Is the HP-71B Still Relevant?

Włodek Mier-Jędrzejowicz

Abstract

The HP-41 family of calculators continues to be of interest and to be a source of inspiration 34 years after HP ceased production. The HP-71B was never as popular but was also of great interest, especially because HP released its internal documentation officially. 27 years after it was officially discontinued and 25 years after the last HP-71B was made, I shall consider in this presentation whether the HP-71B is still relevant to users and to enthusiasts.

Why was the HP-71B interesting?

During its development the HP-71 went through several major changes of design and of direction. What was initially a fairly simple upgrade to the HP-41 finally became a radically new design for HP, running on a new processor with new firmware and with a completely different design.

At the same time as HP were developing the HP-71B as an upgrade to the HP-41, they were also developing the HP-75C as a handheld version of their desktop series 80 computers. Interestingly, they did not cancel one of these two projects to avoid internal competition. They did do this in other cases, most notably when they cancelled the HP-95C desktop calculator to avoid it competing with the HP-97. Why not? It seems that the HP-71B came to be seen by HP as a handheld for use by people and companies developing multi-user systems and control systems, not a handheld general-purpose computer. This explains several things – the very high price, the extremely well-developed HP-IL system, and especially the availability of the internal documentation. The internal documentation was sold at a very high price to deter users like us from buying it, but to allow companies to buy it for the purpose of developing multi-user applications. I was actually present when the HP employee in charge of handhelds made the decision to sell the IDS in Britain at about £700 to make it inaccessible to ordinary users.

However, the very fact that the HP-71B was designed as a handheld for developers made it especially interesting to us, the people interested in the internals of our handhelds and in pushing the handhelds beyond the limits. Tapani Tarvainen, a Finnish enthusiast whom some of us will remember well, said that he survived on water and potatoes for a few months to save enough money to buy an HP-71B.

When HP set out to develop a new family of handheld calculators, they used the same Saturn processor as they had already developed for the HP-71B. That made it possible for us to hack their operating systems by referring to the HP-71B IDS, which made the HP-71B relevant in a whole new way. HP did not release the internal documentation of the new calculators, but they did drop a few hints, such as that a new instruction had been added to the Saturn instruction set. This hint allowed me to figure out what that instruction was when I was discovering the internals of the HP-28C and the HP-28S, as recorded in my book on these calculators.

What happened next?

So, a few wealthy or extremely dedicated enthusiasts obtained HP-71B units and developed interesting BASIC programs for them. Joe Horn even wrote a book about HP-71B BASIC. Articles were published in our journals and Richard Nelson with PPC introduced a separate publication – the PPC Computer Journal for the HP-71B and the HP-71C. Nevertheless, because of its price the HP-71B remained a somewhat niche product.

Separately, a few companies and organisations did develop projects to use the HP-71B. The biggest of these was the application developed by Zengrange in Britain for the Department of Social Security. (Have I got the name right? Government departments seem to change their names so often – even in the US lately!). Offices of this department were issued with an HP-71B for every desk, with a wand to read barcodes on folders, and HP-IL connections to a central computer which kept track of the folders by recognising which HP-71B and therefore which desk had a given folder. Typically for a government department, cost did not seem to be much of an issue if they used HP-71Bs in such numbers. HP also used HP-71B units to monitor some internal manufacturing systems – as I have said, that was one reason why HP-IL was so well developed for the HP-71B – it was used for important applications by HP themselves. Although the HP-71B was officially discontinued in 1988. HP continued to make HP-71Bs for their own use until at least 1990 – I hope to show one of these at this meeting.

As with the HP-41 family, third-party modifications and additions were developed. Memory modules could be built into the HP-71B, just like the HP-41. CMT developed RAM and ROM modules with greater capacity than HP's measly 4k RAM modules, which are now much sought after.

When the British department moved to a new system, and indeed when some other companies stopped using HP-71Bs, a glut of second-hand HP-71Bs came onto the market – they could be had remarkably cheaply on eBay at the time! Zengrange donated a batch of close to 100 HP-71Bs to our British club HPCC and at one of our conferences we gave an HP-71B as a gift to every attendee!

That source of HP-71Bs has dried up now and they are again seriously expensive on eBay. Still, many enthusiasts did obtain an HP-71B (or several!) at the time, and continued to develop programs and applications for them. As with the HP-41, development by third parties of add-ons continued, such as the FRAM.

So, is it still relevant?

As is the case with the HP-41, dedicated enthusiasts continue to build add-ons like the FRAM, even though the market for them is smaller. Neither Swiss Micros nor any other company has created a clone (tell me if I am wrong!). Just the same, interest continues.

Are the people who still use the HP-71B or develop add-ons dinosaurs, doomed to extinction? I don't believe so. The HP-71B is still a remarkably useful and powerful calculator, computer and controller. The math application is still the only one on an HP handheld that implements the IEEE standard including "Inf" and "Nan". The Math module expands it wonderfully – especially if you get a copy of the version debugged by Joe Horn (reminder – I must get a copy!). If you just want a desktop calculator with keys larger than those on a Voyager model, the HP-71B should be your go-to device. If you want to use it in RPN mode, not its built-in BASIC, then Bill Wickes' HP-41 emulator lets you do that. What is more, I believe that developing the HP-41 Emulator for the HP-71B gave Bill Wickes some of the ideas that he later developed into RPL on the HP-28 models and then the 48 and its successors up to the HP50g. That is a topic for a separate presentation, but is just one reason why the HP-71B continues to be relevant. We can but hope that someone (Moravia, Swiss Micros, Jose, who knows, will develop a successor for the HP50g and keep the HP-71B flag flying.

Thank you,

Włodek Mier-Jędrzejowicz