

Words: The hack / the hacker

In its original technological sense, the word 'hacker', coined at MIT in the 1960s, simply connoted a computer virtuoso. That's still the meaning enshrined in the 1994 edition of the *New Hacker's Dictionary*, which defines such a person as someone 'who enjoys exploring the details of programmable systems and how to stretch their capabilities; one who programs enthusiastically, even obsessively.' (Roush 1995:1)

The popular image of the computer hacker seems to be part compulsive programmer preferring the company of computers to people, and part criminal mastermind using his or her technical prowess to perpetrate anti-social acts. (Hannemyr)

The word hack doesn't really have 69 different meanings... In fact, hack has only one meaning, an extremely subtle and profound one which defies articulation. Which connotation is implied by a given use of the word depends in similarly profound ways on context... Hacking might be characterised as 'an appropriate application of ingenuity'.

Whether the result is a quick-and-dirty patchwork job or a carefully crafted work of art, you have to admire the cleverness that went into it. An important secondary meaning of hack is 'a creative practical joke'. This kind of hack is easier to explain to non-hackers than the programming kind. Of course, some hacks have both natures.

The meaning of the term, *hacking*, has gone through several changes from its original dictionary definition of ‘cut or chop roughly; mangle; cut (one’s way) through thick foliage etc.; manage, cope with’; to its present definition of: ‘gain unauthorised access (to data in a computer)’ [The Concise Oxford Dictionary, eighth edition].

People: the image of the hacker:

"Whenever computer centers have become established, that is to say, in countless places in the United States, as well as in virtually all other industrial regions of the world, bright young men of dishevelled appearance, often with sunken glowing eyes, can be seen sitting at computer consoles, their arms tensed and waiting to fire their fingers, already poised to strike, at the buttons and keys on which their attention seems to be as riveted as a gambler's on the rolling dice. When not so transfixed, they often sit at tables strewn with computer printouts over which they pore like possessed students of a cabalistic text. They work until they nearly drop, twenty, thirty hours at a time. Their food, if they arrange it, is brought to them: coffee, Cokes, sandwiches. If possible, they sleep on cots near the computer. But only for a few hours - then back to the console or the printouts. Their rumpled clothes, their unwashed and unshaven faces, and their uncombed hair all testify that they are oblivious to their bodies and to the world in which they move. They exist, at least when so engaged, only through and for the computers. These are computer bums, compulsive programmers. They are an international phenomenon" (Weizenbaum, 1976).

The Hacker in Fiction:

‘In the early 1980s a new genre of science fiction literature emerged that began to colour the [developing computer] underground’s ethos. It, and particularly the work of William Gibson, was the literature of cyberpunk which would give hackers a ser of heroes (or antiheroes) to emulate. The world of cyberpunk portrayed a high-tech outlaw culture, where the rules were made up by those on the frontier – not by bureaucrats. It was a digital world, where the only factor that mattered was how smart and talented you were. It was in this milieu that Gibson coined the term “cyberspace”.

(Thomas Hacker Culture.)

‘Todd works as a tester with me. He’s really young –22- the way Microsoft employees all used to be. His interest is entirely in girls, bug testing, his Supra, and his body, which he buffs regularly at the Pro Club gym and feed with peanut butter quesadillas, bananas, and protein drinks.’

‘Michael is probably the closest I’ll ever come to knowing someone who lives in a mystical state. He lives to assemble elegant streams of code instructions. He’s like Mozart to everyone else’s Salieri – he enters people’s offices where lines of code are written on the dry-erase whiteboards and quietly optimises the code as he speaks to them, as though someone had written wrong instructions on how to get to the beach and he was merely setting them right so they wouldn’t get lost. He often uses low-tech solutions to high-tech problems: Popsicle sticks, rubber bands, and little strips of paper that turn on a bent coat hanger frame help him solve complex matrix problems. When he moved offices into his new window office (good coder, good office) he had to put Post-it notes reading “Not Art” on his devices so that the movers didn’t stick them under the glass display cases out in the central atrium area. (Coupland Microserfs)

‘We got in this discussion about the word “nerd.” “Geek” is now, of course, a compliment, but we’re not sure about “nerd.” Mom asked me, “What exactly, is the difference between a nerd and a geek?”’

