

Chapter Two: The Roots of We Think

Imagine for a moment that a computer nerd, an academic, a hippy and a peasant get together for a joint project. The academic would bring a belief that knowledge developed through a process of sharing ideas with colleagues and testing them through peer review. The hippy would bring a deep scepticism about all sources of authority and a belief that an egalitarian community can organise itself. The peasant supply habits which villages have long depended upon: the shared use of common resources like forests and fisheries and a folk culture of stories and music which had been passed on by word of mouth. The geek would offer to realise their dreams by networking them together with computers, modems and routers. In a nutshell those are the roots of the web inflected culture we inhabit: a peculiar mixture of the academic, the hippy, the peasant and the geek. What binds them is a belief in the power of communities to share knowledge and other resources. Or to put it another way, the culture being created by the web is a potent mixture of post industrial networks, the anti industrial ideology of the counter culture and the revival of pre-industrial ideas of organisation that were marginalised in the 20th century. Our expanding opportunities to be creative together come from this cocktail of ingredients. Let's start with the geeks and Web 2.0.

The Geeks

If you ask Google to find you information about Arsenal football club then close to the top of the list is a website called Arseblog, which is produced by a sometimes drunk, highly opinionated and often very funny Irish fan who lives in Dublin. Arseblog is a perfect example of the small but cumulatively powerful ways in which the web is changing the way people share ideas and collaborate.

On January 13th 2007 Arsenal played Blackburn Rovers, a game Arsenal won 2 – 0 despite being reduced to ten men. *The Observer* the following day focussed on Thierry Henry's sublime 71st minute goal which secured his team's victory. Arsenal.com, the club's official site, evoked Roy of the Rovers:

“A performance brimming with class and character saw off Blackburn despite a red card for Gilberto after just 12 minutes at Ewood Park. Many teams would have buckled under those circumstances but Arsenal rolled up their sleeves, stayed true to their footballing principles and ran out worthy winners.”

This was Arseblog's take on proceedings:

“If you were walking down the street and you saw two buses about to explode and one bus contained a squadron of killer robots who were going to give everyone on earth the plague, after they shagged everyone's wife and smeared poo all over your freshly painted house, and the other bus contained the Blackburn Rovers football team and you had to save one, then there's no question: we'd all get the

black death and have stinky walls.”

We now inhabit a world in which many organisations Welcome the world in which many organisations will have at least one independent full time commentator like Arseblog agitating from the sidelines.

Arseblog does not just provide a daily outlet for its author’s obsession. His daily posts provoke lively discussion often attracting hundreds of contributions and supply a round up of the news in the online and offline editions of all the British newspapers, as well as from France and Spain where many Arsenal players come from. The site links to and often quotes from the other fifteen decent blogs about Arsenal, as well as dipping into blogs run by fans of other clubs. When Alisher Usmanov, an Uzbek oligarch, became an unwelcome investor in the club Arseblog was the best place to find out what was being said about him on the web, which was a lot more than in any newspaper.

Arseblog is a perfect example of how Web 2.0 is changing how people relate to information and media. The web provides many more niches for people to start a conversation on something about which they feel passionately. The old, industrial media, newspapers and television, do not have enough room to cater for all the minority interests of their readers and listeners. Newspapers and television have high capital costs – studios and print plants – and to cover these costs they have to reach a large audience. The web with its much lower costs allows a committed and knowledgeable enthusiast to connect to his fellow fans. Web 2.0 differs from earlier more static versions of the web, though, in that it encourages this community to have a conversation. The readers can talk back and among themselves. It is not one way traffic. Arseblog is more than a niche publishing venture, it’s the focal point for a conversation among a community of fans.

Tim Berners Lee probably was not anticipating Arseblog when he wrote the original software for the web at CERN, the European centre for nuclear physics research. Yet in some respects, it is a realisation of his original vision that the web could be a platform for collaboration, not just a new way to publish information. The now ubiquitous term Web 2.0, has spread like a rash since it was first popularised by Tim O’Reilly the technology commentator and publisher in 2005. By 2007 simply attaching the label 2.0 to something made it seem trendy rather like the @ sign in the mid 1990s. Yet very few people seem to be clear what Web 2.0 really is. To avid web users the term is synonymous with a set of tools – like wikis and blogs – which allow people to publish and share information, including photos and videos. Software programmers, meanwhile, focus on the underlying software which allows changes to appear on web pages without constantly refreshing them. Others use the 2.0 label to associate it with light-footed business models which are enabled by the web and which encourage and exploit user generated content. None of these definitions gets to the heart of the matter.

The real reason Web 2.0 is so exciting is that it seems to promise a solution to a huge problem that besets us: the unfathomably large quantities of information produced by a web in which millions of people are content creators not just receivers. In June 1993 there were 130 websites in the world. By mid 2007 there were 135m registered host names and 61m active sites. Information is pouring in from ever more sources as more people acquire the tools to become mini publishers. The Pew Institute Internet study in the US found that about 60% of teenagers using the Internet regarded themselves as content creators, using tools like blogs. In the UK a 2006 survey by Ofcom, the media regulator found that 70% of teenagers had created content online. That mass of content can make the Web lush and attractive, but also like an information that it is difficult to navigate.

