Will the revolution be open-sourced?
How open source travels through society

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For a long time, open source was an issue only for hackers and other passionate programmers. Since the late 1990s, however, the idea of open source has emerged from underground. Though it can not yet be called mainstream, the discourse on open source is infiltrating society at several levels, and in several different domains. While the concept of 'open source' once meant providing the source code of software together with executable code, nowadays it covers far more than just a mode of software distribution. Today, it connects old and new social, political and cultural practices, constructing a heterogeneous field.

In this article we will provide an explorative cartography of this expanding open-source discourse. We will sketch the constitutive nodes in the open-source network: the spokesmen who represent it, the claims, the products, and the discursive strategies involved. We will argue that 'open source' functions as a generative and transformative concept, so that the term 'open source' can itself be described as an open concept, capable of formulating and transforming several different claims. The concept will be analysed as travelling into different spheres of society, mobilised by agenda-setting, political/semiotic strategies and metaphorical translations. We will conclude with some evaluative remarks on the political aspects of open source.

How open source hit the headlines

How did open source became a public issue – when and where did it all begin? To answer these questions, most authors dive deep into the history of the Internet and hacker culture,[1] but here we take a different starting point: the moment the established ICT press began to cover open-source issues. The professional ICT press is aimed at software developers, system builders, hardware vendors, IT consultants, marketing managers and chief executives in the ICT economy. As such it represents a permeable boundary between the hacker subculture and the software establishment.

Checking the archives of the Dutch weekly magazine *Automatisering Gids*, for example, we can clearly see how from 1998 on there has been a sharp increase in the number of news reports and features on the issue of open source.[2] Its very first news report containing the term 'open source', dated 3 November 1998, is significant:

> **Microsoft sees threat in Linux** – Microsoft regards Linux and other open-source operating systems as a serious threat to its own product, Windows NT. This can be concluded from an internal Microsoft memo that was spread throughout the World Wide Web last Monday...
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> *(Automatisering Gids 03-11-1998)*

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[1] See for instance Raymond (1999), Stallman (2002) and Weber (2004). Following these authors, we define 'hacker culture' as the culture of passionate programmers who create their own tools. This should not be confused with 'cracker culture', i.e. vandals who destroy the tools of others.

[2] See www.automatiseringgids.nl for the web archive of the weekly *Automatisering Gids* since 1997.

This article is about the so-called *Halloween Documents,* an internal Microsoft memoranda that was leaked to the press. The memo dealt with how the company could confront the potential threat posed by the Linux operating system.[3] The memo swept open source immediately onto the agenda of ICT professionals. When a big player like Microsoft was rethinking its position and strategies, something was at stake, so its allies, rivals and customers had to rethink their positions too. From then on the ICT press began to keep an eye on what was happening around Linux.

Since then, thousands of articles have been published about open source, showing how Linux and open source have become hot issues in the world of ICT, and how many players have become involved. Sample headlines from the last six months illustrate this:[4]

'**Open source' in US less open than in Europe** – The American magazine *Wired* praised Linus Torvalds recently as 'the leader or the free world'. No wonder. By now, the Linux community has 140,000 registered users and some 18 million unregistered... (12-12-2003)

Asia breaks power Microsoft with Linux – Asian resistance to Microsoft is becoming epidemic. Several countries want to ban Windows from government offices. Thailand threatened with Linux to force Microsoft to lower its prices, and Japan, Korea and China... (12-12-2003)

SCO now attacks GPL – SCO[5] continues its crusade against the world of Linux. In an open letter, CEO Darl McBride attacks the open-source movement, in particular the General Public License (GPL)... (5-12-2003)

Linux sales growing sneakily – Europe has far more points of sale for Linux than generally assumed. More than 30% of computer retailers are selling Linux distributions... (10-12-2003)

SCO under cyber-attack – The SCO Group's systems today suffered a denial of service-attack... (12-12-2003)

Red Hat shows rising profits – Over the third quarter of its fiscal year, Red Hat recorded a profit of 4.1 million dollars. The sales volume of the supplier of Linux distributions rose from... (19-12-2003)

Public sector still shy about open source – Open-source software provides good opportunities for public administration, health care and education, but decision-makers are still hesitant. This is the main conclusion of a survey by the Multiscope bureau... (19-12-2003)

SCO brings politics into fight against Linux – SCO tries to mobilise the members of the American Congress in its fight against Linux... (22-01-2004)

Torvalds counters SCO claims – Linus Torvalds has today systematically countered SCO claims about the Linux copyright... (23-12-2003)

EU stimulates open source with website – The European Commission has launched a website to promote the achievements of open-source software. The website 'Free and Open-Source Software' (F/OSS) is... (23-12-2003)

'Linux users need not worry' – Law professor Eben Moglen states in a 'white paper' that companies who use Linux need not worry about possible claims by SCO... (11-02-2004)

Sun should release Java code – Open-source ambassador Eric Raymond stated that Sun should release control over Java code so the computer language can be used in open-source programs... (16-02-2004)

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[3] See www.opensource.org/halloween

[4] These are taken from the Dutch *Automatisering Gids*, but any other European professional ICT magazine will undoubtedly reveal the same pattern.

[5] The SCO Group, inheritor of the intellectual property of the Unix operating system, started its copyright claims on parts of the Linux operating system by suing IBM for more than $ 1 billion in March 2003, alleging that IBM had misappropriated SCO's Unix technology and built it into Linux.

French government desktops with open source (17-02-2004)

Microsoft promises to make some programs open-source (30-03-2004)

Demonstration in Brussels against software patents – Opponents of software patents are today protesting against plans by the European Union. They fear that a lobby of big companies... (14-04-2004)

Insurance against Linux copyright claims (19-04-2004)

Computer Associates goes for open source (06-05-2004)

Microsoft feels Linux price pressure (14-06-2004)

Munich opts definitively for Linux (17-06-2004)

Munich freezes Linux project – Today the German city of Munich announced a freeze on the so-called LiMux project. This has been reported by the ICT news agency Heise Online. Uncertainty about software patents was the main reason... (04-08-2004)

In fact, this sample of news reports shows the whole open-source discourse in a nutshell. When we take a closer look at what is happening we encounter several kinds of players: software companies like Microsoft, SCO, Sun, Red Hat and Computer Associates, but also insurance companies, lawyers, countries, continents and political institutions. There are numbers at stake – numbers of users, of sales, of prices, of profits. The overall image is one of commotion and action – growing, attacking, countering, claiming, promising, stimulating and doubting – but we can discern at least three patterns in all this turmoil.

The first is the story of the world-wide rise of Linux. Some articles report that the number of users is still rising, that more retailers then expected are selling Linux, and that some Linux distribution companies are making huge profits. In absolute numbers, especially on desktops, Linux is still negligible compared with Windows,[6] but the symbolic power of Linux is apparently capable of provoking several players. Microsoft, and companies like SCO who have vested interests in the software market, fight back with all the economic, symbolic and discursive strategies at their command. They lower prices, claim ownership of Linux code, and promise to make some of their own code available. These activities provoke all kinds of counter-actions: white papers, insurance policies, counter-claims and 'hacktivist' attacks on websites, to name but a few.

Secondly, although Linux is the main issue in the headlines, open source involves more than just the domain of operating systems. The numerous requests, decisions or refusals to open up source code, as featured daily in the ICT press, concern all kinds of software: not just operating systems, but also desktop applications, databases, security programs, Java code, and so on. The idea that open-sourcing can be done with any kind of software is spreading into the professional ICT world.

Thirdly, we can see how the open-source discourse is gradually extending to other domains besides the software industry, drawing new players into the discourse such as public authorities, research institutes, lawyers, insurance companies, governments and the European Commission. All these players are exploring, propagating or contesting the possibilities of open-source software. Clearly, open source is no longer merely a technological issue, but has become widely discussed among the general public. The floor is now open to all kinds of participants and players, who contribute to the open-source discourse with their own concepts and expectations.

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[6] Figures vary widely between research institutes. Gartner (2004) counts a 2-5% market share for Linux on PCs, Tim O'Reilly 18%. IDC (2004) estimates the server market share for Unix at 36%, Windows 35% and Linux 15%.

