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Canon Cat

Jef Raskin Information

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THE REAL MACINTOSH

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DAVID T. CRAIG
736 EDGEWATER, WICHITA KS 67230 USA
E-MAIL: 71533.606@COMPUSERVE.COM


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Canon Cat Computer Historical Information

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Canon's Cat Computer: The Real Macintosh

(this is the Cat article that I made public and which has appeared in the Historically Brewed magazine and on the internet)

Author

David T Craig

Date

19 June 1994

Source

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Canon's Cat Computer: The Real Macintosh

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941 Calle Mejia, Apt. 509, Santa Fe, New Mexico 87501
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This paper was written for *Historically Brewed*, the newsletter of the Historical Computer Society of El Paso, Texas. Contact Mr. David Greelish at CompuServe address 100116,217 if you're interested in old computers and want to read fascinating stories about such computers and the people behind them.

If many faultes in this paper you fynde,
Yet think not the correctors blynde;
If Argos heere hymselfe had beene,
He should perchance not all have seene.

Richard Shacklock (1565)

INTRODUCTION

In 1987 Canon USA Inc. released a new computer named the Canon Cat. This computer was targeted at low-level clerical workers such as secretaries. After six months on the market and with 20,000 units sold Canon discontinued the Cat. The Cat featured an innovative text-based user interface that did not rely upon a mouse, icons, or graphics. The key person behind the Cat was Mr. Jef Raskin, an eclectic gadgeteer, who began the design of the Cat during his work on the first Macintosh project at Apple Computer in 1979.

The design and history of the Canon Cat is a fascinating story which this paper attempts to tell. I am not a Cat owner nor have I been fortunate enough to have used a Cat. All facts within this paper are based on various documents relating to Jef Raskin and his work at Apple Computer and Information Appliance, Raskin's company that created the Cat.

CAT HARDWARE

The Cat was a 17-pound desktop computer system containing a built-in 9-inch black-and-white bit-mapped monitor, a single 3.5-inch 256K byte floppy disk drive, and an IBM Selectric-style keyboard.

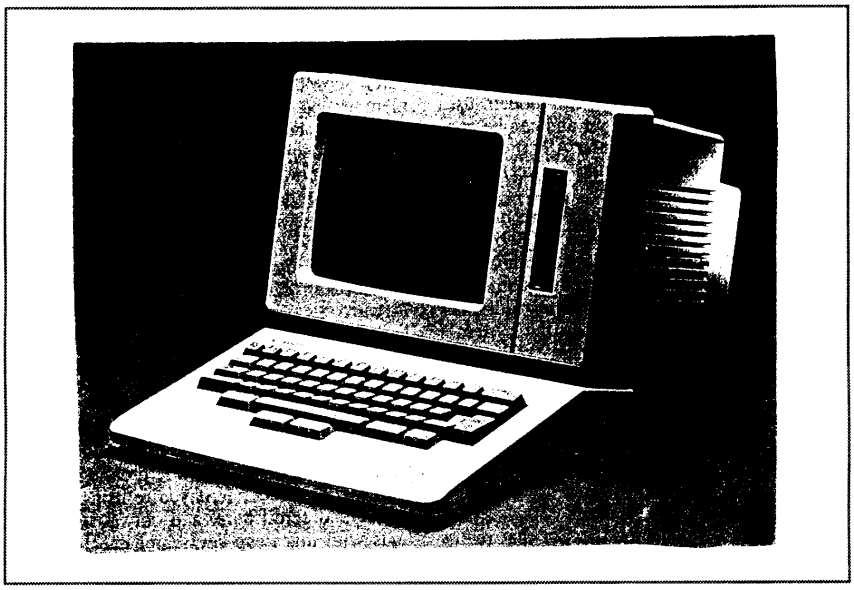

Figure 1 - The Canon Cat hardware

The product specs follow (*A Spiritual Heir to the Macintosh*):

Size	Dimensions	10.7 by 13.1 by 17.8 inches
	Weight	17 pounds
Components	Processor	Motorola 68000 running at 5 MHz
	Memory	256K bytes
	Mass storage	One 256K byte internal 3.5-inch floppy drive
	Display	9-inch black-and-white built-in, bit-mapped
	Keyboard	Compatible with IBM Selectric typewriter plus control functions on front face of the keys
	I/O Interfaces	One Centronics parallel port, one RS-232C serial port (DB-25 connector), two RJ-11 jacks (for telephone connections)
	Modem	Internal 300/1200 bps, Hayes compatible
	ROM	256K bytes
Price	$1495	

CAT SOFTWARE

The Cat came with an extensive collection of applications stored in ROM. These applications supported word processing, spell checking, mail merging, calculator calculations, communications, data retrieval, and programming in the FORTH or 68000 assembly languages. Also present in the ROM was a spelling dictionary based on the 90,000 word American Heritage Dictionary. System setup information and a small personal user dictionary were stored in 8K of battery-backed up RAM.

The Cat's user interface made this computer unique when compared to other computers. The user interface was based on a simple text editor in which all data was seen as a long stream of text broken into pages. Special keyboard keys allowed the user to invoke various functions. An extra key titled "Use Front" acted as a control key. You pressed Use Front and then a special key to activate a specific feature. For example, the L key was marked Disk, the J key was marked Print, and the N key was marked Explain (Cat's context-sensitive help facility). Other commands existed which let you change the system's various parameters (Setup key) and reverse your last action (Undo key).

When you powered on the Cat you were presented with a display that looked like a typewriter with a sheet of paper. Black characters appeared on a white background. A ruler bar appeared at the bottom of the screen. The Cat's memory held around 160K of data which was equivalent to 80 single-spaced printed pages.

You moved through your data using two extra keys called Leap keys located in front the spacebar key and by typing strings of characters. The Cat jumped to the next occurence of that string. Raskin claimed that the Cat's Leap-key search method to scroll from the top to the bottom of a page took 2 seconds, a mouse took 4 seconds, and cursor keys took 8 seconds. Larger documents increased these search ratios.

The Leap keys also controlled text selection (indicated by hilighting), deletion, copying, and moving. If the selected text was a mathematical formula one keystroke with a special key calculated the mathematical result and the answer appeared on the screen with a dotted underline overlaying the original formula. If the selected text was a computer program written in either FORTH or 68000 assembly language, then a special key let you execute the program (I don't think many Cat users did any Cat programming). You performed mail merges by selecting columnar text data and pressing another special key. Repetitive command sequences could be automated by assigning commands and text strings to the Cat's numeric keys. One special key let you dial a selected telephone number either for voice or modem communications. Data received from the built-in modem flowed into your text as if you had typed it.

The Cat used a 256K floppy disk for storage. Each disk held the entire contents of the Cat's memory in addition to system configuration parameters, the user's personal spelling dictionary, and the bit-map for the screen. When you inserted a disk the Cat read the disk's entire contents into the Cat's memory including the last saved screen image. This feature allowed users to transfer their entire Cat environment to another Cat by just taking their disk from one Cat and inserting it into another Cat.

The Cat's simple but powerful user interface received many PLAUDITS. For example, Bruce Tognazzini, a computer user interface guru who worked for Apple (he now works for Sun Microsystems), had the following to say about the Cat (*TOG on Interface* , 2nd printing, 1992, p. 182):

> *There are some really good abstract interfaces, ... Jef Raskin's Canon Cat interface is another. ... Before he left the (Macintosh) project, Macintosh was far more dependent on the keyboard, and Raskin knew what to do with the keyboard, too. For example, the Find function on the Canon Cat is some 50 times faster than the same function on the Macintosh. Raskin didn't use "Command-key equivalents": he designed a true keyboard interface from the ground up.*

Ezra Shapiro in his *A Spiritual Heir to the Macintosh* article had the following to say about the Cat:

> *The Cat represents an eye-opening new approach to data storage and retrieval; it will surprise anyone who thought that interface design was a dying art. Though the basic configuration appears on the surface to be a flexible word processor, the Cat's computational, macro, and programming capabilities make it quite possible to build data structures that emulate spreadsheets and databases.*

Raskin had the following to say about the Cat and the Apple Macintosh in a personal letter dated July 1987:

> *It is as advanced (in terms of human interface) over the Mac as the Mac was an advance in its day.*

Raskin's thoughts on the Cat's user interface and other user interfaces from the perspective of 1994 follow (*The Mac and Me: 15 Years of Life with the Macintosh* , Draft copy, May 1994):

> *The current paradigm of using application programs is inherently wrong from an interface design point of view. This is widely recognized, but the solution offered is to make them interoperable, which solves some of the problems but by no means all. GUIs as presently designed and used are an interface dead end. Though they can be patched endlessly, a large jump in usability can only come from a completely different approach. The Cat computer, which I developed for Canon, demonstrated that my alternate approach is implementable and both more productive and more pleasant than GUIs.*

JEF RASKIN AND THE FIRST MACINTOSH

One can say that Jef Raskin began designing the Cat during his tenure at Apple Computer. He started at Apple in January 1978 as head of its publications department. From 1979 to 1982 Raskin was responsible at Apple for a research project called Macintosh. He resigned from Apple in February 1982 when he was Manager of Advanced Systems over a disagreement with Steve Jobs, one of Apple's founders, concerning the Macintosh's direction. Steve Jobs took over Macintosh development and the Macintosh became a mini-Lisa computer which was totally opposite of Raskin's ideas for the Macintosh.

In Raskin's paper *The Genesis and History of the Macintosh Project* (February 1981) he provided his thoughts on the main software design criteria for the Macintosh:

> *My concepts in designing the software were extreme ease of learning, rapid (and thus non-frustrating) response to user desires, and compact and quickly developable software. Key elements in designing such a system are freedom from modes, the elimination of "levels" (e.g. system level, editor level, programming level), and repeated use of a few consistent and easily learned concepts. Such software also leads to simple and brief manuals without having to sacrifice completeness and accuracy. The editor is similar to the LISA editor but does not require the expensive mouse. A careful study showed that it is probably faster to use than a mouse-driven editor -- although it is probably not as flashy to see when demonstrated in a dealer's showroom.*

In 1994 Raskin had the following to say about the original Macintosh's software design (*The Mac and Me: 15 Years of Life with the Macintosh*):

> *My unifying software originally was to be a graphics-and-text editor within which applications could run as additional commands (via menus), all input and output being through the interface designed for the editor. Later, the PARC desktop metaphor was adopted from the Lisa group (and that from the Xerox Alto and Star computers). Due to the incredible work of the Mac software team, the necessary code was designed and squeezed into a Toolbox that fit into a relatively small ROM (Read Only Memory) that we could afford to put into the product.*

Raskin also had some interesting comments to say in one of his many Macintosh design memos concerning the intended users of the Macintosh (*Design Considerations for an Anthropophilic Computer* , 28-29 May 1979):

> *This is an outline for a computer designed for the Person In The Street (or, to abbreviate: the PITS); one that will be truly pleasant to use, that will require the user to do nothing that will threaten his or her perverse delight in being able to say: "I don't know the first thing about computers".*

The Macintosh's early hardware design was very similar to the Cat's design. One early Macintosh design from January 1980 provided a small screen, a keyboard, and two vertical built-in disk drives. Also present in this early Macintosh design was a built-in printer.

