

# An Open Web

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# The Web is Closed

“As much as we love the open Web, we’re abandoning it.”

-Chris Anderson, WIRED Magazine

The Web was meant to be Everything. As the Internet as a whole assumes an increasingly commanding role as *the* technology of global commerce and communication, the World Wide Web from its very inception was designed to be a free and open medium through which human knowledge is created, accessed and exchanged.<sup>1</sup> But, that Web is in danger of coming to a close.

The Web was meant to be Free. It laid out a language of HyperText, which anyone could use to author electronic documents and connect them together with links. The documents in totum were meant to form a global web of information with no center and no single point of control.<sup>2</sup> The first Web browser was also a Web editor, and this principle that any node in the network can both consume and create content has more or less been defended to this day.

The Web was meant to be Open. It detailed a common interface that could be implemented on any computer. This innovation overcame the obstacles of incompatible platforms and tools for the sharing of knowledge on the Net,<sup>3</sup> by defining a Hypertext Transfer Protocol (HTTP) and other standards for the discovery and communication of online data. The technical specification of the World Wide Web was offered for free as a non-proprietary, open standard that could be used by anyone for commerce and culture and everything in between.

Within a decade of its birth the World Wide Web had blossomed, and by a simple measure of bandwidth usage it had become a dominant protocol for data exchange on the Internet. It was the openness of the Web that allowed for this revolution, and in the years to come countless new technologies and innovations would be built on top of the open Web.

By the turn of the millennium, however, the share of Web usage as a percentage of total Internet traffic had begun to decline, displaced by more bandwidth-intensive activities like video streaming, peer-to-peer file sharing, voice-over-IP and online gaming.

In point of fact, World Wide Web traffic has continued to grow as more and more users come online. Yet more insidious changes have come about. The ever-shrinking proportion of the Web's share of total Internet traffic has been eaten away from within by new data transactions that flow over HTTP but hardly involve a Web browser or Hypertext, or even a human being.<sup>4</sup> More and more of these transactions, rather than relying on free and open standards, involve commercial applications connecting to proprietary online services using custom machine-to-machine protocols or application programming interfaces (APIs). They transpire between network services inter-communicating without human intervention, while others take place on mobile devices running apps tailor-made to limited hardware specifications and screen-size, rather than a general-purpose web browser.

This seemingly undeniable reversal of fortune for the free and open web led WIRED Magazine to proclaim with a straight face in 2010: The Web is Dead.<sup>5</sup>

In truth the Web is thriving. But as a distinct species of human knowledge, technology and innovation, it cannot escape the threat of insidious mutation or outright extinction. The prospects of the World Wide Web as a free and open platform are hardly guaranteed. The only way to ensure its survival is to engage directly with the tools and techniques of the Open Web. If you use the Web at all, you cannot leave this fight unscathed. What threatens the Web's freedom, likewise impinges on your own.

This book will take the view that the Open Web is an essential technology and cultural practice for the future of the Internet and human society. The Web as we know it has had a positive and even revolutionary impact on key areas of science, technology, politics and culture. It has opened up new fields of individual rights and responsibilities, in terms of legal structures, community standards, privacy and the control of data. The rapid pace of technological change is bringing ever more powerful threats (and opportunities) to the Open Web.

The fight for the Open Web is taking place at a global level of interconnected technologies, communities and networks. The fight for the Open Web is your own.

1. The World Wide Web was invented in 1990 by English engineer and computer scientist Sir Tim Berners-Lee, when he worked at CERN in Geneva, Switzerland. For his achievement he was named by Time Magazine as among the most important people of the 20th century: "The World Wide Web is Berners-Lee's alone. He designed it. He loosed it on the world. And he more than anyone else has fought to keep it open, nonproprietary and free." Tim Berners Lee-Time 100 People of the Century. *Time Magazine*. <http://205.188.238.181/time/time100/scientist/profile/bernerslee.html><sup>^</sup>
2. "HyperText is a way to link and access information of various kinds as a web of nodes in which the user can browse at will.... This forming of a web of information nodes rather than a hierarchical tree or an ordered list is the basic concept behind HyperText." Tim Berners-Lee and Robert Cailliau. *WorldWideWeb: Proposal for a hypertexts Project*. (1990) <http://w3.org/Proposal.html><sup>^</sup>
3. "The current incompatibilities of the platforms and tools make it impossible to access existing information through a common interface, leading to waste of time, frustration and obsolete answers to simple data lookup. There is a potential large benefit from the integration of a variety of systems in a way which allows a user to follow links pointing from one piece of information to another one." *Ibid.*<sup>^</sup>
4. "One of the most important shifts in the digital world has been the move from the wide-open Web to semiclosed platforms that use the Internet for transport but not the browser for display." Chris Anderson and Michael Wolff. *The Web Is Dead. Long Live the Internet*. (2010) [http://www.wired.com/magazine/2010/08/ff\\_webrip/all/1](http://www.wired.com/magazine/2010/08/ff_webrip/all/1)<sup>^</sup>
5. *Ibid.*<sup>^</sup>

# The Future is Open

The Web sits atop a thick stack of technical standards that predate, support and supplement it. A system of networking protocols that make up the Internet had to reach a state of stability, maturity and commonality so that the Web of Hypertext and linked documents could thrive upon it. A very basic, open yet powerful structure provided the lattice for the growing Web.

Nearly 100% of this underlying Internet infrastructure is open and standardized. It is this very openness that has allowed for an unprecedented level of innovation, knowledge generation and creative expression on the Web and off. Those who advocate keeping the Web open do so because they want to continue to see these advancements. Experience shows that standardizing the network backbone explodes innovation, leading to more progress and improvements we can't anticipate in advance.

Nowadays, for most of the time we spend online, we don't even think about the strings of code and standards that bolster our daily activities. But without solid and interoperable layers underneath, the Web as we know it would not exist.

Imagine, for a moment, if you had to ask permission every time you search for a restaurant in your city. What if all those pieces of information came with a set of locks, and you had to fumble for the keys or ring your neighbor to let you in every time you wanted to find the program of your local theater? What if you had to pay a licensing fee for checking the online bus schedule? Fortunately, most of these interactions don't require such transaction costs. That is because the supporting technical stack, the Open Web stack, already cleared hurdles and standardized these data exchanges.

In this book, we'll dive into the technical backbone that makes these Web-based activities possible and argue why they're important to foster and protect. But why should we care about the Web in the first place? What has it enabled, and what could it achieve if it is more open?

The following section provides examples from key disciplines and projects. Moreover, it offers a glimpse into a bright future of innovation and collaboration—if we get the technical and normative practices right.

## Sharing Knowledge

Wikipedia, the darling of massively collaborative projects, turned 10 years old in 2011. Hosting over 10,000,000 articles spanning 270 different language versions,<sup>1</sup> Wikipedia is the canonical demonstration of openness. Its combined cognitive output, technically and normatively interoperable and infinitely modifiable, propelled it into one of the most well-known bodies of knowledge in human history. Much ink has been spilled about the merits of the project, its evolution, and critiques, but for the purposes of this book, we wanted to underscore the value of the Web in realizing the potential of Wikipedia and other online collaborative projects. Wikipedia, and many other knowledge-building portals, rely on the Web to keep people participating and accessing invaluable content.

## Civic Engagement

If you see a pothole on your street, you can quickly report it to the city and queue it for repair. The project Fix My Street<sup>2</sup> by UK charity MySociety produced a web interface to improve your neighborhood through simple actions, such as reporting potholes. The software is released under a license that allows others to modify it, so other cities can adapt the technology to their needs. These low-barrier tools help citizens take action, flexibly and free of charge.

A Korean citizen journalism platform, OhmyNews, was one of the first online reporting organizations in the world to harness the Web to foster political debate and influence national politics. With over 63,000 citizen reporters, 2 million unique users a day, and the highest rank of independent news sites in Korea,<sup>3</sup> OhmyNews is an impressive example of how the Web can scale community-driven journalism and inform the polity. Interestingly, tip jars and micropayments fuel the system, bypassing the traditional ad-revenue for online content.

Community organizers, demonstrators, campaigners, and all stripes of civic lives can use the Web to further democracy and their causes. If the Web is open, more platforms like these will flourish. And ad-free content, especially in the civic sphere, will continue to be possible.

## Transparency and Accountability

The battle for the Web is deeply about democracy, transparency, and voice. The Web provides a necessary channel for whistle blowers, citizen and professional journalists, dissidents or anyone really to report or criticize their government, employer, or other powers. If Little Brother is to keep an eye on Big Brother, we need secure and reliable technologies that protect the user and allow anonymity. The Web supports these tools, but there are dire challenges ahead.

The network Technology for Transparency documents case studies for tactics to promote transparency and accountability around the world.<sup>4</sup> At the time of writing, 60 cases were available from Argentina to Zimbabwe, outlining the role of the Web and technologies building upon the Web, to monitor elections, educate citizens on consumer rights, monitor legislative processes, expose budget expenditures, and more. Many of these cases and innumerable others are made possible because of access to the Web and other key pieces of Free and Open technologies.



No contemporary discussion of Web-driven transparency would be complete without mention of the polarizing initiative Wikileaks. While the majority of the organization's practices are in fact closed, Wikileaks depends on the Web to distribute information and communicate with its collaborators and the public. The debates surrounding Wikileaks expose the deep challenges to closing the Web. Reactions to the release of sensitive documents, especially the far-reaching governmental intervention to pressure private companies to deny Wikileaks service, reveal numerous weaknesses to commercially hosted services and the centralization of key Web platforms. It also underscores the importance of law and political influence, coupled with technical capabilities, to access and control information.

A notable legislative development in Iceland, in the wake of the Wikileaks releases, hints at the a possible evolving role of states to protect, and not threaten, freedom of speech. In June 2010, the Icelandic Parliament unanimously approved a proposal for the government to introduce a framework to strengthen freedom of expression, in essence leading Iceland towards "an inverse of a tax haven; by offering journalists and publishers some of the most powerful protections for free speech and investigative journalism in the world."<sup>5</sup>

## Creativity

The Web also fuels creativity. When the underlying technical infrastructure is interoperable and functioning, so much is possible on top of it. Pulling content from across sources, each layer compatible with open standards and open licenses, generates an opportunity like never before to remix and recontextualize art and other creative outputs.

The musicians Arcade Fire blasted the concept of online cinema with their release of *The Wilderness Downtown*,<sup>6</sup> an interactive film using HTML5, a key language of the Open Web. Using live data streams and multiple browser frames, *The Wilderness Downtown* adds a dimension to the moving image impossible with broadcast-only technologies.

With interoperable layers of data, further experiments like popcorn.js are possible.<sup>7</sup> A demo of semantic video, popcorn.js extracts feeds from a variety of sources, effectively allowing realtime video augmentation with data such as location, Wikipedia articles, social network updates, and subtitles. These technologies show the power of HTML5 and its potential. An Open Web would further these modes of expression and keep the future bright.

## Education

In academia,<sup>8</sup> the Open Access (OA) publishing movement is the vanguard towards removing a major barrier to distributed collaboration in science. The high price of journal articles effectively limits access to researchers affiliated with wealthy institutions. Access to Knowledge (A2K) emphasizes the equality and social justice aspects of opening online access to the scientific literature.

The OA movement has met with substantial and increasing success recently. The Directory of Open Access Journals lists over 6000 journals at the time of writing.<sup>9</sup> The Public Library of Science's top journals are in the first tier of publications in their fields. Traditional publishers are investing in OA, such as Springer's acquisition of large OA publisher BioMed Central, or Nature's creation of *Scientific Reports*.

In the longer term, OA may lead to improved the methods of scientific collaboration, e.g. peer review, and allow new forms of meta-collaboration. An early example of the former is PLoS ONE, a rethinking of the journal as an electronic publication without a limitation on the number of articles published and with the addition of user rating and commenting.

An example of the latter would be machine analysis and indexing of journal articles, potentially allowing all scientific literature to be treated as a database, and therefore able to be queried, at least all OA literature. These more sophisticated applications of OA often require not just access, but permission to redistribute and manipulate, thus a rapid movement to publication under a Creative Commons license that permits any use with attribution—a practice followed by both PLoS and BioMed Central.

The Web has also become the ideal platform for the distribution of instructional, classroom and educational resources through various Open Educational Resource (OER) repositories and tools. In two different registers, projects like the Peer-to-Peer University (P2PU) and MIT OpenCourseWare and succeeded in providing access to university-level educational resources to everyone on the web.

## Localization and Multilingualism

Imagine having the ability to adapt educational materials, reference works, medical publications, and more into all the world's languages. Imagine thousands of active communities ready to localize critical tools. Imagine accessing websites from every corner of the world—in your language. These goals, once a pipe dream, are possible with today's technologies. The power of openness lies in its removal of technical and legal barriers to localizing information and tools.

From machine translation that draws upon free corpora like Wikipedia to the development of fonts that display characters in languages deemed “marginal” by major companies, the Open Web stack enables greater opportunities to read information in any language, supported by open standards.

Examples of successful multilingual projects abound, but to highlight localization possibilities that are in particular enabled by the Open Web, take a look at Universal Subtitles. The service deploys standard-compliant software that makes it easy for anyone to add subtitles, captions, or translate nearly any video on the web. Its interface is simple to use, and as more videos are uploaded every day and as bandwidth increases the world over, more and more people will be communicating with video than ever before. To boost the reach of these videos and to engage in a truly global dialog, tools like Universal Subtitles are increasingly necessary. Furthermore, this project in particular exercises a notable privacy policy in that the videos are never hosted on their site; rather, when you play a video embedded elsewhere, it calls up the text via Universal Subtitles. Later, if you wish to move or delete your video, you don’t have to clear it from a million services—just the one you originally hosted it on.

Platforms like Universal Subtitles, as well as many others, are showing us the way to a multilingual web. By allowing users to modify content and localize tools, more people can participate, increasing the diversity and the richness of the conversation.

1. *Size of Wikipedia*. Wikipedia.  
[https://secure.wikimedia.org/wikipedia/en/wiki/Wikipedia:Size\\_of\\_Wikipedia](https://secure.wikimedia.org/wikipedia/en/wiki/Wikipedia:Size_of_Wikipedia)<sup>^</sup>
2. FixMyStreet. <http://www.fixmystreet.com/><sup>^</sup>
3. OhmyNews International. <http://international.ohmynews.com/about/><sup>^</sup>
4. Technology for Transparency Project. <http://transparency.globalvoicesonline.org/><sup>^</sup>
5. Icelandic Modern Media Initiative. <http://immi.is/?l=en><sup>^</sup>
6. *The Wilderness Downtown*. Arcade Fire. <http://www.thewildernessdowntown.com/><sup>^</sup>
7. Popcorn.js. <http://popcornjs.org/><sup>^</sup>
8. This section adapted from Science 2.0 chapter in *Collaborative Futures*. <http://www.collaborative-futures.org><sup>^</sup>
9. Directory of Open Access Journals. <http://www.doaj.org><sup>^</sup>

# You are the Battleground; It's Your battleground.

The battle for the Web is a larger concern for all web users. This battle is not won nor fought on the global level. You are the battleground; it's your battleground. Corporations and private interests are battling for your attention and focus, control and access. The near immaculate conception of the Open Web came from a place of 'closed-ness'. The explosion of possibilities at the birth of the public internet in the mid to late 1990s began the fight for the open stable web, your web.

Since then, the initial waves of experimentation and growth have given way to corporate interests for sustaining and accessing your precious resources-attention and focus, time and money. However, the protocols, standards and software the web is built upon lower the transaction cost for you to both read and write what you want across the Internet. How you use your attention and focus, time and money, is your decision.

You, as an individual, are attempting to both read and write what you want on the web. Where are the lines of the battle? What rights do you have and how can you exercise your maximum potential?

The battle for the open web is not an abstract fight over ideas; it's a fight so that you can control your technology and output. It's about you controlling yourself. If you can't control your browser, you can't control the complete instantiation and clear transmission of your knowledge. If you can't exercise control over your network services-the right to enter, leave and exit a service-you can not, with complete confidence, both access and transmit your knowledge.

We have excellent models for how network services, essentially web-based software, may be created since the largest marketshare for web browsers belongs to those powered by free and open source software, the combination of Mozilla Firefox, Google Chrome, and Apple Safari.<sup>1</sup> Below the browser and desktop software layers, hidden as invisible stable infrastructure, the web is powered by free and open source software created by thousands of people around the world.

New threats have also entered this battle of openness in the form of inexpensive and abundant hardware, which is almost completely proprietary. This closed hardware has always existed, but as devices become more inexpensive and integrated, companies such as Apple are producing magical locked down devices, an accelerating integration of hardware and software, that won't allow you to control yourself. Content must come from commercial online stores, and deeper access to devices is thwarted through proprietary technologies.

If you can't control the software on your devices, the actual devices themselves, or the network services that are the applications on new mobile networked devices, you cannot win the battle for the open web. Your choice plays an enormous role in the future of the open web.

