

Excerpts from “Pioneering the Worlds First Personal Computer”

By Robert R. Nielsen, Sr.

Editor’s note: These excerpts from a “yet to be” published autobiography. These excerpts contain only the Kenbak-1 factual details, which may be important to preserve for history. This contains some very interesting comments regarding intellectual property, suggesting that patent and copyrights for the Kenbak-1 which were sold to CTI, are now owned by the author. I asked John V. Blankenbaker about this in 2005 by email, and this is a point of disagreement. John said that since CTI did not uphold their full end of the contract in promoting and producing the Kenbak-1, John feels that the contract is nullified, and he retains all intellectual property. In 2005, Mr. Nielsen mentioned briefly considered a commercial reproduction of the Kenbak-1, but John seemed to promote free distribution of the information and design. However, in early 2007, John arranged for a commercial reproduction of the Kenbak-1, while Mr. Nielsen then proclaimed, “anyone should be able to make a Kenbak-1 if they want to.” These excerpts fall under fair use U.S. copyright laws, section 107, as detailed here

<http://www.copyright.gov/fls/fl102.html>

I think Mr. Nielsen shares my fear that this information will be lost to historians. If the autobiography is published, I will remove these excerpts from this site. My aim is only to protect these historical facts.

– tej.

[Background: Prior chapters explained how the author became involved in computer programming and training, then opened up a technical college for training electronic technicians, *Nielsen’s Electronics Institute*. NEI used various electronics and digital training devices made by CTI, which had been considering marketing the Kenbak-1 in 1973, so contacted the author for his opinion on the device.]

CONSULTANT FOR CTI

[.....]

FIRST EXPOSURE TO KENBAK-1 – WORLD’S FIRST PERSONAL COMPUTER (PC)

As best I can recall, it was somewhere around October or November of 1973, when I was contacted by CTI to inspect and advise them on a computer product they were considering. [...] CTI explained that it was a “computer” and asked me if I would evaluate it for use in schools as a device to introduce students to computers and their internal programming requirements. I agreed and personally picked up the computer and training manual. In about a week, I was putting the small desktop sized computer through its paces. I was astonished at the “power” it contained!

[.....]

After having the Kenbak-1, in my possession for about a week, I called a conference with the President of CTI to give my report. During that time, I explained that they truly had a small copy of a Main Frame computer in their possession. [...] They were extremely excited, and we arranged a time for the demonstration. In just minutes I had explained everything necessary for them to follow me as the program was entered, read back for accuracy, and “Run”.

I was so impressed with the Kenbak-1 that I promised CTI that I would purchase it and implement it into the Electronics Program.

[.....]

KENBAK-1 – ADVICE NOT HEEDED – HIGH SCHOOLS TO BE MAIN MARKET

Unfortunately, CTI had their ideas on marketing the Kenbak-1. They wanted to concentrate on “High Schools” and use them as a market. Personally, I thought that would be a mistake. In my opinion, the High School teachers lacked the professional knowledge needed to teach the Kenbak-1.

[.....]

Only forty were sold. Some of them were sold prior to CTI’s involvement through magazine advertisements. Of the forty sold, I purchased eight from CTI.

KENBAK-1 – MAJOR TRAINING TOOL IN ELECTRONICS TECHNOLOGY

My Kenbak-1, computers were not used to teach Computer Science. The college had NCR and IBM, Main Frame computers to accomplish that. The Kenbak-1s were employed in the Electronics Technology Associates Degree program to familiarize Electronic Technicians with the operations and architecture of computers...

Over the years and because of their frequent use our Kenbak-1 computers began to heat up [causing failure.] [...] We decided to increase the ventilation inside by drilling three small holes in the rear corners of the cabinet tops. That corrective measure was successful and the added circulation of air prevented any further chip failure.

[.....]

Some students had a rather “heavy hand” when pressing in the “no bounce entry keys”. If one of them became broken, it was a very delicate task to remove and replace it, however we accomplished that feat until we ran out of “keys”. We experimented on one Kenbak-1, by replacing all of the keys with a no bounce toggle switch. It only toggled, when flipped down and it engaged only for a brief time. That machine is still in working order, however without the row of “black and white” keys, its character has changed. It is still a working model of the Kenbak-1, in all other respects. The toggle switches appear to be more durable than the original keys. That modified Kenbak-1 is now in The First Computer Museum of Nova Scotia.