It may be even more relevant to speak in terms of a *battle* for the open-source discourse. Indeed, we can easily identify protagonists and antagonists in these news reports. On one side we see the hacker programmers and their spokesmen, creating and advocating open source. On the other we witness the established 'powers that be', who are fighting against open source. On closer inspection, however, the battle appears to be more complicated, especially when we dive deeper into the culture of open-source developers. There, for instance, we come across two opposing definitions of open source, one in terms of 'free software' and the other 'open-source software'. Several initiatives try to evade or transcend this ideological debate by using the reconciling term 'Free/Open Source' (FOSS),[7] as the European Commission does on its website. Regardless of these types of moves, the battle on political/technical correctness rages on, and we will explore some of these dynamics shortly. First, however, we will look at how and where open source began to travel outside the ICT headlines.

How open source became more than software

It is clear that this commotion all started with Linux. In 1991 the Finnish student Linus Torvalds placed a modest proposal online, encouraging fellow hackers to improve and extend his rudimentary free operating system. In 1994 the first working version of Linux was distributed; in 1998 Microsoft's anxiety leaked out, and from then on it was on the agenda of the ICT industry. Linux appeared to be more than just a toy for hackers. Propelled by Linux, the open-source hacker culture surfaced from its underground location. Amateur hacker programmers began to create coalitions with more established parts of the software production and distribution sector. New companies and organisations were founded, new products, licences and communities were created.

While there has been a hacker subculture developing open-source applications and Internet protocols for more than thirty years – without explicitly using the label 'open source' – it is only in the last few years that this practice has become visible to a broader public. The process started with publications in the professional ICT press, but it soon spread to other media.

The media domain is an extremely important factor in propelling the open-source discourse. In the mid 1990s, when Linux became a market and business opportunity, special-interest magazines emerged all over the world, such as the US *Linux Journal*, the German *Linux Magazin* and the French *LinuxMag.* A few years later, open-source issues entered the pages of established ICT magazines and also general magazines, daily newspapers and other mainstream media. The interview became a popular discursive genre, whether with open-source protagonists or antagonists. An example can be found on the November 2003 cover of the popular technophile magazine *Wired*, which features: 'Linus Torvalds: leader of the free world. His open-source software is making Bill Gates sweat. What's next: open-source science, law, and design.'[8]

Though the general media domain is an important vehicle for extending the open-source discourse, the latter's main habitat remains the Internet. Most of the *production* of open-source software takes place on the Internet. This happens mostly on mailing lists, but also on platforms such as Sourceforge, an open-source developers' website which hosts thousands of projects.[9] In addition, the Internet provides the main platform for the *distribution* of open-source software. Almost every

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[7] Or 'Free/Libre/Open Source' (FLOSS), with the term 'libre' to counter the ambiguity of the word 'free', which is here not intended to mean 'gratis'.

[8] Gary Rivlin, 'Leader of the free world: How Linus Torvalds became benevolent dictator of Planet Linux, the biggest collaborative project in history', in *Wired* 11, 2003. See also Thomas Goetz, 'Open source everywhere: Software is just the beginning', in *Wired* 11, 2003.

[9] Examples of open-source software projects organised on the Internet: Sourceforge.net (www.sourceforge.net), the Open Source Initiative (www.opensource.org), Open Office (www.openoffice.org), Mozilla (www.mozilla.org), MySQL (www.mysql.com). A long list of available open-source software is provided by Wikipedia at http://en.wikipedia.org/wiki/List_of_open-source_software_packages

distribution can be downloaded free online, and the same goes for numerous open-source applications.

The Internet of course also plays a role in stimulating the discourse about open source as it unfolds on websites, weblogs, web forums, in news groups and mailing lists. Surveys and books on open source are often published online, such as the German *Open Source Jahrbuch 2004,* or Lawrence Lessig's *Free Culture.* O'Reilly Media, one of the best-known publishing houses specialising in ICT, offers a wide range of free books on open-source issues on its website. Other important discursive nodes online are the interactive user forums of mainstream newspapers and weekly magazines. Here the discussions on open source continue, and they are often quite heated. One example is the extremely critical IT forum of the Austrian newspaper *Der Standard*. The users, mostly IT professionals, continually criticise the newspaper. They verify facts, add information, correct mistakes and, of course, fight battles with one another. The German publishing house Heise is another big node in the European ICT discourse. They have influential magazines, including *c't* and *iX*, and active online communities on their website, www.heise.de.

A special case on the Internet is Slashdot, one of the largest and most famous independent platforms on ICT matters. Slashdot combines the idea of open source on three levels: code, content and community.[10] The open-source software that runs the weblog ('slash code') provides a user-based publishing and editorial system ('open publishing'), thus creating a critical and loyal community around 'news for nerds, stuff that matters'. Slashdot is responsible for what has been dubbed 'the Slashdot effect': the sudden increase in the number of visits to a mainstream media website when the Slashdot community debates the site in question.

But the discourse on open source is not only proliferating in media circles. During the last five years the academic sphere, with its own magazines, publications and conferences, has discovered open source as an emerging cultural practice to be explored and explained. Scholars in the fields of media studies and cultural studies increasingly conduct research on open-source issues, focusing on questions such as the motivation for developing open-source software, evaluations of innovations by communities and democratic access to technology. In addition, academics recognise several parallels between the principles of generating knowledge in the domain of open-source software and their own domain: the 'gift economy', the free sharing of knowledge, transparency and availability as preconditions for improvements, the importance of co-operation and community-building. The growing resistance to monopolist and expensive scientific journals can be seen in the same terms as the open-source battle. For instance, the Massachusetts Institute of Technology (MIT) has decided to make its educational material and academic papers freely available online on a site dubbed 'Free/Open-Source Research Community'.[11]

On the boundaries between the media and academic spheres, moreover, interesting cross-over initiatives emerge around open-source issues. These cross-overs can take the form of publications (e.g. Volker Grassmuck's *Freie Software,* 2002, Steven Weber's *The Success of Open Source,* 2004), conferences and projects. Since the 1990s, several regular meetings on open source have been held in Europe: the Wizard of OS Conferences, the Linux Kongress in Germany and the Linuxwochen in Austria, all discussing the legal status and potential of open-source software. Organisations in the field of net culture and art are also participating in this cross-over open-source discourse. In the Netherlands, organisations such as *V2*, the Institute for Unstable Media, and the De Waag Society for Old and New Media quite often present open-source issues and initiatives at their events and festivals. The Dutch Electronic Art Festival has chosen 'Open Systems' as the main theme for its 2004 festival. These occasions provide exchange platforms for open-source spokespeople, software developers, artists, journalists, academics and even businesspeople.

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[10] As analysed by Berit Jimmink in her thesis *Interactiviteit bij Slashdot: Code, content en community* (Utrecht University, november 2004).
[11] http://opensource.mit.edu/

It is important to note that Linux, as the alternative operating system to Microsoft's Windows, continues to be the main focus of open-source discourse in all of these domains. The representation of a kind of David-and-Goliath battle between small Linux and giant Microsoft of course appeals strongly to the imagination of subversive hackers and the general public. But we have also seen how the open-source debate has extended far beyond just Linux versus Windows, encompassing even the matter of software. Open source is increasingly becoming a public and a political issue.

How open source became a political issue

The politicisation of open-source issues cannot be seen as a kind of slogan hijacking, using the principles inappropriately for political goals. In fact, open source has had politics built into it right from the start. While open source originally just meant that executable software was delivered together with its source code, because of its far-reaching implications it came to mean much more. Providing the source code meant that other people could now look at how things worked. They could report or repair bugs, change the code to suit their own needs, create new modules, and then redistribute any changes or improvements they made. So, distributing source code implied an inherent openness to modification and redistribution. Openness is a key factor here, because it brings several other implications along with it, especially in a situation of growth and scaling-up. It implies other distribution and production models. It implies other business models for those who want to make money with open-source products. It implies connections with user communities, and the building of such communities. It implies other concepts of copyright and ownership, along with protecting and licensing models to sustain these ideas. These implications connect the concept of open source to several domains outside the domain of plain software development, such as law, insurance, labour organisation, public relations and organisational strategies.

