The Hacker Perspective
by Mike Keller aka GoodHart

I suppose I do not really fit the "mold" concerning those that (normally) call themselves hackers. But I feel I have been a hacker since long before the time computers were available in the household (and many businesses didn't have them yet, either). No mobile, much less cell phones, not even wireless phones. Automobiles did not have computers in them (the first I remember were in Volkswagen Type 3s and consisted of a bunch of resistors - that supposed "brain box"), and I still remember the first ad I saw on TV for a calculator that had four functions and could be held in the palm of your hand... and it was only $2,500 (or thereabouts)! Being born around 52 years ago had both advantages and disadvantages then.

To me, hacking embodies the freedom to grow at the pace one desires to grow, i.e., learn. None of us are anything like each other, and schools tend to stifle the brilliant and push to exhaustion those that can barely keep up. I learned more during summer vacations then I ever did at school. I also recently learned that I have a mild condition called Asperger's Syndrome. It kept me away from "socializing" in school, and would have pushed me into some academics had I been given some direction or opportunities when younger. As it was, I was fairly well isolated.

Yes, today I work with computers, but not as technically as most "hackers," but rather as an operator - night time batch run - and "watch to make sure everything stays up" person. When I was younger, I was more interested in computers than I am now, although I did learn a bit of JavaScript to solve a problem with the company's one website. After a month of intense learning and finally getting their old code to work properly, they went in another direction with it anyways.

In looking back, my start really was with hardware hacking. I was fascinated by the way things worked, mechanically and electronically. For instance, I didn't know how my cassette tape-player worked, and so, since it didn't work so well anymore (since my Dad had bought it, I was obligated to wait until its near death), I opened it up and looked inside. I got a book on schematics (but then, this was in the day when the equipment actually had the diagram on the inside cover of the case) and parts at the library and learned about capacitors, resistors, and transistors, which had just come into use not long before. (I still have a few radios etc. with a schematic of the circuit inside the cover.) Once opened, I saw the problem right away. The stupid little round "rubber band" that drove the mechanism was stretched out and cracked. It was the first item I had ever owned that was not made to "last." (Remember Ma Bell's early dial phones? They could withstand a nuclear blast, and did withstand many a dropping of them.)

I honestly regret the loss of an early transistor portable radio (GE) I had as a youth. It took four D batteries and, although it was only AM, it picked up stations famously. It was leather bound, almost a gray color if I recall correctly. Because smaller capacitors were coming into use, they were not yet produced "sealed," so the entire circuit, once placed on the board, was coated in paraffin. Not really very much fun to desolder, but not impossible.

Is there a difference in the attitude of a "hardware hacker" and one that mainly explores through software and computers? I don't think so. We all tinker to learn. But it goes beyond tinkering most of the time for me. Ever since that day I had to trash the tape player because of a dumb rubber band belt being used, I made it a goal to first learn and then repurpose. I learned to make things better (much of the time, but not always!). I perpend that it is just another set of tools. Computers are tools, and hardware of any other type are just different types of tools; they all can be used for good or ill.

I was in the sixth grade when I caught the hacker bug. Our science class made a battery out of paper towels and some lead foil. Then the teacher hooked it up to a battery charger and, after a few minutes, the saline solution the "battery" was sitting in started to bubble. After about eight minutes, we could hook it up to a light bulb and it lit! Not exactly exciting stuff, but for a ten-year-old underexposed to the world, it was great. I then took my "battery" home, found a jar to put it in, and poured in my own salt water. I wrapped some bare wire around the terminals, and hooked them to a new cord that was removed from some appliance that no longer worked. Before I plugged it in, I figured that maybe the mains would be a bit strong for this, and so I wired in a resistor I had removed from the tape player. I plugged it in and wham. The resistor turned to dust, exploding like a firecracker. Lesson one: don't mess with mains power until you know what you are doing. Later on, I also found out, quite by accident, that a pen does not provide a better ground to the mains box than the box is already being provided with (don't touch an older box while standing on the concrete floor in your bare feet).
It wasn’t long after that that I learned my second lesson in hacking: don’t ruin it for others (especially if that “other” is you, Dad!), I still ten years old, wanted to know what was inside a D cell, the old zinc-carbon based ones. So I used my Dad’s crosscut saw to cut one in half using the bench vise to hold the battery. Then I looked up what that black stuff inside was at the library again. Not very impressive, but later, when I got myself a 110 amp arc welder, the carbon rods from discarded batteries were useful (once cleaned up) as cutting rods for thin metals (as long as one was careful not to breathe any fumes from the chemicals one could not wash off the rods). Anyway, I put my Dad’s saw away, but when he went to use it a few months later - since I hadn’t cleaned off the manganese oxide inners of the battery - it was all rusted and corroded, and ruined. I got a warm bottom that night. So, carelessness, lack of consideration for others and their equipment, and laziness are not good traits to aspire to as a hacker.