[.....]

KENBAK-1 – CTI RENAMED IT, COMPUTER SYSTEMS TRAINER - 5050

CTI bought out the Kenbak-1 and immediately changed its name to the Digital Computer Systems Trainer “5050” (fifty- fifty). They did not make any design changes other than place their CTI label in place of the word Kenbak on front of the computer. The training manuals published by the Kenbak Corporation, were modified and all reference to the Kenbak Corporation was removed. Again, CTI renamed the training manuals to conform to the new name for the Kenbak-1. In 1974, a copyright was established on the Programming Reference Manual, P-5050, and the Student Laboratory Manual, H-5050. The first printing for CTI was March, 1974. When CTI went out of business, Nielsen Electronics purchased all copyrighted material. When the Kenbak-1 was “pulled” from the curriculum at the school, I exercised my rights and placed the Kenbak-1, and all associated material in my possession as personal property.

[...my holdings included].....a copy of the electronic schematics for the Kenbak-1. There are no indications that they belong to either the Kenbak-1 or the CTI 5050, however they are authentic copies of the electronics incorporated into the computer. They were used in troubleshooting the Kenbak-1 by my school expert, Mr. Gary Crozier, as aging problems arose. It is noteworthy that I gave the originals to be

displayed alongside the Kenbak-1, computers I sold to the First Computer Museum of Nova Scotia. The curator of that museum promised that he would allow colleges and universities access to the Kenbak-1 and all printed material I supplied him. He would set up a “loaner” system and as equipment was returned, it would be shipped to other interested schools.

[.....]

ALL KENBAK-1 MATERIAL ARRIVES AT CTI – WHAT I OBSERVED AT THAT TIME

I had an excellent working relationship with CTI. When they got their shipment of Kenbak-1, materials in, (1973) there were about eight or ten fully assembled Kenbak –1 computers, several PC cards (the term mother board was not coined at that time), Console face plates, complete with input keys, output lights and switches, completely wired and ready to attach to the mother board. Back panel, power supplies were complete with the fan in place, also ready for attachment to the PC card by a simple plug connection. There were numerous, blank PC cards, front Console plates, fans, assorted “sleeves” of Integrated Circuits, the tops and bottoms of pretty blue cabinets, shiny steel handles, “spacers”, screws, bolts and the little rubber “feet” which would eventually be attached to the bottom of the Kenbak-1. Everything was present to put a Kenbak-1 together. It appears that John V. Blankenbaker sold out to CTI and that included everything, “lock stock and barrel”. In any event, CTI gained control of it. After CTI closed its doors, I had control and owned the copyrighted material.

KENBAK-1 – INVENTOR RELATES THAT HE BUILT HIS OWN COMPUTERS

I feel very strongly that because some of the Kenbak-1 computers were fully assembled, John V. Blankenbaker, its inventor, personally put them together. If such is the case, I consider them invaluable. In September 2003, I sold seven (7) Kenbak-1 computers to The First Computer Museum of Nova Scotia and retained one for myself. In view of the fact that there are only ten (presently known about) out of forty sold, the chances are that all these computers were actually built by John V. Blankenbaker. I am absolutely certain that CTI never built a Kenbak-1, computer from scratch. I also do not believe they sold any, other than to me.

KENBAK-1 – CTI GEARING UP FOR MASS PRODUCTION

I was present when CTI was working on a “jig” to attach components on a blank motherboard, but the project was never completed. I also had an opportunity to view their production concept. Their plan was to develop the “jig” and apply a specific methodology for soldering the correct components into the proper place. Later the supervisor would train production line employees how to do the same job. When I was examining the manufacturing procedure, the supervisor had the electronic schematics at her side, assorted “sleeves” of chips and a small “stack” of PC Cards devoid of components. In spite of my efforts to assist in marketing, the salesmen failed to convince educators to purchase the Kenbak-1 and the manufacturing project was never brought to fruition by CTI.

[.....]

Amazingly, it [*the Kenbak-1's owned by the school*] served its purpose [*were used by students*] into the mid 1990's.