These domains are in a way the next-door neighbours of software production, but the open-source concept is able to move farther afield than that. We can see it travelling into public administration, politics – Howard Dean's presidential campaign of 2003 was dubbed an 'open-source campaign', as it organised fund-raising by using weblogs[12] – and even nation-state-building and geo-politics at the level of vast entities such as China and Asia.

In European discourse, the decision in June 2004 by the Munich administration to switch to Linux was a crucial moment. It apparently took a big city to gain widespread attention. The small German town of Schwäbisch Hall stepped over to Linux in 2003, but this news did not attract media attention or European-wide headlines. Now, in 2004, the battle on public administration desktops is raging: Paris and Vienna are also planning to switch to open-source systems. While these issues may be considered relatively local, the debate on the European Commission directive on software patents, including the lobbying and protests against it, is pushing the open-source discourse into the heart of European politics. At stake here is the question: will the possibility of patenting trivial software 'inventions' obstruct open-source development and implementation? Munich hesitated for a while in August 2004, wondering whether the forthcoming EU software patent directive could endanger their open-source project, but they decided to pursue it all the same.

Meanwhile, open source is being politicised not only at the level of established political institutions – there is also a grass-roots connection, inspiring a bottom-up, activist politics and more general ideas about structural social change. These connections do not come out of the blue; the concept of open source can easily travel from community-building to democracy improvement in general. It can also travel from concrete licensing formulations to abstract models of property, by

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[12] See the book written by Dean's campaign manager, Joe Trippi: *The revolution will not be televised: Democracy, the Internet, and the overthrow of everything.* New York, HarperCollins: 2004.

claiming that open source may provide a third mode of property and production that is neither capitalist nor communist.[13]

From there it is a small step to thinking about social change in general. For example, the German Oekonux project is dedicated to debating the idea of a 'GPL society', in which the general mode of production and property would be based on the General Public License (GPL, see Annex 1).[14] The GPL is the main licence form for free software and, unlike other open-source licences, this one actively builds a commons. Oekonux (the name a blending of 'economy' and 'Linux') consists of a mailing list and regular conferences where participants theorise about how the notion of free software can 'germinate' in a socio-economic metamorphosis while migrating to other parts of society. The Oekonux project is inspired by a kind of utopian Marxism, as can be seen in the wording of the ideal of the GPL Society: 'self-unfolding as the main motivation for production; irrelevance of exchange value, so the focus is on the use value; free co-operation between people; and international teams'.[15]

While the Oekonux project operates mainly at a discursive and theoretical level, the example of Indymedia shows how open source can, both in principle and in practice, be embedded in socio-political activism. The Indymedia initiative consists of a loose collection of hundreds of locally organised, independent platforms providing online news and debates on (anti)globalisation issues, thus presenting an alternative to mainstream media. Most Indymedia Centres not only use open-source software on their computer systems and websites, they also try to implement the open-source principles of collectivism, participation and consensus decision-making at the organisational level in general.

These examples of jumps from open-source software to open-source society, social reform and revolution should not be too quickly dismissed as 'merely metaphorical'. There seems to be more at stake than just a vague metaphor for a transparent, democratic and non-private constitution. Of course, notions of 'freedom' and 'openness' appeal strongly to the social imagination, and this can easily result in utopian daydreaming. But imagination is a necessary part of any innovation, and metaphorical associations can certainly be productive. This can be illustrated by the wild proliferation of practical initiatives with labels such as Open Hardware, Open Culture, Open Publishing, Open Access, Open Archives, and Open Theory. There is even an initiative for Open Cola.[16]

Whether these initiatives are indeed indications of a revolutionary social transformation remains to be seen. However, new social and cultural practices are emerging. The idea of open source is spreading into society, at several levels and in several domains. It is certainly too early yet to call it mainstream; the default mode for companies, institutions and the general public is still to use proprietary software. But open source is clearly no longer a marginal idea: it appears to be heading for normalisation and mainstreaming.

Translations in the open-source network

This notion leads us to a general question: how do new things or ideas become mainstream and generally adopted anyway? The adoption process is usually analysed in terms of a 'gradual diffusion into society'. This view of diffusion assumes that a new invention or idea will find its way into society when it becomes accepted as good or true by more and more people, until it finally reaches

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[13] See for instance Martin Pedersen, *Lessons from cyberspace: The Free Software movement and the configuration of ownership.* Paper presented at the conference entitled 'Imaging Social Movements', 3 July 2004, Edge Hill College, UK. Online:
http://www.edgehill.ac.uk/Research/smg/Conferences2004/info/papers/pedersen.pdf

[14] www.oekonux.de. See also Geert Lovink, 'Oekonux and the Free-Software Model: From Linux to the GPL Society', in *My first recession,* 2003.

[15] *Free Software & GPL Society,* Stefan Merten interviewed by Joanne Richardson, online:
http://subsol.c3.hu/subsol_2/contributors0/mertentext.html

[16] See www.newscientist.com/hottopics/copyleft/copyleftart.jsp and www.opencola.com

the general public. Seen in this way, the general acceptance of a techno-scientific invention depends on the inherent, objective characteristics of the invention itself: it will become mainstream because it is technologically good or scientifically true. This can be called a techno-scientifically deterministic view of the diffusion of new inventions. A more social and historical view of diffusion foregrounds power relations in society and the subsequent acts of resistance, acceptance or ignorance by different interest-groups during the diffusion process. Nevertheless, the basic assumptions of the diffusion model are the same for both the techno-scientifically deterministic and the socially deterministic variants: on the one hand you have the new invention, and on the other groups of people who may or may not accept it.

Bruno Latour (1987) has criticised this 'diffusion model' as being too static.[17] In his view, the diffusion model wrongly assumes that a successful invention remains the same all the time, and that the social interests and powers it encounters are already pre-existing. The model cannot really explain how general acceptance can be achieved, because it cannot give an account of how both the invention itself and the social groups involved are transformed and constructed as 'diffusion' proceeds.

Latour proposes an alternative model for tracing what happens during this process; he calls this a 'model of translation', situated in an 'actor network'. Translation here means both discursive and non-discursive transformations of the invention: it concerns modifications to definitions and to rhetoric, in order to convince people, and modifications to the technical design and physical construction of the object. The invention in question is thus analysed as something 'that simultaneously changes what it is made of and whom it is convincing'.[18] If we want to trace historically how an invention became generally accepted, we have to follow the different translations it went through along its route in time and space. On this route to 'becoming true' the invention circulates between different actors, and this process transforms/translates both the invention itself and the alliances and associations between the actors. This network of translations and associations is called an actor network. In this network all kinds of heterogeneous players – people, things, concepts, inscription devices, texts, money – are at work, creating mutual alliances and associations in which the invention can become stable and indispensable. Finally, the invention may become mainstream and accepted as a 'black box', i.e., a phenomenon or thing taken for granted, a closed device with no calls for it to be opened or contested.

This model of translation is suitable not only for an anthropological history of established and taken-for-granted science and technology: it is also a strong analytical method for mapping the routings of other kinds of emerging discourse, knowledge and belief.[19] The travels of the open-source concept into different discursive and non-discursive domains appear to be particularly suited to being analysed this way, as the open-source concept mobilises so many different actors and alliances.[20]

In the next section we will sketch the actor network of the open-source discourse, first in terms of the main human actors (a 'sociogram') who are advocating, defining and representing the open-source concept, and then in terms of the discursive strategies of the actors, 'counter-actors' and intermediaries.

Who are the main human actors involved in the expanding open-source actor network, and how are they represented in the different media spheres? What do they do, what do they claim, how

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[17] Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, Mass: Harvard University Press, 1987.

[18] *Ibid.*, p. 139.

