

Old Timers and HP Calculators

Richard J. Nelson

This is the second article in a series of three articles accessing what is happening in the calculator HP User Community, HPUC. The first article was titled *Corporate Memory, Outsourcing, and HP Calculators*.

Several years ago I received an email regarding the HP Handheld Conference, HHC, of that year. I asked the unknown sender if he was going to attend. His response was that he didn't want to hear a bunch of old timers talking about the "good old days." He wanted the presentations to be more involved with the "future." Of course he was completely wrong in his assessment of an HHC, but the "old" (i.e. passage of time) part resonated with me.

In my previous commentary I mentioned the famous quote about repeating history. Certainly older, and more experienced, users will remember more than the student customers that now make up a large portion of the HP calculator user community. What is implied in this repeating history idea is that it is inefficient and ineffective to keep "reinventing the wheel." After all, isn't the ability to write down ideas a major contribution to advancing civilization? Of course the assumption is that the readers will take the time to read what their elders have passed on to them. Old implies the passage of time and perhaps "time limitations" would have been a better title for this analysis.

HP has reorganized its calculator operations by having the Accessories Division absorb the Calculator Division⁽¹⁾. Calculators have previously been more "connected" to the group that made handhelds. We all know that product line is less productive than it once was so perhaps the recent change a few months ago is the probably the better choice. Managers who think in terms of mice, keyboards, and home servers, however, have a different perspective than experienced calculator mangers have; some of which were considered duplicate positions and these "old timers" have had to move on.

If you are able to talk to members of the calculator staff you will find that they view the change as an increased opportunity to contribute to the growth and development of HP calculators because they now have the resources of a much larger group. New management also means new perspectives and new ideas. Having HHC 2009 in their very building provided us with an incredible opportunity to be heard.

So what does this all mean? Even the people attending HP product development meetings can't say for sure because it is too early. The HHC timing for us was excellent. Remember that November 1st is the start of a new fiscal year and budgets and planning is usually at a fever pace during the month of our HHCs. I believe that we profited from some of this planning in the presentation that HP's Tim Wessman gave at HHC 2009. We were given a "business roadmap" similar to what Fred Valdez gave us at the Conference in London in 2002.

In terms of the calculator business there was a Wall Street Journal article about TI Calculator Numbers about six weeks ago that had some very good perspective/status information - believed to be accurate by those I have talked to in the business. See Appendix A. I have highlighted perspective sentences.

What is most important for old time HP calculator users is to keep in mind the current business climate when they comment on hpcalc.org, the hpmuseum, or the news group. The people who complain are not wrong in most of their desires for a better machine; they just don't have accurate knowledge of how the business has changed in the last few years. If you want to be taken seriously you should be accurately informed. Are these the old timers I mentioned in the title? Do they have a calculator memory far greater than that of HP? Does it matter?

1. *The Attach Group/Division is an HP business unit with profit and loss responsibility.*

The calculator business, in general, is difficult to evaluate from a business perspective. Once a calculator integrated circuit, IC, is designed the producer of this circuit sells it to anyone who wants to manufacture a calculator. Having a single IC calculator greatly reduces the cost so that it is possible to sell a simple (“four banger”) calculator in high volume for one dollar. More complex/advanced calculators can sell for ten dollars. Once you add a large display, especially a touch display, the cost rapidly increases. Add to this USB and flash memory for the operating system, and we have the high end machines in the \$100 to \$150 dollar range. Because of the many possible tradeoffs in the mix of hardware and software features for calculators the cost covers the full range of \$1 to \$150.

Calculators in the “disposable income” or “pocket change” price range will always be in demand.

Calculators in the more advanced sophisticated high end price range - models such as the HP 50g, Casio Classpad 300, or TI Nspire – are threatened (as are all mid-range models) by convergence of the calculator function with a smart phone or other handheld device. If you investigate the market place for the many emulated calculators you will find that most are well known models emulated to run on these even more expensive platforms. Why buy the real thing if you can buy a cheap, but accurate emulation?

I have always believed that low cost and personal convenience are the primary reasons that current calculators enjoy continued use and profits. Another reason is the requirement for taking exams that require a calculator.

Have you noticed that research and development has nearly come to a halt in terms of new features and functions? The high end models mentioned above were in development a decade ago. What we see now is the minor tweaking of old development.

What about the many new ideas that have been expressed at our Conferences? Wlodek outlined a broad class of mathematical functions (as used by Einstein) that still could to be added to a high end calculator in his trilogy of talks (HHC 2007/2008/2009) “Would/Should/Should Einstein Have used one?” Brian Maguire of Saltire has kept us up to date on constraint geometry developments since they did the pioneer work for the Xpander in 1999 and 2000. Their current software, however, runs on small computers, not calculators.

