Hackers

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What they had in common was mainly love of excellence and programming... They wanted to be able to do something in a more exciting way than anyone believed possible and show "Look how wonderful this is. I bet you didn't believe this could be done." -- Stallman

Aspects of the Hacker Culture

- Hacker Aesthetic - "Beautiful Code" and more
- Hacker Ethic
  - Sharing
  - Tinkering
  - Openness
  - Decentralization
  - Free access to computers
  - World Improvement
  - Community and Collaboration
- Hacker History - this talk

Disclaimer

- This talk isn't exactly finished
- These speaker isn't exactly knowledgeable

People

- Joybubbles
- Tech Model Railroad Club
- The Mentor
- Sir Tim Berners-Lee
  - WWW
    - BBS/Usenet (1980)
- Stallman
- Torvalds
- Raymond (ESR)
- Doctorow
- Snowden

Institutions

- Bell-labs
- Phrack, L0ft, cDc, LOU, CCC ('81-5)
- GNU (1983)
  - Stallman's Manifesto ('85)
  - Gnutella - Limewire
- EFF ('90)
- Linux ('91)
- Open Source ('98)
- Linux Foundation (2007)

Outline

Earlycore: Phreaks, Tech Model Railroad Club

Networked Generation: BBS, The Web, and the rise of hacker groups

Era of the Hacker Crackdown: Creation of EFF, GNU (and Linux), "Open Source"

Security and Transnational Politics - Wikileaks, Snowden, Encryption, Anonymous

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1960's - Earlycore: Phreaking

- JoyBubbles -- Blind boy with perfect pitch
    - Discovered he could activate phone switches by whistling at specific frequencies
    - "Bill from New York" -- reproduced 2600 Hz with recorder
    - John Draper -- Cap'n Crunch whistles

- Woz -- "Berkeley Blue"

Earlycore: MIT's Tech Model Railroad Club

- The womb of hacker culture, or at least an excellent case study
  - Sharing
    - Utility programs were kept in a file cabinet
  - Tinkering
    - PDP-1 Symphony
      - "Peter Samson did it, and his colleagues appreciated it, because it was obviously a neat hack. That was justification enough."
  - Openness
    - Peter Deutsch

Aspects of subculture - Language, signifiers, *a priorism*, I am not a sociologist.

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1980's - Networked Generation:
Bulletin Board Systems

Community Memory

- Precursor to BBSs, which became ubiquitous through the 80's
- Brought computing to the community
  - Open culture, free information

BBS

- Christensen, Ward, and Randy Suess. "Hobbyist computerized bulletin board." Byte Magazine 3.11 (1978): 150-158.