I replied, “It’s tougher than it seems. It’s subtle. Instinctual. I think geek implies hireability, whereas nerd doesn’t necessarily mean your skills are 100 percent sellable. Geek implies wealth.’

(Coupland Microserfs)

‘Bobby was a cowboy, and ice was the nature of his game, ice from ICE, Intrusion Countermeasures Electronics. The matrix is an abstract representation of the relationship between data systems. Legitimate programmers jack themselves into their employers’ sector of the matrix and find themselves surrounded by bright geometrics representing the corporate data. Towers and fields of it ranged in the colourless nonspace of the simulation matrix, the electronic consensus-hallucination that facilitates the handling and exchange of massive quantities of data.

Legitimate programmers never see the walls of ice they work behind, the walls of shadow that screen their operations from others, from industrial-espionage artists and hustlers like Bobby Quine. Bobby was a cowboy. Bobby was a cracksman, a burglar, casing mankind’s extended nervous system, rustling data and credit in the crowded matrix, monochrome nonspace where the only stars are dense concentrations of information.’

(Gibson Neuromancer)

‘The clientele were young, few of them out of their teens. They all seemed to have carbon sockets planted behind the left ear, but she didn't focus on them. The counters that fronted the booths displayed hundreds of slivers of microsoft, angular fragments of coloured silicon mounted under oblong transparent bubbles on squares of white cardboard.....Behind the counter a boy with a shaven head stared vacantly into space, a dozen spikes of microsoft protruding from the socket behind his ear. 'Larry, you in, man?' She positioned herself in front of him. The boy's eyes focused. He sat up in his chair and pried a bright magenta splinter from his socket with a dirty thumbnail. 'Hey, Larry.' 'Molly.' He nodded....took a flat plastic case from the pocket of his red sport shirt and flicked it open, slotting the microsoft beside a dozen others. his hand hovered, selected a glossy black chip that was slightly longer than the rest, and inserted it smoothly into his head. His eyes narrowed. 'Molly's got a rider,' he said, ' and Larry doesn't like that.'

[expensive microsofts enable Larry to detect Case's simstim connection to Molly's broadcast rig.]

(Gibson Neuromancer)

'Fingertips suddenly brushed the skin beside his skull-jack. 'This, compared with biochip implants, is like a wooden staff beside a myo-electric limb.'

(Gibson: Count Zero.)

'It's a flip-flop switch, basically. Wire it into your Sendai here, you can access live or recorded simstim without having to jack out of the matrix.'I'm fitting Moll for a broadcast rig, though, so it's probably her sensorium you'll access.' The Finn scratched his chin. 'So now you get to find out just how tight those jeans really are, huh?'

Cowboys didn't get into simstim, he thought, because it was basically a meat toy. He knew that the trodes he used and the little plastic tiara dangling from a simstim deck were basically the same, and that the cyberspace matrix was actually a drastic simplification of the human sensorium, at least in terms of presentation, but simstim itself struck him as a gratuitous multiplication of flesh input. The commercial stuff was edited, of course, so that if Tally Isham got a headache in the course of segment, you didn't feel it.'