We did receive some good news this year in an update from Cyrille. Joseph Horn spent well over a decade developing a new algorithm for a much better and faster method of converting a decimal to a fraction. He reported on it at HHC 2003 and donated it to HP. Cyrille says it is now implemented into their math library, but we have yet to see a machine that uses its full power. That major new development was six years ago.

In addition to the extraordinary high development and support costs of a new generation of high end machines are the relative costs of doing business world wide. Most Americans only think in terms of what is best for us whereas a global economy requires world wide thinking. Just competing in the US is no longer adequate in the very high technology, high volume, low cost, electronics industry of which calculators are a part. Even the declining dollar is a factor that impacts how calculators are designed and built, and Tim didn’t even get into that aspect of the business.

When companies reach the gigantic size that HP has become they have to continue to grow in order to compete with other similar gigantic corporations. Volume is everything and the idea of a local dealer selling a calculator has been dead for at least 15 years. Most Americans haven’t noticed the changes in the way businesses have to operate in today’s market place in everything from fast food to calculators. An example is the “just in time” mantra for product distribution. I am reminded of these changes when I visit my mother who has been in a nursing home for many years. I mentioned a free refill of soda at lunch one time, and she had no idea that this was common place in the fast food industry. Soda is so cheap from large dispensers, and labor (time) is so expensive that it makes good sense to change the

business model of a fast food restaurant. Let the customer spend the time getting their own refills. Labor is expensive because everything takes time, and time is money.

Consider the time it would take to answer the simple question, “How many non-HP RPN calculators have been made? 20, 35, 50, 75, more? To do this you would have to make a list. Think of using the Internet to answer this question. How many hours would it take you? 10, 20, 30? Could you actually make a complete list, especially if you wanted to know all models from all manufacturers anywhere – Argentina, Japan, the US, etc. Who has the time to try to answer this question? Should HP know or even care? Do we expect them to be the “experts” on RPN? Should there be any corporate memory on this subject?

Believe it or not one of the major factors affecting the designing and building of the next generation of calculators is time. The race to market for every new product is a time factor. The use of software and its updates, as I mentioned in the first part of this trilogy, involves time. Even the way we conduct our Conferences is time driven. We want to make the most of our stolen time from our normal lives to explore the technology of handheld computation. In reality we are technology junkies that happen to use fellowship and HP handhelds as a focus point.

Imagine an environment where your next production run of the new model has to be scheduled a very long time in advance. If you miss your schedule the time for the next production opening may be six months later. That is a very long time. In today’s business environment time is the most critical element. HP people don’t have the time to talk to or email their customers (except at an HHC 😊), the customers don’t have time for Internet research even when clicking a mouse is so fast, and the R&D folks don’t have time to properly design the next generation.

My background is electrical engineering. In my early years I worked under a PhD “electronicer” who proved to me that if you analyzed your circuit correctly you could actually accurately predict what the various node voltages should be etc. After 40 years of experience working with “electronicers” I learned that most circuits are not designed using a worst case analysis because it takes too much time. Only the Aerospace industry can afford that luxury. One of the slides that Tim showed had the statement: “We are inventing something as we go.” To me this means that there is no longer time to study what is needed, specify the needed design, and then work out the details of how the design is to be made.

Time is everything. No one has time to read manuals, look beyond 20 items in an Internet search, or even check a website on a regular basis. We are lucky if we can get time to keep up with our own email.

Everything and everyone is getting old. The calculator that started it all happened 37 years ago. In today’s world that is indeed a very long time. Hundreds and perhaps thousands of handheld product ideas have come and gone during this time and I don’t need to list them here. Everyone still needs to do ever more calculations – statistics, integration, summations, even simple conversions – and a dedicated calculator performs this task well. Time, however, is still a major factor in determining the future of that handheld device we call a calculator. Whether you are an old timer or a newbie you still have to get your work done – on time.

The next and last commentary of this trilogy will address the future, what is possible, and what could be done, i.e. what is plausible in view of the Time, Corporate Memory, and Outsourcing elements of the current HP Calculator environment. If you attended HHC 2009 you will relate to what I am saying and I am sure that you will have your own views of what could, should, or would happen next.

I am always interested in hearing from you at rjnelsoncf@cox.net

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Richard
October 23, 2009

Appendix A – TI Calculator Numbers

Numbers Don't Add Up for a TI Calculator

Jerry A. Dicolo

New Graphing Device Is More Than Some Students Need as Old Models Hold Their Own

<http://online.wsj.com/article/SB125244891686393811.html>

See comments at the URL including many from HP users. These will help put "users" in perspective.