1. [http://en.wikipedia.org/wiki/Usage\\_share\\_of\\_web\\_browsers](http://en.wikipedia.org/wiki/Usage_share_of_web_browsers) Note however that only Firefox is completely open source. The core technology used by Chrome and Safari (WebKit) is open source, but Chrome is a proprietary wrapper (a fully open source version called Chromium, is available), and Safari is proprietary with the exception of its open core.^



# Your Rights and Freedoms

While many of us come to take convenient and reliable Internet access for granted, there is a great disparity in access dependent on socioeconomic and geographic factors. Getting connected and the 'right to access' is a big issue in itself and the subject of much debate. Recently, some governments are taking a stand to support Internet access as a basic principle for its citizenry- almost or explicitly stated in terms of rights. In 2009 for example, Finland passed a law guaranteeing every person in the country 1 megabit broadband access. Moreover, the European Union acknowledges the right to freedom of expression and information, often interpreted to cover access to the internet.

In the U.S.A, Jeff Jarvis in his *Bill of Rights for Cyberspace* argues, "We acknowledge the limitations on freedom of speech but they must be defined as narrowly as possible, lest we find ourselves operating under a lowest common denominator of offense. Freedom is our default."<sup>1</sup>

Conversely, numerous governments like France's threaten this choice with laws like HADOPI, which at first drafting mandated a restriction of internet usage upon mere accusation of copyright infringement. Without judicial review, the government could remove a citizen's ability to enter the public sphere of the Web, not to mention carry out crucial activities there such as voting, paying taxes, and in general engaging in the polity.

While these are very interesting topics and there are many interesting sides to the debate about 'the right to access', we see this as a topic for another book. While we believe the Web has a positive utility and we hope as many people as possible can access the Web if they choose, we want to restrict our arguments to what happens 'within' this online space.

## Control of Your Information

On the Web we can take action along a spectrum; sometimes our activities are very low-barrier and simple, such as viewing a webpage or repeating a message. Other actions require higher levels of engagement and resources. This spectrum of participation is yours to control, and we believe the personal information you pass along the way is yours to give and take as you choose. In this section, we'll touch on privacy, anonymity, and data portability-important aspects for controlling your information and participation.

Let's start with an example. There is a dissonance between the general "sharing" functionality of social networks and the privacy settings of these networks. If you select your privacy settings to permit friends of friends to see your information, that means friends decide with you who is going to have access to your information. Or, if you share a link on a friends profile, that friend is going to decide with you who is going to see that information. This means that sharing in social networks is a collaborative activity. However, setting your privacy "preferences" is an individual action.

Facebook, one of the largest social networks at this time, offers the the following privacy policy: WE want YOU to have CONTROL over YOUR INFORMATION. However, to manage your privacy on Facebook, you will need to navigate through 50 settings with more than 170 options to tweak it to your preferences.

Facebook tells us that we individually own, control, and protect our data on a collaborative sharing space. On the other hand, Facebook collects all sorts of information about you from other sites and applications. They also share this data with third parties. And they do not let you fully control this. It is exactly such discrepancies that have to be worked out in a future web.

This battle doesn't end with merely the sharing of photos or statuses on social networks. Many users online are deeply concerned about protecting their identity. It is relatively easy to implement the technical means to avoid being identified, whatever your reason may be. You should have the choice to use the Web anonymously and to be aware of how services collect and use your data. You also have the choice *not* to participate.

Lastly, data portability is an important issue as it allows you an essential control lever. You should have the ability to back up your data or share your data with other users, software, or online services.<sup>2</sup> It's your data after all. A network service should provide users the ability to move their data in a format that is as open and compatible as possible with other software and services.

Contemplating the future of privacy, anonymity, and data portability online, Evan Prodromou asks, "Can we make working on network services more like visiting a friend's house than like being locked in a jail? Time will tell whether we can craft a culture around Free Network Services that is respectful of users' autonomy, such that we can use other computers with some measure of confidence."

## Exit

We also believe YOU SHOULD BE ABLE TO LEAVE an online service or social network AT ANYTIME. Many online services make it difficult for you to delete your account, while others do not allow you to leave at all. Exit is a very important feature for social networks on the open Web, not just as a matter of courtesy, but for other more tangible reasons. For example, it is easy to understand why it should be easy for anyone to delete their account if they feel this information for whatever reason puts them at personal risk. However, many social networks do not facilitate your ability to leave. In fact, their business models rely on accumulating accounts and user data.

Within the menu system of Facebook you can deactivate your Facebook account but not delete it. Deleting is possible, but it is not obvious how you do it. If you do manage to deactivate your Facebook account, all your information is still saved on the company's servers. Facebook positions this as if they are doing you a favor, just in case you later decide to re-activate your account. To re-activate your account you simply log in again, and everything will be just the way you left it.

The good news is that you *can* delete you account. But finding out how is not easy. Also, as more and more services implement Facebook Connect as their way to authenticate users, you build up reliance on this integrated system of closed services, and you can find it very difficult to leave indeed.

The inability to easily remove accounts has forced some unusual exit strategies, largely artistic, but with real world consequence.<sup>3</sup> But we shouldn't have to go this far and commit virtual suicide. Leaving should be easy, it should be in your hands, and you should be able to decide what you take with you and what you leave behind.

1. <http://www.buzzmachine.com/2010/03/27/a-bill-of-rights-in-cyberspace/>^
2. Google's Data Liberation project offers an interesting example of data portability. Their policy states, "Users should be able to control the data they store in any of Google's products. Our team's goal is to make it easier to move data in and out." <http://www.dataliberation.org>^
3. The Web 2.0 Suicide Machine and Seppukoo.com are artistic viral suicide services based on the most popular social networking website, Facebook although they also work for Twitter, LinkedIn and MySpace accounts. Both services use slightly different strategies to 'kill' an account. Both Seppukoo and the Suicide machine have faced legal consequences for their actions. Facebook sent a cease and desist letter to both for their efforts. [http://www.seppukoo.com/docs/seppukoo\\_cease\\_desist.pdf](http://www.seppukoo.com/docs/seppukoo_cease_desist.pdf) and [http://suicidemachine.org/download/Web\\_2.0\\_Suicide\\_Machine.pdf](http://suicidemachine.org/download/Web_2.0_Suicide_Machine.pdf)^

# The Browser and Web are Magic

The browser is your interface to the Web, and the Web is your interface to global knowledge. The browser handles the retrieval, presentation, and traversal of content,<sup>1</sup> primarily from the World Wide Web. At a minimum, the browser is a tool for accessing global knowledge in the ether. But together, the browser and the Web are magic.<sup>2</sup> Computers without Internet are useless dumb bricks.

The rapid increase in network speed, the decrease in cost of manufacturing hardware, and cheap internet access are pushing this form of web magic onto mobile devices—from netbooks, to mobile phones, to tablet computing. These devices are browsers. The battle for the Web is dependent upon you having control over the browser and demystifying the entire stack mediating between your consumption and production of knowledge, your communication with other people. Thus, we tackle first the traditional form of web browser, the browser as virtual software.

Since the first web browser, World Wide Web (Nexus), written by Tim Berners-Lee in 1991, the one of the most rapidly developed software types has taken many forms: from black and white text-only presentation like Lynx to non-visual braille browsers<sup>3</sup> all the way to an over-bloated full groupware suite, Netscape Communicator. The options for a browser are as bountiful as you have time to download them.

However, the past browser wars have taught us that there are features which support individuals better. While the browser wars are beyond the scope of this book, it is crucial to understand that browser development not only defines how you can access the Web, but *the browser is becoming the operating system on future devices*. Browsers are, by no fault other than our own, becoming the default software application on new devices.<sup>4</sup> For this book, we will look at the top four browsers, ranked in terms of market share: Internet Explorer, Mozilla Firefox, Google Chrome, and Apple Safari.

## The Big Four

The largest browser, in terms of market share, is still Internet Explorer (IE). It won the first browser war, but by today it is notorious for bad security, partial support for standards, and closed strategies. With massive support behind it in cash money from Microsoft, IE is king in the largest markets in the world, USA and China. After auto-distributing IE downwards onto Microsoft's dominant operating system platform, Windows, IE crushed the rest of the competition.

In the late nineties, as Microsoft's Internet Explorer rapidly gained more users, Netscape came up with a strategy to release their source code in order to harness the power of the pre-existing Free Software Movement, which advocated software freedom<sup>5</sup>. Since Netscape couldn't get more people to use their browser, and didn't have the huge budget that Microsoft strategically pummeled competitors with, Netscape decided to release the source code and do a community marketing blitz with coining the term Open Source<sup>6</sup>. This strategy allows for sharing software freely and legally and for any changes to be released to the public for community benefits. Netscape released their browser code into the Mozilla community project over time (in a very long ongoing story too long for this book). Mozillians, the funny community name for Mozilla supporters, aligned with this approach to attract more business users, and fought back to gain about 30% of the global browser market share from IE at the end of 2010. This is the dominant OPEN browser. It has better security, supports standards, and localization for people around the world.

Meanwhile, as Steve Jobs re-ascended to Apple's throne, having gone through purgatory to learn about content strategies from Pixar and Disney,<sup>7</sup> he re-built his Apple empire, the forbidden fruit of computing, on the Free Software stack. He took a diamond in the rough, recast it as WebKit from the Free Software desktop KDE,<sup>8</sup> polished it off, and named it Safari. This technology is now at the center of Apple devices, from their desktop, to the iPhone to the iPad. To expand upon this critical strategy, Google also built their new browser off of the Open Source WebKit technology, calling it the faceless, but fast, Chrome.

## Choosing a Browser



At the birth of the Web, basic standards existed to govern the "get and put" of information between a browser (client) and a server. With the explosion of new web browsers, the lack of standards between the browsers provided a bad experience for website operators hoping that people viewing their sites could have the same experience. Also, we learned that corporate interests from Netscape Navigator and Microsoft Internet Explorer would exploit the lack of standards to force more people to use their products to have a more consistent experience. The more people who used a browser, the more likely the consistency of the collective experience. One of the worst examples of this is the `<blink>` tag, created by Netscape.<sup>9</sup>

In selecting a browser, it is important to consider how healthy a browser project and its sponsors are in keeping the project alive. At the beginning of the first browser war, Microsoft dominated the other browsers with huge advertising and marketing budgets. Now, Google pumps loads of capital into the rapid development of its new Chrome browser, while it also pays many millions to Mozilla every year for using Google search as Mozilla Firefox's default search option. Remember. The top browsers are spending loads of cash on gaining more users and making their browsers best for you. They want to remove any objections for you to not use their browser.

You can make a difference in the battle for the open web by choosing a browser which:

- Is Free and Open Source Software;
- Has a healthy community ecosystem supporting its continued development and growth;
- Supports Open Web standards;
- Rapidly fixes bugs, and explores features, relating to user security and privacy.

Still the dominant browser in the world is Internet Explorer, but after several browser wars and the continued success of the Free/Open Sources Software movements, the combined marketshare of Mozilla Firefox, Apple Safari, and Google Chrome is more than Microsoft's Internet Explorer.<sup>10</sup> And, importantly, this has forced Internet Explorer to play by the rules more with open standards. Now, you can select a browser which allows you to maximize your potential actions and help win the battle for the open web.

While the authors of this book have tried to provide options that support your autonomy, to fight the battle for the open web, your major choice for a browser is between Mozilla Firefox and Google Chrome. The WebKit engine that powers Apple's Safari is Open Source, however other parts of Apple's interface is proprietary. You cannot control it and see what is actually inside of the software. Oddly enough, this is called chrome in software lexicon, meaning the visual elements around the invisible engine, WebKit, which delivers the web to you.

Many consider Mozilla Firefox the best Open Source web browser because it has by far the largest community of developers, both volunteers and employees paid by Mozilla Corporation. Also, it is one of the largest advocates for the Open Web. The sole shareholder of Mozilla Corporation (MoCo) is the nonprofit Mozilla Foundation (MoFo). Therefore, Mozilla projects will never suffer the fate of some open source projects, where the corporate sponsor is bought out by an open-source-unfriendly company. A potential threat to Mozilla is that it is reliant upon its competitor in the fight for the best browser, Google, which writes checks to Mozilla from a renewable search deal. However, many from Mozilla will say they have \$100 Millions USD in a savings account in case Google starts acting funny. Another weakness is that Mozilla is still holding onto some infrastructural baggage that Google Chrome has jettisoned with a more closed form of development, but with a huge budget and focus on speed, speed, and more speed. At the time of this book, the release of Mozilla Firefox 4 is several months later than expected, while Google Chrome understands the public realidad and perception of need for speed in continuously releasing Chrome 6, 7, 8, and 9, in rapid succession. Plans are afoot to move Firefox releases to a similar schedule, with Firefox 5 arriving later in 2011.

In terms of security, privacy and standards, Mozilla Firefox has taken the biggest stand that is outside the boundaries of Google's slurping and analyzing of massive personal information from the Internet. With Google's search spidering of the Internet and massive cross-wiring of public facing services, another path to putting advertisements in front of more clicking fingers,<sup>11</sup> even though Google provides options to not tie its Chrome browser to your accounts on Google, the whole browser works better if you do let it synchronize with the mothership.

In your battle for the Open Web, you must decide right now if you want a browser you control completely, Mozilla Firefox, or one which is fast, but could compromise your autonomy, Google Chrome. From a competitive vantage point, the more slow development of Mozilla Firefox appears chaotic sometimes and not focused on "winning" as the dominant browser. This also may be viewed as a strength as Mozilla supports more people globally and is the largest Open Source browser by market share. Sometimes gaining a consensus and receiving more contributions slows development, insuring a form of stability that military-style Google Chrome development exemplifies. The battle for the Open Web is more slow than one might be led to believe with the urgency of words in this book or number of advertisements placed on bustops. Remember. Mozilla Firefox has emerged from multiple browser wars over a number of years as the dominant browser fighting for the open web and supporting autonomy.

1. [http://en.wikipedia.org/wiki/Web\\_browser](http://en.wikipedia.org/wiki/Web_browser)^
2. I dare not quote the most quoted essay of all time by Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction." However, its foundational concepts and context of writing this book in Berlin are felt. Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit See [http://en.wikipedia.org/wiki/The\\_Work\\_of\\_Art\\_in\\_the\\_Age\\_of\\_Mechanical\\_Reproduction](http://en.wikipedia.org/wiki/The_Work_of_Art_in_the_Age_of_Mechanical_Reproduction) and <http://www.artelab.uni-bremen.de/~robbe/KunstwerkBenjamin.pdf>^
3. <http://mozbraille.mozdev.org/>^
4. Essentially, we are implying they are becoming the operating system.^
5. The Free Software movement is discussed in more detail in our chapter "Software is a Global Interface to Hardware."^
6. A summary of this jump from Free Software to Open Source essentially meant that Free Software ideologies and people *confused* the business world with the use of "Free" and "Software" together. The primary people from the Free Software movement were not part of the decision to recast the sharing of source code as "Open Source," also an attempt to separate the fervent long beards from those trying to grow Free Software to larger markets.^
7. [http://www.businessweek.com/magazine/content/06\\_06/b3970001.htm](http://www.businessweek.com/magazine/content/06_06/b3970001.htm)^
8. <http://en.wikipedia.org/wiki/WebKit>^
9. [http://en.wikipedia.org/wiki/Blink\\_tag](http://en.wikipedia.org/wiki/Blink_tag)^
10. However, Open Browsers combined market share dominance is not the problem now. The battleground has moved to controlling your attention and focus. The browser is not just software, the browser is an integration of hardware and software. And, Apple, the second largest company in the USA and the world's largest technology company in terms of market cap are leading the lockdown integration of the mobile device, an integration of software and hardware, with Google fighting for the open web through its Android as the integrated browser on hundreds of manufacturers devices globally. Yet again, you are the battleground, how can you battle for accessing others and transmitting your knowledge?^
11. Or, are they russian botnets: <http://en.wikipedia.org/wiki/Botnet>^

# Content is Your Knowledge

One either shares their knowledge or hides it from others. Sometimes this sharing or hiding happens consciously or unconsciously. There are instances where both sharing and hiding are useful strategies. For the Open Web, the concepts of sharing of knowledge have been built into the fiber of websites and services since the early Web, what we often refer to as Web 1.0. Sharing is a refreshing change from the isolation on one's computer off of the Internet, or in using certain non-social aspects of the web like consumption of media. However, it's important to note that sharing is not necessarily the default state of most of the Web.

The original Web, built on the Internet, defaulted to public display of HTML pages between colleagues at universities. With the boom of the public web, specifically from 1994-1997 onward, the explosion of people actively online increased exponentially.<sup>1</sup> Since then, the Web has rapidly changed from a default of public homepages to services and businesses developing applications that allow for varying public and private controls on your participation. The sharing of your knowledge and access to others' knowledge has been regulated either through strategies of lock-down by the proprietors of webpages, or legal enforcement in jurisdictions around the world. Even the ability to view source only allows forking or basic copying of content on the internet and not the changing of that original content by default.

Today, with sites such as Youtube, Flickr, and Twitter, people can both read and write on websites with varying levels of access and control. The new battlefield for reading and writing of information has to do with what a person is allowed to share on a website. On a range of services, sharing daily is default, hence the massive amount of information shared by people to their networks on Facebook and via status update services like Twitter and Status.Net.

However, not everyone in the world uses the same strategy of sharing. For this book, we will make the distinction between sharing knowledge in general, and sharing which requires a legal fix, through Creative Commons and other copyright licenses to allow for legal sharing.

## Sharing Nicely

The land grab on creative works by copyright gave shape to a world where upon the instant you create a creative work—such as audio, video, image, or text—the work is restricted by copyright. The need to register that work with a government agency is not required. This means that most creative works in countries that abide by the Berne Convention are locking-out sharing by others by default. First world sharing is broken. It is failed sharing.

