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Canon Cat

Jef Raskin Information

Paul Baker's Cat Comments
Oct. 1994

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Canon Cat

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MR. PAUL BAKER
APPLE COMPUTER, INC.
20525 MARIANI AVE.
CUPERTINO, CA 95014

*Baker replied
on 03 Oct 94*

Re: Jef Raskin and the Canon Cat computer

Dear Mr. Baker:

Recently I learned that you were the main hardware designer for the Canon Cat computer. As such, you may find the enclosed paper I wrote recently for a computer history group of some interest. This paper attempts to show that Raskin's original ideas for the Macintosh were implemented in the Cat computer.

I had already submitted the paper to the computer history group when I learned of your Cat involvement. As such, your name does not appear in the paper. I plan to upgrade this paper soon and include more detailed technical information relating to the Cat's hardware and software design. If you have any documents relating to the hardware design I would very much like to see copies. I have the following specific h/w questions for you that I hope you will answer:

- 0) How many people worked on the Cat hardware and who were they?
- 1) Why did you choose the 68000 as the CPU?
- 2) Why did you choose a disk size of 256K vs. a larger size (e.g. 400K)?
- 3) How far in the development phase was the Cat laptop?

You may also be interested to know that Jef Raskin is now writing a Macintosh history book titled **The Mac and Me: 15 Years of Life with the Macintosh**. I have a draft copy and found it fascinating reading. He talks a bit about the Lisa computer. As a Lisa hardware designer you may find this book interesting reading.

Sincerely,

Encl: Canon's Cat Computer: The Real Macintosh

David T. Craig

Wednesday, June 22, 1994

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PAUL BAKER

03 Oct 1994

DAVID T. CRAIG

Hi David,

— See 22 June 94 letter

I received your letter some time ago, but have had a fun summer and not kept up with my mail. Sorry it has taken me so long to respond.

I did indeed work at Information Appliance and worked on the Canon Cat as well as the earlier product of IAI, which we called the Swyft and the plug-in card for the Apple //e, which was called SwyftCard.

Once I left IAI, I didn't keep any of the Cat or other documents that I had, but I think I can answer your questions.

0 - How many people worked on the Cat hardware and who were they? At IAI, we had myself, Mino Taoyama, Charlie Springer and Ralph Voorhees. There was also a large staff at Canon, but I can't remember all their names. The project leader at Canon was Susumu Takase and there was a team member named Suzuki, but that's all I remember.

There was also a software team composed of four individuals: Terry Holmes, Jim Straus, John Bumgarner, Johathan Sands. There were a few other individuals in the company who contributed to the product, one was Jef's friend Jim Winters who was one of the originators of the leaping concept and Scott Kim who designed our fonts and did other graphic and software design (although he was more involved in the Swyft than the Cat). Also, Doug McKenna, who was actually one of our investors, is very technically competent and provided us with help in evaluating design options throughout the project.

1 - Why did we choose the 68K CPU? Well, the first reason was probably that we had built the Swyft with a 68008, so we could easily port the code from the older product to the Cat. However, since almost all the code for the Cat was rewritten, really the big part of the code that transferred was the forth development environment and interpreter. On the earlier Swyft, the original design used a 6502 (same processor as the Apple II), but when I joined the company we redesigned to use the 68008 because it was at least 4x the performance and only cost a few dollars more. The 68008 also has a 1 Mbyte address space vs the 64K address space of the 6502 and using the 68K let us get away from any sort of RAM/ROM banking which made the code more efficient and also allowed us to have a larger memory, which improved the product. I

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think the Cat also had a 256KB main memory. We had 128KB of ROM as well.

The SwyftCard used banking (because it ran on the Apple //e which had a 6502 and small memory space). This was a constant source of bugs and it also made it more difficult to develop the code. We were glad to have a single address space in both the Swyft and the Cat.

2 - Why did you choose a disk size of 256K vs a larger size? The operating paradigm of the Cat (and the Swyft and SwyftCard) was that the disk was simply an image of the memory. Thus the disk capacity matched the memory size - if the RAM was 256K, then the disk had to be the same size. Since the Cat had no concept of files, there was no need for the disk to have any different capacity than the RAM. In fact the disk drive we used was a regular FM 80 track 3.5" floppy, so the capacity of the drive was actually 360KB, but only 256K was used. The floppy drive had only one head, so it was half the capacity of the standard floppy used on IBM-compatible PC's at the time. We did not use the GCR encoding that is used by Apple computers, which meant that we would not have had the 400KB capacity available to us.