NEITHER CTI NOR THE INVENTOR REALIZED THEY HAD FIRST PERSONAL COMPUTER

[...] According to, “The Computer Museum Report, Volume 17 – Fall 1986, advertisements went out worldwide from October 1985 to March 1986, designed to solicit old machines for the purpose of analyzing them and measuring them against pre-determined standards specifically developed to make

such a determination. According to the report, the heading of the ad ran – “Wanted: Old Thinker-toys”. Offers flooded them from 13 countries, vying for recognition.

The report indicated that over 320 entries were received. A panel of judges using previously prescribed criteria analyzed each entry to determine if it qualified as a Personal Computer. A total of 137 items were reportedly accepted. The judges were, according to the report, Stephen Wozniak, designer of the Apple II and co-founder of Apple Computer, David Bunnell, an early MITS employee, current publisher (1986) of **PC World**, and Oliver Strimpel. [...] Only after searching worldwide did they make their decision that the Kenbak-1, designed, built, and marketed by, John V. Blankenbaker in 1971, through his California based, Kenbak, Corporation, qualified as the “world’s first personal computer”.
[.....]

Its use in my school is the only known instance where the Kenbak-1 was used commercially to train students in a school or college.

[.....]

JOHN V. BLANKENBAKER – SHORT DISCUSSION ABOUT KENBAK-1

I have been in contact with the inventor by telephone and Email. When I asked John if I was correct and that his design emulated a Main Frame Computer he wrote, stating that, “Not in speed. Except for the lack of interrupts, it could be compared to much larger computers. The memory was very small and the speed was very slow”. In my mind, I had to ask, “what more could John have hoped for, considering the fact that his computer was built from chips available off the shelf”? John also stated, “I designed the Kenbak-1, from scratch by myself”. He also indicated that he still had a set of the original schematics. The PC board was magnificent in its design and John shared the fact that it was also his design.

[.....]

HISTORICAL VALUE OF THE KENBAK-1 – REALIZED VERY EARLY

Because the Kenbak-1 is “architecturally” sound, I realized that as time passed, it would have historical value. I also knew that the sales of them were extremely limited and surmised that because of teachers and or students using them without the necessary aptitude, many would be discarded. When they were removed from the curriculum, I exercised my option and transferred them from the school to myself personally. When I decided to close the Junior College in 1999, I pulled them off the storage shelf along with schematics, some training books, and the videos, still in their plastic cases and stored them in my garage in a large “boat box” I purchased for that purpose. Each time I moved, the big box moved with me. They were not well packed and I believe some of the “no bounce” keys got damaged in the moves. In a trial run of all the computers, only one was actually working. Because the console “keys” are the only way to “input” a program, a broken or loose key prevents any further testing. I started to re-attach some of the keys with super glue, but decided that should be done by an expert, possibly in the restoration section of a museum.

KENBAK-1 – FIRST PLACED IN THE BOSTON COMPUTER MUSEUM

A Kenbak-1 was first placed in the Boston Computer Museum and it has since been transferred to The Computer History Center in California. I sold seven of my Kenbak-1’s to The First Computer Museum of Nova Scotia. Some were in working order, others were not. Those nine Kenbak-1 computers are the only ones that I know of on public display. They are extremely rare because only forty (40) were built. Of those built, I now control only one. Fortunately for me, when CTI went out of business, I purchased the training manuals, schematics and some pieces and parts. I also bought the right to all of their copyrights.

KENBAK –1, SUPPORTING SCHEMATICS, TRAINING MANUALS AND VIDEO DISC, PLACED IN “THE FIRST COMPUTER MUSEUM OF NOVA SCOTIA

I gave The First Computer Museum of Nova Scotia the original schematics of the Kenbak-1 to put on display in the museum. I kept a copy for my own use and consider it my personal property. I also provided the original “Electronic Technician” training materials, used to demonstrate most of the programming functions I have described earlier for them to put on display. I kept the copies and also consider them to be my personal property. In both cases, the copies were more presentable than the originals because of their aging. I also gave them one of the earliest “Digital Trainers” made by Philco Ford. That is truly a treasure. There were two “video cases” containing materials I videotaped for the CTI Salesmen. I instructed the curator of the museum to have them opened, cleaned, copied and copies returned to me. The originals in the case could be put on display in the museum if he desired. As yet I have not received my copies. I had the original videotape that I used to train my instructors, taken apart and recopied. The original was given to the museum for the purpose of putting it on display also. The Digital Video Disc (DVD) I made from my original videotape was provided to the museum and it is allowed to be “played” within the museum. I still consider all printed and video material to be my personal property. Much of it will be incorporated in this autobiography.