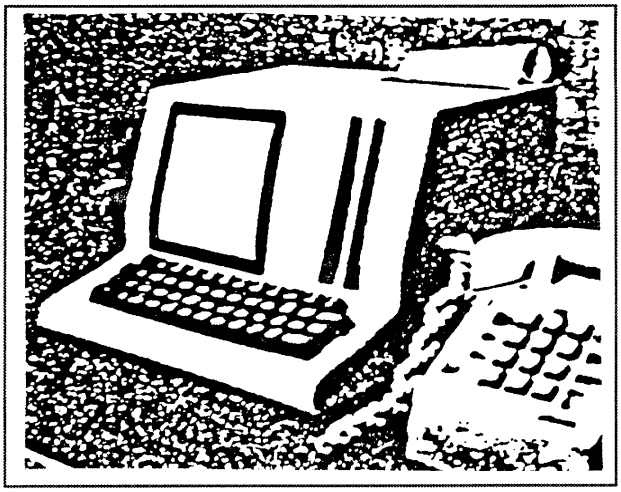

Figure 2 - Preliminary Mock-up of Macintosh computer (circa January 1980)

INFORMATION APPLIANCE, THE SWYFTCARD, AND THE CANON CAT

The company that Jef Raskin founded in 1984 to implement his computing ideas was located in Menlo Park California and was named Information Appliance Inc. Raskin's ideas about computers and the basic concepts for this company are summarized in his white paper *Information Appliances: A New Industry* (February 1986):

> *One of the prophets of the personal computer industry, Alan Kay, has said that the true personal computer has not yet been made. I disagree. We have, as the ancient curse warns us, gotten what we asked for. We do indeed have computers being bought by individuals for themselves; they are "personal computers". The problem is that many of us didn't want computers in the first place -- computers are merely boxes for running programs -- we wanted the benefits that computer technology has to offer. What we wanted was to ease the workload in information-related areas much as washing machines and vacuum cleaners ease the workload in maintaining cleanliness.*
>
> *By choosing to focus on computers rather than the tasks we wanted done, we inherited much of the baggage that had accumulated around earlier generations of computers. It is more a matter of style and operating systems that need elaborate user interfaces to support huge application programs. These structures demand ever larger memories and complex peripherals. It's as if we had asked for a bit of part-time help and were given a bureaucracy.*

Information Appliance's goal was to create a computer system that would be both powerful and easy to use. The company developed a prototype Cat system code-named "SWYFT". Doug McKenna, a former company director and now the key person behind the Macintosh development tool Resorcerer, said that he proposed that "SWYFT" be read as "Superb With Your Favorite Typing" (personal phone call, 15 June 1994). Funding for this company came from around a dozen venture capitalists.

Raskin's business plan was to create and market the Cat using only Information Appliance. But the company's backers thought Information Appliances could not do this as well as a bigger and already-established company. As such, the venture capitalists talked with several computer companies that had an interest in the Cat and selected Canon to market the Cat. Canon was responcible for giving the "SWYFT" the product name "Cat" (Doug McKenna, personal phone call, 15 June 1994).

While the Information Appliance engineers developed the Cat the company's venture capitalists thought it would be beneficial for the company to release some of the Cat's technology as a small board-based product. The result of this was an add-on plug-in board for the Apple //e computer. This card was called the SwyftCard, a name which obviously was based upon the Cat's code name. The SwyftCard's retail price was $90. It is interesting to read Raskin's comments concerning the origins of the SwyftCard (*Programmers at Work*, p. 237):

> *We didn't get into business to produce a board for the Apple //e, but it seemed like such a good idea that I would have felt very bad not to have released the product. I saw a lot of good products at Apple and Xerox pass from desktop to desktop, and never get to the market.*

Information Appliance wrote the SwyftCard's on-board software in FORTH, a computer language which Raskin saw as ideal for this product since it was compact and inexpensive to implement. Raskin's comments about how he hired a FORTH programmer show the distance Raskin had traveled from Apple, at least from a legal perspective (*Programmers at Work*, p. 238):

> *I went out and hired a FORTH programmer and a few other people, mostly personal friends of mine. Nobody from Apple. I didn't touch the company. I didn't want to get into any legal hassles, and Apple was nasty enough then that I worried about such things.*

The SwyftCard was well received by those who used it. One magazine reviewer had the following to say about the SwyftCard (David Thornburg, *The Race goes to the Swyft*, p. 86):

> *SwfytCard is a small, multipurpose circuit board that plugs into slot 3 on an Apple //e, turning it into one of the most useful tools you could ever want for word processing, information retrieval, calculation, BASIC programming, and -- if you have a modem -- communication. SwyftCard has accomplished something that I never knew possible. It not only outperforms any Apple II word-processing system, but it also lets the Apple //e outperform the Macintosh.*

The SwyftCard reviewer also had the following to say about the philosophy behind the SwyftCard (p. 89):

> *SwyftCard was the result of extensive thought about how people might want to use computers if they had a choice in the matter, and as a result is a spectacular piece of programming.*

THE CAT'S DEMISE

After six months as a product, Canon discontinued the Cat in 1987. Bruce Tognazzini, a computer user interface guru, had the following to say about the Cat's demise (*TOG on Interface* , 2nd printing, 1992, p. 182):

> *The Canon Cat did not sell well, but this should be attributed to the hardware on which it ran, as well as Canon's decision to target this ideal interface for professional writers almost exclusively to low-level clerical workers, who didn't need its functionality and were confused by its "invisible" interface.*

Some people have said that the reasons for the Cat's demise were political. One story says Canon's electronic typewriter and computer divisions fought for control of the Cat. Canon's president learned of this fight and ordered the divisions to resolve the matter soon. The matter was not resolved and the president canceled the Cat to teach the divisions a lesson. Another story contends that when Canon wanted to invest in Steve Jobs' new post-Apple company, NeXT, Jobs told Canon that it could invest only if Canon dropped the Cat. Jobs supposedly was very hostile toward Raskin since Raskin had created the Macintosh and Jobs could not stand to be associated with him in any way. Canon did buy around 16% of NeXT stock in June 1989 for $100 million. (These last two reasons were told to me by Owen Linzmayer, the author of the forthcoming Macintosh book *The Macintosh Bathroom Reader*).

Raskin's thoughts on the Cat's demise follow (*The Mac and Me: 15 Years of Life with the Macintosh*):

> *Canon, possibly because the moribund Electronic Typewriter Division had been given the task, failed to market the product effectively, and it is now a dead Cat.*

When interviewed in 1986 Raskin answered the interview question "What do you think is the biggest problem your business faces?" (*Programmers at Work*, p. 239):

> *How in the world do you sell something that's different? That's the biggest problem. The world's not quite ready to believe. It's like in the early days at Apple, they said, "What's it good for?" We couldn't give a really good answer so they assumed the machine wasn't going to sell. But I do know the way I plan to sell my product is by word of mouth. Some people will try it and say, "This product really gets my job done. It doesn't have fifteen fonts. I can't print it out in old gothic banners five feet long, but I sure got that article finished under the deadline." That's how I can sell it. Later, people will understand it.*

In retrospect, it appears that most computer users just didn't get it when it came to the Cat.

In 1989 Information Appliance ended. Doug McKenna, one of the company directors, claimed that the venture capitalists behind Information Appliance no longer wanted to be part of what they considered a risky venture so they pulled out their financial resources causing the company to close its doors (personal phone call, 15 June 1994).

Information Appliance also had on the drawing boards at the time of its demise a 2-lb. Cat laptop. Only around two were ever built, none exist today (personal phone call with Doug McKenna, 15 June 1994).

Jef Raskin currently owns the patents that formed the Cat's core technolgy. These include a patent for the Cat's LEAP method and the saving and loading of all the Cat's RAM to disk and from disk. Information Appliance licensed several of these patents to other computer companies, but these companies did nothing with this technology.

One other comment about Information Appliance and the Cat deserves mentioning. Raskin claimed that the Cat was made on budget and on schedule, a claim that is very rare in the computing industry (*The Mac and Me: 15 Years of Life with the Macintosh*).

REFERENCES

The following documents are useful in understanding Jef Raskin's work with the Macintosh computer, the SwyftCard, and the Cat computer. Document arrangement is by how useful I found them for this paper. Documents marked with * are present in the Historical Computer Society's library. The size of each document in pages appears at the end of each entry and is enclosed in ().

