First encounter: Ohio Challenger 2P (and its 4KB of RAM)



Personal computing, 1980-style.

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Update: It’s Labor Day in the US, which means Ars staff are more likely to be monitoring a grill than breaking news throughout the day. As such, we’re resurfacing a few classic stories from the archives, such as this from our old “First Encounter” series, which revisited those moments in which we first came across some new bit of tech that would eventually change our lives. This story originally ran on December 22, 2012, and it appears unchanged below.

First encounter

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I had seen glimpses of it as I walked past on my way to AP Geometry, but now I was about to enter the school computer lab for the first time.

It was September 1980 and my freshman year at Gateway High School had been knocked off-kilter barely a week into the first term. I had signed up for Russian 1, which involved a daily bus ride to the nearby high school in Aurora, Colorado where it was offered. My excitement at learning the language of the enemy during the height of the Cold War dropped considerably when only four students—from across the entire school district—showed up the first day of class. Such low enrollment meant Russian was cancelled a few short days later, forcing me to rework my schedule. I substituted Latin for Russian—which eliminated the need to hop on a bus each day—and that in turn opened a spot on my schedule for Introduction to Computer Programming.

My children have a hard time grasping this, but in 1980 the only computing devices I ran into on a daily basis were either calculators or video games. Sure, I might get a glimpse of the mainframe in the school office now and again, but my hands-on computing time happened either on my Sears-branded Intellivision knock-off or at the local arcade.

The computers in the lab at Gateway were unlike any I'd seen before. They were blue metal boxes with black keyboards and 9″ black-and-white TVs perched on top, and several were hooked up to teletypes. Chained to the desk next to them were cheap cassette tape decks. Big block letters informed me that these were Ohio Scientific Challenger 2P computers.

Priced at $495, the Challenger 2P sported a whopping 4KB of RAM, a 32×32 character display, and support for Microsoft

BASIC—all powered by a MOS Technology 6502 processor running at 1MHz. Even by the standards of the day, these tech specs were a bit underwhelming. (The Apple][+ came out the same year as the 2P—1979—and offered up to 16KB of RAM and 16 color graphics at 40×48 characters.) But that didn't matter to me, because I now had access to a computer. *And I could make it do whatever I wanted.*



Enlarge / One of the Challenger 2Ps in use at the computer lab at Gateway High School in 1980. (Credit: 1981 Gateway Olympiad)

We started the class with basic BASIC programming, simple stuff really.

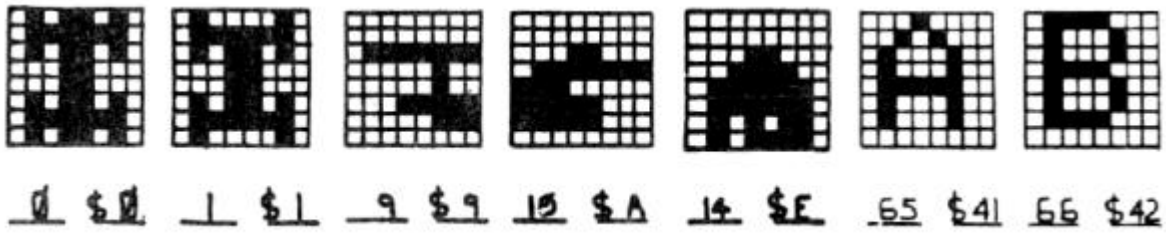
```
10 A=1
20 B=10
30 A=A+1
40 C=A*B
50 IF A>10 THEN GOTO 80
60 ?A" X "B" = "C
70 GOTO 30
80 END
```

Then we moved on to for-next loops:

```
10 B=10
20 FOR A=1 TO 10
30 C=A*B
40 ?A" X "B" = "C
50 NEXT A
```

Boring? Well, kind of. But one day I wandered by the computer lab during lunch and saw an upperclassman playing what looked like a game. A little USS Enterprise was being guided by keyboard presses across the TV screen as it avoided a bunch of asterisks. The game was primitive, even compared to my next door neighbor's Atari 2600, but the student had written it himself.

