



Seminar: Term1 2008 Simon Bridge (cc) by-sa

A few weeks ago I was wondering what on earth I was going to actually say here. And I came across a speech by Mark Shuttleworth, financier, ceo of the Ubuntu foundation and general net billionaire. I was struck by a buzz-word, buzz-phrase, he used: "digital freedom".

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He felt, and I am inclined to agree, that the term "digital freedom" captures the spirit of a revolution that is currently sweeping the technology world. This is actually the third or fourth wave of innovation in the computing revolution. It started back in the 80's with personal computers, then everything went graphical, then we had the internet which suddenly opened doors and expanded horizons. Now we have this participation-oriented era where the internet is bringing people together and allowing them to collaborate, allowing them to create wonderful and amazing things.

A key part of that collaboration is the principle of sharing, of standing on the shoulders of giants, being able to re-use, leverage, remix, the work of others. And we see that principle coming through in the free software movement in the form of the GPL and other free software licenses which essentially allow you to take other people's software, remix that, stand on their shoulders and reach for the stars.

Tentatively we are seeing the same spirit being applied to content. Where we have free content, open content, where you can take someones creative work and remix that to create innovative things.

We are at a threshold. The conflicts we are seeing around copyright, piracy, privacy, intellectual property, are all part of our society renegotiating the way we, as a people, think about property and ideas. This renegotiation is forced on us by the way information is now effortlessly moved... and everything that matters in our 21st century world, money, inventions, what have you, boils down to information.

I'm not here to talk about this. I'm here to talk about the central player in this drama: free software.

Software is what stops computers (banks, phones, cars, governments) from being a kind of elaborate sculpture. Ultimately, software an idea that gets written down. Freedom for software generalises into freedom for ideas, which is why the concept is important, central.

Software parametrises what we can do with our computers, how we engage them. Who controls the software, controls what we can do with these computers, how we do it. We hope that our free market forces, supply and demand, economies of scale, will operate so that we, as consumers, get to say how we do things.

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In this sort of thing, there is a certain amount of Microsoft bashing. I'm not here to do that. Instead I want to talk about what Microsoft does well.

Some months ago I was in a position where I needed some photos printed in a hurry and, wouldn't you know it, my printer died. No problem, I move the images to a usb keydrive and head off to the internet cafe. Plug the drive in, first time I've used XP since it was invented: I have heard "stories". XP produces a popup announcing that there are photos on the device... no kidding... what would I like to do, and some options.

Well, at first I'm annoyed: what's this popup getting in my way. But then I thought: hold on,

maybe it's useful. I told it I wanted to print them, it asks what layout I'd like and I select four to a page. The default printer was black and white, so I had to print again. But the whole process took less than 5 mins.

The program had altered the dimensions of the images to fit the layout, so some of the photos were a bit distorted. Not too distorted for what I wanted and I was in a hurry. Maybe there was a setting buried in a menu someplace to fix it - didn't really have time to sort it out. It was good enough and this is the point I'm trying to make.

Microsoft is very good at being "good enough".

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And this is what the market does. You have a product, you have to sell it. You want to maximise your profits and minimise your costs. If your product isn't good enough it doesn't sell - period. Money spent developing it is wasted. If you put a lot of effort (and money) into developing your product, you risk spending more money than you can recover in sales. If it's too good, you won't make a profit either. The smart move is to strike a balance. You must produce a product that is just good enough to sell well, but not so good that it cuts into profits.

Besides, you can sell patches and service-packs later.

This means you care deeply about rip-off competition. Someone producing a copy of your product has not put in the investment you have in development. No money lost exploring blind alleys. No excess programming time. So they can afford to undercut you on price and still realise a bigger margin. So you protect your designs with patents and copyright.

As a result, you care more about piracy than you care about innovation. You only need a design that is good enough. But you cannot afford these pirates taking chunks out of your market, and that goes double if you're an industry leader.

This affects the kind of world we have. A computer is an "anything machine". And yet, this market-forces/proprietary approach dictates that there are some things we cannot be allowed to do - in order to protect market share. Computer owners must accept highly restrictive contracts governing what they can do with their computers, in order to use them at all. It gets to the point where we think of what is possible in terms of what a computer is allowed to do.

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There's another kind of industry: the fashion industry. Did you know that you cannot copyright a dress design? Fashion designers cannot protect their designs - so what they copyright is their label.

As a result, in fashion, you innovate or die. You've got to, to stay ahead of the knock-offs. Fashion houses also care intensely about the quality of their products - the finished clothing. Their label is the only thing differentiating their product, it says that the attached garment is better made.