I was a quiet kid, so in order to try to get me “out” more, my parents bought my brother and me a pair of walkie-talkies. It didn’t really work, since I think we played with them one time. But, I saw that the box said it used “Channel 3” and, looking that up (still pre-Internet days), found out that was Channel 3 on the CB band. Cool! Now, we lived in a bit of a valley, so I wasn’t picking up any signals easily. So, I tried my hand at hacking it. Taking the back off, it was easy enough to attach a wire to the terminal where the antenna was and extend it out... hmm, still nothing... maybe something bigger... so I attached it to the central heating ducts of the basement. OK, now I could hear a bit, but not much. Hmm. I had an old Bulova five tube radio (AM of course) and attached the other side of the antenna to that. (I later found out there is a small current passing through that antenna and, standing on the basement floor in one’s bare feet, one should avoid touching it.) Whoa! Suddenly I was able to pick up a CBER about two miles away, and he said I was “blowing his doors off” (meaning I had a decent amount of power to my signal)... all from a nine volt walkie-talkie.

I could go on to describe an early “phone extension” before that was “kosher” - an answering machine attached to a semi-party line (one other party on the line... it would pick up their calls too, and I got some really weird messages until I finally uninstalled it the next day), a small forge I made from a 55 gallon drum, and the many many pieces of test equipment I made from spare parts and odd schematics, hand copied as the copying machine was not in widespread use yet. An adamant reader of Nuts & Volts, Popular Electronics, Electronics Now, CQ, EDN, QST, Circuit Cellar, etc.

The news of Robert (Bob) Pease passing in an auto accident recently hit me hard, as we had written one another a few times. He was a giant in his field and one of the kindest persons I never got to meet.

Don Lancaster’s Hardware Hacker was of great interest to me in the early days, also. You might say his influence was second only to Mr. Pease’s. One of my favorite articles by Don was “Elegant Simplicity,” found at http://www.mojina.com/glib/elesimp.pdf. One of the first articles I’d turn to in EDN was Don Lancaster’s “Gurn’s Lair Hardware Hacker.”

I did make some attempts at hacking during the “acoustic coupler” phase of home computers, but I really didn’t have the resources to do much (after modems became more “in line,” I did use the parts to an old coupler for a few projects, including a metal detector I’d put together).

In honesty, I don’t think this type of hacking is of any less importance than anything done “with” computers, but, as things go along of course, more “devices” contain them in one form or another.

At the moment, I am in the middle of recovering from a boot sector crash on my wife’s Windows machine. She is begging me to get as much info off of the hard disk as I can before I do any “wiping it clean” if I discover that it is not an actual hardware problem. If it is hardware, I can always use the hard disk as an auxiliary drive, without need of using it to boot.

After a week of fiddling (which included running Linux off a live CD for part of the recovery process), of course I find out that it is a bad boot sector on the hard disk, so it is going to become my backup as soon as I get the time to transfer everything.

One of my favorite things to do is to write instructions for instructables.com. After documenting a project, I publish it there for others to see and maybe build or improve upon. Information is shared across the board, on all projects and hacks. They have an active forum for general as well as project discussions, and even a few places to ask questions. As the site is inundated by quite a few young persons, many of them in their teens, some of the projects are a bit on the simpler side, but they range from K’Nex and papercraft items to home built RepRaps and desktop laser cutters.

None of this is very exciting in this world of “super car chases” and shootouts in movies. It has none of the “drama” of secretive spying or espionage. It’s just a world of unlimited exploration, which has spilled over into the arenas of astrophysics, genetics, and quantum physics... If it can be learned, it can be hacked. And if it can be hacked, it can be improved.

So I can’t offer any advice that is very much different than others have in this sense. But, for what it’s worth, MAKE Magazine tells us to void that warranty (if you can’t open it, it isn’t yours), and a host of Internet sites tells us to open, learn, make, and repurpose things. This is the wave of the future. And even old guys like me can be in the forefront of that wave.

Mike Keller aka GoodHart has been operating and helping maintain three AS/400 machines and about 26 servers on a second shift for the past 27 years or so. It affords him time to read, study, and work on other projects while backups and such are running. One of his favorite pastimes is dumpster diving, second only to creating working devices out of what others have discarded as worthless.