Hackers: Peeking inside a tech subculture

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A controversial term

- Possible original meaning: woodworker, carpenter (one who works with an axe)

- Has also been used to mean amateur radio enthusiasts, phone exploiters, distributors of illegal software, programmers or even experts of any kind

- In early MIT meant a prankster or practical joker

- Thus, this lecture is NOT about intruders and criminals

Who is s/he?

- Media: smart but evil, breaks into computers
- Cyberpunk: a kind of Internet anarchist
- Warez: Distributor of Windoze, Office and other stuff

- Serious guys: an (IT) enthusiast with exploratory mindset and solid knowledge
- Not necessarily even an IT person!

Who to believe?

- Opinions differ quite radically
- Yet the last one comes from the guys with the most authority (they built the Internet)
- Messing stuff up is easy – building something noteworthy is what counts
- Some people: RMS, Linus, Larry Wall, Rasmus Lerdorf, Miguel de Icaza, Matthias Ettrich a.o.

Main sources for this lecture

- *Hackers: the Heroes of the Computer Revolution* by Steven Levy (hackers of the Elder Days)

- Writings of Eric S. Raymond, plus some ideas from Richard M. Stallman and Linus Torvalds (hackers of the 1990s)

- *Hacker Ethic and the Spirit of Information Age* by Pekka Himanen (hackers of the new century)

The rest of the zoo

- (WARNING: some tongue-in-cheek stereotyping ahead!)
  - Crackers
  - Phreak(er)s
  - Script kiddies
  - Warez d00dz
  - Cyberpunks
  - Geeks and nerds
- Note: the characters of the 1995 *Hackers* movie are mostly crackers, phreakers and cyberpunks, with a small hacker element; the movie has some hints though)

Crackers

- The term was created by hackers to defend themselves against accusations in media

- People doing bad things with computers (for a variety of reasons)

- A notable later addition: hacktivist – a cybercriminal with a cause (which may make sense, or may not)

- Motivation counts – the classical hacker ethic allows playful pranks, or in some cases, disciplinary activity

- Reciprocity ==> a real hacker keeps away

Phreak(er)s

- In the Age of Analog, exploring phone networks used to be similar to ham radio – and as such, a fitting pastime

- Modems became ubiquitous   ==> phreaking blended into cracking

- An extreme example: in June 1989, someone redirected NYC 911 number to a phone sex worker named Tina

- Has somewhat revived today, in the form of mobile / IoT hacking (in both black and white forms)

Script k1dd13s

- A cracker wannabe

- Uses downloaded ready-made tools, does not know that much him/herself (but feels magnificient)

- Historical main activity: web defacement in the vein of "K00I D00dz 0wned diz s3rw3r. U sux0r! R2ging F2rting B2dger."

- Some try to pose as hacktivists ("Free X!")

- On the one hand, limited skills limit damage, on the other hand, having no life means time to burn – can become grunts for bigger baddies (and the danger will be in numbers)

- Some types favour outrageous handles (TwinTurbo, Dr Death ...)

Warez d00dz

- Descended from magpie – loves to steal and collect shiny stuff without using it much

- Typical hard disk content used to be: 1% useful soft, 10% newest games, 50% random apps (w/o licenses), the rest is random (ancient games, pr0n etc)

- A more sophisticated branch - a real k00l d00d would 'release' software on the day it hits stores (*0-day warez*). Can involve just amateurs, or a whole dark industry

- A small silver lining – partially gave birth to the demoscene

- Nowadays, somewhat blended with other subgroups due to license violating becoming trivial (especially in web content)

Cyberpunks

- Named after the *Neuromancer* by William Gibson

- Superficially tech savvy, but definitely talkative computer fashionista (not related to the *Sex Pistols* kind of punks)

- Treated somewhat ambiguously by hackers proper:

  - Newbies and ignoramuses must be talked to so that they understand; hackers with good social skills are actually a minority and should be valued accordingly

  - A cyberpunk can produce loads of verbal cow-manure fast, prolifically, and with extreme confidence