Web 2.0 addresses this problem by capitalising on what happens when millions of people share the same virtual space: their capacity for shared intelligence. Its tools allow us to collaborate to navigate our way through the jungle. The most obvious example is Google's search system which works by treating a link from one website to another as a vote. If website A links to website B, that is like A voting for B. Websites which attract a lot of links also acquire more votes; so if website A itself has a lot of links to it then its vote for B is worth more than the vote of website C which has no links at all. When an Internet user starts a search, Google's algorithms count the number of votes people have made and make the votes a proxy for relevance and quality. When we ask Google to find something it comes back with its account of our collective choices embedded in the links we have made: it is a collective intelligence service. As such it is one early, no doubt imperfect, answer to the web's cacophony and chaos. There are many others and they share the same recipe: we will not make sense of the mass of information generated by the web on our own; our only hope is to employ our shared intelligence. The more people who contribute, the more we need to collaborate. The more people use the web to say "I think..." this, that and the other, the more we will need "We think..." to create some order, to sort the wheat from the chaff.

The history of blogging illustrates why we need We Think to make sense of the mass of content being created. Blogging is a highly individualistic activity. What people blog about reflects their myriad interests and vantage point. The range of bloggers means it is impossible to create a centralised system of editing and quality control as there is on a newspaper. So the best way to find out which blogs are good is to rely on the judgements of other web users who you trust.

The first blog was probably created in 1993 when the web browser company Mosaic set up a page on its website called "What's New" and included links to other sites. The writer Jorn Berger was the first to use the term 'Web log' in 1997 which turned into blogging in 1999 when Peter Merholz used the term 'wee blog' on his site, which quickly got shortened to blog. There were 23 weblogs in 1999; and the first do-it-yourself blogging tool – Pitas.com – was created by Andrew Smales in July of that year to make it easier to create a blog, which by then had

become an online diary. Blogger.com launched a month later, became the most popular blogging software available and was subsequently bought by Google for an undisclosed sum. Blogger.com allowed many more people to become writers and publishers.

As more blogs were created, so elements of We Think started to emerge. Sites that aggregated and collated globs were set up like Brigitte Eaton's Eatonweb which began with 50 blogs in early 1999; by 2007 it had 65,000. That year Technorati, the specialist blog search service, claimed to be tracking 1.6m updates a day to 75m blogs, an monitoring the 175,000 new blogs which were being created every day. Further sites like Slashdot and Digg, Plastic and Fark aggregate and sort blogs and user contributions using tools like collaborative filters, while Trackback services allow a blogger to keep track of other blogs that are linked to their own. The net result is that bloggers can swarm together and produce something like shared intelligence. In 2004 a self organised investigation by US bloggers forced a television news network to withdraw a story claiming that President George W Bush had received preferential treatment during his military service by showing the documents the network had relied upon were fakes. The website Slashdot, a meeting place for nerds and geeks, gets three million visitors a day, mainly people who take part in scores of self-moderated discussions. Oh My News in South Korea brings together 55,000 citizen journalists to provide a news service that rivals that of traditional, mainly conservative newspapers and television stations. YouTube and Flickr have enabled the widespread sharing of video and photographs and allow people to rate and sort content using tags and collaborative filters. So We Think is vital to allow us to make the most of the extraordinary opportunities now available to us to create and contribute content.

Further, more highly developed collaboration can be found on social networking sites like MySpace, Facebook and Bebo that make it easy for people to network around shared interests. Building on online bulletin boards created in the 1990s, and on services like Friends Reunited, which linked long lost school chums, the first social networking site, SixDegrees.com launched in 1997. If proof were needed that an entrepreneur can be too early as well as too late, SixDegrees.com ended in failure. The next significant site, Ryze.com launched five years later, fared better. Ryze focussed on business networks and attracted about 250,000 regular users. Friendster, which started as a dating service for 20 – 30 year olds in the Autumn of that year was the first to reach a significant audience, first in Silicon Valley and then in San Francisco and New York. Users created profile pages with a variety of personal information and used these to link to others in a format that would become standard. Friendster had 3.3m users by October 2003 but was subsequently overtaken by MySpace, with 78m members in 2007 and in Korea by Cyworld with 15m members. By late 2007 however the fastest growing networks was on Facebook, a site created by Harvard student Mark Zuckerberg to link to people in different residential houses on campus. There are many more niche social networks, which may be the wave of the future, like Gaia Online an

ecological network that claims 5m members who have generated 850m posts. Linked.In is business focussed: its 7.5m members mainly use it for professional networking. Playahead, targeted at Swedish teenagers has 1m members. By 2007 all the US presidential candidates had profiles on social networking sites. In the Philippines, Korea and Spain, the outcomes of general elections have been swung by groups organising themselves through online social networks allied to mobile phones. The most sophisticated of these – Nosamo, the online social support group for South Korea’s President Roh – has established a structure for debating policy and making decisions in online forums.

Social networking sites work when they foster a spirit of collaborative self governance: Friendster suffered a catastrophic loss of members through heavy handed top down management. Social networking sites do not produce collective intelligence. But they create some of the pre conditions for it by connecting large groups of people together with shared interests. Blogs and other tools allow people to contribute. Social networks allow them to connect. Still other tools are needed, however, for sustained creative collaboration to take off. The most famous is the wiki.