[19] Especially since Latour's method insists on taking a *symmetrical* look at 'science in action'. Symmetrical here means: no bias, no *a priori* assumptions about social, technical, natural or scientific 'truth'. The divisionsbetween different kinds of 'truth', and a general division between 'truth' and 'mere beliefs or common-sense' have to be analysed as the *effects* of the player-network dynamics, not the *cause.*

[20] Though it remains to be seen if in this case there will ever be an accepted 'black box' in the Latourian sense, since the concept of open source itself implies an inherent resistance to such closure. Indeed, the very principle of open source is against any black-boxing.

do they perform their persuading labour, and whom do they persuade to join in? The open-source movement has several spokesmen (yes, indeed, only men). Three of them are key figures, and we have already seen their names popping up in the samples of ICT headlines: Richard Stallman, Eric Raymond and, of course, Linus Torvalds. All three come from the hacker culture, all have hands-on experience of developing IT applications and technologies, and they all have street credibility. As we will see, however, they use different discursive and mobilising strategies to connect the street level to other social groups and domains.

Richard Stallman, a hacker with an ethical mission

Figure 1: Richard Stallman playing flute for a butterfly

Richard Stallman can be seen as the first 'voice from the open-source revolution'.[21] His story begins in the early 1980s, when his employer, the MIT lab, decided to move over to a new mainframe computer with a proprietary operating system instead of the non-proprietary system it had been using before. Around the old, free system a hacker community had been evolving, developing and exchanging code and applications for fifteen years, but this move signalled the end of the 'free' era. Suddenly it became impossible to exchange or co-create working software, since every user had to sign a non-disclosure agreement. As Stallman (2002) writes, 'This meant that the first step in using a computer was to promise not to help your neighbour. A co-operating community was forbidden. The

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[21] Chris DiBona, Sam Ockman & Mark Stone (eds), *Open Sources: Voices from the open source revolution.* Sebastopol, O'Reilly: 1999.

rule made by the owners of proprietary software was, "If you share with your neighbour, you are a pirate. If you want any changes, beg us to make them".[22]

Not being able to modify or share programs is fundamentally unethical, in Stallman's view, and he faced a 'stark moral choice'. He quit his job and decided to develop a free operating system, 'to make a community possible again'. This system had to be free from having to ask permission to make changes, and it had to be compatible with Unix, the dominant operating system of the embryonic Internet of that time. In 1984 he began to work on this free operating system, dubbing it GNU, a recursive acronym meaning 'GNU is not Unix'.

Of crucial importance in Stallman's project is the notion of freedom. Stallman never tires of stressing that this means 'free as in free speech, not free beer'. Free software is not about money, but about principles. The four principles of freedom include: the freedom to use, the freedom to redistribute copies (either gratis or for a fee), the freedom to modify, and the freedom to distribute modified versions without needing to ask for anyone's permission.

In order to retain this freedom, it was necessary to prevent the software from being turned into proprietary software. This was made possible by a method called 'copyleft', a kind of reverse engineering of existing copyright law: 'copyleft – all rights reversed'. Free software is licensed with the GNU General Public License (GPL), which basically states that anything added to or combined with a copyleft program is also free and copyleft.[23]

Stallman founded the Free Software Foundation in 1985 as a tax-exempt charity for free software development.[24] During the 1980s he managed to recruit a good many voluntary programmers to work part-time and to contribute machines, money and programs. Gradually, several components of GNU were developed in this way, although in the early 1990s there was still no working kernel to make it a compete operating system. Fortunately, around that time Linus Torvalds had started working on the Unix-compatible Linux project. In 1992, combining the Linux kernel with the not-quite-complete GNU system resulted in a relatively stable, free operating system. Stallman is always very keen to keep this history of GNU/Linux alive, and never tires of interrupting anyone who talks about 'Linux' with 'you mean, GNU/Linux'.

Since the 1990s, Stallman has been evangelising to spread his message, by speaking at international conferences, engaging in online discussions and reworking his manifestos. The goal is to mobilise people to use free software and to refrain totally from using non-free software. Stallman's advocacy work is based on a strong moral appeal. Free software is grounded in ethical principles: founding communities, helping your neighbours and friends. It is no coincidence that his book is called *Free Software, Free Society* – he believes free software will bring salvation: 'In the long run, making programs free is a step toward the post-scarcity world, where nobody will have to work very hard just to make a living. People will be free to devote themselves to activities that are fun, such as programming, after spending the necessary ten hours a week on required tasks such as legislation, family counselling, robot repair, and asteroid prospecting.'[25]

Stallman's tone is not only moral but also harsh: 'If programmers deserve to be rewarded for creating innovative programs, by the same token they should be punished if they restrict the use of these programs'.[26] Anyone who deviates from the straight and narrow path of the FSF is at least morally condemned, and we are warned against these heretics: 'Watch out though – a number of companies that associate themselves with the term "open source" actually base their business on

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[22] Richard M. Stallman, *Free Software, Free Society*. Boston: GNU Press, 2002, p. 16.

[23] Note that this does not forbid all 'commercial use', as suggested by Microsoft's Bradford Lee, elsewhere in this book. The GPL just forbids turning free copyleft material into proprietary material.

[24] Free Software Foundation Homepage: www.gnu.org/fsf. The FSF is an actor in the networktoo, by providing lawyers for programmers sued because of copyright infringement, discussing recent law directives, setting the agenda for a revision of the Digital Millennium Copyright Act, etc.

[25] Stallman, 2002, p. 39.

[26] *Ibid.*, p. 36.

non-free software that works with free software'.[27] Anyone who uses the term 'open source' instead of 'free software' is suspect in Stallman's eyes. The term should be avoided, as it obscures the principles of freedom and appeals primarily to 'executives and business users, many of whom hold an ideology that places profit above freedom, above community, above principle'.

Stallman's strategy can be seen as one of purification, qualifying which software and people follow the right principles and which do not. When he mentions 'Linux users', between quotation marks, he is referring to the non-pure users – magazines, advertisements and spokesmen who put convenience or business models before principle. One of these non-pure heretics is his former fellow hacker Eric Raymond, the next key figure in the open-source sociogram.

Eric Raymond, a hacker with a business model

Figure 2: Eric Raymond at the O'Reilly Open-Source Convention

Eric Raymond can be seen as Stallman's opponent in the open-source paradigm battle. His focus on open source is not ethical but financial. In his view, open source is basically a new mode of software production. The benefits are not only the non-alienated and efficient organisation of labour, but also technically superior products. Raymond has dubbed this new mode of production the 'bazaar mode', as opposed to the 'cathedral mode'.[28]

The cathedral mode – used by proprietary-system development companies as well as Unix developers and Stallman's Free Software Foundation (!) – is based on tight co-ordination, systematic planning and goal-setting. Conversely, the bazaar mode, as invented or re-invented by Linus

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[27] *Ibid.*, p. 22.

[28] In 1997 Raymond presented his ideas on the bazaar model at the Linux Kongress in Germany, and published the essay online, where it immediately raised a debate. In 1999 Raymond published the essay together with other essays in *The cathedral and the bazaar: Musings on Linux and open source by an accidental revolutionary.* O'Reilly: Sebastopol, 1999.

Torvalds, emerged from 'casual hacking' and 'constructive laziness' in the context of a decentralised, collaborative, Internet community: 'quality was maintained, not by standards or autocracy, but by the naively simple strategy of releasing every week and getting feedback from hundreds of users within days'.[29] This peer-reviewed direct feedback model is an effective alternative solution to the main problem of the large, cathedral-mode systems: the exponential upsurge of complexity, bugs and communication costs. The basic idea of the bazaar is: 'Release early and often, delegate everything you can, be open to the point of promiscuity'.[30]

This notion of 'promiscuity' can be seen as a key metaphor in Raymond's open-source discourse, and it should be clear that this is diametrically opposed to Stallman's purity. In Raymond's book *The Cathedral and the Bazaar* (1999), we can see how this promiscuity transforms, *en route*, a production model (aimed at products) into a business model (aimed at profits).[31] While a phrase such as 'treating your users as co-developers' may still imply a dual perspective – that of a community and a software company – the translation of the credo into 'release early, release often and listen to your customers' wholly represents the perspective of a company.[32] 'Users' have become 'customers'.

Raymond, being a hacker/programmer himself and with street credibility to boot, writes with a kind of amateur anthropological flavour, always as a participating observer. He provides detailed descriptions of the internal dynamics of the small bazaar groups centred around core developers with different leadership styles, deconstructing the 'automagic' myth of anarchic decentralised developing. Raymond shows that this is not magic; it is organised labour, in a framework of interconnecting personal itches, ego satisfaction, reputation politics, implied ownership customs, and plain hackers' enjoyment.