Geeks

- Originally a 'wild man" in circuses of Old England biting heads off chickens (computer geeks treat bugs the same way)

- Someone valuing his/her goals more than social accept (sometimes, some Asperger's is involved). Can end up on black or white side (sometimes both)

- Generally, geeks are content with being geeks

- U.S. version: propellerhead

- An interesting invention: the Geek Code
(see https://en.wikipedia.org/wiki/Geek_Code)

Nerds

- Someone with very high IQ but highly awkward social behaviour (according to some sources, was originally spelled as *knurd*, or "drunk" backwards)

- The term used to be very offensive in early days, nowadays can also mean the 'crazy professor' types

- Used to be unhappy with being nerds (in comparison, geekiness is typically a chosen way of life), nowadays can also be seen as trendy in some contexts

- A lot of subtypes and country-specific variants (e.g. hikikomori in Japan)

Coloured hats

- The taxonomy mostly used in information security:
    - white hat – hacker
    - black hat - cracker
    - grey hat – someone in between (or fluctuating)
- These tend to reflect only the legal view on the activities (reflected in the very names – in the classic Western movies, good guys wore white and bad ones black hats)

The hack

- In today's IT slang, mostly means a working but obscure solution (e.g. in coding)

- In early MIT, meant just a prank

- 1950-s: exploration of old buildings of the campus, usually with lockpicking (tunnel hacking)

- Today's MIT (but somewhat also at other U.S. universities like Georgia Tech, CalTech, Berkeley, or UIUC) – an elaborate tradition of pranking (mostly involving technology)

Examples

https://hacks.mit.edu
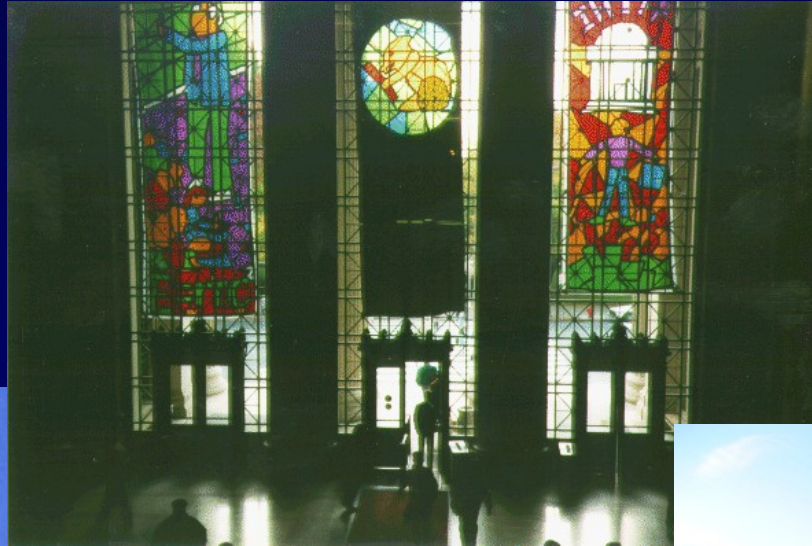
The MIT hack tradition

- A hack must be
    - surprising
    - public
    - using technology in an innovative way
    - harmless
    - good-natured (not directed against anyone)
- A good example: On the 20th of November 1982, the Delta Kappa Epsilon fraternity hacked the American Football game between Yale and Harvard teams
- See also *Nightwork: A History of Hacks and Pranks at MIT* by Peterson and Bender

The Delta Kappa Epsilon football hack

https://www.youtube.com/watch?v=iq4rzxw_wYU

The rise of classical hackerdom

- The Real Programmers. Physicists, batch processing and vacuum tube computers. Murphy's Laws

- MIT Tech Model Railroad Club, later the AI Lab. PDP computers and Arpanet. The recorded folklore begins

- Unix vs VAX; BASIC and minicomputers

- 80-s: crisis. FSF, Unix and PC-s

- 90-s - Linux, *BSD, WWW - return of hackers

- New century – spreads elsewhere (Wikipedia, Open Educational Resources, DeviantArt etc)