One solution to this failed sharing for content is Creative Commons, a non-profit which provides free legal tools that allow a copyright holder to share some rights with others.<sup>2</sup> For software source code, there are legal hacks from the Free Software Foundation, which provides the GNU General Public License (GPL). The GPL pioneered the copyleft method of fixing broken sharing, is the dominant free software license today,<sup>3</sup> and inspired the Creative Commons Attribution-ShareAlike license, also copyleft, and the most frequently used free license for content.

This human-made problem of copyright came from a place of protectionism. Corporations such as Disney perverted the duration of copyright's term to essentially live forever in a form of corporate trans-humanism,<sup>4</sup> cheating death unnaturally forever by exacting profit from enforcing artificial scarcity indefinitely.

The battle for the Open Web requires both more sharing and also fixes like Creative Commons.

## Limits and Challenges to Sharing

Nevertheless, sharing has limits. There are loads of instances around the world where sharing has issues. There is not a perfect share or system. The battle for the Open Web is a shifting social, legal and technical landscape.

Consider for a moment a personal anecdote about oversharing of content on Facebook. A friend of the authors used the Web to share his travels on tripit.com, a service that by default shares your status on Facebook. Our friend, who lives in an Arab country at war with Israel, shared that he would be making a trip to Asia. Someone else, not even an acquaintance of our friend, commented on the automatic update to Facebook's public stream saying, "Hope to see you soon in Tel Aviv!" The secret service intercepted this message, not by some grand technological means, but merely because the status updates are public. Our friend spent the next two days in a jail cell—for his one update. Sharing is not always a positive experience, if its unconscious or misused by others.

One of the best examples of why real sharing works is the top five ranked website in the world, Wikipedia. This massively community edited encyclopedia thrives with the principle that everyone is an expert, anyone may edit the encyclopedia. This is legally reinforced by using the legal fix to sharing, the Creative Commons Attribution-ShareAlike license. Let us take for example the article on Inkscape, the Open Source drawing tool: <http://en.wikipedia.org/wiki/Inkscape>. If we look at this complete article, it lists what the software does, the history of the project and reference material supporting claims. At the top of the page you can click on the history of the article and see thousands of edits. The history of the sharing of knowledge between thousands of people around the world increases the article's strength. This isn't under or oversharing, rather just the right amount of sharing.



The battle for the Open Web is about you controlling yourself. It's about you being responsible for your own forms of sharing. While some might advocate "loving to share," it can have the adverse effects. With the default copyright system in all developed countries (with spread of its enforcement to the rest essentially locked-in through treaty and pressure from internal and external rent-seekers), undersharing is rampant. It's also possible to overshare, both without your consent or in the case of those who choose to become spammers, they actively overshare. For the open web, sharing is necessary to combat the massive knowledge hiding that is part of the legal and social norms globally.

As scholars have shown numerous times and author Cory Doctorow has fantasized about in "Down and Out, in the Tragic Kingdom,"<sup>5</sup> the future is built upon the past. A past of public domain, free creative works. Our collective history. Disney built its empire on taking public domain stories from the past, creating decorative animations to some songs, syncing some voice-overs to explain these stories, and then created a system of artificial scarcity in order to generate profit. However, you cannot freely participate in Disney's empire without paying a price. This same model of locked sharing transfers to countless examples on the web, from Amazon Store to Apple's iTunes store which sells Disney videos, Pixar animations, and countless soundtracks, to the artist again known as Prince, suing his fans uploading videos to Google's Youtube,<sup>6</sup> first-world copyright is often enforced when money is not being collected maximally. In this model, the sharing you are allowed to do is provide your credit card number.

In the Open Web, there are rays of hope for a more balanced sharing. Wikipedia and the huge success of Web 2.0 sites like Youtube show that people want to share. Over 24 hours of HD video is uploaded to Youtube every second.<sup>7</sup>

In the battle for the Open Web, the solution is to support legal sharing with Creative Commons and other Free and Open licenses. If done right, like Wikipedia, just the right amount of sharing can change the world.

1. [http://en.wikipedia.org/wiki/History\\_of\\_the\\_Internet](http://en.wikipedia.org/wiki/History_of_the_Internet)<sup>^</sup>
2. See <http://creativecommons.org/><sup>^</sup>
3. "Make Your Open Source Software GPL-Compatible. Or Else." by David A. Wheeler.  
<http://www.dwheeler.com/essays/gpl-compatible.html><sup>^</sup>
4. Let's call this trans-corporism.<sup>^</sup>
5. See <http://www.thepublicdomain.org> and <http://craphound.com/down/><sup>^</sup>
6. See <http://www.switched.com/2007/11/07/prince-sues-his-number-one-fans/> and  
<http://www.guardian.co.uk/uk/2007/nov/07/musicnews.topstories3><sup>^</sup>
7. See <http://mashable.com/2010/03/17/youtube-24-hours/><sup>^</sup>

# Hardware is Physical Software

The division between hardware and software is a tale about the mechanical apparatus that extends our human technologies. Hardware is the physical interface that allows you to manipulate reality with more control than your standard human technology: arm, leg, leg, arm, head.

Traditionally, when we think of hardware, we think of the expensive computers we buy at a store. We take them out of the box, plug them in, and we double-click a web browser to interface with Web. This is browser/web magic.

## Competition

There are thousands of hardware devices which allow for us to access the Web: from desktop computers, portable laptops, mobile phones, netbooks, and now tablets. And, these devices all run some form of software, often a generic and virtual interface we are used to, that lets us access and transmit our knowledge around the world.

The battle for the open Web is a battle for the the individual. It's a battle for your attention and focus, your time and money. Hardware purchases are one of the greatest expenditures people make today. You make the purchase with more consideration than the decision of switching browsers or sharing a status update. Buying hardware locks you into a culture for a longer period of time than our flippant changing of software and sites.

With the rise of cheap mobile devices, the increase of network speeds, and decreasing costs of internet access, the battle for the Web is a corporate battle for your pocket book, controlling how you use your time, and what you can consume.

Whereas the battle for the magic of Web browsing played out between Microsoft and the “rest”, the battle for the open Web is played out between Apple and Google. Mozilla and Microsoft, David and Goliath, don’t get it in this battle. They are supporting actors. Amazon is slowly getting there, but not for this battle.<sup>1</sup> Apple is a completely vertically integrated company that is both removing the web from its iPhone and tablet iPad in place of custom applications that developers must submit to the corporate headquarters for provisioning on devices. Total control.

Now Google, building upon past Free Software and Open Source strategies, is creating an open source operating system, Android, which any hardware manufacturer may use on their platforms. Other companies that aren’t cool can now simply install Android, design a theme, and join the 21st century.

## Accelerated Integration

Both Apple and Google’s strategies are dependent upon the accelerating integration of hardware and software layers of the browser. For Apple, the more they can control the hardware and software layers of a device, the more devices they sell and the more they can control what is sold. Free has no place on Apple’s devices. Even the developers who make their devices have to pay \$99 a year to be able to participate in the grab for your attention. Nothing is free.<sup>2</sup>

For Google, they play the cool open guys with free hot lunches for employees. Segways for everyone! The more of the Internet that is free and open, the more Google ads can be placed on the net, sending more money into their pockets. Google needs you. It needs the Open Web.

With Apple products and software, we are back into bed with time-tested monopoly like from the Microsoft era. This time Apple has a complete monopoly on content and hardware. Integrated products are cheaper to manufacture; they appear like magic and just work. Provisioned applications function, but they are not the Web. The world at the close of 2010 is one where Apple controls what can be placed onto their devices, the batteries are sealed into their new products, and sales for their non-computers—iPhones, iPods and iPads—are through the roof. One day, Apple could simply remove their web browser because they say no one uses it. Could you envision a future where the Wikimedia Foundation, the company that keeps Wikipedia alive, is required to pay \$50 million a year so that anyone may access free knowledge on the Apple's iPad 4? It is completely possible with the accelerating integration of software and hardware into the ultimate browser of the closed web, the iPad—a consumer's ultimate forbidden fruit. Modularity is dead.

The opposite strategy is propagated by Google, the nerds next door. Success through metrics they say. While Google built their browser, Chrome, on the same standard technology Apple uses at the core of its application layer, Webkit (Apple Safari in its application form), Google is battling Apple by getting installed on more devices faster. The more open the Web, the more ads on that openness. The more public spaces, the more you can see those ads from the streets.

Apple wants you to buy more stuff, and Google wants you to click more ads. It's your battleground though: what hardware will let you control it and allow you to fight for the open Web? This is one of the weakest battlegrounds in the fight for the Open Web. Both the fight for the Open Source browser and a new fight to create free and open hardware is afoot. New projects are on the horizon including the simple Arduino microprocessing project board that is spreading globally like wildfire.<sup>3</sup> Also, there is the more complete and pure, in a Free Software sense, Copyleft Hardware movement led off by the Qi Hardware<sup>4</sup> project attempting to release all plans and software necessary to both make and use hardware. Your fight for the open web cannot stop at the artificial boundary between software and hardware.

Until the hardware that connects with your human technology is completely free, in a Free Software sense, the battle for the Open Web cannot be won.

1. [http://neteffect.foreignpolicy.com/posts/2009/10/07/amazon\\_goes\\_global\\_sort\\_of^](http://neteffect.foreignpolicy.com/posts/2009/10/07/amazon_goes_global_sort_of^)
2. <http://www.pcworld.com/article/194318^>
3. See <http://arduino.cc/^>
4. See <http://qi-hardware.com/^>



# Software is a Global Interface to Hardware

A quick hypothetical story: Your favorite operating system is Windows Vista, you want to install it onto your new Apple iPad. You can't. There isn't even a USB port or a place to install non-Apple sanctioned software from its app store. But, you love Windows Vista and want it to be your interface to the new hardware you purchased. You love the latest Internet Explorer, but can't even install it. You don't have the choice. You can't Think Different™.

Software is a virtual interface to manipulating knowledge. That software is a global interface to the physical hardware that you interface with through your human technology.

## Free Software

Have you ever heard of Free and Open Source Software? Free Software is software that is licensed by software licenses to allow for sharing of software and its development between people. It is a fix for failed sharing. Richard Stallman founded the Free Software Foundation and produced the dominant license for the Free Software Movement, the GNU General Public License, to give back permission to the public as the reciprocity of sharing.

Since October 4, 1985,<sup>1</sup> the Free Software movement's contribution to the open Web are some rules of combat beyond the licenses. It has codified the four freedoms. It states that you should, for any piece of software, 0) have the freedom to run, 1) study and change, 2) redistribute and improve, and 3) give back those changes to the community. These simple rules allowed for the open Web to grow on solid ground. The invisible Internet is powered by Free Software.

The most common Free Software operating systems are based on Linux.<sup>2</sup> Linux is an operating system kernel that powers the Web, and on the desktop is the most common global virtual interface for most types of hardware—from phones, to computers from the 1990s, to the largest supercomputers in China and the USA, Linux is on the most different types of computers in the world. It is the standard interface to all different sorts of computers.

## Stable Foundations

For you, in your battle for the open Web, this is an important distinction to consider because the more closed the software, the less types of hardware you can install your favorite software onto, the less ability you have to maximize your knowledge and access.

Beyond the discussion in this book, it's important to note that the hidden part of the Internet, the invisible faceless infrastructure of the web, is Free Software. The browser, the dominant interface for the web is Free Software; it is the combined shared source and communities of Mozilla Firefox, Apple Safari, and Google Chrome. The browser is the stable ground which both network services and the Web 2.0 startup revolution emanating from San Francisco is built on. The browser is becoming its own operating system as Google releases Chrome OS, a browser-based operating system.<sup>3</sup>

Also Apple, leading the vertically-integrated computing revolution, is built upon Free Software. The core of this is their forked BSD, aptly called Darwin. The app store and the innovation that application developers rely upon is built upon this stable foundation of Free Software. Apple has made famous the millions of application developers who have been lured to the dark side of development, one in which money and the open Web must be handed over in order to get a piece of the money pie lock-in.

## App Stores

The truth is that few eat like kings in the app store, but the lure of a feast is too much in the drought of a down market. The app store, essentially a marketing distraction for those that want to compete with Apple, yet a complete lock-in strategy for developers who might gain freedom by developing for multiple platforms, promotes the closed web.

Applications from the app store are not global interfaces to hardware. When only one company supports software limited to their vertically-integrated, subscription-based computer leasing, product-upgrade strategy, this is not open. Apps are one of the biggest threats to the Open Web today, with their lack of support for the Free Software's four freedoms upon which Apple has built its empire on. Apps lack of support for the standard interface of the open source web browser. Even the name of Apple's web browser, Safari, conjures up that the Web is a jungle, not safe enough for the average consumer—only developers and adults for now.

The battle for the Open Web requires awareness that your attention and focus, time and money are up for grabs. You are the average consumer to them. The less you make decisions for yourself, to actualize your knowledge completely, successfully transmitting and receiving content to other people, the more passive you become. With each 1-click-buy-it-now in the apps store, the more closed the Web becomes.

1. <http://fsf.org> and [http://en.wikipedia.org/wiki/Free\\_Software\\_Foundation](http://en.wikipedia.org/wiki/Free_Software_Foundation)^
2. Most operating systems with a Linux kernel are currently GNU/Linux, though in the future the majority may be Android/Linux, but we don't want to confuse our readers here at this point :)^
3. [http://en.wikipedia.org/wiki/Google\\_Chrome\\_OS](http://en.wikipedia.org/wiki/Google_Chrome_OS) is soon to be released. It should be noted that while Google appears to be compliant with the Free Software Movement, others have pointed out that software code released by the company is out of date, the larger community is not truly allowed in on the process of development in a timely manner, and some questionable coding practices are persistent in Google's practices. Google should be applauded however for taking the lead on the Open Web. Another instance of this OS strategy is Android which has both free software and proprietary binary blobs of code on-top of the Linux kernel.^

# Network Services Connect People

So far we have defined some of the battleground for the Open Web and a strategy for the battle tilted towards you controlling yourself. Let's look at the actual services that connect together people on the open Web.

## Blackbox Services

While you can communicate with others directly on the Web, the current trend is for services that act as hubs. In the early days of the Web, email, instant messaging, and web browsing were controlled by a single person on their computer. Sharing and participation were controlled by you. Now we use Facebook, Google Apps like GDocs, Twitter, and countless other services to do a form of group computing. These private websites provide black boxes which require our participation.

As identified in the last chapter, the invisible software infrastructure of the Internet and Web is built upon Free Software. Likewise, all major web applications used today are built upon Free Software technology successes. But they support neither the code nor community practices of Free and Open Source Software development. Since we have established that the desire for the Open Web is a desire for your own autonomy, a battle for you, the open web cannot be free until the application layer is also Free, as in Free Software.

## Yourbook

Facebook is but a piece of software that runs on the GNU/Linux operating system with thousands of servers working together in some super-secure data center in an nondescript building that allows you to connect with your people. Facebook is not Free Software. One does not have the freedom to run, study and change, redistribute and improve, nor give back changes one wants to make to any community. Rather, all you are allowed to do is enter, participate and (sort of) leave Facebook.

Facebook can never be Yourbook. Facebook provides forms of data portability for you, but if you want to use this service, you must use their standard application programming interfaces (API). This is not Free Software nor is it Open Source. It is NOT Open. APIs are controlled by Facebook and may change at any time. APIs are fauxpen, fake open.

Facebook is the darling of the web startup scene. Neither haircut, fixed gear bike, nor any amount of forbidden fruit seems to change the web startup culture built upon minnovation (minimum-innovation). Built on Free Software, locked applications and proprietary stealth development chart the course of the current Web.

## Free Network Services

However, network services are different from Free Software. Many including Free Software Foundation's Benjamin-Mako Hill and Tim O'Reilly from O'Reilly Books argued at OSCON in 2009<sup>1</sup> that Free Software is computing where you control your own technology. Network services are a form of group computing. It takes some rethinking how to apply the same principles of Free Software to make a Free Network Service.

In the earlier section “Your Rights and Freedoms,” we outline some principles that allow you to make the choice to fight the Open Web. Fighting for the Open Web also requires fighting for Free Network Services. It’s a fight for a healthy ecosystem not just yourself, but for all autonomous individuals to share and communicate clearly. This battle is for people working together to make federated systems.

In March 2008, many leading advocates including Evan Prodromou of Status.Net, Mike Linksvayer from Creative Commons, Mako-Hill from FSF, Bradley Kuhn from Software Freedom Law Center came together in Boston to find a path forward in the battle for the open Web. The picture painted was bleak. All of the top 10 website, save for Wikipedia, had the ability to commit great disservices to the freedoms of the average web user on-demand.<sup>2</sup> In almost every category, the autonomy of individuals on the Web is at risk. As Benjamin Mako-Hill points out:<sup>3</sup>

“The current generation of network services or Software as a Service can provide advantages over traditional, locally installed software in ease of deployment, collaboration, and data aggregation. Many users have begun to rely on such services in preference to software provisioned by themselves or their organizations. This move toward centralization has powerful effects on software freedom and user autonomy.”