Wiki is Hawaiian for quick but it is also an acronym for “What I Know Is.” Wikis use a stripped down version of the web’s hypertext markup language which is why they were first known as the “quick-web”. The first wiki was created in March 1995 by Ward Cunningham a prolific programmer based on Portland, Oregon; by its tenth anniversary Cunningham’s wiki had 30,000 pages. A wiki allows anyone with access rights to log in and directly edit what is on the page. This process can be extremely open – as it is with Wikipedia – or confined to groups within an organisation. As well as Wikipedia and its offshoots there are numerous hotbed wiki services – known as wiki farms – such as SocialText, EditMe, OpenWiki and Swiki. Wikis allow people to cooperate to summarise a debate or amass a body of information and create documents with a collective author. They work best when many minds can focus on a shared task with some clear goals: to create an encyclopaedia, plan a meeting, update a list, assemble scientific data or write a report. They are less effective in reconciling competing opinions. Joe Kraus, co-founder of JotSpot, the wiki software company, says most wikis are best suited for small, well-defined groups of people collaborating on projects of limited duration.

The Web will work for us best when the power of mass collaboration orders the chaos of mass self expression. A string of tools – laptop computers, mobile phones with digital cameras, blogging software - has made it easier for people to contribute their views and ideas through blogs, photographs and videos. But on their own they just create a morass of information, which it is difficult to sort through and navigate. There is more “I Think..” than ever. That makes the web rich but messy. The best way through this plethora of material, to find the person and the information you are looking for is to rely on We Think: the power of

shared intelligence to sort wheat from chaff, whether through search engines, collaborative filters, wikis, or recommendations from trusted blogs and friends on social networks.

The web's tendency to promote sharing is not just a matter of necessity and some clever software. It has deeper roots in the academic and hippy culture that spawned the web in the 1960s. The best way to understand that story is to start with Doug Engelbart.

The digital communards

Nearly 40 years ago, Doug Engelbart stood before the cream of America's fast emerging computer industry gathered in Brooks Hall in San Francisco. On a giant screen he showed how they might: edit text directly on the screen of a computer using a keyboard and a mouse; insert links into a document leading to another related document; mix text with graphics and video; and connect one computer to another several miles away using a phone line. He argued that these developments would create the basis for a computer-to-computer network that would allow people to work on the same documents even when they were on separate continents. Engelbart was showing his audience the bare bones of what would become the Internet. It was December 9th, 1968.

To many in the hall, brought up with computers the size of rooms that used punch cards to complete complex calculations, it must have sounded crazy. Yet in ninety minutes, Engelbart showed them what would become the future of computing and communications and would come to underpin modern commerce and culture. As Fred Turner puts it in his history of the period:

“For the first time they could see a highly individualised highly interactive computing system built not around the crunching of numbers but around the circulation of information and the building of a workplace community.”

From then on, it was possible to see computers as the bearers of social and organisational revolution.

Engelbart had joined the Stanford Research Institute in Palo Alto California in 1957 and three years later wrote a memo for the US air force arguing that something akin to personal computers could be yolked together with “associative links” in documents, a precursor for the web's hypertext. By 1963 Engelbart had set up a research centre to study the augmentation of human intelligence - and between 1966 and 1968 he and his team created the Online System, dubbed NLS, which provided key ingredients for what became the Internet. By 1974 Engelbart's lab was riven by disputes and closed down. The computer industry did not realise his dream until cheap personal computers and the Internet combined in the mid 1990s. Before Engelbart, the computer was distrusted as a

dehumanising tool of corporate and bureaucratic control. His work re-imagined it as a symbol of personal liberation and freedom of expression, with the potential to flatten hierarchies, decentralise organisations and unleashing collective creativity.

The man recording Engelbart's presentation in December 1968 was Stewart Brand, a 29 year old itinerant artist and journalist. Brand's eclectic interests meant he had links with avant-garde artists in Manhattan who were exploring new art forms; with backwoods communes in New Mexico where people were exploring new ways of living; and with the counter culture of San Francisco, where technology, protest and drugs fused together. As technologists like Engelbart were imagining new ways for people to collaborate using computers, others were experimenting directly with communal living: by 1970 about 750,000 people were living in tens of thousands of recently established communes, in search of a simpler, more authentic way of life. Brand stood at the cross roads between bohemianism and new technology, the original digital communitarian.

Brand's most significant contribution was the creation in 1968 of the Whole Earth Catalogue, a mixture of news, tools, reading suggestions and mail order offers of everything from tantric art to cybernetics. The first rough and ready version of the Catalogue sold 1,000 copies. By the time it closed three years later it had sold 1.5m and Brand won a National Book Award for his efforts. The last copy had 448 pages, listing 1,072 interesting items. The Whole Earth Catalogue contained elements now recognisable in trendy Web 2.0 style businesses like eBay and Craigslist. Readers submitted much of the content and those who were first to recommend something interesting got their names listed in the magazine. Brand went on to help create the Whole Earth 'Electronic Link, an early internet bulletin board, which in turn spawned the Electronic Frontier Foundation, which campaigns for freedom of speech online, and *Wired* magazine, the bible of the New Economy. More than any other magazine *Wired* lionised technology entrepreneurs as the carriers of revolution.

