Paul Holmes Interview

By Stefan Piasecki

This interview was first posted as message #1070 on the Arcadia Discussion Group on November 27, 2002. The original posting has been edited to make reading it more clear.

Paul wasn't able to tell us that much about the later days of the 2650 (the Arcadia days) but he covers many aspects of the early days, the very early days. I will now take these questions to also contact the Türk-brothers again. Next to this I am trying to track down former Schmid employees, but this seems to be difficult. However, have fun.

Stefan: [Could we have some details about yourself?]

Paul: Some background information, plus a brief reply and update...

First, as to my involvement with microprocessors in general and the 2650 in particular. In the late 1970's and early 1980's I was "Chief of design" for Elektuur/Elektor, and then took over as "Editor-in-chief", for all (international) editions of Elektuur/Elektor. You can imagine that I was rather busy. We were already working on the "SCAMP" and "Junior Computer" when the 2650 project came up. Philips offered us the complete basic hardware design plus software; they had originally intended to market it themselves, but when that project was shelved they thought that publication in Elektor was the next best thing. Since (a) our microprocessor experts were already busy with the other two machines and (b) I considered this design the first truly interesting "general-amateur" application of microcomputers, I decided to take it on myself. At that time, my knowledge of microprocessors was virtually zero, but I got the hang of it quickly. In many ways it was "learn as you publish" - which is one of the reasons why we originally advised programmers to "block all interrupts"... they caused me too much trouble.

As I had expected, we were soon flooded with simple basic games software. The first batch that we released were often *very* basic, but I soon got ahead of the field(burning the midnight oil! ###or "pulling the Ward" as we'd call it today; Stefan###), and was able to vastly improve later releases. The Atari games served as an example of what could be done - without us realizing that it was actually a very similar machine! If memory serves me, we released at least three (audio) cassettes with about ten games each, plus a 45 RPM record. Then the IBM PC came over the horizon, and our interest in the 2650 waned. We released some further hardware updates, published the book (including the monitor listing, after an intriguing fight with Philips - but that's another story, if you're interested?!), and I personally kept a trickle of games coming out. I heard vaguely about the Interton machine, and someone even sent me a few games cassettes, but we never pursued that angle. My personal interest diversified. I wrote the lengthy supplement comparing the various 16-bit processors that were being announced, and bought a Philips P2000T. That was Z80-based, with a BASIC interpreter, and after cracking the code in the interpreter I wrote many machine-language programs (mainly games) and several general-purpose programs in BASIC. I'm still rather proud of the fact that I wrote a spreadsheet program for it, less than a year after Lotus created the basic concept! In 1985 I left Elektor. Since then I spent more time on the P2000T, and then "graduated" (reluctantly) to the INTEL-PC family.

In summary, therefore:

-- When I wrote the articles (and the book) on the 2650, I was still learning. Also, I was very busy with other matters. I didn't attempt to look for similar machines on the market; not even when we were pointed towards Interton.

-- Once I had reached the point where I could make the extended TV games computer "sit up and beg" (e.g. writing an extensive knight-in-maze program with castles, dragons, puzzles, sound effects and three complete polyphonic wedding marches, all fitting well inside the 3 3/4 KByte RAM...), I switched to other machines.
-- I left Elektor in 1985, and have had very little contact with them since

However... a few years ago, we moved house. At that time, I trashed the hardware. I *thought* I kept the software listings and tapes... but, having spent quite a while searching over the last weekend, I am beginning to fear the worst. At that time, of course, the software was handwritten (no printer!), and so far I have only come up with printed P2000T listings. I only found one cassette; regrettably, the first - with the most primitive games. Maybe, somewhere ... I might find the rest ... but I fear the worst. Now, to your questions and comments. Answering mainly from memory:

Stefan: Your German is almost perfect ...

Paul: Good to know I haven't forgotten that!

Stefan: ... but I plan to bring parts of this mail and your answers to certain questions online, if you agree.

Paul: No problem, if it's any use. Go ahead!