1978

```
TERMINAL NEED NULLS?   TYPE CTL-N WHILE THIS TYPES:

        ***    WELCOME TO CBBS/CHICAGO   ***
   ***   WARD AND RANDY'S COMPUTERIZED BULLETIN BOARD SYSTEM  ***


-----> CONTROL CHARACTERS ACCEPTED BY THIS SYSTEM:

       DEL/RUBOUT   ERASES LAST CHAR. TYPED (AND ECHOS IT)
       CTL-C        CANCEL CURRENT PRINTING
       CTL-K        'KILLS' CURRENT FUNCTION, RETURNS TO MENU
       CTL-N        SEND 5 NULLS AFTER CR/LF
       CTL-R        RETYPES CURRENT INPUT LINE (AFTER DEL)
       CTL-S        STOP/START OUTPUT (FOR VIDEO TERMINAL)
       CTL-U        ERASE CURRENT INPUT LINE


--------------------- BULLETIN ----------------------
         PROBLEMS WITH THE SYSTEM??
HARDWARE: RANDY (SUESS), (312) 935-3356
SOFTWARE: WARD (CHRISTENSEN), (312) 849-6279
--------------------- BULLETIN ----------------------
)

--------------------- BULLETIN -. ----------------------
---> ALL USERS:  BE FAMILIAR WITH MESSAGES 3, 6, AND 60

                     N O T E
-----> AS OF 4/8/78, MESSAGES PACKED AND RENUMBERED <-----
--------------------- BULLETIN ----------------------
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Aside: **Mo**dulator-**dem**odulators and XMODEM

- Modems -
  - Encodes and decodes digital serial signals
  - Acoustic couplers are cool
  - More phone hackery

- XMODEM (1977)
  - Christensen is a boss and wrote a dope file transfer protocol called MODEM
  - Then he added an X because it's definitely not for squares.

1980's - Networked Generation: Bulletin Board Systems

Hobbyist Computerized Bulletin Board

Ward Christensen
688 E 154th St #3D
Dolton IL 60419

Randy Suess
1930 Bradley
Chicago IL 60613

memory to the project, pending receipt of 16 K bytes offered by DMA. Randy donated his D C Hayes modem board, PolyMorphics VTI, SwTPC keyboard, power supply, chassis, IMSAI 8080 processor card and Vector memory board.

We started with the monitor for the system, but found that it was difficult to make the VTI keyboard port work because the VTI keyboard data bus shares the bus carrying the characters being displayed. To solve this, Randy bought a Processor Technology 3P+S board and interfaced the keyboard to it. This also allowed us to have a sense switch port using the 3P+S. Since this board has a serial port, Randy later decided to add a Teletype to the system for logging incoming data. This completed the configuration.

Programming

In the first week of the project, I wrote a mock-up of the software using MITS 8 K BASIC. The input/output (IO) drivers could be switched to my modem under sense switch control, so I had people call in and critique the system. Many good suggestions were made.

By now Randy had the computer far enough along to need some programming, so a monitor was put into read only memory. Since the system was to run under CP/M, a Teletype compatible scroll routine was also put into the read only memory for both the monitor's and CP/M's use. Additions were made later to support the 3P+S board for keyboard input.

After the BASIC mock-up of the system was close to what we wanted, programming started on the assembler version of the software.

Assembler language was chosen over BASIC for the implementation language because of size and speed efficiency, and to maintain control over such functions as control-K to terminate (kill) the current function and return to the main menu. The program now consists of the pieces of assembler source, shown in table 1, which are combined to produce the final assembler

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Bulletin board systems could become nodes in a communication network.

The Computerized Hobbyist Bulletin Board System is a personal computer based system for message communication among experimenters. People with terminals or computers equipped with modems call in to leave and retrieve messages. It was conceived, designed, built, programmed, tested, and installed in a 30 day period (January 16 1978 to February 16 1978) by the two of us. In an effort to generate material for our computer club's newsletter, I first thought of the idea and discussed it with Randy on January 16 1978.