* Ezra Shapiro, "A Spiritual Heir to the Macintosh", BYTE Magazine, October 1987, pp. 121-123 (3 pages)

Susan Lammers, "Jef Raskin", Programmers at Work, 1989, pp. 226-245 (20 pages)

* David Thornburg, "The Race Goes to the Swyft", A+ Magazine, November 1985, pp. 86-89 (4 pages)

* Jef Raskin and Apple Computer, The Genesis and History of the Macintosh Project, February 1981 (5 pages)

Jef Raskin and Apple Computer, The Macintosh Research Project: Progress Report of July 1980, July 1980 (9 pages)

Jef Raskin and Apple Computer, The Macintosh Project: Selected Papers, February 1980 (171 pages)

* Jef Raskin, Information Appliances: A New Industry, February 1986 (7 pages)

* Jef Raskin, The Mac and Me: 15 Years of Life with the Macintosh, Draft copy, May 1994 (42 pages)

Owen Linzmayer, The Macintosh Bathroom Reader, Draft copy, 1994

Bruce Tognazzini, TOG on Interface, 2nd printing, 1992

* John Markoff and Ezra Shapiro, "Macintosh's Other Designers", BYTE Magazine, August 1984, pp. 347-356 (7 pages)

The End

Canon Cat Computer Historical Information

Jef Raskin's Comments about David Craig's 19 June 1994 Cat Computer Paper

"Canon's Cat Computer: The Real Macintosh"

(contains several e-mail correspondences between Jef Raskin and David Craig)

"RaskinDoc018_2.PICT" 144 KB 2000-02-20 dpi: 300h x 300v pix: 2067h x 2467v

Jef Raskin's 29 June 1994 Critique of "Canon's Cat Computer: The Real Macintosh"

(along with David Craig's reply to this critique)

David T. Craig -- CompuServe 71533,606

Sender: raskinjef@aol.com
Received: from mail02.prod.aol.net by dub-img-1.compuserve.com
(8.6.4/5.940406sam)
id AAA11182; Thu, 30 Jun 1994 00:58:21 -0400
From: <RaskinJef@aol.com>
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X-Mailer: America Online Mailer
Sender: "RaskinJef" <RaskinJef@aol.com>
Message-Id: <9406300058.tn196982@aol.com>
To: 71533.606@compuserve.com
Date: Thu, 30 Jun 94 00:58:17 EDT
Subject: Cat Article

JEF RASKIN / 8 GYPSY HILL
PACIFICA CA 94044 USA
PHONE: 415-359-8588 / FAX: -9767
Internet: raskinjef@aol.com 37x37'37"N 122x31'10"W

29 June 1994

Dear David, <71533.606@compuserve.com>

I got your document and sent some comments into the aether. I have no idea why they didn't get to you. It is great that you are documenting the Cat, and aside from a few specific details, it gives a good overall impression of what we did and what happened. Congrats.

The paper version is a little bit different than what I remember reading

(this may be due to differnces or a fading memory), and I will comment anew. First of all, your quote from Shacklock (you have changed at least one word in the quote, by the way, and should call it a paraphrase...), you might be pleased to learn that we used the same quote in one of the Apple manuals I wrote with Brian Howard many years ago. Is that where you found it or did you dig it up elsewhere?

Comments on the content:

If you are ever in the bay area, you should try the Cat. I would not call it "The Real Macintosh" as it had many ideas that were invented after I left Apple as well as some invented before that did not apply to the Mac or which Apple was not interested in.

The floppy drive on most Cats held 384K bytes, not 256 kbytes. A few at introduction had the smaller memories.

The keyboard was not quite compatible with a Selectric, it had a number of keys (such as UNDO) as well as the LEAP (TM) that were not on the Selectric, and some of the keys were not in the same location.

The modem was an auto-answer, auto-dial modem. The initial price was $1495, but the design price was $795 and Canon lowered the price to that level after a few months.

In the list of software abilities you omit the all-important spreadsheet abilities.

The stream of text was not just broken up into pages but also into documents. Your description of how Leap works is not quite right. My 1989 article "Systemic Implications of an Improved Two-Part Cursor," in the Proceedings of the Computer Human Interface Conference, 30 April 1989, has exact details. Many people think that it worked the same as the EMACS find, but there are significant differences that strongly decreased the error rate vs. the EMACS method.

The ability to program directly in the interface was designed for third-party developers, so that they would not have to buy as special development

program. Third-party software expansion was a very important part of the design and our Technical Documentation manual had details on how to do it.

I don't think you mean "platitudes" on page 3. Platitudes are hackneyed expressions, and I think you mean expressions of praise, or "plaudits".

It is certainly not the case that the Mac that came out was "totally opposite of Raskin's ideas." For example, I designed click-and-drag to replace PARCs (and, earlier, Sutherland's) method, which was click one button, move the mouse, and then click another button. Of all the things I ever invented, click-and-drag for moving and selecting (adapted by Atkinson so that it also served to pull down menus) is the most widely copied. On the other hand, the Cat was designed to be used with a graphic input device once Canon allowed its dealers and marketers to admit that it was graphic-based. You quote a paper, The Mac and Me, where did you see it? Did I send you a copy of the draft? More recent versions (which I have not let out of my computer) are more accurate as I learn more details from documents I keep on finding or get sent. A big difference between the Mac and the Cat is that the former was designed to feel like a computer, the latter like an appliance.

My use of the PITS is from a short story about T.C. Pits (The Celebrated Person In The Street), and you should cite that source. I will see if I can remember who wrote it (Thurber?).

Your photo of a mock-up of an early Mac should have a caption mentioning that that was just one of dozens of mockup, lest it give the impression that it is a definitive expression of where the team thought we were going.

An interesting fact about both the Swyft- products and the Cat is that they were essentially bug-free, which I attribute to the methods we used for managing software development. As far as I know, no customer has ever reported a bug in either.

It is not the case that none of the laptop cats exist. I have two, one is still working. Did you mention that it came on instantly when you started typing and that, like the present EPA suggestions for green machines, it turned itself off when not in use? Another way that it was far ahead of its time was in its strong object orientation. It also had what is now called a

"suite" of business applications long before the term was invented.

It is also not the case that companies that licensed some of the Cat technology did nothing with it. There are still active projects at various companies which may turn out products in the next year or two.

I do not wish to give the impression by listing these detailed comments that I do not think well of your article. For someone who has never tried the product, it is surprisingly good and accurate. Your research is commendable. I will have to dig up the article on the Cat that I wrote a few years ago which tells the same story from my inside perspective. And you really should read the one technical article I published about the Cat (cited above) before publication of your history; it is a primary source for technical details on the interface. My view of the business side of the story of the Cat was told in an article I wrote in Midnight Engineering magazine, another reference you need to complete your research. (1990 "Venture Vultures" Midnight Engineering Vol. 1 No. 2, pg. 55 ff Mar/Apr).

I do have tons of documentation and all the manuals. It would cost quite a bit to reproduce the tForth manual and the Technical Documentation, and the User Manual, perhaps 500 to 700 pages in all. Let me know what you want to do.

David Craig's Reply to Jef Raskin's Critique

Dear Jef: 30 June 1994

Thanks for the extensive replies to my Cat paper. I will try and get your comments and corrections in the paper before its publication in the Historically Brewed journal. Some replies to your replies follow:

> Shacklock

I "borrowed" this from your Apple Integer BASIC manual which I've had since 1978 or so when I owned an Apple][.

> If you are ever in the bay area, you should try the Cat

I would like that very much. I've corresponded with Owen Linzmayer, a Mac book writer from SF, who said when he spoke with you about your role in the Mac project, he also saw your Cat. FYI, he was very impressed with both the Cat and you. His book The Mac Bathroom Reader should appear in August, you may want to get a copy since from the drafts I've read it is very accurate.

> The ability to program directly in the interface was designed for third-party developers, so that they would not have to buy as special development program

Great way of having a machine "programmer friendly"! Question: How many 3rd party developers wrote anything for the Cat? I assume very few given the Cat's short life.

> I don't think you mean "platitudes"

Thanks for catching this - a big error on my part!

> It is certainly not the case that the Mac that came out was "totally opposite of Raskin's ideas."

Correct (again). I guess I was being too general, a vice I believe your Mac 15 year history paper takes exception to.

> You quote a paper, The Mac and Me, where did you see it?

I was sent a copy by a person with an interest in computer history. If what he did was wrong I will tell him. If you _really_ want his name I can provide it, but don't want to cause any problems.

> I learn more details from documents I keep on finding or get sent

I have a rather extensive collection of Apple materials which I've collected since the Apple][heydays. If you have any areas in mind that you want concrete info I may have something. Eg I have extensive Lisa info ranging from the Lisa Product Introduction Plan to various technical materials such as Bruce Daniel's 1984 paper The Architecture of the Lisa Personal Computer for the IEEE.

> Your photo of a mock-up of an early Mac should have a caption mentioning that that was just one of dozens of mockup

FYI, this is from your wonderful Selected Mac Project Papers: Feb 1980. Question: Do you have any drawings or other photos of the various Macs you mocked-up? I think these would be fascinating to see.

> Swyft-- products and the Cat is that they were essentially bug-free, which I attribute to the methods we used for managing software development

Great fact! Few computers can claim this. What methods did you use for your s/w management? I've spoken with Doug McKenna who told me that the h/w and s/w teams at IAI were very small, somewhere around 4-5 people in each group. Is this correct? Concerning cat h/w and Apple, I recall reading that you said you stayed away from Apple people due to legal reasons. How did you end up with Paul Baker as h/w designer? I know of his role in the Lisa's h/w dev.

> laptop cats

Doug McKenna said none existed, thanks for the correction. It sounds like these were well ahead of their time.

> not the case that companies that licensed some of the Cat technology did nothing

with it

Good to hear this. Again, Doug McKenna told me that the licenses expired recently on these patents and that nothing had been done. Can you say anything in general about what these companies are doing with Cat technology?

> For someone who has never tried the product, it is surprisingly good and accurate

Thanks. I work as a computer programmer, on the Mac in Santa Fe New Mexico, and as such try and deal only with hard facts. I also like history and think that historical reporting should be based soley on facts which can be documented. I'm always suprised how many factual errors technically-oriented books contain (Steve Levy's books spring to mind). Most of these errors can be fixed before publication by just contacting the people involved in whatever you are writing about. That's why I contacted you.

> I do have tons of documentation and all the manuals

I would love copies of anything you can spare. I would prefer the real thing, ie not photocopies, buy if you can't spare any of these items I would be willing to purchase photocopies from you. Naturally, I would pay for the copies and the postage. What about machines themselves? If you have a Cat or SwyftCard that you don't want I would gladly take them off your hands. I would pay for the postage of this stuff.

Thanks again for the reply and I will try to get what you've said into the final paper. Good luck with your computing interests.

-- DAVID T CRAIG

-- End of Document --

Jef Raskin's 09 July 1994 Comments

(along with David Craig's reply)

David T. Craig -- CompuServe 71533,606

JEF RASKIN COMMENTS

Sender: raskinjef@aol.com
Received: from mail02.prod.aol.net by dub-img-2.compuserve.com
(8.6.4/5.940406sam)
id LAA19537; Sat, 9 Jul 1994 11:44:19 -0400
From: <RaskinJef@aol.com>
Received: by mail02.prod.aol.net
(1.38.193.5/16.2) id AA07281; Sat, 9 Jul 1994 11:44:18 -0400
X-Mailer: America Online Mailer
Sender: "RaskinJef" <RaskinJef@aol.com>
Message-Id: <9407091144.tn192491@aol.com>
To: 71533.606@compuserve.com
Date: Sat, 09 Jul 94 11:44:15 EDT
Subject: cat article redux

1. I can send you a SwyftCard, send a self-addressed stamped package for a 3 X 5 or so PC board.

2. Two of the three Cat manuals are huge. I have only one copy of each and am loathe to let them out of my hands. Then there are all our internal development notes. This is a bookshelf full of stuff. If you have a friend in this area who would want to copy them locally, I would be happy to cooperate. I also have a filing cabinet with lots of early Mac stuff as well.