Raymond clearly exposes the processes of mobilising actors into the open-source actor network, describing his own strategies in detail.[33] He reveals his personal strategy of 'memetic engineering': deliberately framing the memes and myths of hacker culture in metaphors and narratives (i.e. cathedral, bazaar, inverse commons, etc.). He describes the general mobilising strategies of collecting an informal network of allies over the Internet, creating formal organisations (such as the Open-Source Initiative), attending meetings and demonstrations, giving talks, and so on. Raymond makes no secret of his main goal: this is a marketing campaign of 'spin, image-building and rebranding', aimed at big business and the general public. So it is necessary to get rid of the notion of 'free software', as this is too ideological and anti-business. Mobilising the market basically means: forget bottom-up, work on top-down, with Linux as the best demonstration case for capturing the Fortune 500.[34] In 1998 Raymond decided to become the open-source ambassador, playing with his public image as an all-American guy with a love of guns, programming and libertarianism. He grew accustomed to flying first class and riding limousines, and is now a millionaire with shares in several Linux distribution companies.

This millionaire-with-a-mission calls himself an 'accidental revolutionary'. Notice that, for Raymond, the revolution is already here. In his view, it began in January 1998 with 'a shot heard around the world', when Netscape announced it would open up the source code of its browser.[35] Raymond immediately offered Netscape his consultancy services. The second shot was fired in November 1998 when an anonymous insider from Microsoft sent him the infamous Halloween Documents, which he immediately distributed on the Internet. It is indicative that Raymond sees Netscape's announcement as a revolution. In his opinion, revolution is defined by the decisions of

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[29] *Ibid.*, p. 13.
[30] *Ibid.*, p. 21.
[31] In the chapter 'The magic cauldron' Raymond (1999) describes nine business models for sustainable open-source funding – two non-profit, seven for-profit.
[32] *Ibid.*, p. 29.
[33] Particularly in the chapter 'Revenge of the hackers' in Raymond (1999).
[34] *Ibid.*, p. 177.
[35] *Ibid.*, p. 196.

Fortune 500 companies. But by then Netscape was no longer a big company – it was a former big company, in big trouble because it had lost its dominance and superiority on the web browser market. Besides, until recently the open-source Netscape Navigator/Mozilla browser was too weak a product to compete with Microsoft's Internet Explorer. If we can speak of a revolution at all, it started much earlier than 1998. It started with faith, hope, and a lot of organising work to make it come true. It was Linus Torvalds, the next key figure of the open source movement, who provided the missing link between faith and practice.

Linus Torvalds, a hacker with a family

Figure 3: Linus Torvalds with his family

It is no coincidence that Stallman and Raymond, despite being so different in their approaches and in their interpretation of the history of hacking, both point to Linus Torvalds and Linux as the breakthrough in open-source history. Starting with a modest proposal in a Usenet posting in 1991, Linus/Linux attracted thousands of co-developers and millions of users during the 1990s. We write 'Linus/Linux' deliberately, because it is difficult to separate person from product by determining their respective roles. Was it the person Linus or the product Linux that did it? It was probably the synergy. Both Stallman and Raymond admit that Linus Torvalds is a nice guy, with a responsive and open character, so other people really want to help him. And the more people contributed their code, the better Linux became.

Torvalds also published his hacker autobiography, under the significant title *Just for Fun* (2001).[36] No mention of principles or business models or metaphors: 'just for fun'. The first sentence of the book sets the tone: 'I was an ugly child'. In the first pages Torvalds talks about his nice family, and modestly about himself as having no charming personality – he was a geek, a nerd, with the wrong looks and clothes, and all he wanted to do was to play with his grandfather's calculator and computer. At the end of the chapter he mentions that nowadays his wife advises on his wardrobe.

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[36] Linus Torvalds and David Diamond. *Just for Fun: The Story of an Accidental Revolutionary*. Harper Business, 2001.

This picture is illustrative: Torvalds represents himself as a hacker with a family. And this can be seen as a generative metaphor. His family consists not only of his intimate loved ones: it is an extended family – the open-source community. And while there are several kinds of quarrels in this family, with some of its members unable even to be in the same room as one another (Stallman and Raymond), Torvalds can get along with all of them. He can talk with the Free Software Foundation and with open-source business model developers; he can travel between the divided domains.

How does he do it? Torvalds told the magazine *Wired* how he avoids confrontation: 'Just walking away. That also allows me to concentrate on the things I do enjoy, namely the technical discussions. I can't totally avoid all political issues, but I try my best to minimise them. When I do make a statement, I try to be fairly neutral. I like being on friendly terms with most people. By staying neutral, I end up being somebody that everybody can trust. And I'm fairly comfortable with the notion of saying "Sorry, I was wrong," even in public. If I'm right, I'm right, and if I'm wrong we can go back and fix it. I think of myself as an engineer, not as a visionary or "big thinker". I don't have any lofty goals. I just want to have fun making the best damn operating system I can'.[37]

But let's be clear about it: Torvalds runs the show at the Linux project, at least as far as the core development of Linux is concerned. Though he works together with other so-called maintainers, it is he and no one else who decides which features are to be included in the next release of the kernel.[38] It is he and no one else who announces that from now on the names and e-mail addresses of individual contributors will be included in the Linux source code. Torvalds has often been called a 'benevolent dictator', and while this probably is a fitting description of his personal leadership style, it is much more than just a personal thing. What it indicates most of all is that open-source developing, notwithstanding the clichéd ideological connotations of anarchism and decentralisation, is basically a matter of organising people, artefacts, labour and decisions.

Now we have a basic sociogram of three key figures, all of them hackers with hands-on experience but with different discursive positions. Stallman, the ethical purist; Raymond, the libertarian business-model organiser, and Torvalds, the pragmatic hacker and benevolent leader. All three are necessary to keep the open-source actor network alive and kicking, each enlisting his own allies (sometimes overlapping with the others), and each transforming and speaking for different flavours of open-source products, whether they be pure or hybrids of 'free' and 'non-free' software.

But the sociogram is not yet complete. With the extension of open source from code delivery to production, and from production to licensing and copyleft/copyright matters, we enter the domain of the law and lawyers. While there are many lawyers involved, two stand out as open-source spokesmen with their own street credibility.

Lawrence Lessig and Eben Moglen: lawyers of the commons

Two lawyers who quite often feature in open-source headlines and news reports are Lawrence Lessig and Eben Moglen. Both are on the side of hacker culture and deeply involved in the legal and ideological fight to protect public cultural resources from take-overs by companies claiming copyrights and patents. Both are American professors of law (at Stanford and Columbia, respectively), and as such are important players who bring the concepts of open source and digital commons into the realm of academic discourse. This discourse does not confine itself to strictly legal issues, but explicitly connects itself to social and political matters, as can be seen from the titles of their publications. Lessig has written books such as *Code and Other Laws of Cyberspace* (1999) and *Free Culture: How*

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[37] David Diamond (2003), 'The Peacemaker: How Linus Torvalds, the man behind Linux, keeps the revolution from becoming a jihad', in *Wired* 11.07.
[38] On the Linux labour organisation with several maintainers, see Paul Venezia, IDG News Service, 11-2-200 *How the Linux kernel gets built*, http://www.arnnet.com.au/index.php/id;1843600829;fp;4;fpid;1854890668

big media uses technology and the law to lock down culture and control creativity (2004). Moglen wrote *Anarchism Triumphant: Free software and the death of copyright* (1999) and *The dotCommunist Manifesto* (2003).

But they do more than just academic and discursive work. They have earned their own street credibility: Moglen works as a lawyer for the Free Software Foundation, which administers the GPL, while Lessig founded the Creative Commons Licence, an equivalent of the GPL for creative works such as texts, music, photography, weblogs and digital content in general. This licence, recently also launched in European countries such as Germany and the Netherlands, offers several variants of copyright/copyleft, allowing third parties to use, distribute and – under certain conditions – modify the creative product in question. This is another example of how the idea of open source is travelling and being extended to all kinds of digital products, not just programs.