We laid out the hardware requirements:

Note:

This project was a collaboration of Ward Christensen

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We laid out the hardware requirements: an 8080 processor with 24 K bytes of memory, single floppy disk, modem interface, and some sort of local keyboard and dis-

Note:

This project was a collaboration of Ward Christensen and Randy Suess. Each had a particular part to uphold. The first part of this

1980's Networked Generation:
The World Wide Web

Conceived and implemented by Sir Tim Berner's Lee

- This guy liked hypertext, like, a lot.
- Nobody else really thought it was all that interesting in 1980.
- He eventually got around to inventing HTML and HTTP
- Then in 1990 he made all the workers at CERN use his invention
  - Guess what his web browser was called.
- Not popular until *Mosaic*, 1993

1980's - Networked Generation: Hacker Groups rise

Chaos Computer Club (1981)

- Berlin born.
- Hacktivism
  - Leading political protests, supporting "German Green Party"
- White hat operations
  - Major acclaim exposing bank security flaws
  - Hacked Microsoft's ActiveX
  - Broke COMP128
- Still active to this day

1980's - Networked Generation:
Hacker Groups rise

P.H.I.R.M. (KILOBAUD) has funny names. They also hacked Bank of America once, and were really active operating BBS's across the nation. They also wrote a paper about Cleveland!

- Archangel
- Blade Runner
- Jack The Ripper
- Systematic
- The Stingray
- Sir Gamelord

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Electronic Frontiers Foundation - 1990

- Secret Service - Operation Sundevil and Steve Jackson Games
  - Details on the incident remain unclear   (http://www.sjgames.com/SS/topten.html)
    - https://www.eff.org/about/history
    - http://www.cs.umb.edu/~emm/crackdown/lorder1.html
  - What we know for sure
    - Steve Jackson Games is a pen&paper gaming company which endured a federal raid
  - What sources say
    - The raid concerns documents with sensitive E911 system information
      - This information turned out to be a false alarm
    - The incident was separate from Operation Sundevil, which concerned primarily credit card hacking
- The Bernstein Encryption Export Case - 1995
  - Legislation considered Bernstein as an international arms dealer for publishing his algorithm
  - Case's settlement classifies computer code as speech, protected under the first amendment

GNU, Linux, Open Source

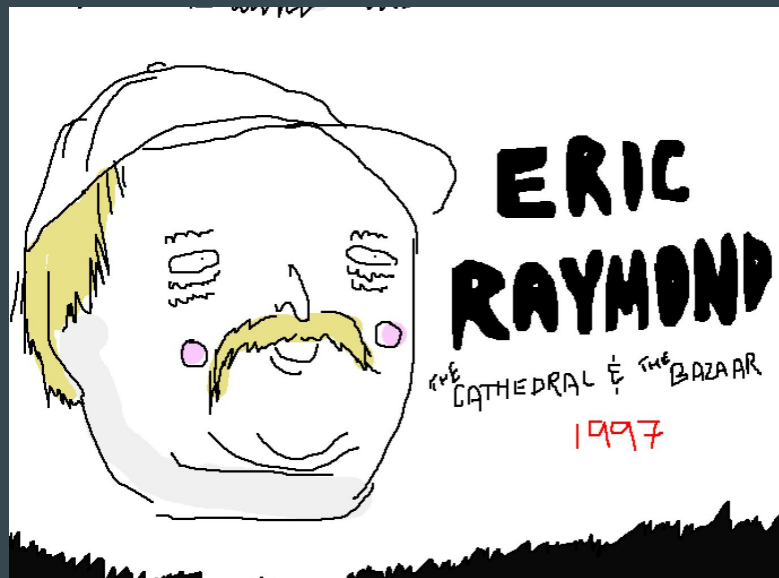- Unix (1969)
- GNU (1983)
- GNU/Linux (1991)

GNU, Linux, Open Source

GNU, Linux, Open Source

Eric Raymond is cool.

- http://www.catb.org/~esr/writings/
  - Cathedral and the Bazaar (1997), and other great essays
- http://www.catb.org/~esr/halloween/
  - Microsoft hates open source

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Privacy and Security

- WikiLeaks
  - Wikileaks.org registered in 2006
  - Released Collateral Murder, Afghan War Diaries in 2010
  - Julian Assange
    - Extradited by Sweden in 2010, granted asylum by Ecuador
- Edward Snowden
  - Sysadmin at Booz Allen Hamilton
  - Sub-contractee for National Security Agency
  - In 2013, leaks large corpus of intelligence documents

Hacker Docs

- Hacker Manifesto
- GNU Manifesto
- Cathedral and The Bazaar
- Jargon File

References

Fat's talk: https://www.youtube.com/watch?v=UIDb6VBO9os
   slides: http://fat.github.io/slides-os-guilt/

GNU: http://www.gnu.org/gnu/gnu-history.html

Hacker Manifesto: http://www.phrack.org/archives/issues/7/3.txt

On the Nature of Hacking:
http://hacsoc.org/talks/20120125%20Hackers/presentation.txt

https://en.wikipedia.org/wiki/Timeline_of_computer_security_hacker_history

Christensen, Ward, and Randy Suess. "Hobbyist computerized bulletin board." Byte Magazine 3.11 (1978): 150-158.