3. Our software development methods included detailed and specific

specifications (which sounds redundant but isn't), reading each other's code, having a test routine for every subroutine (Forth Word in this case), and very extensive commenting in the programs, which often reads like an essay with an occasional line of code thrown in. We used a chief-programmer organization and worked by "contract" (the programmers chose which parts of the task they wanted to do, and estimated how long it would take. The tasks were broken down into very small pieces that could be coded quickly and understood readily, there were no sections of heroic size.).

Lastly, give credit to **Brian Howard** for turning up the Shacklock quote in the first place.

DAVID CRAIG'S REPLIES

Jef: 10 July 1994

Thanks for the continued Cat and Macintosh correspondence. FYI, I've updated the Cat paper per your prior comments and will send you a copy of the printed article in Historically Brewed. Due to a deadline I was unable to look at your Cat LEAP paper or your vulture paper. I plan to update the Cat paper one more time and provide copies to the Historical Computer Society (the maker of Historically Brewed) and the Computer History Associated of California. I may send a copy of the final to the Apple Library so that your "alma mater" will have some knowledge of what you did with your Post-Apple life.

> I can send you a SwyftCard, send a self-addressed stamped package for a 3 X 5 or so PC board.

Will do. Would this include a SwyftCard manual? If not, I know someone with a SC who could let me borrow the manual to make a copy.

> If you have a friend in this area who would want to copy them locally

I understand your reluctance to part with originals. I will see if I can get someone in the SF area to maybe copy some of what you have.

> I also have a filing cabinet with lots of early Mac stuff as well

If you have your original Pascal memos I would like to see those. FYI, I have the source code for UCSD P-System 1.5.

> software development methods

It sounds like you knew what you were doing. I've spoken with Doug McKenna who mentioned a few of the Cat developers, his comments follow:

The Cat's software was written mostly in FORTH by Jim Straus (now at Global Village). Parts of the software were written in 68000 assembly language by Jim Bumgardner. The 68000 assembler was itself written in FORTH.

Of these names who was the "chief-programmer"? I know Paul Baker was head of h/w design. Who else was involved in the h/w and s/w design? I'm curious to know what you had made in terms of technical docs. Do you have any h/w theory or s/w theory docs on the Cat? I believe your SwyftCard manuals have this type of info. I assume you have Cat h/w schematics. From your description of the Cat development process it seems that the Cat s/w could be an excellent example of how to write software. Have you given any thought to making this s/w public? It seems to me that this software could provide some valuable lessons for other programmers. When I worked for a s/w dev company for several years I produced a short paper on the lessons I and the company learned. Do you have something like this?

Concerning MAC AND ME, will this be a book? What is your schedule? From what I've read so far you've done a great job and the stories you have to tell are fascianting.

Thanks again for the feedback. I hope my questions aren't a waste of your time.

-- David T. Craig

Jeff: 10 July 1994

Concerning your software development methods do you have any metrics on this software? I'm curious to know a little about the architecture of this code since from what you've said about this being bug-free it sounds like this is a great piece of software.

I'm looking for the following s/w info:

- FORTH object code size
- 68000 object code size
- FORTH word count

Some other not as technical questions follow. I hope you can answer these since some may pertain to confidential/proprietary info.

- How long did it take to design the Cat s/w? Same for h/w?
- Was the Cat s/w-h/w original design followed closely? I.e. was the final Cat what you had planned to make?
- Do you have any planning docs you can make available?

- How much did it cost to create the Cat s/w? Same for h/w? How does this compare to other projects that you've been involved with (e.g. Apple projects)?

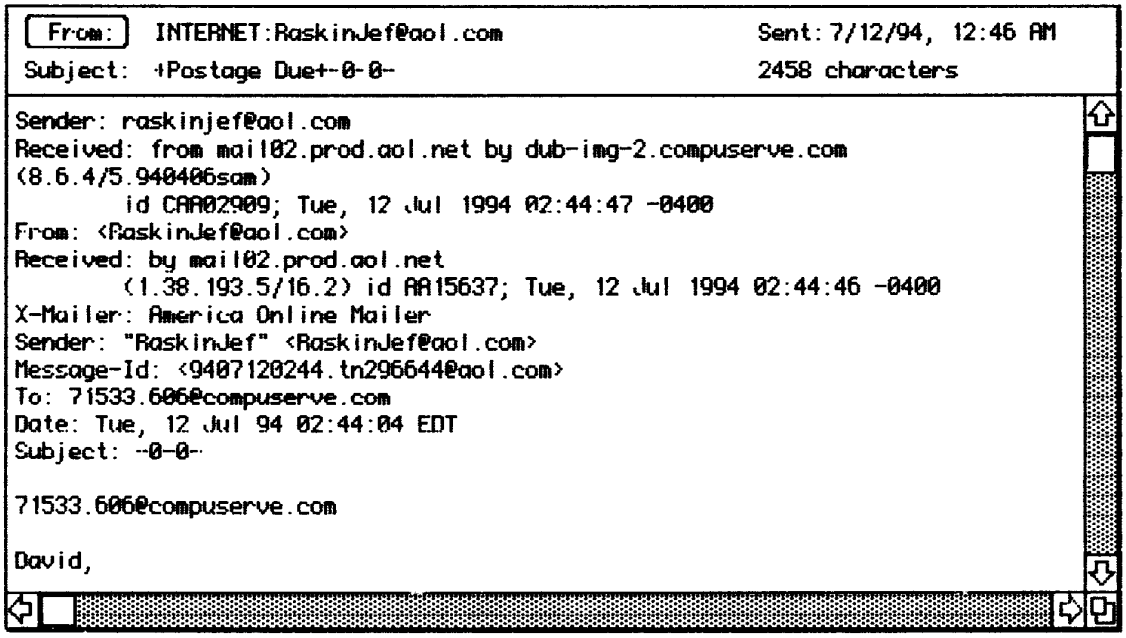
Do you have a listing of the word names from the source code? I'm looking for something that something like the Pascal ProcNames utility would have produced for FORTH.

-- David T. Craig

-- End of Document --

CompuServe JEF RASKIN E-Mail

David T. Craig - 24 JULY 1994
736 Edgewater, Wichita, Kansas 67230 [316-733-0914]



From: INTERNET:RaskinJef@aol.com Sent: 7/12/94, 12:46 AM
Subject: +Postage Due+-0-0- 2458 characters

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Sender: raskinjef@aol.com
Received: from mail02.prod.aol.net by dub-img-2.compuserve.com
(8.6.4/5.940406sam)
        id CAA02909; Tue, 12 Jul 1994 02:44:47 -0400
From: <RaskinJef@aol.com>
Received: by mail02.prod.aol.net
        (1.38.193.5/16.2) id AA15637; Tue, 12 Jul 1994 02:44:46 -0400
X-Mailer: America Online Mailer
Sender: "RaskinJef" <RaskinJef@aol.com>
Message-Id: <9407120244.tn296644@aol.com>
To: 71533.606@compuserve.com
Date: Tue, 12 Jul 94 02:44:04 EDT
Subject: -0-0-