One advantage of recording the entire memory to disk was that we could recall the data that was on the screen first, so it seemed like the user's data loaded instantly, when it actually took about 15 seconds.

3 - How far in the development phase was the Cat laptop? While I was there we built a model with Swyft (not Cat) software which worked. After I left the company, Mino produced a much better model which was based on Cat software. I think they were trying to productize the laptop when the company ran out of money and was closed.

I did enjoy reading your article and thought that it presented the Cat and IAI in a very favorable light. I worked there three years and enjoyed the work, although there were many long hours and we were ultimately unsuccessful in producing a commercial product.

With the wisdom of looking back, it is easy to see that the Cat was doomed more by the advance of other technologies. The product was ideally suited to the task of word processing and communicating. But the Macintosh, and now Windows, with their graphical user interface has made more powerful computers more approachable for users and relegated text only systems like DOS and the Cat obsolete. I suppose you could say that the current "pocket organizer" type

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products are the legacy of the Cat - text only, limited function, low cost products. These products would probably benefit greatly from the "leap" function which makes it very easy to find things in a computer.

Although Canon may not have been successful in selling the Cat I would say that Takase-san with whom I worked very closely was a pleasure to work with and the several trips I made to Japan to work with the Cat team were very enjoyable because of the quality of the engineers working on the project on Canon's behalf.

Although I was closely involved in the hardware design of the Cat, my actual title at IAI was Vice President of Engineering (which is pretty meaningless in a company of 12 people), but what I did was serve as the project leader - working on both hardware and software as well as coordinating the specification for the project. This responsibility fell to me largely because Jef did not like to work with the Canon people. They had several features that they absolutely required (for example spell checking) which Jef felt made the system more complex than the original simple system he and Jim Winters had conceived. Thus it fell to me to negotiate between Jef and Canon to resolve the final spec as well as it's implementation.

Although the Cat was produced on schedule, the reason that we had to sell the product to Canon in the first place was that our original product, the Swyft was about a year late and our investors refused to invest the several million dollars that would have been required to launch the Swyft under IAI's own name. One fairly amazing thing about IAI was that it was in business for about 8 years total and the investors really only lost about \$3 million over that whole period - there have been many startups that burned that much money in one year!

Thanks for your earlier letter. I was surprised that anyone would be interested in the Cat or IAI so many years after it was out of business.

Regards,

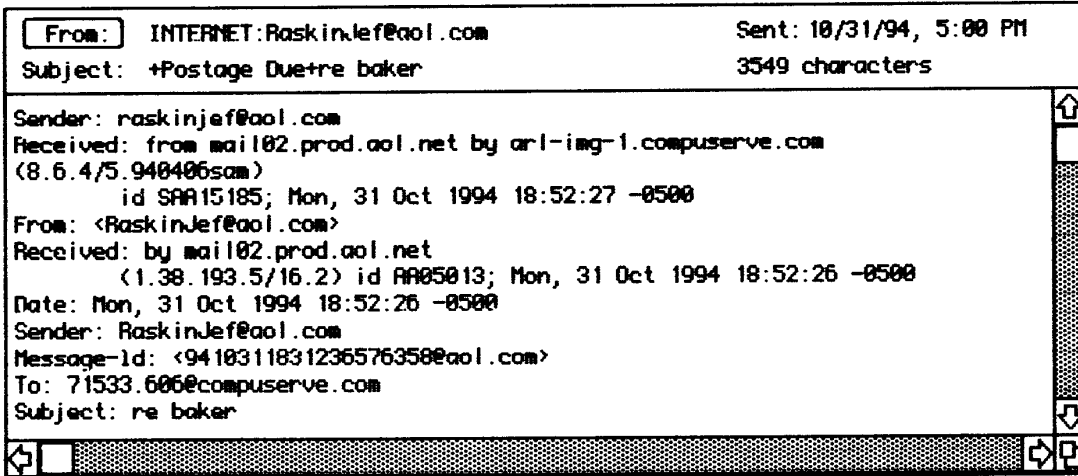
Paul Baker

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Canon Cat Computer Historical Information