Moglen and Lessig are frequently called communists. Indeed, it is easy to link the notion of 'advocate of commons' with this political ideology, mostly with a pejorative connotation in mind, especially in the United States. While Lessig publicly states that he is definitely not a communist, Moglen at least plays with the symbolic capital of communism. In *The dotCommunist Manifesto* he echoes the famous first lines of Marx's *Communist Manifesto*: 'A spectre is haunting multinational capitalism – the spectre of free information'.[39] This is in fact a rewriting of the *Communist Manifesto*, from the perspective of an information society trying to overcome 'information feudalism'.

Moglen clearly represents the more optimistic view. He celebrates the anarchist benefits of the copy-and-paste culture and seems convinced that the open-source revolution is already here. His views, however, do not go unchallenged. For instance *Telepolis*, the German electronic magazine for net culture, has heavily criticised his belief that a free society can be achieved through free software.[40] Lessig's view on the development of culture is more pessimistic. The threat of information feudalism, especially in the form of built-in code to control data traffic and human behaviour, is ubiquitous in his work. But both the optimistic lawyer and the more pessimistic one are important actors in the open-source network. They are necessary intermediaries between street fights and the court-room, between hacker culture and academic culture, between ethical principles and licence formulations.

Strategies of discourse

When we analyse the discourse on open-source software we notice that several discursive strategies are used by the participants to promote their message and to argue against their antagonists. In all the spheres mentioned above we can recognise strategies based on the classic Foucaultian principles of controlling a discourse:

a) prohibition, which regulates what can be spoken of, where and how one may speak, and who has a privileged or exclusive right to speak on a particular subject;

b) the opposition between reason and madness, which creates a division between irrational and reliable speakers;

c) the opposition between true and false, the Foucaultian 'will to truth', mostly represented by science and research institutes.[41]

In the open-source discourse, this comes down to three patterns of exclusion:

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[39] Eben Moglen, *The dotComunist Manifesto,* 2003, online: http://emoglen.law.columbia.edu/.
[40] Marcus Hammerschmitt, 'Luftbuchungen freier Software', in *Telepolis*, 21-6-2004, online: www.heise.de/bin/tp/issue/dl-artikel.cgi?artikelnr=17676&rub_ordner=inhalt&mode=html
and Stefan Krempl, 'Free Society, Von der Utopie zum Alltag', in *Telepolis*, 12-6-2004, online: www.heise.de/tp/deutsch/html/result.xhtml?url=/tp/deutsch/special/wos/17636/1.html&words=Moglen
[41] Michel Foucault, 'The discourse on language', in *The Archaeology of Knowledge*. New York: Pantheon, 1982; pp. 215-238.

a) criminalising the opponent, spreading doubt about intentions or reliability, constituting and maintaining taboos;

b) proving that the antagonist's claims are wrong and irrational, constructing the truth by new evidence and facts;

c) the use of rituals, metaphors and symbols to reframe the discourse.

Fear, uncertainty and doubt

Microsoft's strategy for responding to the open-source challenge has often been described as a 'Fear, Uncertainty and Doubt' (FUD) strategy.[42] When the SCO Group claimed copyrights on parts of Linux and began to sue companies for using it, Microsoft was immediately suspected of being the secret force behind it. And indeed, the Microsoft/SCO connection became public in March 2003 when the venture-capital investor BayStar admitted that Microsoft had funded their investment in SCO and urged them to make a point of the copyright issue. Threatening any commercial usage of Linux with a potential lawsuit, SCO spread uncertainty and doubt among companies who are considering whether to use Linux or stick to proprietary software.

This is indeed an effective strategy for excluding Linux from the market and the discourse. However, it will be difficult if not impossible for the strategy to work in every domain. For a long time, open-source server software has been widely regarded as superior to Microsoft server products. Companies use open-source mostly on their network servers, and the most frequently used web server on the Internet is the open-source server Apache. The situation is different with Linux on desktops, which has been taboo for quite some time. As Michael Tiemann, Open-Source Affairs Manager at Red Hat, puts it, 'suggesting using Linux on a desktop to a customer was impossible, even if the customer had already had good experiences using Linux on a server'.[43] This was why Red Hat initially provided no desktop application products. According to Tiemann, during this period companies would exclude themselves from the market by offering Linux desktop solutions. This taboo existed for years, and pushed open-source products towards servers, away from the desktop. Most open-source software was – and still is – invisible to ordinary users, as it runs mostly on servers and modems. The taboo in fact shaped both the market and technological products.

Microsoft's marketing focus on Linux's liabilities, bugs and 'unpleasant mutations' was made explicit in an advertisement in Germany's most prestigious tech magazine, *c't*, in October 2000. The two-page ad shows penguins with an elephant's nose, a frog's head and rabbit ears, with the caption: 'An open operating system does not only have benefits'. ('Ein offenes Betriebssystem hat nicht nur Vorteile.') The text continues: 'An open operating system sometimes just mutates. Conversely, Windows 2000 offers all services from a single source'.

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[42] The term FUD was first coined by Gene Amdahl to describe IBM's strategy for persuading customers to buy safe IBM products instead of their competitors' 'unsafe' products. See *The Jargon File* by Eric S. Raymond, online: http://www.catb.org/~esr/jargon/html/F/FUD.html

[43] *Linux auf dem Desktop ist kein Tabu mehr*, Interview with Michael Tiemann in Golem.de, 9.7.2004, online: http://www.golem.de/0407/32066.html

Figure 4: Microsoft advertising 'An open operating system does not only have benefits'

Online Linux communities responded as expected: 'We won: MS targets Linux in German advertising'.[44] The style of the advertising seems to allude to the do-it-yourself artwork and culture-jamming that became famous through activist groups like Adbusters.[45] It is frequently used by Microsoft critics on the Internet. But for a big company like Microsoft, it is rather tricky to criticise mutations in the name of a 'pure race' in the context of German history. Besides, this strategy ignores insights from media and science studies on the productivity of modifications and mixes. Marshall McLuhan stated decades ago that hybrids produce energy and push development ahead.[46] Bruno Latour showed how, despite their obsession with purification, modern science and technology have produced a proliferation of hybrid forms that remain unrecognised.[47]

However, the culture-jamming style, which has all kinds of associations with purification and fascist ideology, is also a discursive strategy of the anti-Microsoft warriors. Their virally distributed anti-advertisements represent Microsoft – or preferably Bill Gates – as an intolerant dictator, complete with Nazi uniform and swastikas.

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[44] 'We won: MS targets Linux in German advertising', in *Linux Today* 22 Oct. 2000. Online: http://linuxtoday.com/mailprint.php3?action=pv&ltsn=2000-10-22-016-04-NW-CY-MS
[45] See adbusters.com
[46] In the chapter 'Energy from hybrids' in his book *Understanding Media* (1968, p. 95), McLuhan wrote that the hybrid, the connection of two media, is a moment of truth which produces a new kind of medium.
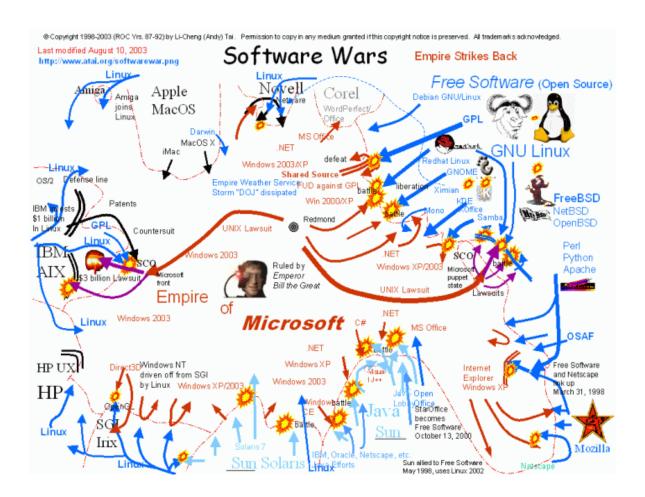[47] Bruno Latour, 1991.

