

## The Personal Computer Golden Age

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Some of us fondly recall the early days of personal computers in the '70s and '80s. We could poke through PC parts in dusty stores, frequently adjacent to ham radio equipment and war surplus electronics, or wait in long lines, in heat or snow depending on the season, for admission to a hall full of vendors whose only addresses were the license plates on their trailers. We would carry our treasures home, install them in our PC, and spend hours getting them to work (or maybe not). We would swap diskette shareware (software that was available for free, but included a request for payment). We had to learn a fair amount just to get our PCs operating, and a good bit more to configure them to work efficiently. There were many computer magazines, and bookstores had shelves full of computer material. However, by today's standards our computers and the applications they ran were limited and crude. The Internet was still in the future, and if we exchanged e-mail it was by using a bulletin board system that we accessed over telephone lines. There were text games, such as Hunt the Wumpus, and those with very crude graphics, such as NetHack. Editors were text only, with few provisions for formatting. Displays were universally cathode ray tubes (even for computers that claimed to be portable) and showed only text. Diskettes provided our only storage.

Today, the computer stores, shows, magazines, and books have largely disappeared. We buy our computer from an electronics store or an Internet dealer, turn it on, and expect it to work out of the box. As a result, many of us know little more about the internal workings of our PCs than we do about our cars, and computer enthusiasts lament the passing of the golden age. However, this grief is mistaken, for although much has changed, the golden age of personal computers is today richer than ever. Let's look at a few examples.

**Creative Writing** – In high school and college, I used a manual typewriter and a special, rather greasy-feeling, paper that could be erased. A 1000-word paper was a term project, and each revision required retyping the whole thing. Research involved a trip to the library, and any graphics were done by hand on separate sheets. Now such a task is an afternoon of labor, and most of the time is spent on the content rather than the tedium of putting the characters and graphics on the page.

When I first went to work, engineers wrote on lined pads or coding sheets and sent them to a typing pool or a keypunch room. Some days later, we'd get the result, mark the corrections, and send it back. Major changes required literal cut-and-paste (with scissors and tape). Again, after a few days, we saw the results, often with a new set of typos. This would continue until exhaustion convinced us the result was "good enough." As a result, the average engineer produced about one finished page per day. Word-processing or coding software now corrects mistakes as we go, typing pools and

keypunch operators have disappeared, and engineers spend more of their time developing products.

**Publishing** – Years ago, to create a published work, you typed the text (making liberal use of white-out), and glued it to card stock along with the photos and graphics. You then took these to a printer who photographed the pages and assembled a book or booklet. When I look at my high-school year book, I can clearly see the cellophane tape used to hold down the photos. Today, publishing software with its spelling and grammar checking and sophisticated layout capabilities allows individuals to produce work of much higher quality, and we can send the resulting e-book to as many people as we like. Or we can abandon the book metaphor and publish our thoughts on Facebook or a Website, where many examples make my old yearbook look shabby indeed.

**Calculation** – When I was in college, my calculator was a slide rule, which had an accuracy of two to three significant digits and could only multiply and evaluate simple functions (typically trigonometric). Moreover, it didn't keep track of decimal points, which I had to do manually. Adding required paper and pencil. Plotting the results meant using a drafting board and its associated tools. Now, we have scientific software that not only evaluates formulas, but also performs algebra and calculus and plots the results. Indeed, electronic circuit simulators are available so we don't even have to assemble circuits to measure their responses.

**Research** – Years ago, the telephone-book yellow pages were about our only source of information about vendors, and product information was delivered by mail. Compared to what is now available on the Internet, these yielded very slim pickings indeed. Instead of having to trek down to a public library (assuming it were open), we can search the Internet from home at any time, where such institutions as the Library of Congress, <http://www.loc.gov/>, and the Vatican, <http://digi.vatlib.it/>, make many of their documents available. True, much of the Internet content is trash, but with relatively little effort, its many treasures can be unearthed.

**Entertainment** – We are no longer limited to listening to only the local radio stations or reading the local newspapers. Most media sources around the world allow at least limited browsing of their material and maintain archives of their past publications. The problem is not access, but finding the gems hidden in the tons of overburden.

**Photography** – When I was young, editing photographs required a darkroom, an enlarger, and a chemical kit, costing several thousand of today's dollars, especially if you were using color. The effects, even when implemented by skilled technicians, were crude compared to what we can do today. Video editing was even cruder, as it was limited to cutting film strips and gluing them back together, and the only sound was the projectionist's narration. Today, using software ranging in cost from inexpensive to free, people with far less expertise can achieve truly spectacular effects.

**Computer Technology** – Today, we can buy very inexpensive, single-board computers, such as the Arduino and Raspberry Pi, and experiment safely with them,

since they are separate from our PCs. (They offer the additional advantage of being quite small and cheap, which means that if all else fails we can at least indulge our frustration by throwing them to the floor and stomping on them.) We do our shopping on the Internet and buy from vendors who offer far more variety than was available in any store or show. Both commercial and open-source software is widely available on the Internet, and it's far more sophisticated. Of course, we have to be careful to protect ourselves from malware, but that isn't new.

It's easy to get into a routine with PCs and use them for the same chores every day, instead of exploring new territory like you did when you first discovered them. Take a fresh look at the activities that pique your interest, and you will probably find computer tools to make them more rewarding. Being knowledgeable about computers' abilities and limitation, you have a head start on your search. Exploring such new capabilities requires initiative, because you must install, and of course learn to use effectively, additional software and perhaps hardware. As usual, there are trade-offs between effort and cost, in particular between heavily-advertised commercial programs, which often emphasize ease of use, and open source ones, which often have more features but require more expertise. I prefer the latter, because I can install several, experiment with them, choose those that suit me, and discard the others. I'm less likely to do this if each test requires a new purchase. Regardless of your approach, using a personal computer can inexpensively broaden your interests and improve your skills.