The Heroic Hacker: Legends of the Computer Age

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What is a Hacker?

- A dangerous criminal?
- A gifted computer programmer?
- Both?

- **To the popular press:** a socially maladjusted teenager out to cause trouble using the computer
- **To a programmer:** hacker means something else...

A Definition of a Hacker

From The Jargon File, v3.2.0

1 - One who enjoys exploring the details of computer systems, and stretching capabilities

2 - One who programs enthusiastically, even obsessively

3 - A person who is good at programming quickly

4 - An expert at a particular program (i.e. a UNIX hacker)

Another Definition

One who follows the Hacker Ethic

- The belief that information-sharing is a powerful positive good, and that it is an ethical duty of hackers to share their expertise by writing free software and facilitating access to information and to computing resources wherever possible

The Culture of Programmers

- Subculture of the general engineering and scientific community
- Meritocracy based on programming skill
- As with any technical culture, lots of technical jargon and slang
- Stereotype programmer => hacker
  - Works long or strange hours
  - Casual dress
  - Informal attitude

Hacker History

- Very young culture
  - Computers only about 40 years old
- Four Periods of hackerdom

  1 - ***Golden Age:*** 1950's - 1960's, Vacuum Tubes

  2 - ***Middle Age:*** 1960's - 1970's, Transistors

  3 - ***Recent Past:*** 1970's - 1980's, Personal Computers

  4 - ***Present Day:*** 1980's - 1990's Games? High finance? Internet? WWW?
- Legendary hackers appear from each of these periods

The Hacker Prototype

- Heroic:
  - Larger than life
  - Endowed with greater skill than ordinary people
  - Perhaps correspondingly weak in other areas (social skills, communication skills, personal appearance)
  - Virtue in the form of the Hacker Ethic
- Outsider from normal engineering community
- Rises to the challenge of a difficult task
- Solutions may be obscure to those who are not, themselves, hackers of a sort

The Story of Mel, A Real Programmer

- Prototype hacker legend
- First appeared on Usenet in May 1983
- Describes an encounter with a Real Programmer (i.e. hacker)
- Originally written in prose, has since been altered to free verse, but text stays largely the same
- Very widely distributed
- Often used to help define what it means to be a hacker

Discussion of The Story of Mel

- Characterization of the hacker persona
- Set in the past when computers were difficult beasts to use
- Prowess of the hero is based on his ability to make the cumbersome machine obey
- Cleverness of the solution requires using the machine in ways not intended by its makers
- Hero maintains his own set of ethics and values
- Sense of awe and respect for Mel’s abilities

Other Hacker Legends

- The Story of Mel is longer and more narrative than most
- However, most stories contain similar elements:
  - Extraordinary programming skill
  - Cleverness in the face of difficulty
  - Struggle against the computer to make it obey
  - Follows the Hacker Ethic

Magical Themes in Hacker Legends

- Computers seem magical in their operation
- "Any sufficiently advanced science will seem to be magic" - Arthur Clarke
- Programmer titles: UNIX Wizard, C Guru
- Magic Switch Story:
  - Switch is found on MIT AI Lab machine, put there by unknown hacker
  - Hand-labeled "magic" and "more magic"
  - Although the switch is seemingly not connected, changing the setting causes the machine to crash...

Doing the Impossible

- Part of the appeal of the legends is the obscurity of the feats
- Can involve making the computer do things that should not be possible, or that the designer never envisioned
  - Mel's coding tricks
  - Auto mechanics rewriting engine control code
  - Squeezing code into tiny places: Satellites, Apple Macintosh, Doorknobs

Transmission Methods

- Community of programmers connected by electronic communication media
  - Email
  - Internet Newsgroups
  - World Wide Web
- Physically distant, but still in close communication - a virtual community
- Stories tend to stay in one form once they enter the network - data is stored as it is received
  - Query the community rather than retype