Stefan: Another guy, Adam Trionfo, is trying to understand the machine and even programmed several sample programs. Another German collector, Max Clemens, has in-depth technical knowledge of this and other game-machines.

Perhaps I could help them? You have my e-mail address.

Stefan: ... for games ported over to the Arcadia, if we ever find the missing info that would enable us to program a complete game.

Hmmm. To get the best out of these old machines (with very limited RAM), you will have to re-think any games. You can "port" the basic idea, but the final version will have to be machine-oriented. That means omitting some elements, and adding others.

Stefan: ... classics like Space Taxi (1984) ... I teach games-design at the games-academy in Berlin. For me as a believer in simple but powerful elements that can bring a game forward it would also be a great lesson in "sizing down" and concentrating on what really counts: gameplay.

Aha! A man after my own heart. I could not agree more fully.

Stefan: Which brings me to an interesting point: what if we take a modern game, rewrite the concept so that the game will keep its original elements and port it over to the Arcadia with your help and maybe the help of some Interton programmers like H.H. Bieling (no active programming intended, just help and advise) and make a series of articles for Elektor out of it - "games design through the ages". I mean, your generation started it all, my generation brings it to perfection. I believe that it might be interesting for Elektuur ...

Paul:
a) Provide me with the hardware, and I'd be delighted to do "active programming"!
b) I could provide "help and advice". But "active programming" is probably easier...
c) As mentioned above, I have no ties with Elektor.
d) "Your generation" makes me feel old. But you're probably right. Further to that:
e) I currently teach electronics. I often tell my students that we electronics experts made one major mistake: we thought that developing software was such a simple matter that we

could turn it over to lesser beings - software designers. Which led to disaster: umpteen MegaBytes of program code ... less reliable and much slower than what we ourselves could and would have done.

Stefan: Technical Department: Do you have any of the following documents or information that you could copy for us? Any 2637 docs?

Paul: No

Stefan: Memory map of the Arcadia?

Paul: No

Stefan: English version of the book "TV-Spielcomputer?"

Paul: Yes, my own copy. The original text (all others were translations)

Stefan: Any source code available (on cassette tape or printout)?

Paul: Still looking, but very little so far.

Stefan: Administrational things regarding worldwide distribution of games and systems: You obviously have been involved in the Elektuur TV-Computer and possibly the Interton. What exactly did you do? Some person at Elektor mentioned that relatives of yours worked or work at Philips in the research area. Have they been involved with the 2650?

Paul: For what I did: see above. As to my "relatives": my father was deputy director in charge of the development of gas discharge lighting, and never touched a computer in his life. My brother was (and is) a loudspeaker designer, and highly skilled in audio design - he *uses* computers.

Stefan: Do you know what the main purpose of the 2650 was? Surely not a games-processor. You mentioned military roots and that the processor wasn't officially known in the US due to its military links.

Paul: A simple question that deserves a ten-page answer... Very briefly: At that time, several manufacturers were designing 8-bit processors. An 8-bit opcode limits you to 256 basic instructions, so you have to choose. INTEL went for data-base oriented (lots of addressing modes, primitive and basic program flow); SIGNETICS opted for computation-based, with extensive conditional program flow and an extremely logical and straightforward instruction set. (And ZILOG used a cunning trick to work in almost twice as many instructions for their Z80.) Now we come to hearsay. When I was over in The States to promote a US-edition of Elektor, I talked to one of the main component distributors. I mentioned the TV games computer, with its Signetics chip. He was astonished: "Signetics don't make microprocessors!". I insisted that we were using the Signetics 2650. He came back to me the next day: "How on earth did you get hold of those chips? They're low-level classified: the total production is supplied to the military. They're certainly not available on the US market!" We then *assumed* the following scenario: The military evaluated all available microprocessors. Signetics won. The military required almost their total production capacity. However, to supply a guaranteed 1000 chips, any manufacturer will produce at least 1100; the 100 leftovers are insufficient for the US market, so they are shipped to Europe. Sounds plausible?

Stefan: ... a 2650/ 2636 combo-card was used by the Italian (?) company Zaccaria

Paul: I don't know anything about that one. But it fits the above scenario.