Not only are the designs unprotected, they are freely available. You can usually buy the patterns from dress shops. Anyone can study the patterns, learn from them, alter them. Altering clothes is a business. And you can onsell your altered patterns and your altered clothes too.

With free software - we are doing - the same thing.

I started out by talking about a revolution. Really, there's nothing new here. This is a very old, established, business model, being applied to the newest industry sector. Using 21st century tools. The market-force, proprietary, models that we grew up with through the 80's were built on an assumption of greed. Sharing, is making a comeback.

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Free software provides the same freedoms that dressmakers enjoy.

The software equivalent to the dress pattern is the source code. The source code is the written form of a program. It uses a specialised language to describe what the computer is supposed to do, and how it is supposed to go about it, in such a way that everyone can understand it except for the computer.

The computer uses an special program called a compiler to translate the source code into binary. Binary is a set of exact, step-by-step instructions that the computer can understand but nobody else.

So, if you don't want anybody to understand how your program works, you keep the source code a secret and sell the binary. Nobody is allowed to look at the source code.

With free software, anybody can examine the source code, learn from it, alter it, and onsell or otherwise distribute the results. The clever part is the way free software has used, leveraged, the 80's culture of greed to guarantee these freedoms. It uses copyright.

All free software is copyright. Then, the rights of dressmakers are granted to you. But you are not allowed to act in a way that prevents others from having the same rights you just had. The legalese gets specific.

The result is an industry that is diverse and efficient.

Every time you darn a sock, take up the bottom of your jeans, or sew back a button, you are working in the clothing industry. Technically, the clothing industry has millions of people in it. Same with free software.

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If you produce free software products, you concentrate on quality and innovation. For the same reasons. If you stand still, your competitors will overtake you. If you make a product that is good enough, your competitor will innovate on that and produce something that is a bit better than good enough.

You can use your competitors products to build something more, standing on their shoulders. But there isn't really any point just copying them, they are ahead of you, you have to innovate on their product so you can compete. And they get to use your innovation.

The result is a wealth of high quality, free software solutions. The owner is back in control, because the owner contributes to the process. The free software "market" is a crucible for innovation. And much of the result is available free of charge - much the same way you don't have to pay for a good recipe.

Probably the best published result of this crucible is the GNU/Linux phenomenon.

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GNU and Linux together make a complete, free software, operating system. This is a remarkable achievement. Something previously thought economically impossible. Certainly, the old greed models cannot explain it. It's existence is a rigid middle finger to everyone else. That's its biggest attraction. That it also kicks ass is just a bonus!

Linux is a single program, a very important program. So important, in fact, that the name "linux" has come to be associated with the entire wealth of free and not so free software that usually comes with it.

Linux was the brainchild of Linus Torvalds. The story is worth a seminar all by itself, look it up. Linus is now a wealthy man. He gave away his best work, he's wealthy. In fact, had he not

given it away, he would still be poor.

He produced the central core of the operating system, called the kernel. The rest was produced by the Free Software Foundation as the GNU project. This project was started by Richard Stallman, another interesting story. Also worth a look.

GNU/Linux has been adopted by a raft of organisations, both amateur and professional. These have all contributed more innovations to make the linux phenomenon what it is today. The result is a great number of brand-name GNU/Linux "distributions". As a group, these distributions represent the first serious competition for Microsoft Corp in forty years.

By serious, I mean Microsoft takes it seriously.

How serious is this?

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Steve says a lot of things. So lets take a closer look.

Linux "market share" is typically ranked as comparable to Macintosh. Usually between 2 and three percent. It's difficult to tell though. For eg. Traditional market share estimates are based on sales. Google have over 6000 linux servers (not counting workstations) but they only needed to actually buy one CD. There is no "per seat" restriction on linux. Laptop Gnu/Linux users typically remove pre-existing windows as well. See the problem?

Even estimates which take this into account place Linux as about on par with the Mac. But Microsoft is taking the threat of linux, and free software, far more seriously.

Microsoft train their partners to market against linux, and have an entire website dedicated to rubbishing it. Something they've never done with Apple. They advertise this website aggressively. Microsoft executives repeatedly rubbish linux in public. They back actions that could damage supporters of Free software.

Why?

Microsoft regular strategy doesn't work - they cannot buy linux. It's not proprietary, they cannot own it. The developer base is in the thousands for major projects so they cannot out-innovate it. It sticks to international standards and ethical practises, so they don't run afoul of different nation's anti-trust laws, and the embrace-extend-extinguish approach just means that Windows gets left out in the cold.