From this meeting in Boston emerged the Franklin Street Statement (FSS) and the Autonomo.us project, working towards a definition of what is a Free Network Service. Possibly still too early to define completely, a Free Network Service is generally one that chooses to release software for the service under a Free Software license and allows a user to control her data. Arguable more important for the ecosystem is to consider recommendations for supporting that ecosystem.

In your battle for the Open Web, it is important to consider what services *are* Free Network Services. While services might represent some amazing boost in functionality, they may be at the detriment of you, your autonomy, and those people connected to you.

For developers in the open Web ecosystem:

- They should release software source code.
- The code which is human readable and compilable into code that machines can read, under a license which supports releasing source code on a network service.
- The major license for this is the Affero GNU General Public License,<sup>4</sup> a modification of the major Free Software license, the GNU GPL.<sup>5</sup>
- Developers supporting the open Web should replace popular non-free alternatives when possible.<sup>6</sup>
- And finally, developers should work to replace centralized services with open distributed ones when possible.

Your service providers should choose Free Software for their services. They should release customizations to their software under a Free Software license like the GPL or AGPL. And, they should allow for data portability and user autonomy built into their systems. They should respect your autonomy and choice. You should be able to control your private data.

## Federated Social Web

It's now 2011, three years since the Franklin Street Declaration and in many ways, and it is a similar climate to when Richard Stallman founded the Free Software Foundation for network services. Unlike this social and technical movement, the hope for Free Network Services comes down to non-profits supporting free projects like Wikipedia and the slow re-implementation of closed services by ragtag groups building community projects.



Meanwhile, web startups like StatusNet are building the federated social web as a Free Network Service, not just a clone of Twitter. Evan Prodromou, founder of Status.Net summarized in his Federated Social Web Top 10 of 2010 blog post, the social web and Free Network Service space has been most active in 2010.<sup>7</sup>

The most interesting development (as in happening, not as in software development) has been Diaspora. Prodromou said, “In the wake of the F8 [Facebook] keynote, a group of four students at NYU announced a kickstarter project to create a distributed social network. Unlike other mad-genius announcements, they managed to raise \$200,000 USD to fund the project, with an unprecedented level attention from technology and mainstream media.”

Mark Zuckerberg donated \$7,000 USD to Diaspora, the New York Times and BBC made a big deal about Diaspora as it being a Facebook killer. This could be the face of a real sustainable Free Network Service. It could be a service which supports your autonomy. Prodromou goes on to highlight that, “the stakes are high for Diaspora. A high-profile failure could be a huge setback for social web federation—essentially dooming its prospects for the consumer web. A high-profile success can potentially be the engine for a virtuous cycle of growth.”

Either way, you have choices in your fight for the open web. Free Network Services support your autonomy.

1. <http://autonomo.us/2009/11/autonomo-us-panel-explores-freedom-in-network-services-at-oscon-2009/><sup>^</sup>
2. <http://www.alexa.com/topsites><sup>^</sup>
3. <http://autonomo.us/2008/07/franklin-street-statement/><sup>^</sup>
4. <http://www.gnu.org/licenses/agpl.html><sup>^</sup>
5. Generally, most assume that Google does not like the AGPL license because Google and many other large corporations are notorious for using Free Software and hiding behind a network in order to not have to return software source code back to the general public. This is beyond the scope of this discussion, but an interesting point nonetheless.<sup>^</sup>
6. If any indication of the past struggles in technology have any bearing on the future, a great business plan would be to pick any of these categories and replace it with a Free Network Service and sort out a business plan. There are essentially complete categories needing Free Network Services including Internet portal, office suites, social, creation apps, publication, and distribution, utilities, backend support, project hosting, knowledge bases and more. If interested, please visit:  
[http://autonomo.us/wiki/Wish\\_list](http://autonomo.us/wiki/Wish_list)<sup>^</sup>
7. <http://status.net/2010/12/31/federated-social-web-top-10-of-2010><sup>^</sup>

# 10 Things You Can Do Now

As well as illustrating what we think the Open Web is, we also wanted to provide some practical steps that you can take towards this vision. The following are 10 steps starting with the most simple through to the more technical or involved.

## Install a Free Browser

Install a recent version of the Firefox or Chrome browsers. They are free, open source and promote open standards. Without them the Open Web would be significantly diminished. If you keep your browser updated then it means that developers who are making tools for the Open Web can make good things happen faster.

Point your browser to <http://www.mozilla.org/firefox> or <http://www.google.com/chrome> and download them while they're fresh.

## Install Browser Plugins that enhance the Open Web

After installing a free browser, consider the following enhancements, and discover more:

- <https://www.eff.org/https-everywhere> causes your web browser to use a secure connection to any website that supports secure connections, enhancing your security and privacy.
- <http://flashblock.mozdev.org/> lets you control when (non-open and performance killing) Flash plays in your browser.
- <http://adblockplus.org/en/> will block ads which slow down your browser and leak privacy information to third parties.
- <https://www.torproject.org/projects/torbrowser.html.en> will help you surf anonymously.

Note also that your browser is also a powerful tool for developing Web content and applications, not only for surfing. See <http://chrispederick.com/work/web-developer/> and similar browser tools for developers.

## Leave Facebook

If you haven't joined consider not joining. If not you could consider leaving Facebook. We're not advocating compulsory abolition. But we are Pro-Choice.

Within the menu system of Facebook you are encouraged to de-active rather than delete your Facebook account. This freezes your account but allows you to come back to it and thus retains all information.

However if you want the real deal then the form to delete your account can found here:

[https://www.facebook.com/help/contact.php?show\\_form=delete\\_account](https://www.facebook.com/help/contact.php?show_form=delete_account)

Remember that if you do this you cannot use Facebook or log into any other web services using your Facebook login for 14 days otherwise your account will not be deleted.

## Share your knowledge about the Open Web

Why not use the information in this guide here to help spread the word? There has been a lot of good work done to create great resources to communicate how to keep the Web more open which can be used as well. You can blog or use email to talk about projects or software you've found useful. You can publicly rail against attempts to make the Web more closed. Use all channels. Transmit on all frequencies.

It is worth looking at the Mozilla Drumbeat website —<http://www.drumbeat.org/>—which lists and supports many Open Web projects. It also acts to spread the ideas and technologies behind the Open Web.

## Install some Free Software

You don't have to have a free operating system to use Free Software. There are many areas of computing where there is no need to pay for or to pirate software to achieve what you want to do. However, the process of trying software to find out how useful it is can be a bit wearing. One of the advantages and disadvantages of Free Software is that there is so much out there.

The FLOSS Manuals website—<http://en.flossmanuals.net>—which gives help about how to use Free Software, is a good place to look for software which fits your needs.

<http://www.opensourcemac.org> is a also great resource which lists recommended Free Software for Macs here  
<http://opensourcewindows.org> the same, for Windows.

## Use Status.net

Status.net is a micro-blogging service, similar to twitter. It is decentralized and Open Source (Free Software). This means you can run your own status.net installation.

If you don't want to have to install your own status.net installation, you can get an account on or <http://identi.ca> or look at a cloud or self-hosted installation at <http://status.net>.

Status.net has some other neat features:

- You can automatically attach pictures or video to posts, so you don't need to hand your content to another party like twitpic or plixi.
- You can create/join groups. Posts into groups are distributed to all its members, whether they are following you or not.
- You can take an RSS feed from a blog and automatically bring its latest posts into your timeline.
- If you have a newish mobile phone (e.g., Android or iPhone ) you can install a status.net application from your appstore to make publishing and reading your time line simple.

Status.net makes easy to link your account to a Twitter or Facebook account so that updates that you make on Status.net are cross posted. This maybe a good way of starting a migration to a more open tool if you don't want to leave Twitter and Facebook behind completely

It may also be useful if you wanted to update accounts used when leaking sensitive information, organizing demonstrations or other situations where greater anonymity is useful.

## Provide your Website in other Languages

To provide your website in different languages easily, the best option would be to choose a Content Management system that supported localization. Localization is a term which encompasses translation and other adaptations (including changing images) which may be necessary to make your content suitable for audiences in different parts of the world.

<http://en.flossmanuals.net/opentranslationtools> is a great manual on Open Translation Tools.

## Install a free Operating System

Installing a free Operating System marks a significant moment in your progress as foot soldier in the war for the Open Web. Many would advise you to start with an Operating System that does a lot of the hard work for you and 'just works.' Ubuntu has by far the biggest take up of Linux operating systems.

You can ask Ubuntu to send you an installation CD but most people download the CD for free from <http://www.ubuntu.com/desktop/get-ubuntu/download> and burn themselves a copy. Booting from the CD will walk you through installing it on your computer. If you have a current installation of Windows you have the option to try them side by side, in what is known as a dual boot. You get to compare which operating system you prefer. Let the duel begin.

## Learn to make a Web page

<http://p2pu.org/webcraft> is a great project which can talk you through the stages involved in this process of creating websites. It's called the School of Webcraft, a project dedicated to providing web developer training that's free, open and globally accessible.

## Become a Cybrarian and use Semantic Web in your pages

The Cybrarian is a Librarian in Cyberspace. They are dedicated to the radical idea of making knowledge as open as possible using the Web. Their weapons are wikis and their allies are search engines. If you want to further the cause of the Web as a common repository for all then you can look to include machine readable format so that your data can become part of the Semantic Web. The Semantic Web has the ability to act as the missing indexing service for the Web.

The Semantic Web is a concept which has been advocated for some time but still seems somewhat slippery. <http://wiki.creativecommons.org/Metadata> provides a definition:



The Semantic Web is the part of the Web available in RDF. The idea behind the concept of the Semantic Web is that when enough pages carry this machine-processable metadata, developers can build tools that take advantage of it. RDF can also be used to create more powerful search engines.

Linked Data is a less confusing term now used for Semantic Web technologies deployed on the Web.

The latest version of Drupal the popular web publishing system contains RDF support out of the box which is a big step forward in this struggle.

# The Open Web Stack

While the battleground that we have established is a personal one it is important to understand that there other other battles being fought that may not be so visible to us. Many of these have already taken place and have helped shaped the Open Web, however technology being what it is these battles are never over. The struggle continues. New standards have to be developed to keep up with new technologies, new open technologies have to be developed to keep up with closed technologies, and in some cases regulations need to be established guaranteeing online freedoms and the Open Web.

A lot of these battles happen in a realm that seems beyond our personal control however it is important to be aware of them and to know that this is not just a battle for the your desktop, browser, and social networks.

One of the least visible arenas happens in the layers beneath the browser in a technical realm that most of us do not understand or do not know exists. These layers are important because they not only gave us the Open Web but its ongoing survival also depends on them.

## The Four Technical Layers

Any computing device can at some real level be separated into layers of hardware and software. Numerous strata of hardware and software are sandwiched between the physical components of keyboard and screen that mediate our everyday computing experience. Many more layers still separate our own computer from the millions of other devices that make up the Internet as we know it.

The entire Internet can be conceived as consisting of four basic *technical* layers. Each of these layers handles a different level of communication between networked devices, and is known as a protocol. The four layers together compose the Internet Protocol Suite.

The lowest level protocol is the link layer. This describes the actual physical hardware device, such as an Ethernet or WiFi connection, which ultimately handles the transfer of data.

Atop the link layer we find the internet layer and the transport layer. The internet layer describes the protocol for the movement of data from one device to another, while the transport layer is responsible for ensuring that any data sent along the network arrives intact at the intended destination. The protocols that occupy these layers are commonly referenced together as Transmission Control Protocol and the Internet Protocol, or TCP/IP.

The final layer is the one that we are most intimately familiar with: the application layer, which is responsible for the content that is communicated over the network. The most familiar protocols in the application layer include HTTP, FTP and the various protocols which handle Email.

Each of these technical layers has its own set of Open Standards—agreed and documented rules—that enable them to communicate horizontally and vertically.

As we know in hindsight, each of these open standards created an explosion of innovation. Ethernet enabled companies such as Cisco, 3Com and others to emerge and compete in an area that used to be dominated by huge vendors who built super-expensive networking systems designed by telephone companies to specifications hammered out over years in Inter-Governmental standards bodies.

Similarly, TCP/IP allowed independent companies, the first ISPs to compete at providing network services to companies and individuals, breaking, often for the first time, monopolies that the telephone companies were granted by government. This introduced competition driving down the cost of moving bits around and also enabled a whole ecosystem of software components, many free and open source. Author David Weinberger would later describe this system as “small pieces loosely joined.” This new network created out of small objects developed by small teams using open standards and protocols was a completely new model.

## The Open Web Layer

On top of these layers is where we live out our virtual existence. The Web sits on top of these 4 layers—this is what we mean by ‘The Open Web Stack’. It is effectively where we can friend, share, innovate, communicate, learn, create and collaborate through the huge array of web services and social networks available to us.

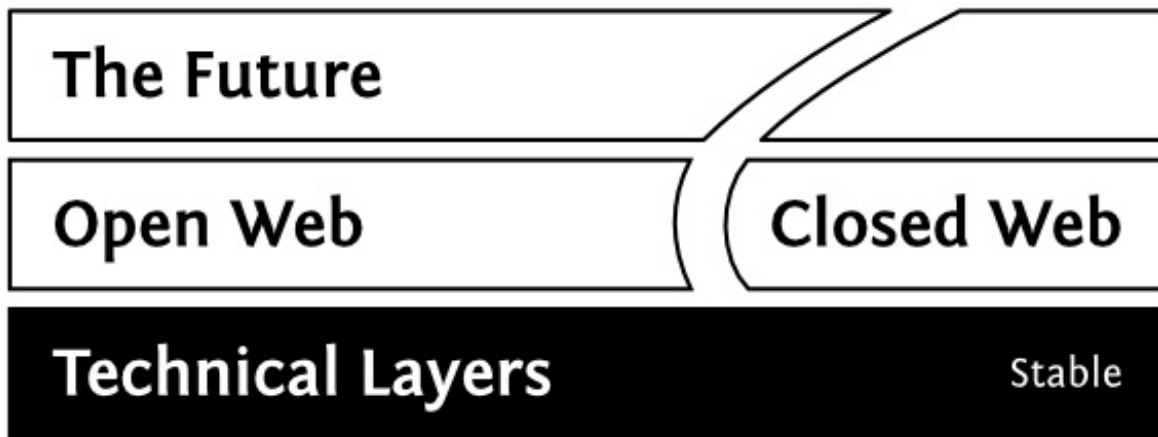
Open Web	Closed Web
<b>Application</b>	HTTP, FTP, E-Mail
<b>Transport</b>	TCP
<b>Internet</b>	IP
<b>Link</b>	WiFi, Ethernet

The Open Web Stack is incredibly important not just for the Open Web but it has also enabled 'closed' services and many of the things we know today could not have been realized without the Open Web Stack. If you try to imagine what it would have been like to create Google without the Open Web it is impossible. Google would have no customers or content if it was not for the Open Web.

The Open Web Stack continues to disintermediate and disrupt sector after sector. We find businesses and whole industries having to change their models and compete with a whole new set of players ranging from individuals to companies to non-profit organizations.

The Open Web Stack is successful because they are open technologies and standards shepherded by non-profit organizations which are custodians of a bottom-up process taking inputs from and creating consensus from a wide variety of stakeholders.

Having 100 parallel Internets or 100 World Wide Webs governed by incompatible “standards” would suffocate the network effects that we enjoy on our one interoperable Web. However this is where we are headed. On top of these four layers we are increasingly seeing the closing of this stack. This is the closed web—it kills the stack at the top most layer by closing down the ability to communicate vertically and horizontally. It kills innovation and stifles collaboration.



Hence the fight for the Open Web is also an ongoing fight for layers you might not 'see' but which are nevertheless very important. The following chapters cover some of these important topics - Application Programming Interfaces (API), Cloud Computing, and the regulated filtering of content.

# Standard but not Standards

It is highly unlikely that any single, non-trivial application will be able to independently contain within itself all necessary functions. Instead, it must communicate and interact with other pieces of software in order to obtain data, process it, and send it elsewhere. This becomes especially true of any piece of software that depends on the Internet for its operation. As a means of standardizing these interactions, software must implement application programming interfaces (or APIs) which define exact types of input they can accept and output they can generate.

Web APIs are the way for outside programmers to build new tools for using a website and its services, besides what the site itself provides to a user through a web browser. They also allow independent network services to communicate information to each other. Popular examples include mobile phone applications for posting pictures, blogs, or status updates to a web service without having to load a full web browser.

Sometimes, a walled garden owner provides an API to let “others” make some of the attractions in the garden, and get access to their users and perhaps some of the data lying in their silo in return. This enriches both the garden and the attraction owner, so it’s a common strategy that brings a steady influx of eager third-party developers to Facebook, Apple’s App Store and other popular closed platforms.

On the face of it, a website that publishes an API and allows other websites and applications to connect to it and avail themselves of its services would seem to fit the very definition of an “open” Web. For certain, the existence of APIs do appear to allow developers (and by extension users) more choice about how to access and interact with their favorite online services. APIs also allow developers to build novel new applications on top of existing online services.

Although Web APIs are in their own right publicly defined, they are far from published standards in the strict sense, namely as open and public standards put in place by a neutral entity such as the World Wide Web Consortium (W3C). Instead, APIs are created entirely at the whim of the website that provides them. They can change at any time, and there is no guarantee that they will provide the functionality that the user might need or request.