Generations

- Gen Zero: Hackers of the Elder Days (60s). Real Programmers. Physicists, batch processing and valve computers. Murphy's Laws

- MIT Tech Model Railroad Club (later the AI Lab), Playful Cleverness and PDP hardware. Arpanet. Birth of Folklore

- Gen 1. Unix hackers (70s). Unix (and C) vs VAX; but also BASIC and early minicomputers

- 80s: crisis. Commercial Unix, Apple and MS. GNU/FSF as a counter

- Gen 2: Linux hackers (90s) – Linux, Free/Open/NetBSD, and Web

- Gen 3: Internet hackers (21st c.) - the hacker ways spread elsewhere (mainstream and social media, startups, education...)

Fun facts from the Elder Days

- Playful cleverness

- A pre-Internet sharing culture („programming into a drawer")

- Non-standard use of technology (music, chess, ping-pong, Spacewar)

- Slang (-P, T/NIL, MU!)

- Hacking Chinese food

- Wordplay ("Government Property - Do Not Duplicate" => "Government Duplicity - Do Not Propagate" (written on keys)

The original hacker code (according to S. Levy)

- 1. Access to computers – and anything which might teach you something about the way the world works – should be unlimited and total. Always yield to the Hands-On Imperative!

- 2. All information should be free

- 3. Mistrust authority – promote decentralization

- 4. Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or position

- 5. You can create art and beauty on a computer

- 6. Computers can change your life for the better

Title here

- The 90s hacker culture has been described by Eric S. Raymond (CatB, Hacker-HOWTO and others):
    - Likely evolved from cats…
    - Elitary yet democratic (meritocracy)
    - Does not seek social approval
    - Distrusts power
    - Values intellect and originality
- (A proverb: no matter what colour the cat if it can catch mice..)

Who?

- attitude: "Do you identify with the goals and values of the hacker community?"

- skills: "Do you speak code, fluently?"

- status: "Has a well-established member of the hacker community ever called you a hacker?"

- All three must be met

Attitude

- The world is full of fascinating problems waiting to be solved

- No problem should ever have to be solved twice

- Boredom and drudgery are evil

- Freedom is good

- Attitude is no substitute for competence

Becoming one

- Learn how to program: Python, C, C++, Lisp, Java, Perl (KK: maybe Lisp => Prolog or Haskell, and Perl => PHP and/or JavaScript)

- Get one of the open-source Unixes and learn to use and run it

- Learn how to use the World Wide Web and write HTML (currently HTML5 and CSS3)

- If you don't have functional English, learn it

Points of style

- Learn to write your native language well.

- Read science fiction, go to science fiction convention

- Join a hackerspace and make things

- Train in a martial-arts form and/or study an actual meditation discipline

- Learn to appreciate music, to play some musical instrument well, or how to sing

- Learn to appreciate puns and wordplay

Position

- Based on reputation and respect
- A gift culture – status is obtained by giving away something substantial
- Time, skills and results for reputation
- Also, Linus' Law on motivation:
    - Survival
    - Social status
    - Fun

Himanen's hacker ethic (revisited)

- Protestant ethic
  - Money
  - Work
  - Flexibility
  - Determination
  - Accountability
  - Optimality
  - Stability

- Hacker ethic
  - Passion
  - Freedom
  - Hacker work ethic
  - Hacker money ethic
  - Hacker net ethic (nethic)
  - Caring
  - Creativity

Application

- Most of the Free Software / Open Source
- Open Educational Resources (OER) and MOOCs
- The original Google
- Wikimedia Commons
- Makers (Garage48 a.o.) and some startups
- In Estonia, most things around Robotex (was also Estobuntu and the original IT College)
- ….

Earning respect

- Write FLOSS

- Help test and debug

- Publish useful information

- Help keep the infrastructure working

- Serve the hacker culture itself

Hackers of ancient Japan once said:

To follow the path:

look to the master,

follow the master,

walk with the master,

see through the master,

become the master.

Thanks

(happy hacking!)