Stefan: The whole Interton/Arcadia mess ...

Paul: Sorry - I don't know about the other machines.

Stefan: Is this list correct, or almost right or did we forget anything of importance? Do you know anything about the latter machines?

Paul: I *think* Elektor published before Interton's machine. Bear in mind that we first published articles; the book came later. I can look up the exact publishing date - I still have those old copies.

Stefan: Was there a relationship between the home-built computer, the Interton and the Arcadia? It must be more than a coincidence that all were based on almost the same hardware and that even games could have been made compatible?

Paul: I really don't know. Great minds think alike? Atari was certainly one of the first- they were in the arcades long before we published.

Stefan: Was Elektor involved with the making of the Interton/Arcadia?

Paul: No - not to my knowledge. We got the info from Philips. I *think* Atari was earlier, and Interton was later. Interton may have got the idea from us (?).

Stefan: It appears that Philip´s daughter Signetics developed and manufactured the chips. Can you tell us anything more about the links between Signetics and Philips?

Paul: Basically: Philips bought Signetics around that time. Signetics had already developed the chips, and Philips didn't really know what to do with them. Philips is a *hardware*-oriented company... they weren't really interested in software.

Stefan: How was Signetics involved with the home-built computer? Were they involved with the Arcadia? Or did they just produce an overstock of 2650´s that were then sold to others, being Elektor and its articles just another sales-channel?

Probably. Or, in our case, read Philips.

Stefan: The games: ... comparing ... the Arcadia and Interton family ... Can you agree and comment on this?

Paul: Without any "inside" information: in those days, we games designers often looked at the on-screen efforts of others. Obviously, we would emulate anything that looked interesting, game-wise. At Elektor, we didn't copy anyone else's code, but I can't speak for other games designers...

Stefan: ... Andrew Choi. Have you ever heard of the Hong Kong based developer UA Ltd.?

Paul: No - never heard of either.

Stefan: It seems that the first 2637 specific 2650 machines ...

Paul: Sorry - no info on this.

Stefan: Was Philips directly involved in these machines?

Paul: I doubt it. As I said above: Philips was hardware-oriented. Their basic philosophy (carried over to the P2000T) was: "We'll provide the hardware - let others provide the software".

Stefan: Can you remember how the licensees were found and contacted?

Paul: No...

Stefan: If you know anything about the licensees...

Paul: I don't.

Stefan: ...

Paul: You've lost me.

Stefan: Can you remember of specific events or market changes that influenced certain decisions or developments?

Paul: Ditto.

Stefan: Some companies worked on the same markets: Schmid and Hanimex ...

Paul: Ditto.

Stefan: Elektuur TV-Computer / Interton Special Questions: Homecomputer/ Hocosoft in Düsseldorf was a long-term distributor of Elektor kits and software. Have they been in any way independent in choosing, developing and distributing the games for the systems?

Paul: No - we supplied.

Stefan: How many tapes/games did HoCo-Soft sell (different tapes / quantities)? Have they been independent or were they a "brand" of Elektuur?

Paul: They supplied ours.

Stefan: There's an Interton Emulator available. This emulator does have tape-support, although this wasn't tested yet. Do you think you could digitize the tapes in WAV-format for us to test?

Paul: ??? I don't know.

Stefan: In an recent interview, Interton developer H.H. Bieling ....

No idea...

Stefan: Bieling as well as the Türk brothers (Interton bosses) ...

Paul: No idea...

Stefan: In the Elektor magazines ... Did Elektor/Elektuur indeed not know anything more concrete

No - we didn't!

Stefan: The VC4000 contains a noise generator. A book (Frech-Verlag, author was H. Bernstein) described this device. Did this device also come from Philips? Is there a reason why Elektor didn't mention this? Was it because it came from another publisher?

Paul: We had our own noise generator - as an extension. I don't know about the other.

Stefan: Do you know how Interton came across the VC4000?

Paul: No...

Stefan: Do you know who holds the rights to the games and the hardware?

Paul: No. But I doubt whether anyone would still worry!

- End of Interview.