      Considering this kind of artwork, Microsoft's anti-Linux advertisement makes some sense. But the do-it-yourself artwork of the heterogeneous multitude of open-source communities is quite different from the deliberate marketing strategy of an established multinational such as Microsoft. People who

feel connected to these communities contribute not only with code jobs, but also by producing artworks, posting comments about articles on various websites or simply forwarding pictures like the ones shown above. The interesting aspect of these demonising strategies is how technology is able to arouse people's emotions, and how this can be transformed into creative output, not only as artwork, but also at the level of discourse and symbols. The symbolic capital of Enlightenment – literacy, freedom of speech, free flow of information, liberation and democracy – provides an arsenal of discursive weapons to be used against Microsoft's monopoly-constructing market strategies. For example, the *Software Wars Map* published by Li-Cheng Tai depicts the open-source battle in terms of liberation frontiers and the Microsoft empire.

Cultural practices such as do-it-yourself artwork and mapping the battlefield are not just discourse strategies, they also serve the purpose of 'self-positioning' of the open-source enthusiasts. As the 'most evil' antagonist in the open-source battle, Microsoft plays an important role in this process. In fact, the hegemonic company makes the cultural activity and identity of Linux protagonists possible by its mere existence, its business models and its discursive strategies. The harder Microsoft pushes its influence on parliaments, public administrations, companies, and the public sphere, the more it contributes to the identity and community-building of the open-source movement.

The 'will to truth': proof and counter-proof

In the late 1990s, one of the main reasons for companies and institutions to use open source was its price: it was practically free. Microsoft responded promptly with detailed accounts of the 'total costs of ownership' of desktop computers, which included the cost of service, maintenance and system management, claiming that their seemingly expensive products might in the end be cheaper than using Linux. In 2004 Microsoft launched a special website dedicated to the open-source debate, calling it *Get the facts*. On this website we find a great many links to research claiming the superiority of Microsoft products and the unreliability, or even dangers, of open source[48] – for example, a survey by the Alexis de Tocqueville Institution stating that open-source software facilitates terrorist attacks.[49] Another survey by this institution claims that Linux was not even invented by Linus Torvalds.[50] A survey published by the Forrester Research/Giga Information Group shows how companies could save up to 28% of their costs using Microsoft products instead of Linux.[51] An International Data Corporation (IDC) survey claimed that companies had higher expenses because they used Linux .[52]

This 'scientific' attack on Linux can be described as an attempt to exclude speakers from the discourse by the Foucaultian 'will to truth'. But we also learned from Foucault that truth never comes without power and organisation: several independent sources have claimed that Microsoft financially supported the Alexis de Tocqueville Institution, Forrester Research and IDC.[53]

The strategy of the 'will to truth' is not, of course, the exclusive preserve of the closed-source party in the discourse. Pro-open-source websites also provide surveys to prove the compatibility, usability and benefits of Linux.[54] Publishing success stories or case-studies on migration to open source is in fact the equivalent of Microsoft's publishing *Get the Facts.* Moreover, the Foucaultian 'will to truth' is also at work in the growing interest in open-source issues being shown by scholars from a range of different disciplines.

If you can't beat 'em, join 'em

Besides excluding Linux from the discourse by pushing its subject to the fringes of legality and reliability, Microsoft enters the discourse by pretending being open itself. With its *Shared Source Initiative* the software company alludes to the concepts of the open-source movement, allowing licensed parties limited access to their proprietary source code. A Gartner Group survey concludes that although the software giant stresses the importance of openness it is not actually implementing these principles itself.[55] For example, the Internet Explorer review process revealed many serious security problems but did not lead to implementing any effective solutions. Microsoft's Shared Source Initiative uses the terminology of open-source principles, but it comes nowhere near to the peer-review model and collaborative production process of open-source development. It lacks practically all the freedoms Richard Stallman talks about: no public availability, no right to modify, no right to distribute.

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[48] *Get the Facts*: http://www.microsoft.com/mscorp/facts/default.asp

[49] Kenneth Brown, *Opening the Open Source Debate.* http://www.adti.net/opensource.pdf

[50] Kenneth Brown, *Samizidat.* Alexis de Tocquville Institution, 2004, http://www.adti.net/kenarbeit/samiz.release.html

[51] http://download.microsoft.com/download/7/3/e/73e77129-db34-4c95-b182-ab0b9bd50081/TEICaseStudy.pdf

[52] See also the Blog Deltoid: http://www.cse.unsw.edu.au/~lambert/blog/computers/tanks.html

[53] For instance, Alfred Krüger, *Gesponserte Fakten*, in Telepolis, 8.1.2004; http://www.heise.de/tp/deutsch/inhalt/te/16473/1.html

[54] Surveys on migration to open source: http://www.bundestux.de/themen/inlmigstud/index.html

[55] John Pescatore, *Microsoft sends mixed signals about Software Security,* Gartner Group 2002, http://www3.gartner.com/resources/106700/106790/106790.pdf

Microsoft has taken more steps to 'join the enemy'. In June 2004 for the first time the company attended the German business fair, Linuxtag. In several statements, leading managers welcomed the competition of open source: it would lead to better products, and in the end the market would decide which was the best.[56] This is the well-known capitalist discourse of the free market allowing 'democratic elections' of the best products. But behind the scenes, and in public, Microsoft is working hard to 'enable the market to decide' in the right direction, that is: closed software as a protected business model.[57]

This strategy of 'joining the enemy' can be found in open-source circles as well. For example, Wine/Lindows is open-source software that makes it possible to run Microsoft applications on Linux systems. And approximately 25% of the open-source projects hosted on Sourceforge are related to Microsoft software. In April 2004 Microsoft itself offered two projects on Sourceforge for the first time ever. Surprisingly, in June 2004 these were among the most active five per cent of the more than 80,000 projects at Sourceforge.

Political agenda-setting

Though we can perceive patterns like the ones above in the discursive strategies of the open-source movement, these are by no means centrally organised communication strategies. While the public discourse on open source can be shaped by the accidental or self-assigned representatives of the open-source multitudes, setting political goals and agendas is quite another thing. This is done by other players from other domains. In particular, unions, left-wing political parties and non-governmental organisations recognise in the open-source concept their traditional values of democracy, public responsibility and collectivity, and connect these values to several campaigns.

In the late 1990s the open-source discourse was framed mainly as a financial and technological issue. Open-source entrepreneurs stressed the assets of cheapness, reliability and safety. From 2001 we notice a shift in the argumentation, from costs to independence, freedom and democracy. During a year-long discussion in the German parliament about which software to use on its servers and desktops, the importance of being independent of the software supplier was a recurring argument. The German Bundestag finally compromised: it would use Linux on its 150 servers but stick to Windows on its 5,000 desktops. Nevertheless, this showed that open source was definitely on the political agenda. Now German politicians of all parties are actively promoting Linux on the platform www.bundestux.de.

In communicating their interest, politicians are extending the field of discourse to a wider public. For example, the Bavarian politician and former programmer Monica Lochner-Fischer (Social Democratic Party) launched the campaign *'More Linux, More Freedom'.* Microsoft was not amused, and tried in vain to get the posters removed. In interviews, Lochner-Fischer encouraged concerned citizens and open-source activists to shift the debate from online platforms and user groups into the political sphere, by attending political meetings or writing letters to members of parliament.[58]

The Austrian Green Party launched a '*Linux for everyone'* (Linux für Alle) campaign, and distributed 5,000 copies of a bootable Linux CD.[59] The website gives arguments for using open-source software, offers a free download of Volker Grassmuck's book *Freie Software,* and the content of the

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[56] 'Microsoft Österreich-Chef im Gespräch: Heil froh' über Open Source', in *Der Standard*, 28.6.2004; online: http://derstandard.at/?id=1568721

[57] See also Bradford L. Smith, *The Future of Software: Enabling the Marketplace to Decide*, March 2003; online: http://www.microsoft.com/resources/sharedsource/Articles/Future.mspx (also in this book). For a profound analysis of Microsoft's strategies see Alexander Roesler and Bernd Stiegler, *Microsoft, Medien, Macht, Monopol.* Frankfurt a.M., Suhrkamp: 2002.