71533.606@compuserve.com

David,
```

Sender: raskinjef@aol.com
Received: from mail02.prod.aol.net by dub-img-2.compuserve.com (8.6.4/5.940406sam)
id CAA02909; Tue, 12 Jul 1994 02:44:47 -0400
From: <RaskinJef@aol.com>
Received: by mail02.prod.aol.net
(1.38.193.5/16.2) id AA15637; Tue, 12 Jul 1994 02:44:46 -0400
X-Mailer: America Online Mailer
Sender: "RaskinJef" <RaskinJef@aol.com>
Message-Id: <9407120244.tn296644@aol.com>
To: 71533.606@compuserve.com
Date: Tue, 12 Jul 94 02:44:04 EDT
Subject: -0-0-

71533.606@compuserve.com

David,

Doug McKenna gave you a good start, here's the rest of the information

Appliance programming team: The Chief Programmer was Jim Straus, to be sure. A major part of the code was written by Forth expert Terry Holmes, along with John Bumgarner and Jonathan Sand. I think that most of the code was written by Holmes and Straus.

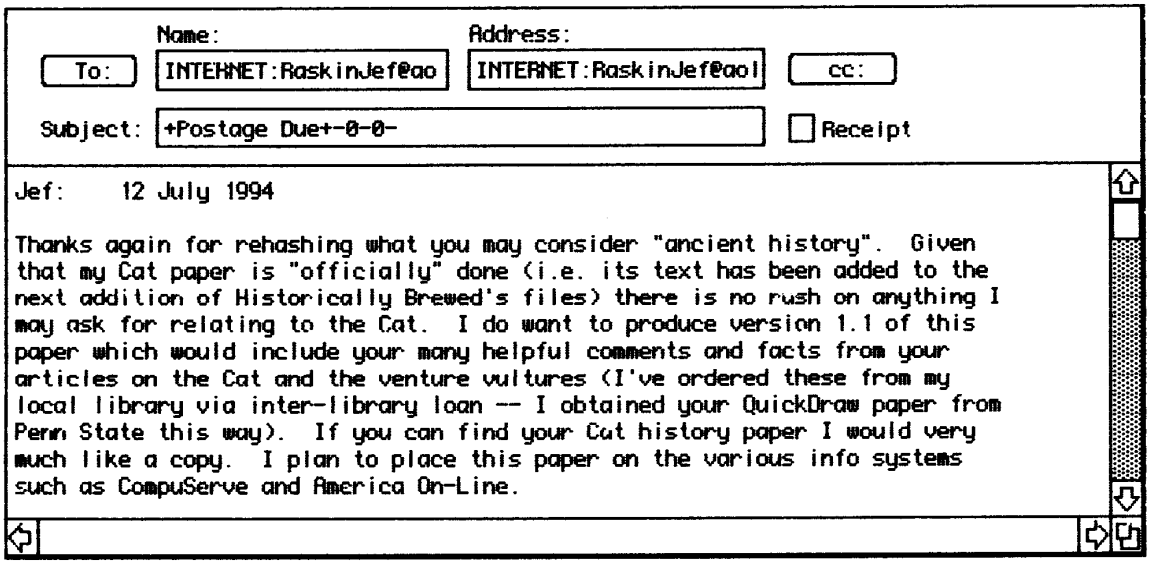
The contract for the Canon Cat was signed about 11 months before the product first appeared. The hardware development, including three custom chips, was done in this time. Paul Baker led an extraordinary effort. The software was written in this time though it had a head start via the SwyftCard development. I had a lot of ideas about how reliable software could be developed quickly, this project gave me a chance to test my theories of software management, and they seemed to work very well in practice.

Your other questions will have to wait for a day when I have more time to sort through the documents; if I spend too much time looking back I will hardly have time to move forward with new work (which is much more exciting). It was important to my reputation and potential for moving the field ahead that I help correct the misleading reports that minimized my work at Apple, but that is partly accomplished (thanks to people like yourself who are digging out the facts).

As I said in my last note, I would be glad to cooperate in making files available to serious historical research, but I probably should wait until I retire if I am to do such myself. The problem with The Mac and Me is that it seems to be too long for an article, too short for a book. I shall seek a place for it in the next few months.

By the way, I hate Compuserve's use of numbers as names. Totally unmemorable. We shouldn't have phone numbers either, but that's another discussion. Did you see my review of Stross's book in this month's **IEEE Spectrum**? It has a bit of history in it.

-- jef



Jef: 12 July 1994

Thanks again for rehashing what you may consider "ancient history". Given that my Cat paper is "officially" done (i.e. its text has been added to the next addition of Historically Brewed's files) there is no rush on anything I may ask for relating to the Cat. I do want to produce version 1.1 of this paper which would include your many helpful comments and facts from your articles on the Cat and the venture vultures (I've ordered these from my local library via inter-library loan -- I obtained your QuickDraw paper from Penn State this way). If you can find your Cat history paper I would very much like a copy. I plan to place this paper on the various info systems such as CompuServe and America On-Line.

> here's the rest of the Information Appliance programming team

Thanks. FYI, I've written Baker at Apple about the Cat and have yet to hear from him.

> It was important to my reputation and potential for moving the field ahead that I help correct the misleading reports that minimized my work at Apple, but that is partly accomplished (thanks to people like yourself who are digging out the facts)

Glad I can be of some help in setting the historical record straight.

> The Mac and Me ... I shall seek a place for it in the next few months

I understand your reluctance to spend too much time on M&M. You may want to serialize it in the Computer History Association of California. It produces a regular journal (The

Analytical Engine) covering California-based computing history. M&M may fit in well here. You would retain the rights to your story. If interested, contact Mr. Kip Crosby at CompuServe address 72341,2763. His home phone in El Cerrito CA is 510-527-7355. I'm a member of this group and have enjoyed the AE issues (4 so far).

> I hate Compuserve's use of numbers as names

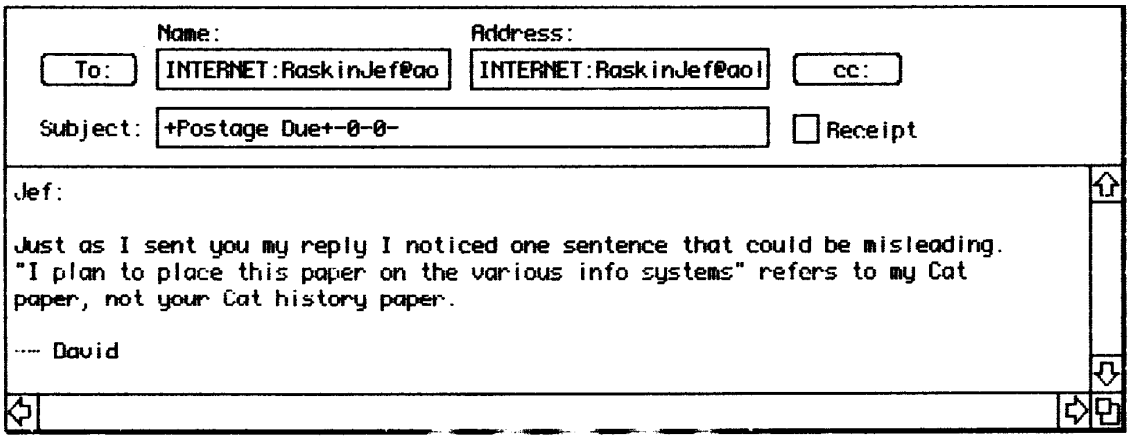
I totally agree. I use CIS' Information Manager which provides me with a list of names that I click on. The address then appears in its box. As such, this lets me ignore these numbers. Your INTERNET address is also in my CIS "phone book" so I don't need to remember it either.

> see my review of Stross's book in this month's IEEE Spectrum

I haven't seen this, will check it out. I've read some of your copy in Wired and have liked the reviews.

Concerning the Cat and what I believe is called "SWYFT Technology" why did you not market the Cat after its Canon demise? I assume you held the rights to this technology while Canon served basically as a seller.

-- David



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Subject: +Postage Due+Re: -0-0- 705 characters

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Sender: raskinjef@aol.com
Received: from mail02.prod.aol.net by arl-img-1.compuserve.com
(8.6.4/5.940406sam)
        id CAA17275; Wed, 13 Jul 1994 02:22:25 -0400
From: <RaskinJef@aol.com>
Received: by mail02.prod.aol.net
        (1.38.193.5/16.2) id AA11485; Wed, 13 Jul 1994 02:22:24 -0400
X-Mailer: America Online Mailer
Sender: "RaskinJef" <RaskinJef@aol.com>
Message-Id: <9407130221.tn347320@aol.com>
To: 71533.606@compuserve.com
Date: Wed, 13 Jul 94 02:21:45 EDT
Subject: Re: -0-0-

I will answer your last question now, and return to the others another day as
it is late: Canon was building the product in Japan. We didn't have the
marketing or financial resources to have them build it for us.
```

From: INTERNET:Wiggoney@aol.com Sent: 7/21/94, 6:47 PM
Subject: +Postage Due+Cat 1209 characters

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Sender: wiggoney@aol.com
Received: from mail02.prod.aol.net by dub-img-2.compuserve.com
(8.6.4/5.940406sam)
        id UAA15475; Thu, 21 Jul 1994 20:46:35 -0400
From: <Wiggoney@aol.com>
Received: by mail02.prod.aol.net
        (1.38.193.5/16.2) id AA28263; Thu, 21 Jul 1994 20:46:35 -0400
X-Mailer: America Online Mailer
Sender: "Wiggoney" <Wiggoney@aol.com>
Message-Id: <9407212046.tn07232@aol.com>
To: 71533.606@compuserve.com
Date: Thu, 21 Jul 94 20:46:23 EDT
Subject: Cat

Thanks for the article.  It is indeed a fascinating story, and I enjoyed
reading it.

One of the most important messages is conveyed in a quote from Raskin:  "It's
as if we had asked for a bit of part-time help and were given a bureaucracy."
 The power of this statement hits home.  I have often asked myself why I and
others like me are predisposed toward using a computer to accomplish a task
when a simpler tool, like pencil and paper, would suffice.  I don't have an
answer.

Raskin's quote ignores one important fact.  Instead of saying "...given a
bureaucracy," he should have said:  "...offered a bureaucracy, and we bought
it!"