<http://online.wsj.com/article/SB125244891686393811.html#articleTabs%3Dcomments>)

WSJ TECH JOURNAL SEPTEMBER 9, 2009 Facing competition from iPhones and other devices that have caught on with the high school set, Texas Instruments Inc. is trying to inject some new life into its popular line of graphing calculators.

But its latest entry, the \$135 TI-Nspire, has gotten off to a slow start since hitting stores last year. One of the company's biggest challenges: convincing users the revamped model is better than existing ones, which generally cost about \$100.

Some math teachers say the Nspire, which has more computer-like features, is unnecessarily complex. And calculator enthusiasts complain the new model limits what kind of tinkering they can do.

[Photo: TI's first handheld electronic calculator from 1967 (left) and its latest model, the TI-Nspire (right), which has computer-like features.]



"TI-Nspire is a bit of a different model. It is taking us more time to have the market understand that," said Melendy Lovett, head of TI's education technology unit. The company's best-selling calculator remains the five-year-old TI-84 Plus, she added.

The Nspire is part of the Dallas-based company's strategy to defend its dominance in the sleepy but profitable calculator business as students head back to school. TI, whose scientists invented the portable calculator in 1967, accounts for about 80% of the U.S. market for graphing calculators in terms of units, according to research firm NPD Group.

Traditional graphing calculators, which are required for certain math classes and are used for college entrance exams, plot algebra and trigonometry on small screens and do a bit of programming. The Nspire has an operating system that makes the device run more like a PC, allowing students and teachers to run spreadsheets and take notes.

For some users the Nspire is too high-tech. "It sings, it dances, it does the dishes for you," said math tutor and retired teacher Lucinda MacKinnon, who owns an Nspire. "I can't imagine getting teachers to use that thing in the classroom. There is way too much going on."

Some calculator fans say they prefer the older models because the Nspire's operating system and other features limit users from creating the types of programs they have designed and shared in the past.

"In all the other calculators they have always encouraged programming," said Michael Vincent, a law student and calculator enthusiast who helps run the Web site ticalc.org. The site offers free downloadable programs and games students can put on their TI devices, a popular time-waster in high schools. Mr. Vincent, who at one point owned 14 TI calculators, said the Nspire offers new interactive ways of solving math problems, but limits the computer languages that can be used to write programs.

Last year, 29-year-old programmer Gabor Nagy released a graphing calculator app for Apple Inc.'s iPhone and iPod touch. In the first five months, a free version was downloaded by 1.2 million users, he said, and a version that costs 99 cents has sold more than 45,000 copies.

TI rival Hewlett-Packard Co. has also released a similar iPhone app that costs around \$30. H-P has a less than 5% stake in the graphing calculator market, according to NPD, and focused mostly on college and professional users.

"We've had a bit of a late start," in the high-school market, said Dirk Dickson, head of H-P's calculator division. But the company is renewing its focus on the much larger middle and high-school markets.

Casio Computer Co., which is a distant No. 2 to TI in calculators, said its lower-cost devices -- one graphing calculator retails for \$50 -- are more appealing in the current economic environment. Greg Yurchuk, marketing director for Casio, said the company believes it is set to gain market share this year.

"It is a mature market, and we are feeling competitive pressure from alternatives," said TI's Ms. Lovett. But the company and analysts say the nature of the education segment gives TI an advantage. "Education is a market that doesn't change quickly," she added.

For one, standardized tests, including the SAT and ACT, prohibit test takers from using devices that have wireless connections such as iPhones.

Many supplements for high-level math classes direct students on how to solve problems using a TI device. That's helped TI maintain a steady stream of revenue from calculators for most of this decade.

TI's calculator business has generally accounted for about 5% of TI's annual revenue and profit. The unit had a profit of \$208 million on revenue of \$526 million in 2007 -- the last year in which the semiconductor giant broke out results for its education business. Since 2008, the results have been folded into a larger segment.)

The Nspire also has its fans.

Andrew Munsell, 15, owns both a TI-84 and an Nspire, and likes the Nspire in part because of the added complexity. "The TI-Nspire that I have is not just a calculator any more -- it is a handheld computer," he said.

Mr. Munsell has also started up a Web site where other students can download simple games onto their TI devices, some that emulate popular titles like Tetris or Mario Bros.

At his school in Washington State, other kids took to their TI calculators once he provided a place where they could easily find games. "I was really the one that made the calculator cool. Almost," he said.

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