There is usually also no easy way to use a program written for one API on another website. For example, the desktop client for the an online radio service last.fm<sup>1</sup> does not mirror that of services of other music sites like Pandora or Spotify. In other words, the APIs do not use publicly vetted standards to transfer data, and most often, developers have to program applications anew for each platform. The exception to this would be the APIs built into popular open-source content management systems (CMSes) like Wordpress, MediaWiki or Drupal, so they work for most of the many sites using them.

As one example among many, an entire ecosystem of third party websites and applications has grown up around the Twitter API. So much so that the company has revealed that 75% of its internet traffic comes through its API rather than its website. While this has allowed users a constellation of choice about how to send and receive messages from Twitter, it has nevertheless put developers and users alike at the mercy of the single company providing the service: Twitter. Keep in mind that the company is under no contractual obligation to continue to make its API available to anyone. If it cancels access to its API, all of those business and users that rely on it are left hanging.



1. However, a simple API can be a useful starting place. For example, some functions of free network service Libre.fm can be used from many music players, because Libre.fm started by cloning the Last.fm API.<sup>^</sup>

# Tiers of the Cloud

Cloud Computing uses shared computer resources distributed throughout the Internet to deliver services and storage. A number of leading software and software service firms such as Amazon, Google, Microsoft and others now offer individual access to the powerful computing resources of their massive 'clouds'. However, this easy access to high-performance computing comes at a terrible cost: the centralization of control in a single service provider.

The technique of distributed computing has been put into practice since the first local-area networks were established to allow computers to communicate and interact. The primary advantage of distributing the workload among two or more devices is that their computational power can be combined even when the computational units are remote from one another.

The most basic type of distributed computing is a client-server architecture, which partitions computational workloads between a centralized node (which we call a server), sharing resources and data with its edge nodes (which we call clients). More complex still, the computations of a single application can be partitioned into separate but interconnected functional tiers; for example, a traditional 3-tier architecture separates a user interface (presentation logic) from data storage (data access logic), which are connected together by an information exchange layer (business logic). A 3-tier architecture is the the primary model of distributed computing on the web.

More powerful results can be achieved by what is known as a 'cluster'—large sets of machines coupled into powerful and robust units; a clustered architecture is essential to modern high-performance scientific computing. Conversely, a peer-to-peer architecture divides computational responsibility equally between a large number of loosely coupled computers. Peer-to-peer file sharing networks like BitTorrent, and anonymity networks like Tor, both work on this principle.

In all of these architectures, the computations are distributed in more than one sense: they can both be separated in physical space, and dissected into separate, autonomous but interacting processes that communicate via message passing.

With the right technical implementation, distributed computing has three primary advantages for fast and stable web services: the increased efficiency in terms of both lower cost and higher performance gained by clustering a set of low-end computational units based on commodity hardware; the increased reliability that is gained by avoiding a single point of failure in the system; and the relative ease of scaling the network up or down by bringing additional nodes online or offline.

Enterprises whose business depends upon ownership of capital-intensive data centers have begun to offer on-demand rental access to these computational resources to individuals and small- and medium-sized companies. These services treat computation as a pure utility, insofar as the details of the where, the what and the how is abstracted from its users. In this way, cloud computing provides the power of high-performance and dynamically scalable resources to users, with lower barriers to entry and minimal capital expenditure.

At the same time, the same innovations that eliminate the requirement for consumer expertise in the underlying infrastructure of these computing platforms, in the last analysis robs them of control over these resources. Cloud computing as the pure exemplar of distributed computing technology is also the pinnacle of centralized control over computing resources.

Online file storage and back-up services such as Dropbox (<http://dropbox.com>) have made it easy for individuals to move their home folders into the “cloud” and sync personal files across all computing devices, whether laptop, phone or tablet. Website developers are likewise able to deploy and manage web applications in the “cloud” that can effectively scale from dozens up to millions of users, by availing themselves of services such as Engine Yard (<http://engineyard.com>) or Heroku (<http://heroku.com>).

But there is a price to be paid for this convenience. Dropbox, Engine Yard and Heroku are not themselves in the business of cloud computing. Each of them, as well as hundreds of other services, are merely clever interfaces to *Amazon* Elastic Compute Cloud (<http://aws.amazon.com/ec2/>). While having your data and online accounts backed by Amazon’s data centers may sound like your best guarantee of stability, it is also means surrendering control of these data to a single company. This threat became real enough for one organization, when Amazon shut down hosting the WikiLeaks website after succumbing to government coercion.<sup>1</sup>

1. <http://www.guardian.co.uk/media/2010/dec/01/wikileaks-website-cables-servers-amazon><sup>^</sup>

# Edges of Autonomy

Internet filtering is a set of techniques that censors use to try to prevent Internet users from accessing particular content or services. Network operators can filter at any point in a network, using a wide variety of technologies, with varying levels of accuracy and customizability. Typically, filtering involves using software to look at what users are attempting to do and to selectively interfere with activities that the operator considers forbidden by policy. A filter could be created and applied by a national government or by a national or local Internet access provider. Filtering can also have very real and very harsh real world consequences. If governments monitor an individuals online activity and someone can be hauled away for writing something mildly offensive online, then its pretty hard to argue the Web is open for them regardless of the technical architecture and freedom of the software/content.

However, advocating an entirely 'open web' where all things are accessible (unfiltered) to all people is also a problematic position as it is not a polar equation but a rather a position on a continuum. It seems quite clear that governmental blocking of access to Open Education Resources (OER) on the web is not acceptable where as it would be hard to take issue with the individual that sets up filters on their work PC to moderate their excessive non-work web habits (such as checking Facebook at work). Along that continuum there are many grey questions—is it acceptable for parents to establish filters to block or monitor a child's access to pornography. Should schools be able to filter social networks like Twitter?

The question of whether filtering is appropriate often comes down the motivation for filtering and who is doing the filtering. An Open Web as we see it generally advocates for as much autonomy as possible when determining what should be filtered.

In many countries, it is no secret that government censorship of the Internet exists, as documented in the book *Access Denied: The Practice and Policy of Global Internet Filtering*, edited by Ronald Delbert, John Palfrey, Rafal Rohozinski, and Jonathan Zittrain (<http://opennet.net/accessdenied>). When a popular site is widely blocked, that fact tends to become widely known within the country.

But, in general, determining whether someone is preventing you from accessing a Web site or from sending information to others can be difficult. When you try to access a blocked site, you may see a conventional error message or nothing at all... the behavior may look like the site is inaccessible for technical reasons.

Some organizations, most notably the OpenNet Initiative (<http://opennet.net>), are using software to test Internet access in various countries and to understand how access may be compromised by different parties. In some cases, this is a difficult or even dangerous task, depending on the authorities concerned.

In some countries, there is no doubt about government blocking of parts of the Internet. In Saudi Arabia, attempting to access pornography results in a message from the government explaining that the site is blocked, and why. In countries that block without notification, one of the commonest signs of censorship is that a large number of sites with related content are inaccessible for long periods of time, except perhaps when they take countermeasures such as moving to a new domain. Another is that search engines return useless results or nothing at all about certain topics. These may be related to pornography, gambling, drugs (including alcohol) or other illegal activities or to political or religious movements deemed dangerous (for example, neo-Nazi sites blocked in Germany).

As discussed above, filtering or blocking is also done for a variety of reasons that have little to do with politics. Parents may filter the information that reaches their children. Many organizations, from schools to commercial companies to the US military, restrict Internet access in order to prevent users from having unmonitored communications, using company time or hardware for personal reasons, infringing copyrights, or using excessive networking resources.

However the more serious consequences of filtering come when injustices occur as a result of governments filtering and monitoring an individuals access. France, for example, passed a law in 2009 intended to control and regulate internet access through compliance with copyright law. HADOPI, as the law is called, initially proposed revoking a user's access to the internet merely upon *accusation* of copyright infringement. The law was ultimately scaled back to require judicial review before plugging the plug, but the practice raises huge questions about a government that undermines a fundamental right to internet access as articulated by the European Union:

"Recognising that the Internet is essential for education and for the practical exercise of freedom of expression and access to information, any restriction imposed on the exercise of these fundamental rights should be in accordance with the European Convention for the Protection of Human Rights and Fundamental Freedoms. Concerning these issues, the Commission should undertake a wide public consultation."

Hence the battle for an Open Web here is not just one of appropriate regulation vs autonomy but also overlaps with the age old fight for civil rights.



# Other People's Computers

Much of what we call collaboration occurs on web sites generally running software services. This is particularly true of collaboration among many distributed users. Direct support for collaboration, and more broadly for social features, is simply easier in a centralized context. It is possible to imagine a decentralized Wikipedia or Facebook, but building such services with sufficient ease of use, features, and robustness to challenge centralized web sites is a very difficult task.

Why does this matter? Making it relatively easy for people to work together in the specific way offered by a web site owner is a rather impoverished vision of what the web and digital networks could enable, just as merely allowing people to run programs on their computers in the way program authors intended is an impoverished vision of personal computing.

Free software allows users control their own computing and to help other users by retaining the ability to run, modify, and share software for any purpose. Whether the value of this autonomy is primarily ethical, as often framed by advocates of the term free software, or primarily practical, as often framed by advocates of the term open source, any threat to these freedoms has to be of deep concern to anyone interested in the future of collaboration, both in terms of what collaborations are possible and what interests control and benefit from those collaborations. Kragen Sitaker frames the problem with these threats to freedom:

"Web sites and special-purpose hardware [...] do not give me the same freedoms general-purpose computers do. If the trend were to continue to the extent the pundits project, more and more of what I do today with my computer will be done by special-purpose things and remote servers.

What does freedom of software mean in such an environment? Surely it's not wrong to run a Web site without offering my software and databases for download. (Even if it were, it might not be feasible for most people to download them. IBM's patent server has a many-terabyte database behind it.)

I believe that software-open-source software, in particular, has the potential to give individuals significantly more control over their own lives, because it consists of ideas, not people, places, or things. The trend toward special-purpose devices and remote servers could reverse that.

-Kragen Sitaker, "people, places, things, and ideas"<sup>1</sup>

What are the prospects and strategies for keeping the benefits of free software in an age of collaboration mediated by software services? One strategy, argued for in "The equivalent of free software for online services" by Kragen Sitaker,<sup>2</sup> is that centralized services need to be re-implemented as peer-to-peer services that can run on computers as free software under users' control. This is an extremely interesting strategy, but a very long term one, for it is both a computer science challenge and a social one.

Abstinence from software services may be a naive and losing strategy in both the short and long term. Instead, we can both work on decentralization as well as attempt to build services that respect user's autonomy:

"Going places I don't individually control-restaurants, museums, retail stores, public parks-enriches my life immeasurably. A definition of "freedom" where I couldn't leave my own house because it was the only space I had absolute control over would not feel very free to me at all. At the same time, I think there are some places I just don't want to go-my freedom and physical well-being wouldn't be protected or respected there.

Similarly, I think that using network services makes my computing life fuller and more satisfying. I can do more things and be a more effective person by spring-boarding off the software on other peoples' computers than just with my own. I may not control your email server, but I enjoy sending you email, and I think it makes both of our lives better.

And I think that just as we can define a level of personal autonomy that we expect in places that belong to other people or groups, we should be able to define a level of autonomy that we can expect when using software on other people's computers. Can we make working on network services more like visiting a friends' house than like being locked in a jail?

We've made a balance between the absolute don't-use-other-people's-computers argument and the maybe-it's-OK-sometimes argument in the Franklin Street Statement. Time will tell whether we can craft a culture around Free Network Services that is respectful of users' autonomy, such that we can use other computers with some measure of confidence."

-Evan Prodromou, "RMS on Cloud Computing: 'Stupidity'"<sup>3</sup>

The Franklin Street Statement on Freedom and Network Services is an initial attempt to distill actions that users, service providers (the "other people" here), and developers should take to retain the benefits of free software in an era of software services:

"The current generation of **network services** or **Software as a Service** can provide advantages over traditional, locally installed software in ease of deployment, collaboration, and data aggregation. Many users have begun to rely on such services in preference to software provisioned by themselves or their organizations. This move toward centralization has powerful effects on software freedom and user autonomy.

On March 16, 2008, a working group convened at the Free Software Foundation to discuss issues of freedom for users given the rise of network services. We considered a number of issues, among them what impacts these services have on user freedom, and how implementers of network services can help or harm users. We believe this will be an ongoing conversation, potentially spanning many years. Our hope is that free software and open source communities will embrace and adopt these values when thinking about user freedom and network services. We hope to work with organizations including the FSF to provide moral and technical leadership on this issue.

We consider network services that are **Free Software** and which share **Free Data** as a good starting-point for ensuring users' freedom. Although we have not yet formally defined what might constitute a 'Free Service', we do have suggestions that developers, service providers, and users should consider:

**Developers** of network service software are encouraged to:

- Use the GNU Affero GPL, a license designed specifically for network service software, to ensure that users of services have the ability to examine the source or implement their own service.
- Develop freely-licensed alternatives to existing popular but non-Free network services.
- Develop software that can replace centralized services and data storage with distributed software and data deployment, giving control back to users.

**Service providers** are encouraged to:

- Choose Free Software for their service.
- Release customizations to their software under a Free Software license.
- Make data and works of authorship available to their service's users under legal terms and in formats that enable the users to move and use their data outside of the service. This means:
  - \* Users should control their private data.
  - \* Data available to all users of the service should be available under terms approved for Free Cultural Works or Open Knowledge.

**Users** are encouraged to:

- Consider carefully whether to use software on someone else's computer at all. Where it is possible, they should use Free Software equivalents that run on their own computer. Services may have substantial benefits, but they represent a loss of control for users and introduce several problems of freedom.
- When deciding whether to use a network service, look for services that follow the guidelines listed above, so that, when necessary, they still have the freedom to modify or replicate the service without losing their own data."

-Franklin Street Statement on Freedom and Network Services<sup>4</sup>

As challenging as the Franklin Street Statement appears, additional issues must be addressed for maximum autonomy, including portable identifiers:

"A Free Software Definition for the next decade should focus on the user's overall autonomy- their ability not just to use and modify a particular piece of software, but their ability to bring their data and identity with them to new, modified software.

Such a definition would need to contain something like the following minimal principles:

1. data should be available to the users who created it without legal restrictions or technological difficulty.
2. any data tied to a particular user should be available to that user without technological difficulty, and available for redistribution under legal terms no more restrictive than the original terms.
3. source code which can meaningfully manipulate the data provided under 1 and 2 should be freely available.
4. if the service provider intends to cease providing data in a manner compliant with the first three terms, they should notify the user of this intent and provide a mechanism for users to obtain the data.
5. a user's identity should be transparent; that is, where the software exposes a user's identity to other users, the software should allow forwarding to new or replacement identities hosted by other software."

-Luis Villa, "Voting With Your Feet and Other Freedoms"<sup>5</sup>

Fortunately the oldest, and at least until recently, the most ubiquitous network service-email-accommodates portable identifiers. (Not to mention that email is the lowest common denominator for much collaboration-sending attachments back and forth.) Users of a centralized email service like Gmail *can* retain a great deal of autonomy *if* they use an email address at a domain they control and merely route delivery to the service-though of course most users use the centralized provider's domain.

Making email address portability available on a wider scale could be cheaper and technically easier. As an example, a democratically-run non-profit *The Internet Users Forever IKI* has worked to make this a reality in Finland. Since 1995, more than 24000 individuals have paid the one-time membership fee and received an @iki.fi address they can route to a provider of their choosing. The fees earn interests that are used to finance the routing service.<sup>6</sup>

It is worth noting that the more recent and widely used, if not ubiquitous, instant messaging protocol XMPP as well as the brand new and little used Wave protocol have an architecture similar to email, though use of non-provider domains seems even less common, and in the case of Wave, Google is currently the only service provider.

It may be valuable to assess software services from the respect of community autonomy as well as user autonomy. The former may explicitly note requirements for the product of collaboration-non-private data, roughly-as well as service governance:

In cases where one accepts a centralized web application, should one demand that application be somehow constitutionally open? Some possible criteria:

- All source code for the running service should be published under an open source license and developer source control available for public viewing.
- All private data available for on-demand export in standard formats.
- All collaboratively created data available under an open license (e.g., one from Creative Commons), again in standard formats.
- In some cases, I am not sure how rare, the final mission of the organization running the service should be to provide the service rather than to make a financial profit, i.e., beholden to users and volunteers, not investors and employees. Maybe. Would I be less sanguine about the long term prospects of Wikipedia if it were for-profit? I don't know of evidence for or against this feeling.

-Mike Linksvayer, "Constitutionally open services"<sup>7</sup>

Software services are rapidly developing and subjected to much hype, often referred to as the buzzword Cloud Computing. However, some of the most potent means of encouraging autonomy may be relatively boring-for example, making it easier to maintain one's own computer and deploy slightly customized software in a secure and foolproof fashion. Any such development helps traditional users of free software as well as makes doing computing on one's own computer (which may be a "personal server" or virtual machine that one controls) more attractive.

Perhaps one of the most hopeful trends is relatively widespread deployment by end users of free software web applications like WordPress and MediaWiki. StatusNet, free software for microblogging, is attempting to replicate this adoption success. StatusNet also includes technical support for a form of decentralization (remote subscription) and a legal requirement for service providers to release modifications as free software via the AGPL.