By 1971, however, the workload on the Whole Earth Catalogue was taking its toll on Brand and so he decided to close down the magazine with a Demise Party, held on June 21, at the Palace of Fine Arts in the centre of San Francisco. The entertainment included were clowns, belly dancers, trampolinists, a band called Golden Toad who played Irish jigs and Tibetan temple music. Brand, dressed in a monk's black habit, brought with him \$20,000, the sum he had invested in starting the Catalogue. At 9.30pm he announced that anyone could take to the stage and suggest a scheme the money should be spent on that would keep the Catalogue's spirit alive. Brand wrote down suggestions from about 50 people on a blackboard. There was little agreement. Quite a bit of the money disappeared into the throng. But by the end of the night, when most of it had been gathered in, the man standing at the microphone was Fred Moore: he had \$14,905 in his hands. He turned out to be one of the patron saints of the collaborative web.

Fred Moore, the son of a military man, decided in his teens he was a pacifist. In 1959 when he arrived at Berkeley to study science, he looked no different from the average American teen: white socks, braces, tennis shoes and neatly turned up jeans. It had been compulsory at Berkeley since 1868 for male students to undertake military training. Moore set up a table during freshers' week soliciting support for a campaign against compulsory military training. He was summoned to the Dean's office and told exemptions would be given only on grounds of physical disability, previous military experience or foreign citizenship. On the morning of October 19, 1959 Moore sat down on the steps of Sproul Hall, the university's administration building, with a canvas mat, a pint of water and a petition and started a seven day fast against compulsory military training. Moore was the original student protestor. Thanks to Fred Moore, military training was made optional. In the 1960s, the decade of civil rights and the Vietnam War hundreds of thousands of students followed his lead and turned campuses into places of protest.

Moore was an odd person to have been left holding the money at the end of the party because he regarded money as evil. Yet the cash helped to keep him going as his interest shifted from protests to computers as a tool for social change. In the early 1970s, Moore got involved in the People's Computer Company and in 1975 when that started to split apart, he and a fellow volunteer Gordon French, launched an club for amateurs interested in the social impact of computers. Moore cycled around Palo Alto posting flyers which announced:

"Amateur Computer users Group, Homebrew Computer Club..you name it. Are you building your own computer...if so you might like to come to a gathering of people with like minded interests, exchange information, swap ideas, talk shop, help work on a project, whatever..."

The club's first meeting in French's garage, attracted 32 people, six of whom had built their own computers. The club embodied the hacker ethic: people making things for themselves and helping one another to do the same. Twenty-three high tech companies can trace their lineage to this club of do-it-yourself amateurs, among them Apple. Fred Moore died in a car crash in 1997 at the age of 55, largely unknown and yet he helped to shape modern America: the original student protestor and co-founder of the club that spawned much of the digital revolution we now live with.

After the Homebrew Computer Club's first few meetings Lee Felsenstein a computer engineer who had also been involved in student protests against the Vietnam War, its chair. Felsenstein wrote for an avant garde publication call *The Tribe* and in 1973 he led a project called Community Memory, which consisted of two computer terminals set up in a popular record shop and the university library, linked to a central computer. Community Memory was an early prototype for what Web 2.0 would become. The project described itself as :

“An actively open information system, enabling direct communication among its users with no centralised editing or control over the information exchanged. Such a system represents a precise antithesis to the dominant uses of electronic media which broadcast centrally-determined messages to mass passive audiences.”

Felsenstein had developed this convivial approach to the use of computers as a tool for everyday self expression and collaboration after reading the work of the radical philosopher, Ivan Illich, whose ideas provided the backdrop to much of the discussion among the high tech bohemians of San Francisco. People like Felsenstein, Moore and Brand turned to computers in part to realise Illich's ideas.

Illich spent his life transgressing boundaries and confounding conventional wisdom. Trained as a priest and rapidly promoted in the Catholic hierarchy, he became a fierce critic of the Vatican. For much of the 1970s he was a darling of the left, sharing common ground with Herbert Marcuse in his critique of a one-dimensional society run by large corporations. He was an environmentalist before the movement had a name. Yet Illich was also a libertarian who dismayed many of his left-wing fans with a withering attack on Castro's Cuba and enraged feminists with his defence of traditional gender roles.

Illich was born in Vienna in 1926, the son of a civil engineer and grew up in a comfortable middle class home. The Nazis expelled him from Austria in 1941 because of his mother's Jewish ancestry and, for the remainder of his life, he was a wandering intellectual living with few material possessions. In a golden period in the 1970s Illich set about dissecting the failings of modern institutions, the professionals who organise them and the systems they design in a series of short polemics: *Deschooling Society*, *Limits to Medicine*, *Disabling Professions* and *Tools for Conviviality*. He argued that as people become dependent on the expert knowledge of professionals so they lose faith in their own capacity to act. His solution was that people should spend less time as consumers, more as producers of their own well-being. And for that to be possible they would need more convivial, easy to use tools.