(Gibson Neuromancer)

What the hack is: ‘the holy grail. It is a concept which exists independently of the computer and can best be presented through an example using another technology complex enough to support its own version of hacking and hackers’ (Turkle)

The example she uses is that of phone-phreaking and one of its main adherents, John Draper, alias *Captain Crunch*. The hack, in this instance, refers to such technological stunts as having two phones on a table; talking into one and hearing your own voice in the other after a time-delay in which the original has first been routed around the world. ‘Appreciating what made the call around the world a great hack is an exercise in hacker aesthetics. It has the quality of [a] magician’s gesture: a truly surprising result produced with ridiculously simple means. Equally important: Crunch had not simply stumbled on a curiosity. The trick worked because Crunch had acquired an impressive amount of expertise about the telephone system. That is what made the trick a great hack, otherwise it would have been a very minor one. Mastery is of the essence everywhere within hacker culture. Third, the expertise was acquired unofficially and at the expense of a big system. The hacker is a person outside the system who is never excluded by its rules. (Turkle)

Hacker Generations: The first hackers

Scientific Management was invented by the engineer Frederick Winslow Taylor, and aimed at taking away from workers the control of the actual mode of execution of every work activity, from the simplest to the most complicated. Taylor's argument was that only by doing this could management have the desired control over productivity and quality. The methods advocated by Taylor were to increase standardization and specialization of work. In the computer field, this spelled, among other things, the introduction of programming standards, code reviews, structured walkthroughs and miscellaneous programming productivity metrics. The most profound effect of application of Taylorist principles to computer work was the introduction of a detailed division of labor in the field.

Computer workers found themselves stratified into a strict hierarchy where a "system analyst" was to head software development team consisting, in decreasing order of status and seniority, "programmers", "coders", "testers" and "maintainers". Then, below these on the ladder was a number of new adjunct positions created to serve the software development team: "computer console operators", "computer room technicians", "key punch operators", "tape jockeys" and "stock room attendants". Putting the different grade of workers in different locations further enforced the division of labor. Most corporations in the sixties and seventies hid their mainframes in locked computer rooms, to which programmers had no access. This isolated programmers from technicians, diminishing their social interaction and cutting off the opportunity for the exchange of ideas. It also prevented programmers from learning very much about the workings of the machine they programmed.

(Hannemyr Technology and Pleasure)

Early hackers rejected Taylorist principles and practices, insisting that computer work had to be rooted in artistic expression and craftsmanship and not in regulations.

(Hannemyr Technology and Pleasure)

‘In the 1980s, hackers entered the public imagination in the form of David Lightman, the protagonist in the hacker thriller *WarGames* (1983), who would inspire a whole generation of youths to become hackers, and later, in 1988, in the form of Robert Morris, an old-school hacker who unleashed the Internet worm, bringing the entire network to a standstill. These two figures would have significant influence in shaping hacker culture and popular media representations of it. From the wake of these public spectacles would emerge the “new school,” a generation of youths who would be positioned as heroes (like Lightman in *WarGames*) and villains (like Morris) and who, unlike the old-school hackers two decades earlier, would find little or no institutional or governmental support.’ (Thomas Hacker Culture)

The hacking generations

- 1) The “original” hackers were computer professionals who, in the mid-sixties, adopted the word “hack” as a synonym for computer work, and particularly for computer work executed with a certain level of craftsmanship ...

- 2) Then in the seventies, assorted techno-hippies emerged as the computerized faction of the counterculture of the day ... What characterized the second wave hackers was that they desperately wanted computers and computer systems designed to be useful and accessible to citizens ...

- 3) Finally, in the second half of the eighties the so-called cu emerged, appropriated the terms “hacker” and “hacking” and partly changed their meaning. To the computer underground, “to hack” meant to break into or sabotage a computer system, and a “hacker” was the perpetrator of such activities. (Hannemyr 1997: 2)

Levy's three generations

they all exhibited to various degrees qualities associated with:

- 1) the hacking's original connotation of playful ingenuity epitomised by the earliest hackers, the pioneering computer aficionados at MIT's laboratories in the 1950's and 1960's.
- 2) The second generation are defined as those involved in bring computer hardware to the masses with the development of the earliest PCs.
- 3) The third generation refers to the programmers who became the leading lights in the advent of computer games architecture.
- 4) The phrase hacker is now almost exclusively used to describe an addition to this schema: the fourth generation of hackers who illicitly access other peoples' computers.
- 5) Microserfs - the 5th Generation