There are a few minor mechanical errors, which I will be happy to point out.
```

Name: Address:

To: INTERNET:RaskinJef@ao INTERNET:RaskinJef@aol cc:

Subject: +Postage Due+- Receipt

Jef: 14 Nov 94

Thanks for the reply. Please take your time on whatever questions of mine you decide to answer. I know you have other more pressing and more modern items on your agenda than ancient computer history. I appreciate very much the time you've already spent on my account and don't want in any way to interfere with your time on more important matters.

Regards,
David

From: INTERNET:RaskinJef@aol.com Sent: 11/15/94, 1:04 AM

Subject: +Postage Due+Re: - 613 characters

Sender: raskinjef@aol.com
Received: from mail02.mail.aol.com by arl-img-1.compuserve.com
(8.6.4/5.940406sam)
id DAA21163; Tue, 15 Nov 1994 03:01:07 -0500
From: <RaskinJef@aol.com>
Received: by mail02.mail.aol.com
(1.38.193.5/16.2) id AA28611; Tue, 15 Nov 1994 03:01:06 -0500
Date: Tue, 15 Nov 1994 03:01:06 -0500
Message-Id: <941115015332_7874189@aol.com>
To: 71533.606@compuserve.com
Subject: Re: -

Thanks, but remember that I am still happy to help you with your project, it is proving most educational for me. More holes in my memory get filled in, and mismemories corrected.

Thanks again.

From: INTERNET:RaskinJef@aol.com Sent: 11/15/94, 12:58 AM
Subject: +Postage Due+- 1300 characters

Sender: raskinjef@aol.com
Received: from mail02.mail.aol.com by arl-img-1.compuserve.com
(8.6.4/5.940406sam)
id CAA20929; Tue, 15 Nov 1994 02:58:29 -0500
From: <RaskinJef@aol.com>
Received: by mail02.mail.aol.com
(1.38.193.5/16.2) id AA27168; Tue, 15 Nov 1994 02:58:28 -0500
Date: Tue, 15 Nov 1994 02:58:28 -0500
Message-Id: <941115014805_7871274@aol.com>
To: 71533.606@compuserve.com
Subject: -

I rarely use the Cat. Not only are the UNDO and the DELETE key exchanged (a real human-factors disaster that Canon foisted upon us without warning), but time has passed it by. I often wish I had LEAP, and the ability to do calculations, spreadsheets, and communications directly from my word processor and a CAT-type interface instead of this GUI I am using, but when using the CAT I cannot have CAD to do design or music programs to compose with etc. since no third party would write for a long-gone product. The CAT is very outdated now (though its interface basics are not).

We got royalties on about 20,000 units. I don't think they would have paid royalties on units they didn't sell, so that's the best number I have.

I usually refer Cat questions to Bob Wing or John Bumgarner who are among those that have never given up on the product, having less complex needs.

Name: Address:
To: INTERNET:RaskinJef@ao INTERNET:RaskinJef@aol cc:
Subject: +Postage Due+- Receipt

Jef: 15 Nov 94

Thanks for the Cat info and the names of the people who still use the Cat.

Regards,
David

Canon Cat Computer Historical Information

Article Name

Canon's Cat
The Swyft Computer
Or, Jef Raskin's Macintosh Computer?

(reprint of dtc's Cat article with minor changes/additions by David Greelish)

Author

David T Craig

Date

July-August 1994

Source

Historically Brewed # 6 magazine

CANON'S CAT

THE SWYFT COMPUTER
Or Jef Raskin's Macintosh computer?

By David T. Craig

"The Canon Cat did not sell well, but this should be attributed to the hardware on which it ran, as well as Canon's decision to target this ideal interface for professional writers almost exclusively to low-level clerical workers."

In 1987, Canon USA Inc. released a new computer named the Canon Cat. This computer was targeted to low-level clerical workers such as secretaries. After only six months on the market and with 20,000 units sold, Canon discontinued the Cat. The Cat featured an innovative text-based user interface that did not rely upon a mouse, icons, or graphics. The key person behind the Cat was Mr. Jef Raskin, an eclectic gadgeteer, who began the design of the Cat during his work on the first Macintosh project at Apple Computer in 1979.

The design and history of the Canon Cat is a fascinating story which this article attempts to tell. I am not a Cat owner nor have I been fortunate enough to have used a Cat. All facts within this paper are based on various documents relating to Jef Raskin and his work at Apple Computer and Information Appliance, Raskin's company that created the Cat.

CAT HARDWARE

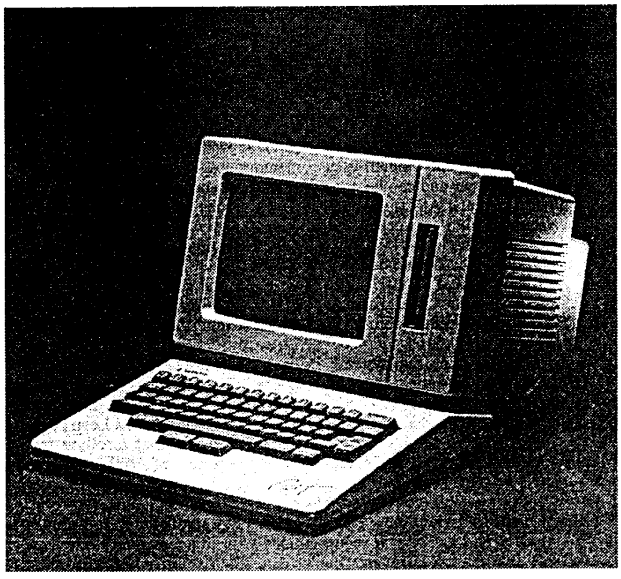
The Cat was a 17-pound desktop computer system containing a built-in 9 inch black-and-white bit-mapped monitor, a single 3.5 inch 384K byte floppy disk drive, and an IBM Selectric-style keyboard.

The product specs follow; Ezra Shapiro, "A Spiritual Heir to the Macintosh", *BYTE* magazine, October 1987:

Dimensions	10.7 by 13.1 by 17.8 inches
Weight	17 pounds
Components	Processor, Motorola 68000 running at 5 MHz
Memory	256K bytes
Mass storage	One 384K byte internal 3.5-inch floppy drive
Display	9-inch black-and-white built-in, bit-mapped
Keyboard	IBM Selectric-style plus several special keys (UNDO & 2 LEAP)
I/O Interfaces	One Centronics parallel port, one RS-232C serial port (DB-25 connector), two RJ-11 jacks (for telephone connections)
Modem	Internal 300/1200 bps, Hayes compatible, auto answer/dial
ROM	256K bytes
Price	$1495

CAT SOFTWARE

The Cat came with an extensive collection of applications stored in ROM. These applications supported word processing, spell checking, spreadsheet abilities, mail merging, calculator calculations , communications, data retrieval, and programming in the FORTH or 68000 assembly languages. Also present in the ROM was a spelling dictionary based on the 90,000 word American Heritage Dictionary. System setup information and a small personal user dictionary were stored in 8K of battery backed up RAM.



The Cat's user interface made this computer unique when compared to other computers. The user interface was based on a simple text editor in which all data was seen as a long stream of text broken into pages, which could also be broken into documents. Special keyboard keys allowed the user to invoke various functions. An extra key titled "Use Front" acted as a control key. You pressed Use Front and then a special key to activate a specific feature. For example, the L key was marked "Disk", the J key was marked "Print", and the N key was marked "Explain" (Cat's context-sensitive help facility). Other commands existed which let you change the system's various parameters (Setup key) and reverse your last action (Undo key).

When you powered on the Cat, you were presented with a display that looked like a typewriter with a sheet of paper. Black characters appeared on a white background. A ruler bar appeared at the bottom of the screen. The Cat's memory held around 160K of data which was equivalent to 80 single-spaced

printed pages.

You moved through your data using two extra keys called "Leap" keys located in front of the space key and by typing strings of characters. The Cat jumped to the next occurrence of that string. Raskin claimed that the Cat's Leap-key search method to scroll from the top to the bottom of a page took 2 seconds, a mouse took 4 seconds, and cursor keys took 8 seconds. Larger documents increased these search ratios.

The Leap keys also controlled text selection (indicated by hi-lighting), deletion, copying, and moving. If the selected text was a mathematical formula, one keystroke with a special key calculated the mathematical result and the answer appeared on the screen with a dotted underline overlaying the original formula. If the selected text was a computer program written in either FORTH or 68000 assembly language, then a special key let you execute the program (I don't think many Cat users did any Cat programming). You performed mail merges by selecting columnar text data and pressing another special key. Repetitive command sequences could be automated by assigning commands and text strings to the Cat's numeric keys. One special key let you dial a selected telephone number either for voice or modem communications. Data received from the built-in modem flowed into your text as if you had typed it.

The Cat used a 384K floppy disk for storage. Each disk held the entire contents of the Cat's memory in addition to system configuration parameters, the user's personal spelling dictionary, and the bit-map for the screen. When you inserted a disk, the Cat read the disk's entire contents into the Cat's memory including the last saved screen image. This feature allowed users to transfer their entire Cat environment to another Cat by just taking their disk from one Cat and inserting it into another Cat.

The Cat's simple but powerful user interface received many plaudits. For example, Bruce Tognazzini, a computer user interface guru who worked for Apple (he now works for Sun Microsystems), had the following to say about the Cat (*TOG on Interface*, 2nd printing, 1992, p. 182): *There are some really good abstract interfaces, ... Jef Raskin's Canon Cat interface is another. ... Before he left the (Macintosh) project, Macintosh was far more dependent on the keyboard, and Raskin knew what to do with the keyboard, too. For example, the Find function on the Canon Cat is some 50 times faster than the same function on the Macintosh. Raskin didn't use "Command-key equivalents": he designed a true keyboard interface from the ground up.*

Ezra Shapiro in his "A Spiritual Heir to the Macintosh" article had the following to say about the Cat: *The Cat represents an eye-opening new approach to data storage and retrieval; it will surprise anyone who thought that interface design was a dying art. Though the basic configuration appears on the surface to be a flexible word processor, the Cat's computational, macro, and programming capabilities make it quite possible to build data structures that emulate spreadsheets and databases.*

Raskin had the following to say about the Cat and the Apple Macintosh in a personal letter dated July 1987: *It is as advanced (in terms of human interface) over the Mac as the Mac was an advance in its day.* Raskin's thoughts on the Cat's user interface and other user interfaces from the perspective of 1994 follow: (*The Mac and Me: 15 Years of Life with the Macintosh*, Draft copy, May 1994) *The current paradigm of using application programs is inherently wrong from an interface design point of view. This is widely recognized, but the solution offered is to make them interoperable, which solves some of the problems but by no means all. GUIs as presently designed and used are an interface dead end. Though they can be patched endlessly, a large jump in usability can only come from a completely different approach. The Cat computer, which I developed for Canon, demonstrated that my alternate approach is implementable and both more productive and more pleasant than GUIs.*

JEF RASKIN AND THE FIRST MACINTOSH

One can say that Jef Raskin began designing the Cat during his tenure at Apple Computer. He started at Apple in January 1978 as head of its publications department. From 1979 to 1982 Raskin was responsible at Apple for a research project called Macintosh. He resigned from Apple in February 1982 when he was Manager of Advanced Systems over a disagreement with Steve Jobs, one of Apple's founders, concerning the Macintosh's direction. Steve Jobs took over Macintosh development and the Macintosh became a mini-Lisa computer which was substantially different from Raskin's original ideas for the Macintosh.