KENBAK-1 – A COMPUTER PURPORTEDLY SOLD FROM EBAY FOR \$3,000 DOLLARS

In addition to the copies contained in the Boston Computer Museum and the First Computer Museum of Nova Scotia, there may be another copy in circulation. Mr. John Blankenbaker indicated in a telephone call I made to him (year 2000) that his Daughter had reported that she heard that a Kenbak-1 was sold on E-Bay for \$3,000. Notwithstanding those already mentioned, other than the one in my possession, I do not know of any others. If I am correct there would only be ten (10) in existence. When I was talking with John, I asked him if he had any computers, he stated that it might be possible for him to put a copy together from some parts he had stored somewhere, however he indicated that he now had other interests and that his time and investment in the Kenbak-1, was wasted. I personally do not believe he will attempt to put another Kenbak-1, in operation.

INVENTOR DISAPPOINTED – KENBAK-1 NOT USED PROPERLY TO TRAIN PROGRAMMERS

I praised the little computer to John. He acknowledged that other “programmers” really liked his invention and expressed an interest in it, just as I had. But he informed me that his computer wasn’t designed for experienced programmers, it was designed to “teach students” how to program. The fact that other programmers liked it didn’t impress him – it appeared he was disappointed that it could not be sold in quantities to educational institutions, to teach people about computers, which was his ultimate goal.

I got the distinct impression from him that he himself would have been an excellent educator in “Computer Science”. Because so many years had passed when I was conferring with him, he indicated that the computing industry had passed him by with technological advances. His main interest was now in the Genealogy of his ancestors and he was devoting all his time to building a Blankenbaker web site.

In the same telephone call I asked him to: “Please write your autobiography as there is definitely a place in history for it”. He replied, “Bob, I’m only 70 years old. I’ll do that when I’m too old to work on my other interests”. I chuckled at that thought and we soon ended the conversation. Now, I’m 70 and feel just about the same way! Unless John reads this story, he probably does not know how valuable an asset his little computer was to my Junior College and the students that had an opportunity to be trained on it. They would number in the high hundreds, and perhaps in the thousands.

CTI OUT OF BUSINESS – I PURCHASED COPYRIGHT MATERIALS AND ALL PIECES AND PARTS ON KENBAK-1

Because CTI went out of business, I felt compelled to purchase all the Kenbak-1, material they had in stock, which was not much. When they closed, everything was stacked in piles for the auctioneer. CTI had already done a major cleanup in the plant. I was fortunate to have a few front plates (console) complete with keys, power supplies and several motherboards. In addition to purchasing the hardware, I also purchased the “schematics” complete with component identification for insertion on the motherboard.

CTI sold me all of their “copyrighted” material as I was using numerous books on electronics, published by them. I have not renewed any copyrighted material, as technology has long since passed it by. It should be in the public domain and anyone wanting to reproduce it would be entitled to do so. That is not so with material that I consider to be personal “intellectual property”. Of course that would be copies of the training material I developed and any videos. Colleges and Museums would be allowed to play the video without permission; however I reserve any sales of them or other public distribution.

[.....]

I have had museums and collectors all over the world express a desire to own a Kenbak-1. Money always seemed to be their problem in the final analysis. I found a lot of collectors that pay the freight on used computers. I feared that one day, when they died, their garage full of “collectibles” would end up in a dumpster, headed for a landfill. For that reason, I insisted that any collector pay a respectable price for them. I made an exception for The First Computer Museum of Nova Scotia because of the willingness of the Curator to share the collection with the rest of the world.

Editor's Note: The above are just excerpts from the full autobiography, containing pointers towards the portions most important to history and research, and is not meant to be a stand-alone reference. Refer to the entire document when published for full context. This contains under 3,000 words, out of 87,000 in the original document.