[58] 'Mehr Linux, Mehr Freiheit', Monica Lochner-Fischer interviewed by Peter Riedlberger and Peter Mühlbauer, in *Telepolis,* 17.7.2003: http://www.heise.de/tp/deutsch/inhalt/te/15239/1.html

[59] *Linux für Alle,* http://www.wien.gruene.at/linux/

Linux CD to burn at home. To encourage and support people interested in running Linux on their desktops, the Viennese department of the Green Party adopted the Linux User Groups' practice of organising Linux installation parties.[60]

The Dutch party GroenLinks (Green Left) is also actively propagating open source.[61] The party wants to stimulate the use of open source in public administrations, and is urging active support for the development of open-source solutions in the public sector. Again, the main argument here is independence from suppliers: the public administration should be in control of its own software.

Business fairs such as the Linuxtag, the Linux Worldexpo in Frankfurt, the Linuxwochen in Austria or the Wizard of OS Conference in Berlin provide platforms for discussion between politicians and open-source activists. The 2004 Wizard of OS conference released the so-called 'Berlin Declaration on Collectively Managed Online Rights' and sent it to the European Commission. In this statement copyright scholars, civil society activists and programmers urged the European Commission to revise their approach to software patents and intellectual property.[62] The Berlin Declaration is a landmark in the politicisation of the open-source discourse: it shows that the open-source multitude can become organised and is capable of formulating political goals. And this is needed badly, as the open-source discourse is being increasingly marked by battles on intellectual property, copyrights and patents. Legislation and political decision-making processes in this domain are emerging as a new open-source battlefield.

The proposed EU regulation of software patents is widely regarded as a major threat to open-source development. While copyright closure could be successfully countered with copyleft licences, this cannot be done with patents. The legislation on copyright (or copyleft) protects a specific work; the legislation on patents protects general technological inventions. Software can indeed be considered to be in between a written work and a technological invention – this is the essence of software: it is written code that does something technical. But the shift from copyright to patents implies the possibility of so-called trivial patents – patents on commonly-used building blocks or ideas. Compare this with the situation of an author writing a novel when someone has patents registered on 'the happy ending', or 'the relative clause', or the letter 'm': writing a novel would become practically impossible. In the same way, open-source development will become very difficult, as no amateur programmer would be able to go through the thousands of software patents to check whether his or her work contains possible patent infringements. It will be obvious that patenting software limits our cultural resources and slows down the innovation process in ICT.[63]

Moreover, if almost any software idea can be patented, even such common things as a toolbar, a spell checker or a double-click (all three patented by Microsoft), it will become very easy to attack any open-source program with claims of patent infringements. A recently published Hewlett-Packard memo from 2001 addresses this possibility. The memo warns: 'Microsoft could attack open-source software for patent infringements against OEMs, Linux distributors, and least likely open-source developers. (...) Basically Microsoft is going to use the legal system to shut down open-source software'.[64] On Slashdot, the memo raised a discussion with more than 350 postings. But not only open-source communities and Linux distributors are worried – European small and medium-sized

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[60] One reason for this engagement might also be the personal background of Marie Ringler, who is responsible for technology issues in the Viennese Green Party. Ringler served for years as managing director of Public Netbase, Institute of New Culture Technologies. See www.marieringler.at

[61] *'Groenlinks presenteert plan Open source'*, 19.11.2002; online: http://www.groenlinks.nl/partij/landelijk/nieuwsarchief/dbimport/id-gldb-4001428/view

[62] *The Berlin Declaration*, http://www.wizards-of-os.org/index.php?id=1699&L=3

[63] This is also the conclusion of a US survey: Paul Horn, Eliot Maxwell, and Susan Crawford, *Promoting innovation in the on-line world: the problem of digital intellectual property. A report by the Digital Connections Council of the Committee for Economic Development,* 2004.

[64] Joe Barr, 'HP Memo forecasts MS patents attack on free software', in *Newsforge,* 19.7.2004; online: http://www.newsforge.com/article.pl?sid=04/07/19/2315200

businesses see these patents as a threat too.[65] And even Deutsche Bank research recently stated that 'patents on software, common practice in the US and on the brink of being legalised in Europe, in fact stifle innovation'.[66]

Increasingly diverse players representing various domains are arguing against software patents. For example, when the German chancellor Gerhard Schröder recently opened a symposium on innovation and intellectual property, a demonstration was organised by Linux groups, the Free Software Foundation Europe and non-software organisations, such as Greenpeace and Attac. Demonstrations set up to fight for open source are of course possible because the issue reflects traditional democratic values, while demonstrations for Microsoft products would seem ridiculous. In any case, this shows the public's growing interest in software patents and open source, and the political relevance of the issue. The time seems to be ripe for encouraging a public debate on open source, and drawing in those who still consider it a nerd's hobby. Open-source communities, spokesmen and other actorshave demonstrated that open source matters, and that it affects much more than just the life and work of programmers. The discourse can now enter a second stage and become a major issue on the political agenda.

Conclusion: will the revolution be open-sourced?

Our explorative mapping of the open-source discourse has shown how the concept travelled from computer subcultures into various domains – economic, cultural, social, legal, academic and, especially, political. Using a actor-network approach made it possible to identify the various players, spokesmen, companies, and institutions which are busy mobilising their allies and associations, using several discursive and non-discursive strategies to transform and extend the concept of open source. It became clear that the discourse directly affects the development of technological products, and that technology, in turn, shapes the discourse.

The spokesmen of the open-source movement in fact shaped a public sphere, by representing the multitude of users and promoting agenda-setting by other players. Meanwhile, open-source developers continued to offer compatible programs, suggestions for independent technology use, open standards and free access to technology. In the extending actor network the term 'open source' became firmly associated with democratic values, collaborative production processes, freely accessible resources and community-building.

Several actors alluded or explicitly referred to the term 'revolution'. Spokesmen such as Raymond and Torvalds call themselves 'accidental revolutionaries', and Moglen hit the spot when he translated open-source principles in terms of revolutionary communism. But revolutions can only be recognised and evaluated with hindsight, from a future in which the winners have been definitively declared. It is just too early to answer the question 'will the revolution be open-sourced?' The battle is still going on, and seems to be entering a second stage, in the domain of political agenda-setting and legal regulation.

Nevertheless, the rapid and widespread diffusion of the term 'open source' is remarkable. Starting as a practical concept from the computer subculture, the concept mobilised a huge and ever-widening discourse and technological development. It has become the major metaphor in the battle between the monopolistic establishment and distributed cultural practices, which are strongly connected with the collaborative labour dynamics of the Internet generation (Castells, 2001). While monopolistic companies and their allies try to sustain the industrial-age concepts of property, patents and copyrights, the metaphor of open source describes and mobilises the cultural practice of the

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[65] See *Ein Jobkiller*, Georg Greve interviewed by Stefan Krempl, in *Die Zeit*, 8.7.2004; online: http://www.zeit.de/2004/29/Interview_Patente
[66] Deutsche Bank Research: *Innovation in Germany. Windows of Opportunity*; online: http://www.dbresearch.com/PROD/DBR_INTERNET_EN-PROD/PROD0000000000175949.pdf

digital age. Perhaps we can even describe the multitude of programmers, users, spokesmen and activists as the avant-garde developing the cultural practice of the 21st century. But what is clearly needed is a political avant-garde, or rather a broad movement, to root this in political practice. The fate of the open-source paradigm is closely connected to a public sphere which provides a legal and social framework for the ongoing circulation and modification of technologies and ideas. That is where our cultural resources reside. And it is worth the battle.

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Pictures

Figure 1: *Richard Stallman playing flute for a butterfly.* Richard Stallman's home page www.stallman.org/rms.jpg

Figure 2: *Eric Raymond at the O'Reilly Open-Source Convention.* LinuxDevCenter www.linuxdevcenter.com/pub/a/linux/2001/08/02/raymond.html

Figure 3: *Linus Torvalds with his family.* The Rampantly Unofficial Linus Torvalds FAQ, www.catb.org/~esr/faqs/linus/le2.jpg

Figure 4: *Microsoft advertising.* Source: *c't* October 2000.

Figure 5: *Anti-Microsoft Page* www.theapplecollection.com/various/anti_ms/

Figure 6*: Microsoft Art Page.* http://microsoft.com.tripod.com/art.htm

Figure 7: *Software Wars*. Li-Cheng Tai, www.atai.org