This section barely scratches the surface of the technical and social issues raised by the convergence of so much of our computing, in particular computing that facilitates collaboration, to servers controlled by "other people", especially when these "other people" are a small number of large service corporations. The challenges of creating autonomy-respecting alternatives should not be understated.

One of those challenges is only indirectly technical: decentralization can make community formation more difficult. To the extent the collaboration we are interested in requires community, this is a challenge. However, easily formed but inauthentic and controlled community also will not produce the kind of collaboration we are interested in.

We should not limit our imagination to the collaboration facilitated by the likes of Facebook, Flickr, Google Docs, Twitter, or other "Web 2.0" services. These are impressive, but then so was AOL two decades ago. We should not accept a future of collaboration mediated by centralized giants now, any more than we should have been, with hindsight, happy to accept information services dominated by AOL and its near peers.

Wikipedia is both held up as an exemplar of collaboration and is a free-as-in-freedom service: both the code and the content of the service are accessible under free terms. It is also a huge example of community governance in many respects. And it is undeniably a category-exploding success: vastly bigger and useful in many more ways than any previous encyclopedia. Other software and services enabling autonomous collaboration should set their sights no lower-not to merely replace an old category, but to explode it.

However, Wikipedia (and its MediaWiki software) are not the end of the story. Merely using MediaWiki for a new project, while appropriate in many cases, is not magic pixie dust for enabling collaboration. Affordances for collaboration need to be built into many different types of software and services. Following Wikipedia's lead in autonomy is a good idea, but many experiments should be encouraged in every other respect. One example could be the young and relatively domain-specific collaboration software that this book is being written with, Booki.

Software services have made "installation" of new software as simple as visiting a web page, social features a click, and provide an easy ladder of adoption for mass collaboration. They also threaten autonomy at the individual and community level. While there are daunting challenges, meeting them means achieving "world domination" for freedom in the most important means of production-computer-mediated collaboration-something the free software movement failed to approach in the era of desktop office software.

1. <http://lists.canonical.org/pipermail/kragen-tol/1999-January/000322.html>^
2. <http://lists.canonical.org/pipermail/kragen-tol/2006-July/000818.html>^
3. CC BY-SA <http://autonomo.us/2008/09/rms-on-cloud-computing-stupidity>^
4. CC BY-SA <http://autonomo.us/2008/07/franklin-street-statement>^
5. CC BY-SA <http://tieguy.org/blog/2007/12/06/voting-with-your-feet-and-other-freedoms>^
6. <http://www.iki.fi/iki/statistics.html>^
7. CC0 <http://gondwanaland.com/mlog/2006/07/06/constitutionally-open-services>^

# 5 Battlefield Tactics

While some battles are seemingly beyond our control as individuals, we can still influence the outcome, especially if we work strategically within groups. Increasingly, success in these areas may depend on the coordinated work of communities in partnership with larger entities. Here are five tactics to help you agitate and educate within organizations, peer groups or public bodies.

## Promoting Open licenses

If your organization publishes work online then you can support the Open Web by making clear your intentions about how you want people to be able to reuse your work. The best way to do this is by giving your work a license. If your organization works with software this is often done using a Free Software license. It is very likely that if you work with computer enthusiasts, they will be able to share their knowledge on this.<sup>1</sup>

Creative Commons have done some amazing work in the area of open licenses for non-software projects, especially in the areas of culture, education and science. The Creative Commons website has a license chooser<sup>2</sup> which helps you choose a license by asking you a few simple questions. For your troubles you get:

- a web button with nifty graphics that you can embed in your web page
- a link through to a human readable interpretation of how you want your work to be used
- a full legal code that lawyers have created to make your intentions enforceable

Using this website and tools may help you convince your bosses, co-workers and legal department that choosing an open license is the right choice to achieve the goals of your organization.

## Bypassing Censorship and Surveillance

As previously indicated, the fight for the Open Web is also a fight for Civil Rights. Lobbying done by organizations like the Electronic Frontier Foundation<sup>3</sup> plays a vital role in this struggle and we should support them and their campaigns. However, sometimes lobbying just isn't enough. Luckily, there are also tactics for non-violent resistance for those who refuse to move to the back of the Web. The tools to defeat Internet blocking, filtering and monitoring are designed to deal with different obstacles and threats.

Your organization or peer group can make a real difference. Here are some general pointers to more information on how you can work with others to support appropriate resistance to inappropriate censorship:

- Set up and help others use a public Proxy, an easy way to make it more difficult to trace the Internet use.<sup>4</sup>
- Encourage the use of routers like the TOR (The Onion Router) project.<sup>5</sup>
- Set up and help others use a Virtual Private Network. VPN and tunneling are techniques that allow you to encrypt the data connections between yourself and another computer.<sup>6</sup>

To learn more about digital security, privacy and tools that may facilitate circumventing censorship, preventing eavesdropping, and remaining anonymous there are detailed resources on the Internet which share technical content on this subject.<sup>7</sup>

## Creating Subtitles

In the context of increasing use of online video, the importance of providing subtitles for wider accessibility cannot be overstated. Providing foreign language subtitles increases your potential audience hugely. In addition subtitles in the original language opens the door to hearing impaired viewers as well as second language audiences.<sup>8</sup>

There are some great tools for subtitling on the Web which allow users to:

- Create subtitles for videos using an online transcribing tool.
- Upload pre-prepared subtitle files to display over video clips.
- Create or embed video players which allow viewers to choose which language subtitles are displayed.
- Download subtitle files to help create DVDs or for general offline use.

If you are involved in an organization or network that distributes video online, you can push to make sure that subtitles are not overlooked. Furthermore, an open and community approach to subtitles is needed (as was the case with Wikipedia) if volunteer-based translation of subtitles is to take off. It is difficult to imagine tens of thousands of users translating videos if their work is then owned or controlled by a corporation. The Universal Subtitle project is also working towards that goal, with the aim of creating a decentralized network of open and searchable subtitle databases.<sup>9</sup>

## Hosting Independent Websites, Blogs and Networks

Automattic the company that runs wordpress.com does not claim to offer anonymous blogging, but users might assume that some degree of legal authority would be needed to access the identities of their bloggers. However, Automattic recently handed over the personal data of the owner of a blog criticizing the VC of the University of Salford to the University seemingly without a court order.<sup>10</sup>

In this case although Wordpress is built on free software, the installation of it at Wordpress.com can be seen as a centralized Network Service. The Open Web, which established a decentralized approach to hosting, has inbuilt resilience to censorship. Reliance on huge Network Services as the arbiters of Free Speech is a very weak position. Such services come under daily pressures from authorities for disclosure. As such, they often opt for an easy life by handing over personal details and suspending accounts, websites and blogs with little in the way of an appeal process.

If you are part of a group that feels able to foster an online community that values Free Speech then you can do this in a very practical way by providing reliable and secure hosting to groups and individuals who share your aims. There are many technical and social tactics to achieve this. Here are some of them:

### *Technical aspects of hosting*

This book mentions numerous useful Free Network tools, Wordpress is a particularly useful one. You can download it and install it on your own server. As such, you are not bound by the take-down and privacy policy of Wordpress.com. If you have website creation skills, it is relatively easy to install a Wordpress network. This allows you to host many blogs, install extra functionality for them and makes it easy to keep the software updated. Wordpress blogs are a great entry point into the social media maze as they have RSS feeds, publicly vetted APIs and useful plugins to allow cross posting. With the BuddyPress functionality you can also create a very usable Social Network.

You can anonymize blogs and services by not logging IP addresses. The process of not logging IP addresses on a server using Apache is relatively simple. Use the removeip Apache module. Rather than trying to remove all logs of IP addresses it replaces them with an arbitrary IP number.<sup>11</sup>

Avoid the Cloud. Hosting your blogs or networks in the Cloud may offer technical advantages but reduces your control of your resources. Choose a smaller provider who can offer more support and options.

### *Social aspects of hosting*

Here are some tips for running a hosting collective as part of your project:

- Make sure you are agreed on what/who you are prepared to host or not
- Make this agreement public as your AUP (acceptable usage policy)
- Create a clear (and perhaps automated) process for applying for a website or blog
- Have a firm, clear and fair way of taking down websites that you no longer feel you can support and suggest alternative hosting options for users you have to disconnect

## Supporting Standards

As an individual, your influence in promoting the adoption of Open standards and formats is limited. However you can make a difference by working in partnership with other groups and networks to help form a critical mass of adoption. This is especially true in the area of media formats.



In the same way that APIs are widespread but not 'Standards', the same applies to many media file formats. The Mp3 audio format has patenting restrictions that make it difficult to support their use in free software. This is problematic, especially for groups who cannot afford to pay for software. The same situation exists for popular Video formats.

Recently Google announced that their Chrome browser wouldn't support the most widely adopted but patented video format 'h264'. The announcement has divided opinions. Many criticised the decision as a step backward for openness,<sup>12</sup> whilst others supported it as a blow to the patented h264 and therefore a boon to the advancement of more open formats.<sup>13</sup>

Until recently the situation had been bleak for groups who wanted to support the Open Web in the world of Video.<sup>14</sup> However, there are now open formats which we can advocate that are supported with the new <video> tag in HTML5.

If you want to create open video formats you can use Miro Video Converter. This is simple to use software for Windows and Mac to convert to a number of presets including the open formats Ogg Theora and WebM. The free software tool is made by the Participatory Culture Foundation who have a great track record of building tools that make it easy to use open standards in the world of online video.<sup>15</sup>

1. Free Software Definition <http://www.gnu.org/philosophy/free-sw.html>^
2. <http://creativecommons.org/choose/>^
3. <http://www.eff.org/>^
4. <http://en.flossmanuals.net/CircumventionTools/WhatIsAWebProxy>^
5. <https://www.torproject.org/>^
6. <http://en.flossmanuals.net/CircumventionTools/WhatIsVPN>^
7. <http://security.ngoinabox.org/html/en/index.html>^
8. <http://en.flossmanuals.net/VideoTranslation/>^
9. <http://universalsubtitles.org>^
10. <http://manchestermule.com/article/anonymity-over-for-wordpress-bloggers>^
11. <https://we.riseup.net/debian/apache>^
12. <http://arstechnica.com/web/news/2011/01/googles-dropping-h264-from-chrome-a-step-backward-for-openness.ars/>^
13. <http://www.yelvington.com/content/video-tag-mess-and-why-googles-interests-are-mostly-our-interests>^
14. [http://wiki.transmission.cc/index.php/FOSS\\_Codecs\\_For\\_Online\\_Video](http://wiki.transmission.cc/index.php/FOSS_Codecs_For_Online_Video)^
15. <http://mirovideoconverter.com/>^

# The Web is Open?

Most of what the Web offers today has evolved because it was based on open standards. But this was never guaranteed. When the Internet first became widely used by ordinary people, in the early to mid-1990s, a number of media and telecom companies like AOL, CompuServe and MSN vied to build their own “walled garden” services. The idea was that users would stay most of their time within closed networks owned by these companies, using their own information services, communicating mainly with other subscribers to the same service—and paying, not just for connectivity, the bits and bytes of getting online, but also, and mainly, for access to information, and even for the right to produce information themselves. In the end, this business model was eroded by the explosion in use of open Internet standards. These companies were forced first to provide access to it to stay competitive, and ultimately to compete as Internet Service Providers with others such as telecom companies simply to sell connectivity.

The richness of the Open Web today is a result of the victory of those open standards. Because the Internet became the world's first real-time meeting place for ideas and services, it forced companies to set out their stall there. We take for granted services such as Google Maps, YouTube, open translation engines, or the ability to sign up to any number of Web-based email accounts which we can access from any Internet cafe in the world. But what if the open Internet had been dwarfed by the walled garden services of the 1990s? Would Wikipedia have developed to the stage where it is now? Would we even have blogging services such as Wordpress and Blogger, provided as they are by companies whose business model relies on the fact that their thousands of Web servers are mostly powered by Apache, an open source server program free for anyone to use? Would these commercial information networks have spread to two billion users around the world as the open Internet has? We cannot answer any of these individual questions with certainty, but there is no doubt that that in general we would be information- poorer. For good or bad our current world view, which assumes that sooner or later everyone will be online all the time, would simply not hold.

It is important to understand that many people fought for that victory, early Internet pioneers such as the Electronic Frontier Foundation and the free and open source software movement. Thousands of others came later with other ideas. Imagine the enormous amount of work necessary to give you Mozilla Firefox—a struggle that was considered to be over and lost and yet through the efforts of many thousands of people that believed in the open web it now holds a substantial market share. We will continue to enjoy the fruits of an Open Web only as long as enough people remain engaged to defend it. Now more than ever that defense is dependent on you—on the decisions you make.

# The Myth of Openness

<sup>1</sup>Some questions may be raised when looking at the current use of the web and the high popularity of Google and social networks such as Facebook. These questions tap into cultural variables that have not been addressed elsewhere in this book but which are important to understand such a revolution. Digital environments such as Google Maps or the walled gardens of Facebook are dramatically changing the way we relate to people, ourselves and the world. Considering the high speed in which they have been adopted one might assume that in fact there are different layers at which representations about the world and ourselves are distributed. What kind of processes are at work on a personal and collective levels? This epilogue is an attempt at drawing a map of what might be considered when thinking of the cultural dimensions attached to the open (or closed?) web.

The Internet is a network controlled by protocols. Alexander Galloway speaks of the protocols that support Internet technology. He attributes to them a disciplinary form of control executed by networks. Inside the Internet there is no escape from protocols, because they are the way computers communicate and distribute information, through TCP/IP and DNS. Protocols are a technology of inclusion he observes, and in this sense change or resistance inside the World Wide Web is to be done within “the protocological”.<sup>2</sup>

Even if Internet protocols enable decentralization (representing a decentralized circuit), they are based upon forms of control of an invisible kind, iterating through series of different nodes, giving the impression there is freedom—but it is a customised freedom at best, at worst a kind of prison.

Even inside this limited sphere we are losing or giving away our freedoms—more and more people are trading privacy for convenience. Web 2.0, as embodied by Facebook and Twitter, has some resemblances to the shopping mall, being promoted as a way of meeting new people, or getting in touch with old friends, or keeping everyone informed of your activities. It is a social mall where the commodity for sale is personality.

The model of the network is the optimal circuit of control acting upon contemporary civilization.

Celebrated at times as a sort of utopia, networks perform as a modern kind of prison. The Internet is a disciplinary diagram based upon forms of decentralized control. Resting upon the idea of Progress as obligatory, the network has evolved into an optical or panoptical system of control, powered by the optimization of remote communication.

Lewis Mumford in “The Myth of the Machine”<sup>3</sup> describes Egyptian civilization, pointing out how writing was the first form of programming at a distance, allowing ruling powers to reproduce precise commands to distant slave workers building the Pyramids. Since the Internet is based on text one could state that from its written nature it has developed newer forms of instructions to be executed over human and social behaviour. The Internet hides processes that instruct commands in an invisible decentralized fashion, these in turn affect behaviour. You can only interact with your Friends in your Facebook account in certain scripted ways, and these transactions hide a growing sphere of corporate initiated absorption of Facebook profile information (but did Facebook ask you?).

Facebook is a good example of a pseudo-open Web resting on weak relations where these socialities ('communities') are founded on tenuous horizontal connections or superficial connections where a horizontal terminology is used, but isn't enshrined. Proprietary social network sites might use the rhetoric of the horizontal, but in a weak and superficial manner since is always subject to the rules of the host which are ultimately contingent, and never so decentralized nor open.

Social networks are sanitized, they don't contain the dirtiness of body to body contact, they work as separated galleries, clean and constrained and their aim is the commodification of friendship, capitalizing on relations and affection for corporate interests.

Profiles in social networks exemplify a newer form of discipline. Manuel Castells writes about it this way: "In a world of global flows of wealth, power, and images, the search for identity, collective or individual, ascribed or constructed, becomes the fundamental source of meaning. This is not a new trend... Yet identity is becoming the main, and sometimes the only, source of meaning in a historical period characterized by widespread destructuring of organizations, delegitimization of institutions, fading away of major social movement."<sup>4</sup> The search for identity taken to an extreme form such as creating and sharing profile information is changing the way we relate to others.

"I have been told many times, you don't exist if you don't have Facebook, but actually even if I don't have a Facebook account my spectral presence is animated by my friends' accounts, their pictures, their statuses. Like my former boyfriend, he changed his status from "engaged" to "single" four months before we actually broke up. I couldn't know because I have no Facebook account, but all his Facebook friends knew about it and some were asking me how was I dealing with it. Dealing with what? - since I had no notice of new status". Or the man approaching me in a club in Lima: he saw me dancing and came to me to give me a piece of paper and left without saying a word. The paper had his e-mail address and the message "add me". These examples may show how social networks recreate a separated world that in some way has dominance over the real world. Perhaps we may even speak of network produced human relations as a vertical power accessing real life being reproduced in social network platforms.

Social networking is a form of production. Following Maurizio Lazzarato,<sup>5</sup> life-styling becomes a form of capitalist production where capitalism co-opts consumers as life-style workers creating the conditions for commodities to be sold. The possibility of making a profile gives the impression of freedom to design what you are or the way you want to be seen by others, but it is hiding a deep fragmentation of human relations, of the way we relate to our bodies and the way we relate to the world. They produce an ideological environment in which to shape subjectivities, e.g. the Facebook community, to extract, and ultimately to profit, through profiling and data-mining.

