of open source projects are available. Clay Shirkey made his 2012 TED talk about how open source's version control system could transform society:

"a programmer in Edinburgh and a programmer in Tibet can get a copy of the same piece of software, each of them can make changes, and they can make changes after each other, even if they didn't know of the other's existence before hand. **This is co-operation without co-ordination**. This is the big change. Once Git allowed for co-operation without co-ordination you start to see communities form that are enormously large and complex."[26]

It is easy to imagine how finding a way to implement a system for 'co-operation without co-ordination' for social and environmental problems could be transformative. To consider a hypothetical example dealing with climate change:

1)It would start with an itch to scratch, such as making Britain 100% renewably powered as soon as possible.

2)A respected and charismatic individual or small group, with good tech understanding, would need to propose through their networks an approach to solve the problem. This could be, for instance, a comprehensive website to understand the incentives, technologies and cost-savings to convert their home, coupled with peer-to-peer lending to finance it and social media gamifaction to motivate and mobilise large national team of people to promote and encourage households to switch. This group would then need to have a system to facilitate co-operation without coordination.

3)By making all of the code powering their solution – from the database of green-tech installers to the infrastructure validating the micro-loans non-proprietary, the project team can motivate the large pool of people who care about climate change to contribute work that will have benefit regardless of the success of the project. This could be data entry, resource-writing, infrastructure development, design or social media support. Mobilising, encouraging and integrating such numbers would invite the bazaar approach – invite and absorb submissions and trust (and encourage) people to improve on them if flawed rather than holding everything back and waiting until deemed perfect by the centre. As the public aren't used to 'beta' releases in the way coders are, and could dismiss something that appeared half-baked, the core team would need to stress this was a work in progress and only brand, design and push the core service once it was at a certain level.

4)Given that such a project would be more service than product, a co-op would offer an ideal structure to allow the army of volunteers to share in the ownership and success of it, perhaps proportional to their input, while also tracking the management expenses.

25 http://www.catb.org/esr/writings/homesteading/cathedral-bazaar/ar01s11.html
26 http://blog.ted.com/2012/09/25/further-reading-in-github/

5)The bazaar model doesn't assume the core team will have all the answers, in fact - most of the innovation would likely happen at the fringes in unexpected ways. In many ways the core team aren't expected to be innovators beyond creating the project – instead they facilitate a collective action to solve a problem and encourage and incentivise that with recognition and, potentially, co-op shares or jobs.

**Conclusion**

Bringing together the lessons about what motivates us as individuals with the methods to mobilise and organise large distributed groups of people to address the urgent needs of our planet, seems our best hope to begin change quickly enough.

This could come through co-ops, governments or the private sector. For as long a private enterprise is funded from sources far removed from users, workers and those impacted by a product or service, co-ops seem to be the structure least corruptible to shareholder interests and distorting influences to achieve that.

There is a co-operative alternative to capitalism, and it is working at a huge scale already, just outwith a co-operative structure. The challenge for the co-op movement is to apply these lessons and get closer to these communities. For those without a technical background it may seem daunting, which is why the motivation should be that people want to work differently, they want to co-operate and do work that solves problems, and want to enjoy that as summed up by Raymond:

"It may well turn out that one of the most important effects of open source's success will be to teach us that play is the most economically efficient mode of creative work."