Illich's most optimistic book, *Tools for Conviviality*, which inspired Felsenstein and others in the hacker community in the 1960s, put the challenge this way:

“I believe a desirable future depends on our deliberately choosing a life of action over a life of consumption, on our engendering a lifestyle which will enable us to be spontaneous, independent, yet related to each other, rather than maintaining a lifestyle which only allows us to produce and consume.”

Convivial institutions work through conversation rather than instruction; co-creation between users and producers, learners and teachers, rather than delivery from professionals to clients; through mutual support among peers as much as by

means of professional service. In *Deschooling Society*, published in 1971, Illich provided some principles for how a more convivial education system might work. These included by providing access to resources for learning at any time, in airports, factories, offices, museums and libraries as well as in schools; enabling those who want to share knowledge to connect with those who want to learn from them through skills exchanges and directories of classes from which people could choose; and allowing those who want to propose an issue for discussion and learning to do so easily. In 1971, all that must have sounded mad. In the era of eBay and MySpace it sounds like conventional wisdom. The collective self-help of *We Think* is an attempt to realise of the Illich's ideals.

Illich was not the only philosopher who provided ideas to shape the way technologies might be used. E.F Schumacher, the advocate of *Small is Beautiful* argued for a society of "production by the masses not for the masses." Marshall McLuhan, in *Understanding The Media* extolled a pre-bureaucratic humanism based on a retribalisation of society. In 1968 Roland Barthes, the French literary critic, announced that only the "death of the author" as the sole arbiter of the meaning of a work of art would clear the way for the "birth of the reader" as a participant, actively engaged in making sense of a text. Guy Debord, the founder of the anarchist Situationist International, turned that idea into a manifesto. Debord denounced modern society as no more than a 'society of spectacle':

"The spectacle is the opposite of dialogue. It is the sun that never sets on the empire on modern passivity."

The avant-garde imagined that spectatorship would give way to participation permitting people to become more social and collaborative, egalitarian and engaged with one another, to borrow and share ideas.

Our ever so trendy Web 2.0 culture, embraced by politicians of left and right, by companies and educators, is the bastard offspring of this melange of ideas from the 1960's counter culture. Mass participation, Debord's anti-dote to the society of the spectacle has turned into YouTube and social networking sites on which we can all make a spectacle of ourselves. The libertarian, voluntaristic communities which briefly flowered in their thousands in California and New Mexico find their modern counterparts in the open source communities listed on SourceForge and the virtual homesteaders of Second Life, as they create their own rules and currencies. Collage and pastiche, recombining ingredients provided by others, was central not just to Situationism but to futurism, cubism, Dadaism and pop art. The rip, mix, burn generation of Apple iPods, hip hop music and YouTube videos are Debord's heirs. The *We Think* generation are living out the hopes of the 1960s radicals for the creation of a harmonious, post scarcity society that is free, decentralised and yet apparently egalitarian, a world in which as Fred Turner put it

“each individual could act in his or her own interest and at the same time produce a unified social sphere, in which we were ‘all one’ .”

As an offspring of the 1960s the web also means it carries many of the congenital weaknesses that afflicted the counter culture. The communes collapsed because they could not govern and work efficiently. They claimed to be egalitarian and open and yet they were mostly for the white, college educated middle classes. Women were largely confined to domestic tasks. Even more significantly the Homebrew Computer Club bequeathed to us an argument which has since become the longest running dispute of modern times. That dispute pitted the ethics of mild mannered Fred Moore against those of Bill Gates, the economics of sharing against the economics of private ownership.

At the Homebrew Computer Club’s third meeting someone “borrowed” a copy of a software programme called Altair BASIC, designed to run the first personal computer, the Altair. The programme, on a long roll of paper tape, was the first made by a tiny Albuquerque company called Micro Soft, created by William Gates and Paul Allen. The tape fell into the hands of Dan Sokol, a semi-conductor engineer who had access to a high-speed copying machine. BASIC software was freely circulating in academia, and Sokol could not see why personal computer users were being asked to stump up \$500 for a barely modified version. At the club’s next meeting he handed out 70 copies of the Micro Soft programme. Gates was incensed that his tiny company being threatened by the amateurs. In an infamous letter to the hobbyists Gates complained:

“As the majority of hobbyists must be aware, most of you steal software. Hardware must be paid for, but software is something to share. Who cares if the people who worked on it get paid?”

That started the digital civil war over how information should be owned and paid for. What started as a row in a tiny club of enthusiasts in Palo Alto has spread into hundreds of millions of living rooms, bedrooms and increasingly courtrooms around the world and involves not just software but film, music and virtually every other kind of information as well. Fred Moore’s cooperative ethic – the more you share the more value gets created - ran straight into Bill Gates’s hard headed economics – you profit from what you own. When Microsoft launched its Vista operating system in 2007 with security features to allow the company to keep tabs on how it was used, it was firing the latest salvo in this civil war. Like most civil wars this one is messy and complex, because people seem to swap sides. Big companies like IBM and Hewlett Packard make money from implementing the open source software programmes that they help to create. Google earns vast sums by milking the web’s collective intelligence: never has so much money been made by so few from the selfless, cooperative activities of so many.