In Raskin's paper, "The Genesis and History of the Macintosh Project" (February 1981), he provided his thoughts on the main software design criteria for the Macintosh: *My concepts in designing the software were extreme ease of learning, rapid (and thus non-frustrating) response to user desires, and compact and quickly developable software. Key elements in designing such a system are freedom from modes, the elimination of "levels" (e.g. system level, editor level, programming level), and repeated use of a few consistent and easily learned concepts. Such software also leads to simple and brief manuals without having to sacrifice completeness and accuracy. The editor is similar to the LISA editor but does not require the expensive mouse. A careful study showed that it is probably faster to use than a mouse-driven editor -- although it is probably not as flashy to see when demonstrated in a dealer's showroom.*

In 1994, Raskin had the following to say about the original Macintosh's software design: *My unifying software originally was to be a graphics-and-text editor within which applications could run as additional commands (via menus), all input and output being through the interface designed for the editor. Later, the PARC desktop metaphor was adopted from the Lisa group (and that from the Xerox Alto and Star computers). Due to the incredible work of the Mac software team, the necessary code was designed and squeezed into a Toolbox that fit into a relatively small ROM (Read Only Memory) that we could afford to put into the product.*

Raskin also had some interesting comments to say in one of his many Macintosh design memos concerning the intended users of the Macintosh ("Design Considerations for an Anthropophilic Computer", 28-29 May 1979): *This is an outline for a computer designed for the Person In The Street (or, to abbreviate: the PITS); one that will be truly pleasant to use, that will require the user to do nothing that will threaten his or her perverse delight in being able to say: "I don't know the first thing about computers ".*

The Macintosh's early hardware design was very similar to the Cat's design. One early Macintosh design from January 1980 provided a small screen, a keyboard, and two vertical built-in disk drives. Also present in this early Macintosh design was a built-in printer.

One of many preliminary Mock-ups of a Macintosh computer (circa January 1980)

INFORMATION APPLIANCE, THE SWYFTCARD, AND THE CANON CAT

The company that Jef Raskin founded in 1984 to implement his computing ideas was located in Menlo Park, California and was named

Information Appliance, Inc. Raskin's ideas about computers and the basic concepts for this company are summarized in his white paper Information "Appliances: A New Industry" (February 1986): *One of the prophets of the personal computer industry, Alan Kay, has said that the true personal computer has not yet been made. I disagree. We have, as the ancient curse warns us, gotten what we asked for. We do indeed have computers being bought by individuals for themselves; they are "personal computers". The problem is that many of us didn't want computers in the first place -- computers are merely boxes for running programs -- we wanted the benefits that computer technology has to offer. What we wanted was to ease the workload in information-related areas much as washing machines and vacuum cleaners ease the workload in maintaining cleanliness. By choosing to focus on computers rather than the tasks we wanted done, we inherited much of the baggage that had accumulated around earlier generations of computers. It is more a matter of style and operating systems that need elaborate user interfaces to support huge application programs. These structures demand ever larger memories and complex peripherals. It's as if we had asked for a bit of part-time help and were given a bureaucracy.*

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Raskin's business plan was to create and market the Cat using only Information Appliance. But the company's backers thought Information Appliances could not do this as well as a bigger and already-established company. As such, the venture capitalists talked with several computer companies that had an interest in the Cat and selected Canon to market the Cat. Canon was responsible for giving the "SWYFT " the product name "Cat".

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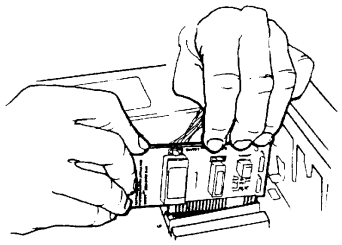
The SwyftCard was well received



Installing SwyftCard in Slot 3

by those who used it. One magazine reviewer had the following to say about the SwyftCard (David Thornburg, "The Race goes to the Swyft, *A+*, p. 86): *SwfytCard is a small, multipurpose circuit board that plugs into slot 3 on an Apple //e, turning it into one of the most useful tools you could ever want for word processing, information retrieval, calculation, BASIC programming, and -- if you have a modem -- communication. SwyftCard has accomplished something that I never knew possible. It not only outperforms any Apple II word-processing system, but it also lets the Apple //e outperform the Macintosh.* The SwyftCard reviewer also had the following to say about the philosophy behind the SwyftCard: *SwyftCard was the result of extensive thought about how people might want to use computers if they had a choice in the matter, and as a result is a spectacular piece of programming.*

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Jef Raskin currently owns the patents that formed the Cat's core technology. These include a patent for the Cat's LEAP method and the saving and loading of all the Cat's RAM to disk and from disk. Information Appliance licensed several of these patents to other computer companies, but to date nothing has been done with this technology. Raskin claims that in a few years some products may appear with CAT-like features.

Canon Cat Computer Historical Information

Article Name
Canon's Cat Computer: The Real Macintosh

Author
David T Craig

Date
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DTC
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dot-matrix printer)

99.9% FINAL

Canon's Cat Computer: The Real Macintosh

941 Calle Mejia, Apt. 509, Santa Fe, New Mexico 87501
CIS 71533,606

(paper written for the Historical Computer Society of El Paso Texas)

INTRODUCTION

In 1987 Canon USA Inc. released a new computer named the Canon Cat. This computer was targeted at low-level clerical workers such as secretaries. After six months on the market and with 20,000 units sold Canon discontinued the Cat. The Cat featured an innovative text-based user interface that did not rely upon a mouse, icons, or graphics. The key person behind the Cat was Mr. Jef Raskin, an eclectic gadgeteer, who began the design of the Cat during his work on the first Macintosh project at Apple Computer in 1979.

The design and history of the Canon Cat is a fascinating story which this paper attempts to tell. I am not a Cat owner nor have I been fortunate enough to have used a Cat. All facts within this paper are based on various documents relating to Jef Raskin and his work at Apple Computer and Information Appliance, Raskin's company that created the Cat.

DRAFT #3

CAT HARDWARE

The Cat was a 17-pound desktop computer system containing a built-in 9-inch black-and-white bit-mapped monitor, a single 3.5-inch 256K byte floppy disk drive, and an IBM Selectric-style keyboard.

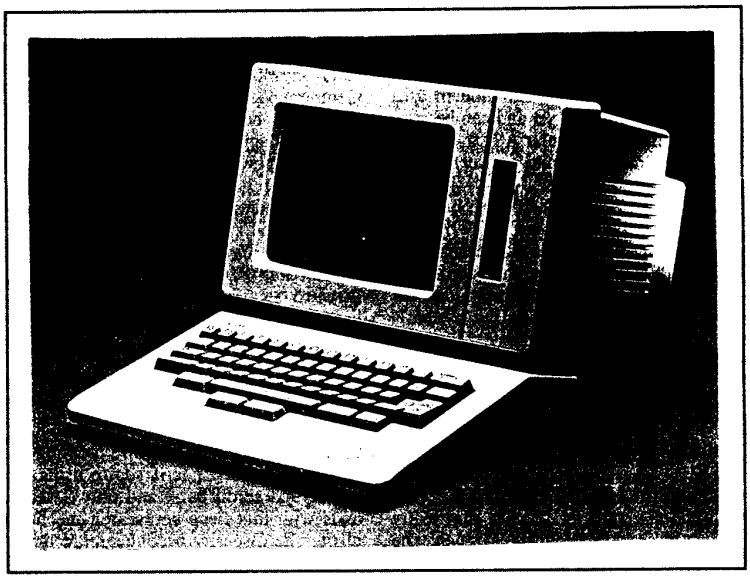

Figure 1 - The Canon Cat hardware

The product specs follow (*A Spiritual Heir to the Macintosh*):

Size	Dimensions	10.7 by 13.1 by 17.8 inches
	Weight	17 pounds
Components	Processor	Motorola 68000 running at 5 MHz
	Memory	256K bytes
	Mass storage	One 256K byte internal 3.5-inch floppy drive
	Display	9-inch black-and-white built-in, bit-mapped
	Keyboard	Compatible with IBM Selectric typewriter plus control functions on front face of the keys
	I/O Interfaces	One Centronics parallel port, one RS-232C serial port (DB-25 connector), two RJ-11 jacks (for telephone connections)
	Modem	Internal 300/1200 bps, Hayes compatible
	ROM	256K bytes
Price	$1495	

CAT SOFTWARE

The Cat came with an extensive collection of applications stored in ROM. These applications supported word processing, spell checking, mail merging, calculator calculations, communications, data retrieval, and programming in the FORTH or 68000 assembly languages. Also present in the ROM was a spelling dictionary based on the 90,000 word American Heritage Dictionary. System setup information and a small personal user dictionary were stored in 8K of battery-backed up RAM.

The Cat's user interface made this computer unique when compared to other computers. The user interface was based on a simple text editor in which all data was seen as a long stream of text broken into pages. Special keyboard keys allowed the user to invoke various functions. An extra key titled "Use Front" acted as a control key. You pressed Use Front and then a special key to activate a specific feature. For example, the L key was marked Disk, the J key was marked Print, and the N key was marked Explain (Cat's context-sensitive help facility). Other commands existed which let you change the system's various parameters (Setup key) and reverse your last action (Undo key).

When you powered on the Cat you were presented with a display that looked like a typewriter with a sheet of paper. Black characters appeared on a white background. A ruler bar appeared at the bottom of the screen. The Cat's memory held around 160K of data which was equivalent to 80 single-spaced printed pages.

You moved through your data using two extra keys called Leap keys located in front the spacebar key and by typing strings of characters. The Cat jumped to the next occurence of that string. Raskin claimed that the Cat's Leap-key search method to scroll from the top to the bottom of a page took 2 seconds, a mouse took 4 seconds, and cursor keys took 8 seconds. Larger documents increased these search ratios.

The Leap keys also controlled text selection (indicated by hilighting), deletion, copying, and moving. If the selected text was a mathematical formula one keystroke with a special key calculated the mathematical result and the answer appeared on the screen with a dotted underline overlaying the original formula. If the selected text was a computer program written in either FORTH or 68000 assembly language, then a special key let you execute the program (I don't think many Cat users did any Cat programming). You performed mail merges by selecting columnar text data and pressing another special key. Repetitive command sequences could be automated by assigning commands and text strings to the Cat's numeric keys. One special key let you dial a selected telephone number either for voice or modem communications. Data received from the built-in modem flowed into your text as if you had typed it.

