

Digital Freedom or winning or losing the digital revolution

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«It bears reminding that “democracy”, a word used frequently in the modern media, does not at all mean the same today as it did in the 19th and the early 20th centuries. This is a case of two homonyms: the old “democracy” came from the Greek word “*demos*”, which means the people, whereas the new “democracy” is derived from the word “demo”, as in “*demo version*”».

-Viktor Pelevin *Generation P*

The information revolutions

- Major information revolutions:
 - **speech**: information flows from one brain to another (and back),
 - **writing**: one to many, even distant, brains; the memory goes outside, becoming collective and not only individual,
 - **print**: collective memory goes to the masses!
 - **digital**: with search engines collective memory becomes content-addressable, like in the brain itself! Information flows no more one-way.
- what next? Telepathy?

We are now building the *Earth's brain*

People interact across nation borders

building free, scattered, **distributed communities**,

sharing *freely* knowledge and taking decisions,

making **pressure** on governments;

building a fast, **common memory**,

that anyone can *freely* access;

using their brain, computers, Internet and search engines.

Free information

- Like all other forms of information and knowledge, digital must stay free
 1. producing and sharing information must be kept **free from any kind of censorship,**
 2. information must **flow freely,**
 3. individuals must have **free access** to it,
 4. preserving **privacy and human rights.**

What going digital means

- Not only **producing** information is easy
 - text, sound, music, images, motion pictures
- but **sharing** information is easier
 - with fast networks and Internet anyone can
- and **copying** information is even easier
 - drag and drop...
 - at nearly no cost at all.

Pervasive, ubiquitous, computing

- all **business** depends on computers;
- we talk digital with government, banks, suppliers, we have dozens of *fidelity cards*;
- we use email, **digital entertainment**: TV, DVD, radio, *intelligent* household appliances.
- **Mobile**: phone (downloadable logos, tones / ringbells), PDA, GPS devices.
- Wearable computers, clothes with **RFID**.
- **Body Implant**: GPS+GSM against kidnapping

Masses of DATA

- All those devices and transactions generate huge amounts of data.
- '*Data mining*' techniques can extract relevant information from this data and learn things about your life and behaviour.
- Data owners are willing to sell and merge many data sources.
- Improper use can violate individuals privacy and rights.
- Individuals do not own data about themselves.

The digital takeover of media

A Call For The Home Media Network - Gordon Bell and Jim Gemmell

4 May 2001 (draft v8: 28/4/2004)

Technical Report MSR-TR-2001-52

Microsoft Research - Microsoft Corporation

However, in our model of the future, **all content will be distributed to the home and reside on home servers and be distributed on the home IP network** not as analog audio or video.

[...]

The most fundamental question to be answered about content distribution/storage is how to protect it as intellectual property based on the owner's desires. **Publishers do not want their content to be carried in any form that might be digitally copied**, so they don't want it to pass unencrypted over any interface, and are leery about giving it to any device with a removable store.

[...]

In a few years, we may all look back at this time as the **end of an era** when so much content (TV & radio) could freely and legally be recorded for personal use.

[...]

Digital Content

- Entertainment industry sees huge opportunities:
 - lower distribution costs for books, films, audio;
 - text, video, audio content downloaded from Internet to your *home computer entertainment center*, paid via Credit Card.
 - even cinemas will be wired: *digital cinema*.
- But Hollywood doesn't want you to copy freely their content without paying...
 - you can play the content but not store it.

Copy protection

- Owners, (like Recording Industry Association of America - RIAA and the Motion Picture Association of America – MPAA and others) do not want copy of digital content,
- but digital content is **by definition** easy to copy.
- So, how to make copies impossible?
 1. by **Technical** means:
 - Digital Rights Management,
 - Watermarking.
 2. by **Legal** Means:
 - making laws against copying,
 - forcing the adoption of technical means.

Digital Rights (restrictions) Management

- Hardware :TPCA - Trusted Platform Computer Architecture, Intel LaGrande: CPU.
- Software, uses **central servers** to generate and store information on permissions for documents:
 - Microsoft: Palladium (now NGSCB), Windows Rights Management Services.
 - Adobe: Policy Server, available by end of year.
- 4C Entity: Intel, Matsushita, Toshiba, IBM: xCP - eXtensible Content Protection system, complex **cluster of devices** in home network.
- **Mobile**: OMA- Open Mobile Alliance, Windows Mobile...
- ... lots of ...

Watermarking

- Watermarking: embedding hidden signatures into documents, images, **music**, (like embedded images in banknotes paper).
- **SDMI** Watermark control (from `verance.com`) is embedded in current cd players software.
- **Phase 1** Watermark is *already* embedded in current music.
- When **Phase 2** watermark will be injected in music, it will trigger an *upgrade notification*.
- “As a result, a consumer who uses Phase 1 software to play or copy a new Phase 2 musical release will receive notice that the software on their PC needs to be upgraded”
- from <http://www.sdmi.org/FAQ.htm>
- “there is currently no consensus for adoption” of the phase 2.