The web started life in odd circumstances for an innovation that will change the world. It did not come out of commerce or a research and development laboratory but can instead it trace its roots back to a mixture of academics, visionaries, hackers and hippies who all believed in and often worked in non-market communities of equals, in which designers of computers and software, were also the users. The pioneers of open source programming and online communities in the 1960s and 1970s talked the language of fellowship and communion. The web has never shaken off these communal and collaborative roots which is why money making companies have found it hard to bend it to their commercial purposes. At best they cohabit, often uneasily. The nature of that cohabitation between commerce and community, what we own and what we share, will shape much of our the future in science, culture, politics and economy life.

The developing world could be far more adept at this cohabitation than the rich developed world. That is because contemporary web culture is reviving older, pre-industrial forms of organisation that were sidelined in the developed world by industrialisation. In much of the developing world these pre-industrial ideas are alive and well. What will happen when the networks created by the geeks combine with the traditions and habits of millions of people who were until recently rural peasants ?

Radically old ideas

Ivan Illich was ahead of his time by being a long way behind the times. His critique of industrialisation harked back to pre-industrial, more communal, and less hierarchical forms of organisation, in which local, low technology production were best equipped to meet demand. The web is reviving older ways of organising that were cast to the margins during the industrial era. The new turns out to be a lot older than we thought.

We Think revives the idea that sharing and mutuality can be as effective a base for productive activity as private ownership. It draws on the tradition long established in villages and communities to use a common pools of resources. A commons is anything like the streets on which we drive, the skies through which planes fly, public parks and the beaches on which we relax. A commons belongs to a community – sometimes a tightly defined community, sometimes everyone – and is usually governed by common consent of the people using it, whether they be Spanish farmers watering their oranges from shared irrigation systems or Turkish fishermen taking turns over which areas they can fish. A day on a decent public beach exemplifies the commons in action. Beaches are ordered without being controlled. No one is in charge. A public beach is a model civic space: tolerant, playful, self-regulating, democratic in spirit. As the day unfolds everyone takes their spot, adjusting to where everyone else has pitched their towel. There are no zoning regulations, fences or white lines to tell you where to go (admittedly this is not true of some beaches in Spain, France and Italy.) Order

emerges as each family joins the throng. On popular beaches people spend all day in close proximity but generally remain civil and considerate. Precisely because there is no one in control - other than sometimes lifeguards looking after safety - people take it upon themselves to self-regulate. Beaches are generally egalitarian in spirit because barriers to entry are quite low. Normal rules do not apply because there is no private property. A public beach is a commons for pleasure. Many public spaces - festivals and carnivals, parks and libraries - thrive on this ethic of mass self-regulation. The web is bringing the spirit of the beach into the sharing of ideas and information.

The beach also explains why the enclosure of the cultural commons of Web 2.0 would be such a bad idea. Imagine finding your favourite public beach had been bought by Microsoft. You would only get onto the beach by buying Microsoft towels and windbreaks. You would be told where you could lay down your towel according to how much you had paid. If you wanted to surf it might cost you more to upgrade. Every two years you would find your towel was no longer compatible with the beach's sand. You could not modify your windbreak yourself, because key aspects of the design would be kept under lock and key.

The frequent criticism of the commons as a system of organisation is that they often fail however because individuals with unlimited access to a shared resource will over use it, taking too much cod from a common fishery or over-grazing land. Something that is everyone's property fast becomes no one's property and so becomes abused. As soon as that possibility rears its head everyone using the commons sees no reason to restrain their use. It is argued that the only ways to avoid this "tragedy of the commons" are to fence up the commons into pieces of private property that people look after or to place the whole thing into state ownership. This "tragedy of the commons" argument is currently being used by media, music and film companies to fence round the cultural commons of the web. Open access leads to abuses, such as rampant file sharing and the stealing of software. This is the same argument that Bill Gates used in his attack on the Homebrew Computer Club: if people are not going to be paid for their music or software then they will stop producing it. Everyone will be worse off. Yet the commons do not always need to be tragic. Elinor Ostrom, a professor of political science at Indiana University has researched commons that are up to 1,000 years old, from Swiss villages that share summer grazing to rice paddy irrigation systems in the Philippines. Ostrom found that the commons can work when they are self-governing, when participants can easily monitor one another's behaviour and when sanctions for breaking rules are effective because people want to be part of a community in which reputations matter. She suggests a commons works best with a bounded community, but even large and open communities can sustain a commons if they are broken down into smaller platoons or guilds. A commonly owned irrigation system can be the shared platform for a mass of orange farmers. Commerce has often been built on shared foundations.