The video shown on the 9" black-and-white TVs used 1KB of memory. That 32×32 display worked out to 1,024 characters, but only 576 would actually show up (the rest were reserved as a sort of guard buffer). It was possible to write directly to the display, check to see if a given spot on the screen contained a particular character, and move characters around the display with the keyboard. I was immediately and irrevocably sucked in.



The Challenger 2P included graphical characters in addition to ASCII characters. (Credit: Professor Mark Csele's Ohio Scientific Page)

My spare time at school became devoted to successfully mixing the *Star Wars* and *Star Trek* universes by writing a two-player game that pitted the *USS Enterprise* against a TIE fighter (represented by a left-arrow and a right-arrow symbol). Should a phaser (hyphen) shot from the *Enterprise* score a hit, the TIE fighter would blow up—well, not so much "blow up" as be

transformed into a pair of asterisks.

This snippet from Challenger 2P game *Tank For Two* offers an idea of what my own code looked like:

```
390 POKE P1,TA(T1)
400 FOR X=1TO3:IF F1=0 THEN 460
410 IF B1<>P1 THEN POKE B1,32
420 P=PEEK(B1+M1):IF P=161 THEN F1=0:GOTO 460
430 B1=B1+M1:POKE B1,BD(T1)
440 IF P=TA(T2)THEN F1=0:B1=P1:S1=S1+1:GOTO 460
450 IF B1C2 THEN F1=0
460 IF F2=0 THEN 520
```

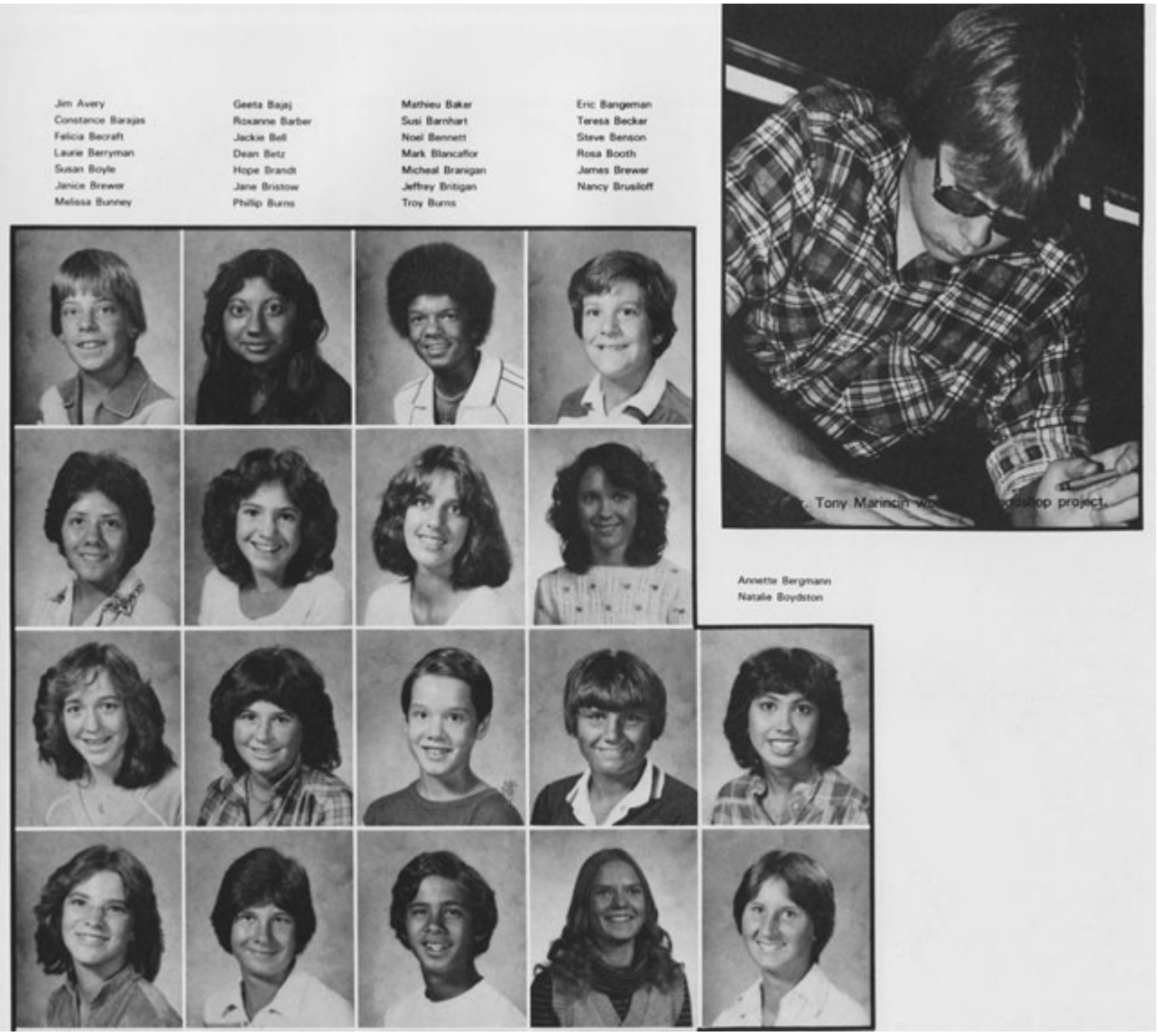
The POKE command was used to render a particular character on the display, with the variable to the left of the comma representing the location in memory and the one to the right the character to be inserted there. PEEK was used to read the contents of a point in memory, determining whether the laser shot from the tie fighter scored a hit on the Enterprise. It was heady stuff for a high school freshman in 1980.