In Facebook the necessity of showing off your face, only a part of your body, the upper part where the eyes are, a section dominated by the visual dimension, has taken over other parts of the body, which is shown, here and there, as fragments.

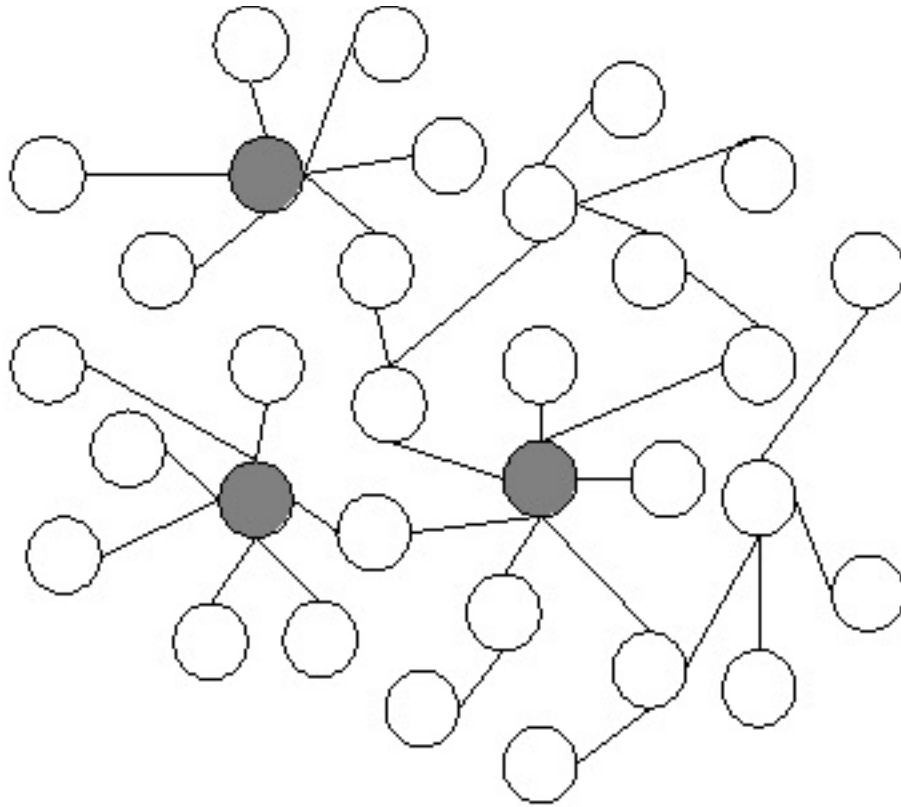


As a “walled garden” this popular social network mall threatens openness from a cultural perspective, but it may also have an effect on the structure of the web. As Tim Berners-Lee warns, social networking sites that do not allow users to extract the information they put into them could mean the web is “broken into fragmented islands.”<sup>6</sup> “The web evolved into a powerful, ubiquitous tool because it was built on egalitarian principles,” he said. “The web as we know it, however, is being threatened in different ways. Some of its most successful inhabitants have begun to chip away at its principles.”

## Network vs Web and their origins

From its inception the Internet is closed. If we look for an origin, one source would be rooted in graph theory in the 18th century, in the mathematical definitions of Euler. “A graph” in its mathematical definition “is pair of sets (...) of vertices (nodes in a graph) and a set of edges denoting the links between the vertices.”<sup>7</sup>

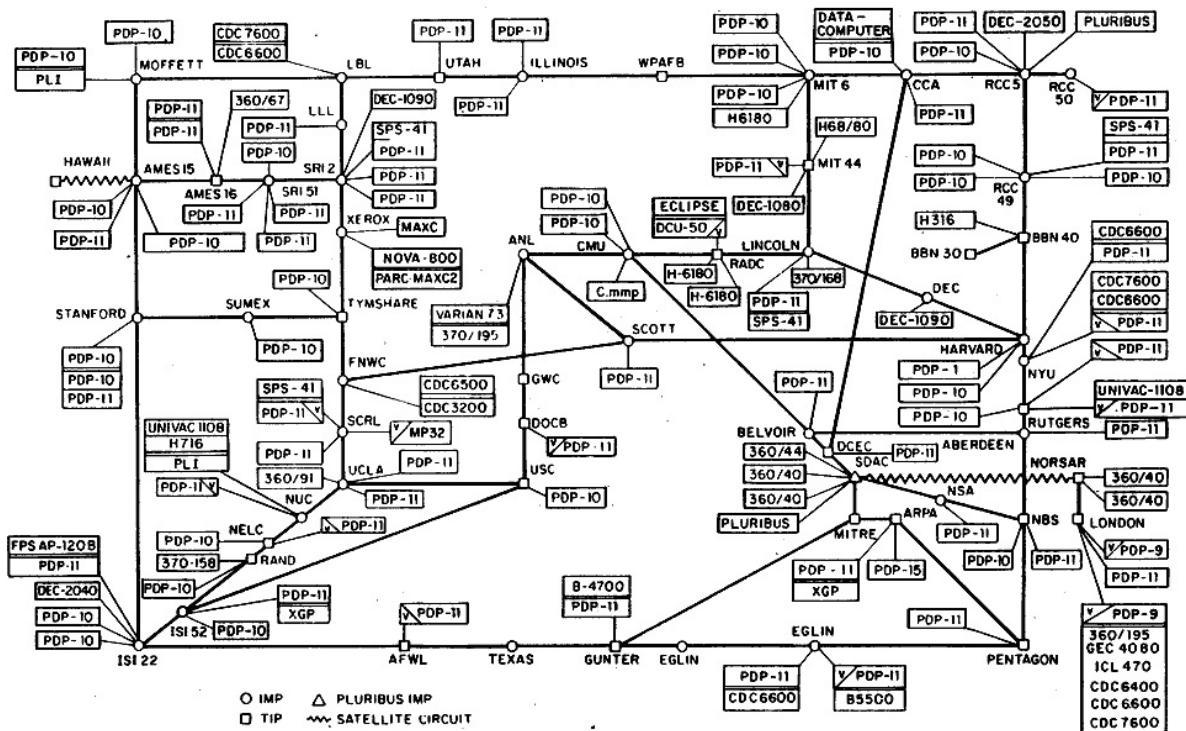
One case is the model of scale free networks—“Barabási and collaborators coined the term “scale-free network” to describe the class of networks that exhibit a power-law degree distribution (...) Scale-free networks are noteworthy because many empirically observed networks appear to be scale-free, including the world wide web, the Internet, citation networks, and some social networks.”<sup>8</sup>



A general consideration is that graphs are focused on nodes and that all real life networks are finite. Being finite co-ordinate systems, networks contain in themselves means of ideological control.

Another starting point to place the origin of the internet is the Advanced Research Projects Agency Network (Arpanet) whose military aims were based on survivalism. The network of networks was created so information could survive to a global nuclear attack."the arpanet was the world's first operational packet switching network and the core network of a set that came to compose the global Internet. The network was created by a small research team at the Massachusetts Institute of Technology and the Defense Advanced Research Projects Agency (DARPA) of the United States Department of Defense."<sup>9</sup>

ARPANET LOGICAL MAP, MARCH 1977



(PLEASE NOTE THAT WHILE THIS MAP SHOWS THE MOST POPULATION OF THE NETWORK ACCORDING TO THE BEST INFORMATION OBTAINABLE, NO CLAIM CAN BE MADE FOR ITS ACCURACY)

NAMES SHOWN ARE IMP NAMES, NOT (NECESSARILY) HOST NAMES

We could explore as an analogy a model of a web as described by the shamanic geometrical designs of the Peruvian indigenous tribes of the Shipibo-Conibo. In their drawings they graphically describe a web based on the intertwined communication paths of all existing forms being animated or not.<sup>10</sup> They draw these networks under the effect of psycho active endogenous plant agents and describe them as paths that interconnect everything to everything. They even see networks coming out of written text as in books. Their emphasis is placed not in the nodes but on the paths, the infinite relations between agents. Reality is then knitted through the flow of energy of this infinite web.

“Whereas we perceive these designs as visual abstractions, the Shipibo-Conibo perceive them as matrices of intersensory perception, since these geometric designs are at the same time musical scores and perfume recipes. They resonate in each of the senses at once. They are not simply addressed to the eye.”<sup>11</sup>



The contrast between western models of networks such as the Internet, and the aboriginal intersensory experience of an infinite web of relations, is drawn to make explicit the difference of dynamics between the two models of web and networks, by considering the latter as iterations of well-defined relations with finite limits, versus a web of knowledge and a related freedom springing out of developing narratives through intoxication. Intoxication and infection are also related to the nature of text, words and writing (word is a virus Burroughs reminds us<sup>12</sup>).

There is liberty contained within the strings of text shared on the Web. Content is a filigree knitted through text, a soft layer that has the tendency to resonate and overcome limits.

Open standards carry within the historicity of technical developments. The cultural movement that has resisted closeness, the desire to overcome limitations imposed by elites over knowledge. There is something such as the open web as a layer working on top of close instances, that may improve the way we engage to daily life, people, work and knowledge. Considering this potential, why are you exercising your right to be in prison?

## Dystopia, Open as propaganda

We may see there are, at least, two diagrams at work: one that is closed and finite, the Internet infrastructure based on protocols; and another that is open, the Web, that is based on open standards which have sprung up from the unstoppable desire to open the way people and communities relate to information and to knowledge. There is a juxtaposition of diagrams where instances of open and closed gates are at work. The desire of being found in a Google Map, an opening gate, clashes with the corporate means of aggregating located information, a closing gate. Google Maps exemplifies the power and virtuosity of this optical system of control.

One looming threat to openness today is increasing access to the Internet from mobile devices. Mobile devices are a good thing of course, but they also create another opportunity for rent seeking from commercial players, who could introduce, for example, proprietary standards in the way they “mobilify” websites for access from smaller screens. This would affect everyone, but particularly people in developing countries just coming online now for the first time, whose Internet experience is more likely than not to be through mobile phones. In Jamaica, for example, more people access the Web from mobiles than from desktop or laptop computers, in a stunning case of technological leapfrog. There are already millions of smart phone users in China, not just the rich, but students who will save for months to buy a phone that gives them Internet access.

In 2009 the Chilean government made an agreement with a Malaysian telecom company to “illuminate” with wireless Internet all rural zones of the country using WiMAX technology.<sup>13</sup> Their attempt was to provide free internet for three million people and in this way work towards breaking the digital divide. However the people living in the countryside, 13.4% of the population, have scarce knowledge of the Internet and low computer literacy. What may be seen in this case is that access to the Internet works as a command to progress. Technology will perform “illumination” with internet. Economical dependencies established by such an implementation are direct since the infrastructure is built as a free asset to later become a private paid service. This technology has been adopted as a blind command for progress without having a concrete plan for using it to increase economical production, even though this was the original intention. Earlier the government had vaguely envisioned developing educational initiatives. We can imagine that Internet in this type of arrangement and environment might have a low degree of adoption amongst the local community, so instead of bringing knowledge, the open wireless Internet infrastructure works as a propaganda of progress, destined to become open electromagnetic pollution.

1. This title is named paraphrasing Lewis Mumford essay "The Myth of the machine" "Mumford insisted upon the reality of the megamachine: the convergence of science, technics and political power as a unified community of interpretation rendering useless and eccentric life-enhancing values. Subversion of this authoritarian kingdom begins with that area of human contact with the world that cannot be successfully repressed—one's feelings about one's self." Lewis Freid, *Makers of the City*, Univ Massachusetts Press, 1990. p 115. [http://en.wikipedia.org/wiki/The\\_Myth\\_of\\_the\\_Machine](http://en.wikipedia.org/wiki/The_Myth_of_the_Machine)<sup>^</sup>
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7. Reuven Cohen, Shlomo Havlin, and Daniel ben-Avraham *Structural Properties of Scale-Free Networks* , 2002 <sup>^</sup>
8. [http://en.wikipedia.org/wiki/Scale-free\\_network](http://en.wikipedia.org/wiki/Scale-free_network)<sup>^</sup>
9. <http://en.wikipedia.org/wiki/ARPANET><sup>^</sup>
10. "Which are said to originate in the markings of the cosmic serpent, Ronin—are woven into textiles, incised on pots and houseposts, painted on faces, and even recorded in folios which were supplied by the first missionaries who made contact with the Shipibo-Conibo (see Illius 2002). However, their foremost use is in the context of Shipibo-Conibo healing rituals. David Howes, 2006. p.76.<sup>^</sup>
11. *The Aesthetics of Mixing the Senses*. *Cross-Modal Aesthetics* David Howes (Concordia University), 2006  
<http://www.david-howes.com/senses/aestheticsofmixingthesenses.pdf><sup>^</sup>
12. *The Electronic Revolution*, essay collection by William S. Burroughs first published in 1970<sup>^</sup>
13. [http://www.lanacion.cl/prontus\\_noticias\\_v2/site/artic/20090318/pags/20090318210129.html](http://www.lanacion.cl/prontus_noticias_v2/site/artic/20090318/pags/20090318210129.html)<sup>^</sup>

# About This Book

This book was created in a Book Sprint over 5 days between January 17 and January 21, 2011 in Berlin. It was an enormous achievement by the handful of people brought together to write a Book about the 'Open Web'.

The sprint was unusually affected by a high number of last minute issues including some last minute participant and sponsor cancellations, denied visas, and two delayed flights to the sprint. As a result we started with a great team but a little smaller than anticipated.

The event was hosted by transmediale.11 and the Collegium Hungaricum Berlin (CHB), based on an idea and concept initiated by transmediale artistic director Stephen Kovats and Adam Hyde of FLOSS Manuals. To write the book we used the FLOSS Manuals installation of Booki (<http://booki.flossmanuals.net>).

On the first day the CHB Director Can János Togay and CHB Curator Vera Baksa-Soós welcomed us and gave us an excellent introduction to the CHB. It is an amazing building and a very forward-thinking organization. It was both an honor and a privilege to be welcomed and hosted there. Our context for the sprint was very interesting on another level too. Hungary has a somewhat acute problem at the moment with self-censorship, free speech and open expression. The CHB is an adjunct organisation of the Embassy of Hungary in Berlin and therefore, technically speaking, not in Germany, but on sovereign Hungarian territory. Given the current debate in the EU on press and internet restrictions, there is considerable poetic irony that the Book Sprint about the Open Web took place there.



While waiting for Jon to arrive we started some light discussions about the book but we held back a lot, wanting to involve him in the process as much as possible. We started with a discussion followed closely by an injection of pizza delivered by Stephen Kovats. The conversation started with some wobbles. Most of us were confused by the proliferation of the term 'Open Web' since any discourse of the net has abused both terms over the last decade. None of us really knew what 'open' was anymore or what is meant these days by 'the Web'. What then was the 'Open Web'?

Bassel Safadi, contributing remotely from Syria, gave us a clue. He outlined a stack of conditions that would lead him to agree to a web service being identified as 'open'. Then the conversation turned to mapping this idea onto a book structure. Jon arrived around 1800 and we continued. After the first night we had a structure, but it was not complete. We still were not exactly sure what the open web was even though we could talk with some meaning about the conditions that needed to be fulfilled.

We started writing anyway at 10:00 the next morning. Everyone picked a topic and started putting their ideas down. The sprint facilitator (Adam Hyde) was pretty certain this book did not have to be long, and it could be simple since if we (relatively 'old hand') web users could not say what the Open Web was, and there is very little other literature out there about it, then a short clear book about the Open Web was going to be a good first step. It should be a strong attempt at setting up the parameters and defining the terms of this discourse.

Determined to succeed and scared of failure, we wrote. At the end of the day we had dinner and wrote some more and then realized we had a better idea of what we wanted to define. Book Sprints are noisy environments and throughout the day there were many discussions about issues and ideas we wanted to clarify, discard or write about. Hence after a day of this we had a better shared language for discussing the content and we were moving towards some kind of simple thesis. John West joined us for a few hours and wrote some material and discussed the introduction chapters in detail with sprinter Alejandra Perez. After dinner Jon Phillips, Chris Adams, and Michelle Thorne pushed for a rethink of the table of contents, and then we started getting closer.