That is especially so when the commons are not finite resources like woods and land but knowledge and ideas. Bodies of ancient music are part of a cultural commons. Einstein's theory of relativity is part of the commons, along with Watson and Crick's description of the double helix of DNA. Language is a kind of commons. Dictionary publishers, broadcasters and teachers may attempt to claim authority over language but their right to do so is frequently contested. A language is not owned by anyone. The English language, which developed by absorbing so many foreign influences, now provides a global common resource for business, science and culture. English has an estimated 380 million core speakers. More than 300 million have English as a second or third language. English is thought to be the lingua franca of upwards of a billion people – and rising. A key feature of the English language has been the ease with which it has borrowed, stolen and adapted words from other languages. By the end of the Sixteenth Century, it had incorporated words from around fifty different languages. The idea of a private language spoken only by a single individual is an absurdity. Language lives in conversation between people and its structure is held in place by public rules. And a language grows with use rather than wearing it out. Sheep grazing the same field will soon eat up the grass. On a cultural commons, like a language, encyclopaedia or game, the grazing sheep excrete more grass the more they eat.

Organisations that mobilise peer to peer ways of working are the height of fashion. Social networking sites like Facebook rely on people making connections with one another through lateral networks of friends and contacts. Most open source projects work only because there is rigorous peer review of software code produced. Yet although the scale of the recent explosion of peer to peer activity is new, the idea itself dates from the late 16th century.

Until the mid 16th century, most science was conducted under conditions of secrecy. Science was likened to alchemy and sorcery. By the second half of the 17th century learned scientific societies were flourishing across Europe, embodying the practices of the modern web – the, open disclosure of, and debate about ideas. According to Paul David, a professor of economics at Stanford University the system of peer review has noble roots. Kings, and princes surrounded themselves with poets and musicians, architects and scientists, to provide entertainment but also to project their prestige. Yet science posed a tricky problem. As science became more theoretical and mathematical, patrons found it harder to judge for themselves how good their scientists were. Communities of scientists emerged, David argues, to allow scientists to establish their credentials. The idea that your peers are the best judge of how good you are, especially at something difficult to measure such as intellectual work, started with Henry Oldenberg's Royal Society, the founded in 1660. In the following decades scores of scientific and learned societies were created across Europe, in order that scientists could earn a reputation from their peers.

A social innovation created in pre-capitalist Europe in the 16th and 17th century for an elite of nobles and scientists is becoming a mass way of working thanks to the web. When people say there is something oddly noble about the way open source programmers give away the fruits of their labour without being paid, they are closer to the truth than they might think. Gaining recognition from your colleagues through peer review stems from an aristocratic tradition of science in which money really did not matter.

Common platforms and peer to peer working allows innovation to emerge from a community. Communities of innovation are all the rage on the web but once again, they are very old. Community and conversation is the root of creativity. Ideas live in within communities as much as they do in the heads of individuals as shown for example in the 18th century Cornish tin mining industry just before the industrial revolution.

Cornwall was the Silicon Valley of its day, home to the most impressive innovations in industrial technology. Cornish tin and copper mines posed the trickiest problems for engineers and so demanded the greatest ingenuity. The deeper the mines went the more prone to flooding they became. In 1769 the inventor James Watt came up with a engine design which incorporated a separate condenser that cut the amount of coal needed by two thirds. This transformed the economics of mining. The Watt engine, marketed with his business partner Mathew Boulton, quickly spread through Cornish mines but the mine owners became disenchanted. Boulton and Watt charged mine owners a royalty fee equivalent to a third of the amount of money that a mine saved each year after installing their engine, the design of which was protected by a very broad patent enforced ferociously. Mine owners soon started to complain. The patent meant they could not improve on the design through their own efforts. Boulton and Watt had no incentive to make further improvements because they were making so much money. In 1790 Cornish mine owners revolted. Today they would be denounced as software pirates: they started to install unauthorised versions of the engine. Boulton and Watt took them to court and got their patent's life-span extended to 1800. Innovation ground to a halt. Boulton and Watt never made another sale in Cornwall. In 1811, a group of mine captains – lead by Joel Lean a respected local engineer – started a journal to share new ideas in the spirit of collaboration and open competition that often marks creative communities. *Lean's Engine Reporter* was published each month for almost a century, reporting on all aspects of engine design. A year after the *Reporter* started, Richard Trevithick and Arthur Woolf introduced a new design that fast became the industry's standard operating system. Woolf and Trevithick did not patent their design and freely allowed other mines to copy from the original erected at the Wheal Prosper mine. They made their money installing, adapting and improving engines. The tightly knit community of Cornish engineers were soon swapping ideas through the *Lean Reporter* for how to improve on the basic idea.

During Boulton and Watt's ascendancy, following an initial leap, innovation stalled. The open and collaborative period that followed produced near continuous innovation for more than thirty years, as a host of practitioner-engineers improved upon Woolf and Trevithick's design. None of this invention was patented. By 1845, engines in Cornish mines were more than three times more efficient than the Boulton and Watt engine of 1800. They became known as "Cornish" engines in recognition of the cumulative, collaborative and collective nature of the innovation. During this period Cornwall had the fastest rate of steam engine innovation in the world and the lowest rate of patenting in Great Britain.

The Cornish engine story prefigures today's contest between Microsoft and open source software: sharing can be a highly effective basis for commercial endeavour. In Cornwall rival firms released to one another ideas that brought significant cost reductions to all. They did so because the mine owners had a strong shared interest and independent mine engineers were keen to make known what they had achieved. The Cornish tin mines ran on open source software centuries before the computer. The web is reviving this communal approach to innovation, using the web as its tool rather than *Lean's Engine Reporter*.