Given my current occupation, it will come to no surprise that I spent every moment I could in the computer lab. I began buying and subscribing to computer magazines, manually inputting text-based games like *Hunt the Wumpus,* and saving them on my growing library of cassette tapes. If I forgot to bring a tape with me, there was the option of using one of the teletypes to print the program as a series of raised dots on a strip of paper. Loading from the spool didn’t always work perfectly, so I would also have the teletype loudly print out my original code for reentry, just in case.

Over Christmas break I even got to take one of the machines and its black-and-white TV home. Unfortunately, I lost two days of computing fun to a blown fuse on the 2P—yes, an actual glass tube fuse.

I desperately wanted a Challenger computer of my own. Even though the TV and stereo shop at Aurora Mall sold the Atari

400, and although the TRS-80 was available at Radio Shack, I would always head straight to JCPenney and then to the electronics department. There, in all of its color glory, sat a $600 Challenger 4P. But despite my best efforts, my mother was unimpressed by the possibilities of a personal computer in the house, and my entreaties to buy one fell on deaf ears. It would be another year before I bought my first computer, a Timex Sinclair ZX80 kit that I could never use because of an unfortunate soldering accident during assembly.



That’s me: top row, far right.
1981 Gateway Olympiad

When I showed up for my sophomore year, however, the Ohio Scientific computers were gone, replaced by Apple][and Apple][+ computers with 5-1/2” floppy drives and monochrome green monitors. While I was disappointed not to see the familiar

blue boxes, I quickly learned the Apples were far more powerful.

Three decades later, Ohio Scientific is nothing more than a memory. The Challenger 2P was succeeded by the 4P (color!) and, eventually, by the Challenger 8P before the company was purchased in 1981 and its PC lineup was discontinued. Sadly, my programming skills are mostly memory now as well, but the experience wasn't a waste. If more Colorado kids had wanted to speak Russian, my life might have taken a much different path. Instead, I had the opportunity to cultivate a love of computers as something I could not only use, but as devices I could tinker with, build upon, and ultimately control.

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