Legal means

- USA: DMCA Digital Millennium Copyright Act
 - Intended against **copyright violations**.
 - Prohibits the act of **circumventing technological measures** (is skipping commercials a violation?)
 - Has a **chilling effect** on vulnerability and cryptography research.
- USA: CBDPTA -Consumer Broadband and Digital Television Promotion Act: legally force secure (TCPA-conform) systems.
- European Union Copyright Directive (EUCD)
 - DMCA with **exemptions** intended to protect cryptographers and academics.

Dangers

- **Abuse** of technical and legal means can lead to privacy and human rights violation:
 - tracking and profiling via rfid, watermarking;
 - censorship via Palladium, etc...
 - media control is appealing for obtaining power.
- Excessive empowerment of **content owners** with both technical and legal means.
- Software Patents can bring to information technology industry **deadlock** and can be lethal for free software.
- For sure you'll **pay** for every ring of your cellphone.

What can we do?

- Keep eyes wide open for **laws** being discussed in our parliaments: democracy is no more only about giving our vote.
- Be informed on what producers sell: do not **buy** something that can eventually harm you.
- Fight **software patents**.
- Always choose what gives you more freedom, even if it will cost more money or is more demanding.

Other dangers

- What happens if, say, the major **search engine**:
 - censors information (or applies DRM policies),
 - charges a fee 'per search',
 - ~~tracks~~ 'personalizes' your searches?
 - loses its data
- The '*slammer*' virus took 10 minutes to smash all infectable computers in the Net.
- “Dave, I can feel my mind going”

What *else* can we do?

- Care about 'bio-diversity' in the Information Technology scene: let's call it **BIT-diversity**:
 - look for different hardware
 - use a different operating system
 - use different antivirus systems
 - use different search engines
 - choose free software
- Diversity is the way towards survival and success.
- Care about accessibility to IT resources: fight Digital Divide.

Freedom and Digital Divide

- Digital Divide: gap between those people and communities who can make effective use of information technology and those who cannot,
- because of census, sex, geographical position, age, culture, physical condition, policies (censorship).
- Whole countries have government control on Internet access: no **free** access.
- Technology itself can be a bridge or an obstacle.
- We can help providing low cost but effective technology (not trash) and political support.

Winning the revolution

- we have the chance of making concerned people decide, and not only those who have control on the media: *free media makes free people*.
- requires from us constant attention, ethical awareness and political action.
- *The computer is the nearest thing we have to a universal tool* -Moor, 1985:
- the way we use of this tool can make a tremendous difference.

Thank you
any (free) questions?

This paper is available at:
<http://homes.stat.unipd.it/mmzz/Papers/Dfreedom>

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Contacts

- Worldwide:
 - Electronic Frontier Foundation: www.eff.org
 - Foundation for a Free Information Infrastructure: www.ffii.org
 - Foundation for Information Policy Research: www.fipr.org
 - FSF Free Software Foundation : www.fsf.org
 - Digital Divide Network www.digitaldividenetwork.org
 - GNU : www.gnu.org
 - UNESCO www.unesco.org/webworld/portal_freesoft
 - League for Programming Freedom: lpf.ai.mit.edu
- In Italy
 - AsSoLi (Associazione Software Libero): www.softwarelibero.it
 - Il secolo della rete: www.ilsecolodellarete.it
 - ILS (Italian Linux Society) www.linux.it
 - PLUTO: www.pluto.it
- In Padova: PLUTO Padova: www.plutopadova.org

Further reading

- Wearable computers, digital pervasiveness:

- MIT media lab <http://www.media.mit.edu/wearables/>
- No Cyborg Nation Without FDA' OK , Julia Scheeres, <http://www.wired.com/news/technology/0,1282,55626,00.html>
- Cyborg 1.0 Kevin Warwick outlines his plan to become one with his computer, <http://www.wired.com/wired/archive/8.02/warwick.html>
- Paying for drinks with wave of the hand, April 14, 2004, Sherrie Gossett, http://worldnetdaily.com/news/article.asp?ARTICLE_ID=38038
- VeriChip implantable RFID Device, <http://www.4verichip.com/verichip.htm>

- Software monoculture:

- Microsoft monoculture allows virus spread, 25 September 03 NewScientist.com news service, <http://www.newscientist.com/news/news.jsp?id=ns99994203>
- Warning: Microsoft monoculture, Associated Press, Feb. 15, 2004, <http://www.wired.com/news/privacy/0,1848,62307,00.html>

Further reading II

- Fast viruses:

- Slammer could have been much worse, By Nick Farrell, 04-02-2003,
<http://www.vnunet.com/News/1138483>

- Global brain:

- Principia Cybernetica, <http://pespmc1.vub.ac.be/SUPORGLI.html>

- Digital Rights (restrictions) Management

- Software makers ready desktop lockdown, April 20, 2004, David Becker
http://news.com.com/2100-7343_3-5194756.html?tag=mainstry
- IBM makes late DRM bid, Faultline, 27th April 2004,
http://www.theregister.co.uk/2004/04/27/ibm_drm_bid/
- The Draft IPR Enforcement Directive ? A Threat to Competition and to Liberty, Ross Anderson,
<http://www.fipr.org/copyright/draft-ipr-enforce.html>
- `Trusted Computing' Frequently Asked Questions, Version 1.1 (August 2003), Ross Anderson,
<http://www.cl.cam.ac.uk/~rja14/tcpa-faq.html>