Microsoft are an industry leader - they've been doing this a while now. It is fair to say that they know their market. So if Microsoft thinks Linux is more serious as a threat than the Mac, I'm going to want to know more about this.

This is all very well, but what does that mean to us. Ordinary computer users.

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Microsoft Windows is, right now, the most popular operating system in the world. Hands down. Simply put, everyone is doing it. We'd be foolish, just for the sake of interoperability, to do differently.

My old primary school teacher used to say, "And if everyone jumped off a cliff, would it be smart for you to do that too?" Which is missing the point: Windows is not popular.

If you are popular, people *like* you. How many people *like* Windows? Surely most of us approach our PC with a kind of subliminal dread. Once our task is done, we're glad to escape. If the phrase "dread machine" has meaning for you, Windows is not popular with you.

Windows is common. Like the flu. There's a lot of it going around.

I have been responsible for orienting university students and others to a linux-based working environment for a wee while now. There are parts of UA which are forcing students to use linux as part of their courses. The students universally don't want to. They grumble. It's always the same: my windows is good enough, why can't the university work like everybody else?

It takes about ten minutes guided use of linux to change their minds. They leave smiling, they've had a good time. They are looking forward to using the machines again. Some won't leave. Some ask me where they can get it for themselves.

But don't take my word for it. I have four laptops here with linux running. You'll all have a chance to play soon enough.

You see: GNU/Linux is popular. It's just not very common.

I just want stuff that works. Windows is good enough for what I want.

I've said before, Windows is terribly good at being good enough. Your computer is expensive, Windows is even more expensive. Vista costs from about \$300. For that kind of money, are you really prepared to settle for "good enough"?

Of course, if you've already purchased Windows, that's an investment. Buying dubious improvements is just throwing good money after bad, but what if you don't? Then you run into security issues as you get more and more out of date. Why struggle with "good enough"?

Windows Vista was out of date when it was released. Ubuntu had it's feature set frozen 1 month before release - so it was a month old at release time. Users can catch up with third-party innovations, just like you do for windows, but integrated features wait for next release... in 6-8 months. Support for old releases vanishes after another cycle because, in software, anything more than 18 months old is obsolete.

Windows Vista had a feature freeze three years before it's release (it missed it's deadline). Actually, features got removed. That means it was three years old on release day.

It only makes economic good sence to shop around.

But how are we supposed to do this?

One computer looks pretty much like the other... basically, what we end up doing is buying the cheapest computer for the features. Whatever those features are.

This is because IT is a "lemons market".
(Bruce Schneier)

(slide 11)

This is where the seller knows vastly more about the product than the buyer. How do you know a D975XBX2 from a DP35DP? What you actually experience is the user interface, the stuff that goes on the screen, which is why there is so much eye-candy on modern computers. The trouble is, it's the engineering you cannot see that actually makes the difference. This is why Vista reasonably needs a fast computer, top-class graphics card and lots of RAM while the mac is happy with normal stuff. But the mac is much more expensive: so which one sells?

In a lemons market, bad tech drives out good tech.

We defend ourselves from this effect by looking for "tells" ... ways we can tell the salesman isn't just full of it. We look for warrenties. We look at the features list. We look at product reviews and endorsements. We look to see what other people are using.

Warrenty: none

Features: 64bit? 32bit? bps Bps RAM GHz Gflops?

Product Reviews - hard to sort from marketing - especially when the license says you cannot

say anything bad about the product. The rest is advertising.

Other people: it's a monopoly - are they using it because it's good or because it's there? Have they even thought about it?

The cure for a lemons market is to decrease that gap. (Bread. Cars.) You don't need to know a lot, but you do need to know. How can you demand proper products when you don't know what they are?

This is where Open Source Computing comes in.
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The purpose of the course is to empower you through understanding. The course covers 4x2hr sessions designed to familiarise you with the basics of GNU/Linux operation and maintenance. It will go over the normal computer stuff from a platform-independent perspective. You will end up being able to install, configure, troubleshoot and use linux systems with confidence.

If you need to continue with proprietary systems anyway, you will find you will make better IT decisions and be more in control for having been exposed to free software.

This is a win win situation.

... To help:

This Saturday, HBCLUG is holding a Free Installfest - this is to help people get hold of a working gnu/linux for their hardware. It is held at 27 Duncansby Rd - there will be a poolside barbeque and net access (geek heaven), bring a computer, nibbles, drinks, yourself.

The first course starts next week, right here.