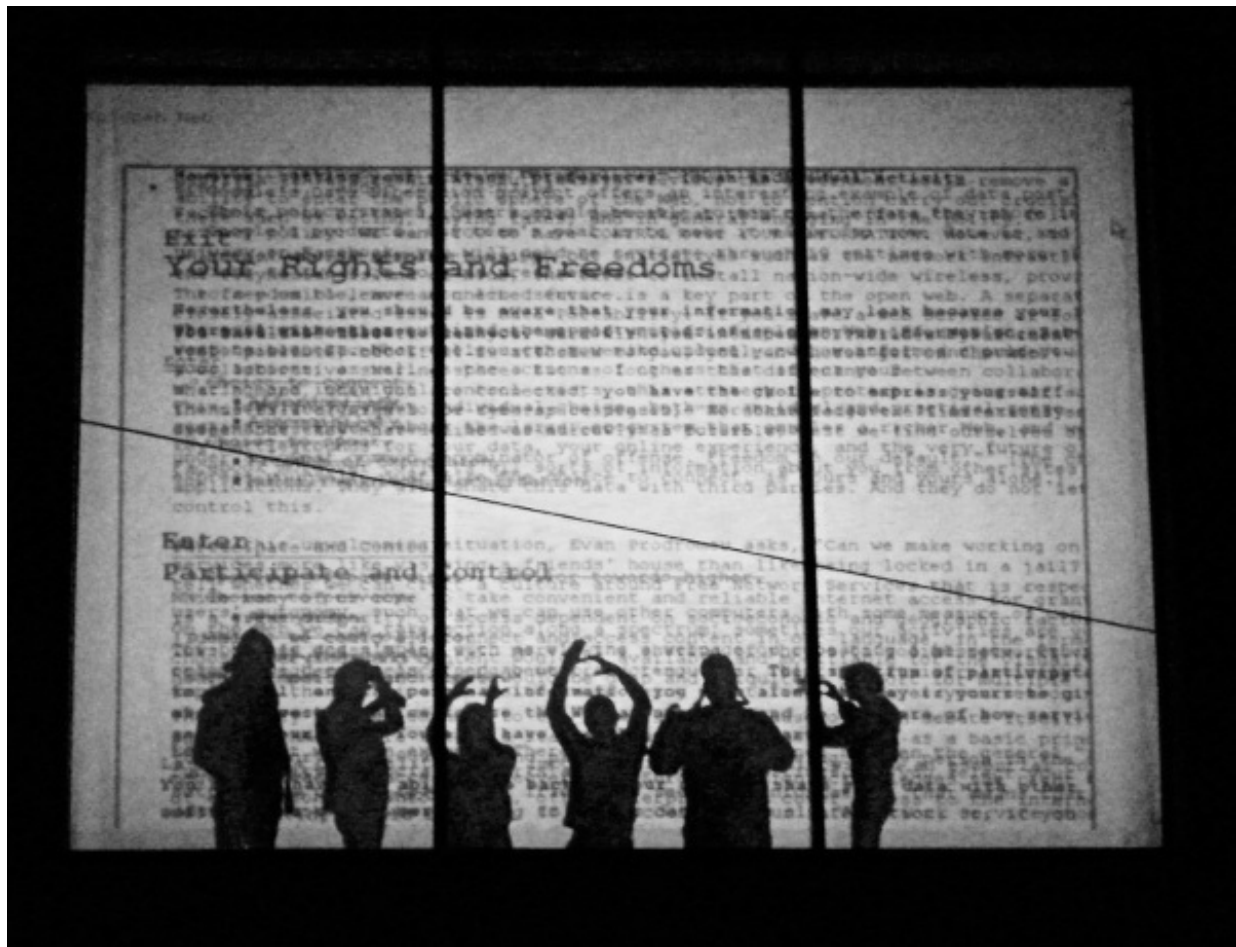
The next day we made a few smaller tweaks to the structure and started writing. We carried on throughout the day with only a few breaks, finishing around midnight. We also asked for some feedback from people we knew. Overnight, a few comments were left by these people, most notably Mike Linksvayer went through the entire text and left some very useful and worthwhile comments. Aleksandar Erkalovic ('Aco'—the lead developer of Booki) worked on integrating Status.net services into Booki so we could utilize microblogging. In the early evening Aco demonstrated basic microblogging functionality in Booki which was fantastic. Barry Threw also later demonstrated a visualization app that used the RSS feed of the developing book as its data source.



Later Mick Fuzz woke us all to the fact that we needed to get a move on. He was not convinced we had enough material at this point of the sprint and he gently provoked a more thorough review of where we were. This was an important point of clarity that motivated us to start early and start strong the following day.

The fourth day we were in the zone and wrote well. The discussions became fewer but denser and closer to the source of what we wanted to say. We had already learned a great deal from everyone involved and brought our own ideas more sharply into focus. We had a few more people drop in remotely. Luka Frelih from Slovenia and Tuukka Hastrup from Finland popped in throughout the day with helpful contributions.

The last day. We shifted rooms, moving to the CHB 'Panorama Hall', an amazing space with a double story projection screen window, and started writing. Fabricatorz pushed the visualization forward and it was projected on this screen creating a live visual manifestation of the Book Sprint (<http://wall.fabricatorz.com/>).



We cut five chapters down (about freedoms) into a much more succinct and healthy chapter. We also had a lengthy discussion about a beautiful essay Alejandra wrote (included as the 'Myth of Openess' in the appendix) and how it did not seem to fit into the rest of the book. We wanted to include it because also Alejandra had been sprinting all week and because the essay had some very inspirational elements. We decided to include it and Alejandra finished the essay. Although its tone and content didn't quite fit into the body of the rest of the book it is one of the best chapters so we believe it was a good decision! Then we just sprinted. 1900 16,000 words. Push the publish button, upload to lulu.com, distribute the epub, push to FLOSS Manuals—blog, email, spam. Done.



In the process of adding this book to Unglue.it in 2015, about 200 link references we fixed, invalid xhtml was repaired, and unused graphics were removed, slimming the file down by about half. The cover and css file were added. A MOBI file for use on Kindles was generated. Third party improvements like this are a benefit of using Creative Commons licensing.

## Improve this Book (even more)!

If you would like to improve this book, please register at FLOSS Manuals <http://booki.flossmanuals.net> and contribute to the book here:  
<http://booki.flossmanuals.net/an-open-web/edit/>

## Biographies

Below are the biographies of the sprint team that was onsite in Berlin all day all night:



**Christopher Adams** is a publishing professional and free culture advocate based in Beijing. He is a developer at Fabricatorz and works with Neoteny Labs. *Freesouls: captured and released* by Joi Ito was his first fully Creative Commons-licensed book project. Christopher is a co-founder of Sharism.org and a member of the Creative Commons Network. He graduated magna cum laude from Brown University with a degree in Cognitive Science. This is his first book sprint. Photo Joi Ito, CC-BY 2.0.

**Michelle Thorne** is the International Project Manager for Creative Commons. She organized the Free Culture Research Conference, and co-chaired Mozilla's Drumbeat Festival on Learning, Freedom, and the Web, to forge the future of education. She co-founded the Awesome Foundation Berlin, a lightweight association to fund small projects. As a believer in making and doing things, she helped "chaordinate" the DMY Maker Lab and other DIY projects in Berlin and around the world. She blogs at [thornet.wordpress.com](http://thornet.wordpress.com) and tweets as @thornet.







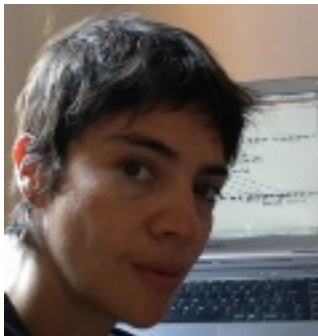
**Mick Fuzz** started life on the Internet in the 90's, helping organize and promote large messy European Free Festivals. Since then Mick walked a line between a fervent belief in the urgent necessity for autonomous, ecological, grassroots organizing and a vague post-industrial nihilism.

Both of these can probably be linked to living in Manchester, UK. He now spends his time doing Campaign/Community Media work (<http://clearerchannel.org>) and Community Gardening (<http://redbricks.org>).

**Adam Hyde** is the founder of FLOSS Manuals, project manager for Booki and Book Sprint facilitator. Adam has been responsible for pushing the Book Sprint methodology from a 3-6 month process to a 2-5 day process. Adam lives in Berlin and enjoys exploring the process of producing books from their birth as an idea to writing to design to binding and beyond.



Adam is currently very interested in pushing the Book Sprint methodology into new content areas and exploring its boundaries as much as possible. [adam@flossmanuals.net](mailto:adam@flossmanuals.net)



**Alejandra Perez Nuñez** is an independent artist and a member of a diverse group of practitioners and writers examining the electromagnetic environment in relation to post industrial economies. As a noise performer working with FLOSS tools she participates in projects dealing with radio, connected performance and social science fiction. She has

a degree in psychology and aesthetics and a M.A. in media design. She is currently based in Valparaiso, Chile.  
<http://elpueblodechina.org>



**Jon Phillips** (<http://rejon.org>) is a developer devoted to contributing to society and building meaningful relationships. He is notable for creating communities, growing successful media projects and leading in the Free Software, Open Source and Open Content movements. His artwork, projects and research are presented internationally including at Cantocore



Import/Export Guangzhou (2008), Beijing Central Academy of Fine Arts (2008), Nelson-Atkins Museum of Art (2008), Inter-Society for Electronic Arts Singapore (ISEA, 2008), Wikimania Taipei (2007), Pixelodeon Conference American Film Institute (LA, 2007), Berkeley Museum's Digital Culture 0101 Public Lecture (2006), SF MoMA (2004), University of Tokyo (2004), Korea Advanced Institute for Science and Technology (2004), UCLA Hammer Museum, USC AIM Festival IV (2003), and the Institute for Contemporary Art London (2002).



**Bassel Safadi** is a software developer and a 3D technical director with ten years of practice experience. He has extensive experience in open source development including Linux kernel and Apache server. He started web application development in 2000 and 3D visual effects in 2005. His latest work includes a 3D photo realistic reconstruction of the old city of palmyra (Syria), real time visualization, and developing a web programming framework (i.e., aikiframework). He graduated from Riga technical university (rtu) Faculty of Computer Science and Information Technology (Latvia), with a bachelor in computer science in 2001. He has also obtained a M.Sc.IT from the University of Damascus (Syria) in 2004.

On March 15, 2012, Bassel was detained in a wave of arrests in the Mazzeh district of Damascus. He is currently being held at Adra Prison in Damascus by the Syrian government.

Since his arrest, Bassel's valuable volunteer work, both in Syria and around the world, has been stopped. His absence has been painful for the communities that depend on him. In addition, his family, and his wife, have had their lives put on hold.

The United Nations Working Group on Arbitrary Detention has determined that Bassel's arrest and imprisonment were arbitrary and in violation of international law, and has asked for his immediate release.

For information on the campaign to free Bassel, visit [FreeBassel.org](http://FreeBassel.org)

Below are Bios of those that participated remotely and part-time onsite.



**Aleksandar Erkalovic** is the lead developer for Booki. He is also renown internationally in the new media arts and activist circles for the software he has developed. Used to work in Multimedia institute in Croatia, where he was the lead developer of a popular NGO web publishing system (TamTam), Aleksander has a broad spectrum of programming experience having worked on many projects from multi-player games, library software, financial applications, artistic projects, web site analysis applications, and building systems for managing domain registration. Unsurprisingly, he is fluent in many computer languages and technologies.

**Barry Threw** (<http://www.barrythrew.com>) works globally to develop culture. He consults institutions and artists interested in exploring digital media through immersion and interactive media experience; combining sound, video, network, and audience interactions. Currently he works to present surround cinema with Recombinant Media Labs, develop interactive media with Obscura Digital, and free culture projects with Fabricatorz.



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- 10 Things You Can Do Now & 5 Battlefield Tactics-Tech Tools for Activists by Hacktionlab Network, available under a Creative Commons Attribution 3.0 US license: <http://creativecommons.org/licenses/by/3.0/us>
- Seda Guerses donated (via email) a paragraph to the Rights and Freedoms chapter.
- John West, Jonathan Kemp , Matthew Fuller, Luka Frelih, helped with the development of 'The Myth of Openness'

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## The Web is Closed

### Modifications:

booki - 2011  
rejon - Jon Phillips 2011  
pueblo - alejandra maria perez nuñez 2011  
lf - Luka Frelih 2011  
delepaak - John West 2011  
mlinksva - Mike Linksvayer 2011  
mickfuzz - Mick Fuzz 2011  
christopheradams - Christopher Adams 2011  
bthrewww - B. Jason Threw 2011  
thornet - Michelle Thorne 2011

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## The Future is Open

### Modifications:

booki - 2011  
tuukka - Tuukka Hastrup 2011  
thornet - Michelle Thorne 2011  
adam - adam hyde 2011  
mickfuzz - Mick Fuzz 2011  
mlinksva - Mike Linksvayer 2011  
bthrewww - B. Jason Threw 2011  
christopheradams - Christopher Adams 2011

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## You are the Battleground; It's Your Battleground

### Modifications:

rejon - Jon Phillips 2011

thornet - Michelle Thorne 2011  
mlinksva - Mike Linksvayer 2011  
mickfuzz - Mick Fuzz 2011  
adam - adam hyde 2011  
bassel - Bassel Safadi 2011  
booki - 2011

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## Your Rights and Freedoms

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adam - adam hyde 2011  
thornet - Michelle Thorne 2011  
bassel - Bassel Safadi 2011  
booki - 2011

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## The Browser and the Web are Magic

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thornet - Michelle Thorne 2011  
booki - 2011  
jmswisher - Janet Swisher 2011

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## Content is Your Knowledge

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mlinksva - Mike Linksvayer 2011

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## Software is a Global Interface to Hardware

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rejon - Jon Phillips 2011  
thornet - Michelle Thorne 2011

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## Network Services Connect People

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lf - Luka Frelih 2011  
booki - 2011  
thornet - Michelle Thorne 2011

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## 10 Things You Can Do Now

### Modifications:

booki - 2011



mickfuzz - Mick Fuzz 2011  
adam - adam hyde 2011  
mlinksva - Mike Linksvayer 2011

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## The Open Web Stack

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mickfuzz - Mick Fuzz 2011  
rejon - Jon Phillips 2011  
booki - 2011

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## Standard but not Standards

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christopheradams - Christopher Adams 2011  
lf - Luka Frelih 2011  
thornet - Michelle Thorne 2011

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## Other People's Computers

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thornet - Michelle Thorne 2011

mlinksva - Mike Linksvayer 2010

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Tiers of the Cloud

Modifications:

christopheradams - Christopher Adams 2011

booki - 2011

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Edges of Autonomy

Modifications:

booki - 2011

mickfuzz - Mick Fuzz 2011

mlinksva - Mike Linksvayer 2011

adam - adam hyde 2011

thornet - Michelle Thorne 2011

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5 Battlefield Tactics

Modifications:

mickfuzz - Mick Fuzz 2011

booki - 2011

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The Web is Open?

Modifications:

christopheradams - Christopher Adams 2011

thornet - Michelle Thorne 2011

mickfuzz - Mick Fuzz 2011

adam - adam hyde 2011

booki - 2011

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The Myth of Openness

Modifications:

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lf - Luka Frelih 2011

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### Modifications:

adam - adam hyde 2011  
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rejon - Jon Phillips 2011  
mickfuzz - Mick Fuzz 2011

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## Colophon

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thornet - Michelle Thorne 2011  
booki - 2011

# Colophon

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**Software used:** Booki - <http://booki-dev.flossmanuals.net>

**More Software used:** Calibre - 2.40 <http://calibre-ebook.com/>

**Date sprinted:** Jan 17-21, 2011

**Date exported:** Jan 21, 2011

**Date fixed:** Oct 5, 2015

**CSS Design:** Laleh Torabi, <http://spookymountains.com>

**CSS License:** CC-0

**Font :** Fontin Sans,

<http://www.josbuivenga.demon.nl/fontinsans.html>

**CSS:**

```
body {  
  font-family: "fontin sans";  
  background: #fff;  
  color: #000;  
  font-size:12pt;  
}
```

```
.objavi-chapter{  
  color: #000;  
  display:none;  
}
```

```
a {  
  text-decoration:none;  
  color:#000;  
}
```

```
h1 .initial{
  color: #000;
  display:none;
}
```

```
ol#InsertNote_NoteList{
  page-break-before:always;
  font-size:8pt;
}
```

```
.objavi-subsection{
  display: block;
  page-break-before: always;
}
```

```
body .objavi-subsection:first-child{
  page-break-before: avoid;
}
```

```
.objavi-subsection .initial {
  color: #000;
  display:none;
}
```

```
.objavi-subsection-heading {
  font-size: 20pt;
  text-align: center;
  line-height: 300px;
  font-weight: normal;
}
```

```
h1 {  
  page-break-before: always;  
  background: white;  
  font-weight:normal;  
}
```

```
h2 {  
  margin-bottom:-10pt;  
  font-weight:normal;  
  font-size:15pt;  
}
```

```
h3 {  
  margin-bottom:-10pt;  
  font-weight:normal;  
  font-size:12pt;  
  font-style:italic;  
}
```

```
table {  
  float: none;  
}
```

```
h1.frontpage{  
  page-break-after:always;  
  margin-top:70%;  
  font-size: 20pt;  
  text-align: center;  
  page-break-before: avoid;  
  max-width: 700pt;  
  font-weight: normal;  
}
```

```
div.copyright{
  padding: 1em;
}
/* TOC *****/
table {
  float: none;
}
```

```
table.toc {
  font-size: 1.1em;
  width: 95%;
}
```

```
table.toc td{
  vertical-align:top
  padding-left: 0.5em;
}
```

```
td.chapter {
  padding: 0 0.5em;
  text-align: right;
}
```

```
table.toc td.pagenumber {
  text-align: right;
  vertical-align:bottom;
}
```

```
td.section {
    padding-top: 1.1em;
    font-weight: bold;
}
/* End TOC *****/
```

```
p, ul, ol {
    page-break-inside: avoid;
}
```

```
pre, code, tt {
}
```

```
pre {
    max-width: 700px;
    overflow: hidden;
}
```

```
img {
    max-width: 500px;
    height: auto;
}
```

```
.objavi-no-page-break {
    page-break-inside: avoid;
}
```

```
.unseen{
    z-index: -66;
    margin-left: -1000pt;
}
```