Jef Raskin's Comments
about
Paul Baker's
Cat Computer Letter

31 October 1994



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Received: from mail02.prod.aol.net by ar1-img-1.compuserve.com (8.6.4/5.940406sam)
id SAA15185; Mon, 31 Oct 1994 18:52:27 -0500
From: <RaskinJef@aol.com>
Received: by mail02.prod.aol.net
(1.38.193.5/16.2) id AA05013; Mon, 31 Oct 1994 18:52:26 -0500
Date: Mon, 31 Oct 1994 18:52:26 -0500
Sender: RaskinJef@aol.com
Message-Id: <9410311831236576358@aol.com>
To: 71533.606@compuserve.com
Subject: re baker

David:

Thanks very much for sending me Paul Baker's letter. It is very helpful.
"Johathan" should be "Jonathan" of course.

The last version of the Cat had 384K in both memory and on the drive. So
Baker can't be exactly correct about a 360K limit.

The working laptop (I still have it) has software that was a few versions
beyond the Cat. It had Hyperleap and some other amenities that the Cat
didn't.

I, of course, disagree with Paul about the idea that the Cat was "doomed." He
seems to have forgotten that it was a fully-bit-mapped system, and had Canon
exploited that and kept the product going until third-party software started
developing. It may or may not have prospered had not Canon abruptly dropped

it, but it was not necessarily doomed.

Puzzling is his statement that I "did not like to work with the Canon people." I enjoyed working with them a great deal, including my trips to Japan and their visits. I often disagreed with them--especially when they made decisions based on a lack of understanding of interface principles; their moving the UNDO key to the normal location for the DELETE key was a disaster; they claimed they did it for "marketing" reasons, but it made touch typing a nightmare unless you used a Cat and only a Cat. Like Paul, I also found Canon's Takase great to work with. On the spelling-checker our memories differ; we had to use the one that Canon had a license for and I did not like the way we had to interface to it as a consequence of its design (you had to LEAP to find spelling errors), but I recall wanting a spelling checker. I also disagree that our first Swyft was a year late. We had an iterative, testing-based schedule; I could not and did not give a fixed schedule to our investors. Though they had agreed to the concept and though we had budgeted for it, they continually pressed for a fixed schedule, impossible when work is partly research-based. I will admit that I would give one due date to our engineers and a different, later one, to our investors. But I think that such "fudge factors" are wise from a management point of view.

← IAI Invertas

I was continually amazed that they could agree to something in writing and then demand something else. I am pleased that Paul was impressed by our low-cost, high-productivity environment. And was perpetually surprised that the investors didn't recognize how cost-effective IAI was.

I don't know if I mentioned it, but the work Paul did for Information Appliance was superb. He is extremely hard-working, organized, and capable.

The great interest in the book I am working on, "The Humane Interface, Essays on Post-GUI Interface Engineering," the sudden interest in my articles on the subject, and the many invitations that I have recently gotten for talks about it make me suspect that perhaps Cat-like interfaces were not doomed but just a decade ahead of their time.

Re: design awards. One that I was able to find was the Industrial Designers Society of America's Industrial Design Excellence Award. SwyftWare got a number of magazine citations also.

Name:		Address:	
To:	INTERNET:RaskinJef@aol	INTERNET:RaskinJef@aol	cc:
Subject:	+Postage Due+re baker		<input type="checkbox"/> Receipt

Jef: 31 Oct 94

Glad you found Paul Baker's letter enjoyable.

> make me suspect that perhaps Cat-like interfaces were not doomed but just a decade ahead of their time

Hopefully you are correct here. Given that the Cat was a commercial system in 1987 I can extrapolate from your comment that Cat features will appear around 1997. Do you have any concrete evidence to support your claim? E.g., IAI patent usage?

> the work Paul did for Information Appliance was superb. He is extremely hard-working, organized, and capable

I've heard this from others who have worked for him at Apple. They think he did a great job managing the hardware development of the Lisa and his work with the LC Mac line was also supposed to be very good.

Thanks for the design award feedback,

Regards,
David

Jef: 31 Oct 94

Glad you found Paul Baker's letter enjoyable.

> make me suspect that perhaps Cat-like interfaces were not doomed but just a decade ahead of their time

Hopefully you are correct here. Given that the Cat was a commercial system in 1987 I can extrapolate from your comment that Cat features will appear around 1997. Do you have any concrete evidence to support your claim? E.g., IAI patent usage?

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