The social approach to creativity the web is encouraging is reviving one of the oldest forms of creativity – folk – by empowering a mass of amateurs to create and share content. In 2006 and 2007 do-it-yourself, user generated content became hugely fashionable. Many of the advertisements shown during the 2007 Superbowl were made or inspired by amateurs. Lasse Gjertsen a twenty two year old from Larvik in Norway became an international star by making intricately cut home videos that got an audience of 2m on YouTube. In 2007 Time magazine anointed us all as the person of the year to mark this surge in collaborative, everyday creativity. Yet once again this is simply bringing back to life an older, folk culture, which was extinguished by the mass produced, industrial culture of the record and film industry of the 20th century.

Over the next few years we are likely to witness the growth of an enormous, collaborative, digitally enabled vernacular culture that will be both more democratic and creative than what went before but also more raucous and out of control. Many of the themes of folk culture recur in discussions about the growth of social networking, blogging and YouTube. Folk has always rested on a cult of authenticity: the self taught singer song writer armed with just an acoustic guitar; the self taught artist making a sculpture from driftwood. Now we have legions of self-taught amateur musicians, armed with Garage Band, posted their work on MySpace, their videos on YouTube. Nothing is fresher in our manufactured and commercialised culture than raw, untutored talent, untouched by training and the lure of commerce.

Folk has always been art for people outside and at odds with the mainstream culture and commerce. Folk artists are not in it for the fame, but for the pleasure

of producing good art, using an everyday style rather than the formal, self-conscious and fancy styles taught in art and music colleges. By making tools of cultural production ever more widely available, Web 2.0 has unleashed new waves of authentic talent – pensioners on YouTube, bloggers like Salam Pax or Internet performers like Ze Frank and Ask a Ninja who can find audiences without succumbing to the cookie cutting marketing of the mainstream culture industry. The wave of digitally enabled folk culture is presented as an antidote to the plastic, celebrity obsessed and contrived culture of mainstream television which is heavy reliance on reality tv formats. The more shaky, grainy and real video looks the more real it must be; professional advertisers and agencies crave the raw and fresh.

Folk rests on a self-styled communal creative culture: songs and tunes, borrowed and passed on for generations. Claims to sole authorship or celebrity are frowned upon. The point is to rework material created by others, to pay homage to those who went before. Authorship is lost in the mists of collective creativity. Folk artists encourage others to borrow from them rather than protecting their rights as authors. As Woody Guthrie's copyright notice put it:

“This song is Copyrighted in U.S., under Seal of Copyright 154085, for a period of 28 years, and anybody caught singin it without our permission, will be mighty good friends of ourn, cause we don't give a dern. Publish it. Write it. Sing it. Swing to it. Yodel it. We wrote it, that's all we wanted to do.”

Guthrie's copyright notice could be a rallying cry for the file sharing We Think generation.

For Dorothy Noyes, a professor at Michigan University and the leading folklorist in the US, we have to go a long way back to understand the future. Noyes points out that epic poems, such as the *Iliad* and *Odyssey*, developed over many years through the contributions of probably several hundred poets and performers all over the Greek world. The *Iliad* and *Odyssey* had a core code, which many people worked on, specialising in particular scenes or episodes, to improve it. There was no master text until much later. The Homer to whom the poems are attributed is, as Noyes notes:

“the name we give to what was a collective process of creativity involving many people over a long period. The founding myths of our culture set out in classical drama, drawn upon time and again by subsequent writers, were not created by a single author but a highly collaborative, social process of creativity.”

Before the mass-produced book – that is for most of human history – most culture and art was folk. In many developing world societies it still is. In Ghana, for example, designs for traditional clothes are owned by communities that include craftsmen living and dead, royal patrons and entire communities. The same is true

for Aboriginal stories. The popular culture of We Think is the mutant offspring of the marriage of folk culture and digital technology.

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We Think culture is a hybrid of these odd ingredients: the geek, the academic, the hippy and the peasant. Media and culture used to be an industrial business dependent upon large printing presses and expensive television studios, making products for the mass audiences needed to sustain their costly operations. The spread of the web means more people than ever can have their say, post their comment, make a video, show a picture, write a song. The more I Think there is, the more content and information we create, the more we will need We Think to sort it. The anti industrial ideas of the 1960s counter culture, bringing together Doug Englebart's vision of distributed and decentralised technologies with Fred Moore's ethic of sharing underpin hopes that we might still be able to create egalitarian, self governing communities. Finally, We Think revives pre-industrial forms of organisation: the commons, peer to peer working, community innovation and folk creativity. We Think is so potent because it mixes the brand new – the blog and the wiki - with the very old. The achievement will be to turn these basic ingredients into a working model, a social form of creativity, in which many contributors have the capacity and tools to think, act and experiment together, which is both informal and structured. It is not enough for people merely to participate, to have their say; they have to find ways to collaborate and to build on what others are doing, so that whatever they are engaged in grows through accretion, mutual criticism, support and imitation. When people do pull off this trick, which is by no means always, they can create complex, valuable, reliable products: encyclopaedias, software programmes, computer games, news reports, scientific theories, epic poems. How they do it and when they do it is the subject of the next chapter.