Shared Qualities across generations

... it should be noted that the ... hacking communities are not completely disjunct. The hacker of the sixties was not beyond appreciating lock-picking skills, both those addressing physical locks barring access to computer rooms, and software protection schemes such as password files and encryption schemes, and he also believed that information was born to be free – including the source code he had written and the knowledge he had about the inner workings of various systems ... As far as politics go: Today's generation-x anarchist hackers share with their artisan and activist hacker predecessors a distrust in authority, a libertarian attitude and a tendency to position themselves outside bourgeoisie society's norms and values. (Hannemyr 1997: 2)

The hacker ethic and Internal Boundary Formation

In the middle of Stanford University there is a large concrete- and-glass building filled with computer terminals ... If you go further inside, you can discover the true addicts: the members of the Establishment. These are the people who spend their lives with computers and fellow "hackers". These are the members of a subculture so foreign to most outsiders that it not only walls itself off but is walled off, in turn, by those who cannot understand it. The wall is built from both sides at once ... (Zimbardo- Website)

Fuelling the hack and setting the ideal standard of hacking morality within the culture of hacking is the ethos of the first generation of early MIT hackers. Its main tenet was: "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!" [Levy, 1984:40].

The hacker ethic:

1. "All information should be free".
2. "Mistrust Authority- Promote Decentralisation".
3. "Hackers should be judged by their hacking, not bogus criteria such as degrees, age, race, or position."
4. "You can create art and beauty on a computer".
5. "Computers can change your life for the better".

(Levy 1984: pp 40-45).

The "Inner Circle"

an elite group of hackers, formed in 1982 - no attempt was made to formally draw up a specific code of behaviour. Bill Landreth argued it would have been as follows:

No Inner Circle member will ever delete or damage information that belongs to a legitimate user of the system in any way that the member cannot easily correct himself. No member will leave another hacker's name or phone number on any computer system. He will leave his own on a system only at his own risk. All members are expected to obtain and contribute their own account information, rather than use only information given to them by other members. (Landreth 1985: pp18-19).

"We were explorers, not spies, and to us, damaging computer files was not only clumsy and inelegant - it was wrong". (Landreth 1985)

Internal Boundary Formation

For hackers there's a difference between "real" hackers and the "wannabes" - Internal boundary formation differentiates between 'good' and 'bad' hacking activities e.g. this comment upon a spate of 'email bombings' by a character known as the 'Unemailer':

The annoying thing is that these vandals are really not using any real skills to accomplish these feats. It's the equivalent of speed-dialling a phone number over and over -- very aggravating but uninspired ... It is a shame today's batch of hackers have taken such a foul turn -- tarnishing the image of what was once a great hobby to many of today's major players in the industry. Today's hackers are even worse than the virus writers, who at least have enough talent to impress us with mutating engines. Email bombing and ISP spoofing reminds me of the joke where a kid calls you in the middle of the night and asks you if your refrigerator is running. You are supposed to reply, "I think so" and they respond, "Well, you better go catch it". Anyone can play the joke (or email bomb or ISP spoof), but only kids do it.

(Baker 1995 Web site)

The community of hackers

Cultures have:

- (1) Technology
- (2) Institutions
- (3) Language
- (4) Arts.

By this measure, what is 'Catholic Culture'? It is heavy on Institution and weak on Technology. Hacker culture is obviously very technological. Hacker Language is based on jargon that separates it from mainstream Englishⁱ. Hacker Arts would be centred on Star Trek and fractals. But you would be hard-pressed to find a reason for saying that Classical or Electronic New Age Music is 'hacker' since some probably enjoy Rap far more. (Marotta: email interview).

ⁱ For a full account of hacker jargon c.f. the online version of the hacker dictionary - *The Meaning of 'Hack'*. Available at http://beast.cc.emory.edu/Jargon30/APPEND_A/MEANHACK.HTML