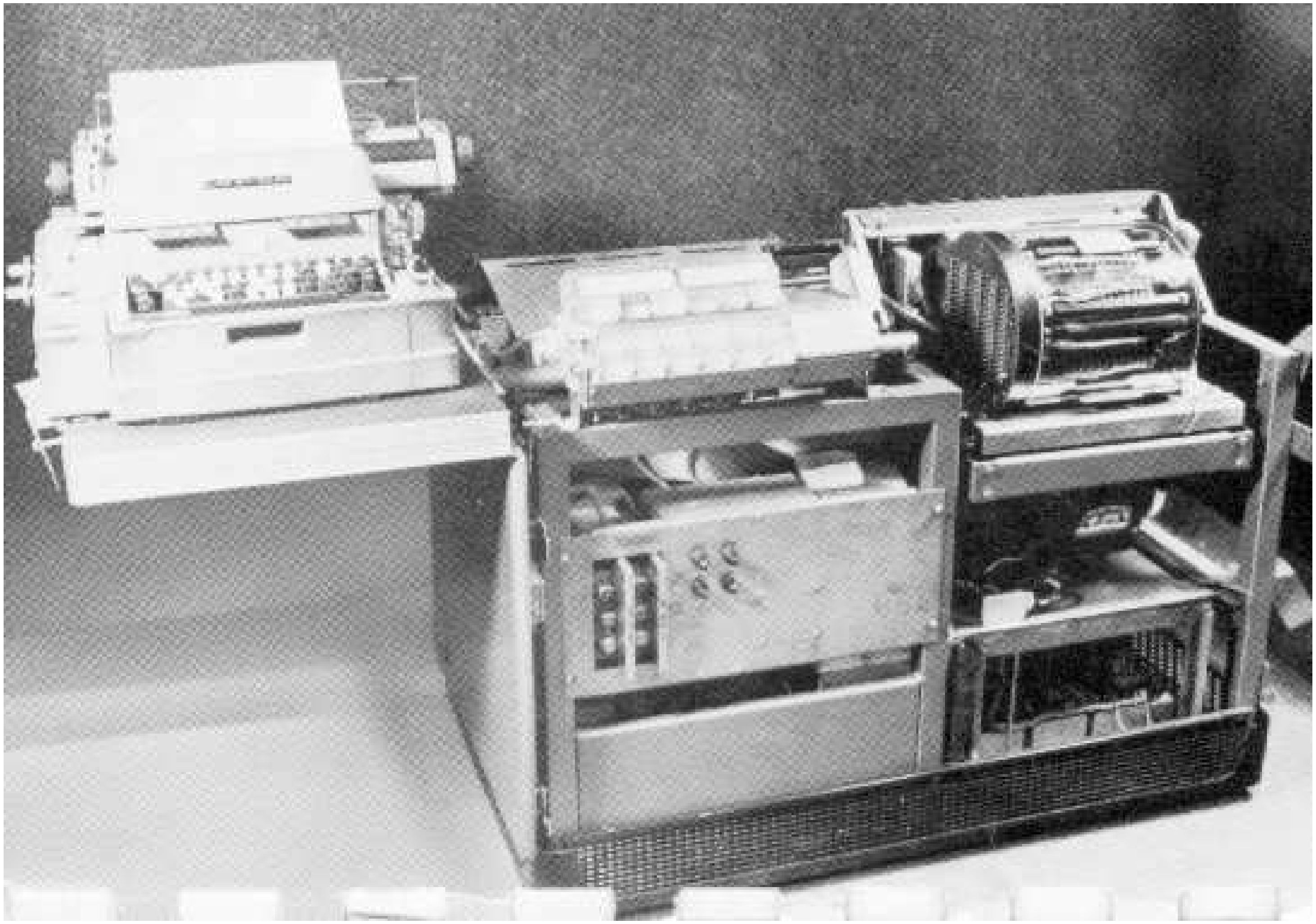
The Dark Side: Hackers vs. Crackers

- There are, of course, some criminals out there
- Some even call themselves “hackers”
- Other hackers call them “crackers”
- Extension of the Hacker Ethic to allow breaking into systems for fun
- Phone system (very similar to computer network) is a popular target
- Aliases used to protect identities
- They have their own set of ethics, heroes, and legends, but that’s another story...

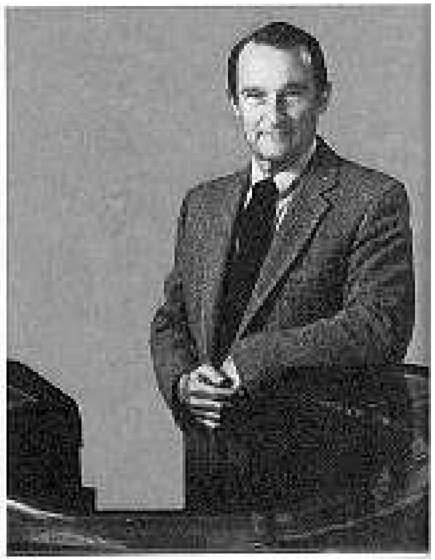
Conclusion

- Computer programmers are a subculture of general engineering and scientific community
- They have their own values, and their own heroes
- Legendary hackers share many features:
  - Extraordinary programming skill
  - Cleverness in the solution to difficult problems
  - Weakness in other areas to balance their hacking skill
  - Adherence to some form of the Hacker Ethic
- Legends circulate through the Internet, the virtual community of the programmer

Royal McBee LGP-30 Computer



Seymour Cray 1925-1996



- ❑ Hardware hacker extrordinaire
- ❑ Designed the worlds fastest supercomputers from 1960 through 1985
  - ❍ CDC 1604, 6600, 7600
  - ❍ Cray 1, Cray 2
- ❑ Much of the progress in modern microprocessor design can be seen as transferring Cray’s ideas from supercomputers into microprocessors

Where to Find this Paper

- http://www.cs.utah.edu/~elb/folklore/
  - Paper in postscript and html
  - Annotated text of The Story of Mel
  - Text of a variety of other hacker legends
  - These slides...