The Cat used a 256K floppy disk for storage. Each disk held the entire contents of the Cat's memory in addition to system configuration parameters, the user's personal spelling dictionary, and the bit-map for the screen. When you inserted a disk the Cat read the disk's entire contents into the Cat's memory including the last saved screen image. This feature allowed users to transfer their entire Cat environment to another Cat by just taking their disk from one Cat and inserting it into another Cat.

The Cat's simple but powerful user interface received many platitudes. For example, Bruce Tognazzini, a computer user interface guru who worked for Apple (he now works for Sun Microsystems), had the following to say about the Cat (*TOG on Interface*, 2nd printing, 1992, p. 182):

> There are some really good abstract interfaces, ... Jef Raskin's Canon Cat interface is another. ... Before he left the (Macintosh) project, Macintosh was far more dependent on the keyboard, and Raskin knew what to do with the keyboard, too. For example, the Find function on the Canon Cat is some 50 times faster than the same function on the Macintosh. Raskin didn't use "Command-key equivalents": he designed a true keyboard interface from the ground up.

Ezra Shapiro in his *A Spiritual Heir to the Macintosh* (BYTE magazine, October 1987) article had the following to say about the Cat:

> The Cat represents an eye-opening new approach to data storage and retrieval; it will surprise anyone who thought that interface design was a dying art. Though the basic configuration appears on the surface to be a flexible word processor, the Cat's computational, macro, and programming capabilities make it quite possible to build data structures that emulate spreadsheets and databases.

Raskin had the following to say about the Cat and the Apple Macintosh in a personal letter dated July 1987:

> It is as advanced (in terms of human interface) over the Mac as the Mac was an advance in its day.

Raskin's thoughts on the Cat's user interface and other user interfaces from the perspective of 1994 follow (*The Mac and Me: 15 Years of Life with the Macintosh*, Draft copy, May 1994):

> The current paradigm of using application programs is inherently wrong from an interface design point of view. This is widely recognized, but the solution offered is to make them interoperable, which solves some of the problems but by no means all. GUIs as presently designed and used are an interface dead end. Though they can be patched endlessly, a large jump in usability can only come from a completely different approach. The Cat computer, which I developed for Canon, demonstrated that my alternate approach is implementable and both more productive and more pleasant than GUIs.

JEF RASKIN AND THE FIRST MACINTOSH

One can say that Jef Raskin began designing the Cat during his tenure at Apple Computer. He started at Apple in January 1978 as head of its publications department. From 1979 to 1982 Raskin was responsible at Apple for a research project called Macintosh. He resigned from Apple in February 1982 when he was Manager of Advanced Systems over a disagreement with Steve Jobs, one of Apple's founders, concerning the Macintosh's direction. Steve Jobs took over Macintosh development and the Macintosh became a mini-Lisa computer which was totally opposite of Raskin's ideas for the Macintosh.

In Raskin's paper *The Genesis and History of the Macintosh Project* (February 1981) he provided his thoughts on the main software design criteria for the Macintosh:

> My concepts in designing the software were extreme ease of learning, rapid (and thus non-frustrating) response to user desires, and compact and quickly developable software. Key elements in designing such a system are freedom from modes, the elimination of "levels" (e.g. system level, editor level, programming level), and repeated use of a few consistent and easily learned concepts. Such software also leads to simple and brief manuals without having to sacrifice completeness and accuracy. The editor is similar to the LISA editor but does not require the expensive mouse. A careful study showed that it is probably faster to use than a mouse-driven editor -- although it is probably not as flashy to see when demonstrated in a dealer's showroom.

In 1994 Raskin had the following to say about the original Macintosh's software design (*The Mac and Me: 15 Years of Life with the Macintosh*):

> My unifying software originally was to be a graphics-and-text editor within which applications could run as additional commands (via menus), all input and output being through the interface designed for the editor. Later, the PARC desktop metaphor was adopted from the Lisa group (and that from the Xerox Alto and Star computers). Due to the incredible work of the Mac software team, the necessary code was designed and squeezed into a Toolbox that fit into a relatively small ROM (Read Only Memory) that we could afford to put into the product.

Raskin also had some interesting comments to say in one of his many Macintosh design memos concerning the intended users of the Macintosh (*Design Considerations for an Anthropophilic Computer*, 28-29 May 1979):

> This is an outline for a computer designed for the Person In The Street (or, to abbreviate: the PITS); one that will be truly pleasant to use, that will require the user to do nothing that will threaten his or her perverse delight in being able to say: "I don't know the first thing about computers".

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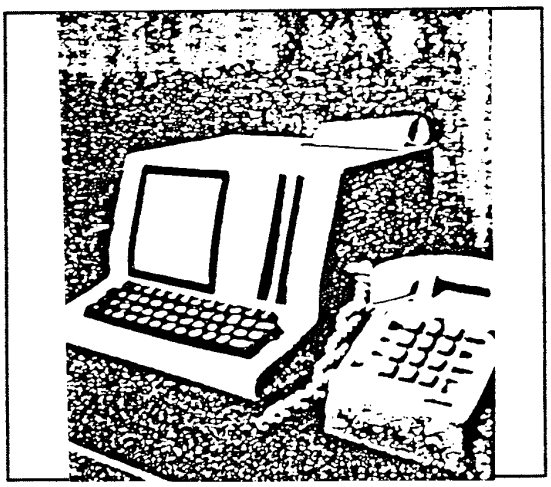

Figure 2 - Preliminary Mock-up of Macintosh computer (circa January 1980)

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The company that Jef Raskin founded in 1984 to implement his computing ideas was located in Menlo Park California and was named Information Appliance Inc. Raskin's ideas about computers and the basic concepts for this company are summarized in his white paper *Information Appliances: A New Industry* (February 1986):

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Raskin's thoughts on the Cat's demise follow (*The Mac and Me: 15 Years of Life with the Macintosh*):

> Canon, possibly because the moribund Electronic Typewriter Division had been given the task, failed to market the product effectively, and it is now a dead Cat.

When interviewed in 1986 Raskin answered the interview question "What do you think is the biggest problem your business faces?" (*Programmers at Work*, p. 239):

> How in the world do you sell something that's different? That's the biggest problem. The world's not quite ready to believe. It's like in the early days at Apple, they said, "What's it good for?" We couldn't give a really good answer so they assumed the machine wasn't going to sell. But I do know the way I plan to sell my product is by word of mouth. Some people will try it and say, "This product really gets my job done. It doesn't have fifteen fonts. I can't print it out in old gothic banners five feet long, but I sure got that article finished under the deadline." That's how I can sell it. Later, people will understand it.

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One other comment about Information Appliance and the Cat deserves mentioning. Raskin claimed that the Cat was made on budget and on schedule, a claim that is very rare in the computing industry (*The Mac and Me: 15 Years of Life with the Macintosh*).

REFERENCES

The following documents are useful in understanding Jef Raskin's work with the Macintosh computer, the SwyftCard, and the Cat computer. Document arrangement is by how useful I found them for this paper. Documents marked with * are present in the Historical Computer Society's library. The size of each document in pages appears at the end of each entry and is enclosed in ().

* Ezra Shapiro, "A Spiritual Heir to the Macintosh", BYTE Magazine, October 1987, pp. 121-123 (3 pages)

Susan Lammers, "Jef Raskin", Programmers at Work, 1989, pp. 226-245 (20 pages)

* Jef Raskin and Apple Computer, The Genesis and History of the Macintosh Project, February 1981 (5 pages)

Jef Raskin and Apple Computer, The Macintosh Research Project: Progress Report of July 1980, July 1980 (9 pages)

Jef Raskin and Apple Computer, The Macintosh Project: Selected Papers, February 1980 (171 pages)

* Jef Raskin, Information Appliances: A New Industry, February 1986 (7 pages)

* David Thornburg, "The Race Goes to the Swyft", A+ Magazine, November 1985, pp. 86-89 (4 pages)

* Jef Raskin, The Mac and Me: 15 Years of Life with the Macintosh, Draft copy, May 1994 (42 pages)

Owen Linzmayer, The Macintosh Bathroom Reader, Draft copy, 1994

* John Markoff and Ezra Shapiro, "Macintosh's Other Designers", BYTE Magazine, August 1984, pp. 347-356 (7 pages)

The End

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Article Name
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Author
David T Craig

Date
01 June 1994 • Draft Copy

Source
DTC
(printed on the Apple ImageWriter
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DRAFT #2

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941 Calle Mejia, Apt. 509, Santa Fe, New Mexico 87501
Compuserve # _____
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Mention:
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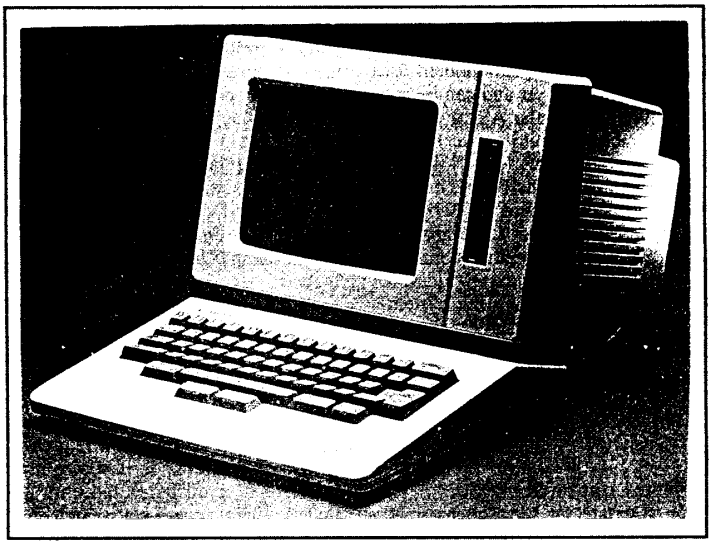
- IAI - ended in 1989
- SC info. quote from
  p. 4 of SC article
  (Profiles)



- Cat made on budget/schedule (p. 28 of JR book)
- Mac design (JR book, p. 22)

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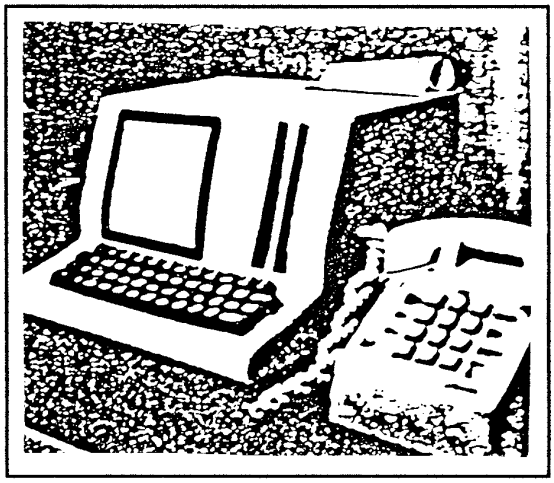

Figure 2 - Preliminary Mock-up of Macintosh computer (circa January 1980)

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> By choosing to focus on computers rather than the tasks we wanted done, we inherited much of the baggage that had accumulated around earlier generations of computers. It is more a matter of style and operating systems that need elaborate user interfaces to support huge application programs. These structures demand ever larger memories and complex peripherals. It's as if we had asked for a bit of part-time help and were given a bureaucracy.

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REFERENCES

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Ezra Shapiro, "A Spiritual Heir to the Macintosh," BYTE Magazine, October 1987, pp. 121-123 * (3 pg

Susan Lammers, "Jef Raskin", Programmers at Work, ~~Interview with Jef Raskin,~~ pp. 226-245 (20 pages) Microsoft Press, 1989

Jef Raskin and Apple Computer, The Genesis and History of the Macintosh Project, February 1981 * (5 pages)

John Markoff and Ezra Shapiro, "Macintosh's Other Designers," BYTE Magazine, August 1984, pp. 347-356 * (7 pages)

Jef Raskin, Information Appliances: A New Industry, February 1986 * (7 pages)

David Thornburg, "The Race Goes to the Swyft," A+ Magazine, pp. 86-89 * (4 pages) November 1985

Jef Raskin, The Macintosh Project: and Apple Computer Selected Papers, Feb. 1980 (171 pages)

The End

Canon Cat Computer Historical Information

Article Name
Canon's Cat Computer: The Real Macintosh

Author
David T Craig

Date
May 1994 • Draft Copy

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(printed on the Apple ImageWriter
dot-matrix printer)

DRAFT #1

Canon's Cat Computer: The Real Macintosh

941 Calle Mejia, Apt. 509, Santa Fe, New Mexico 87501

(paper written for the Historical Computer Society of El Paso Texas)

INTRODUCTION

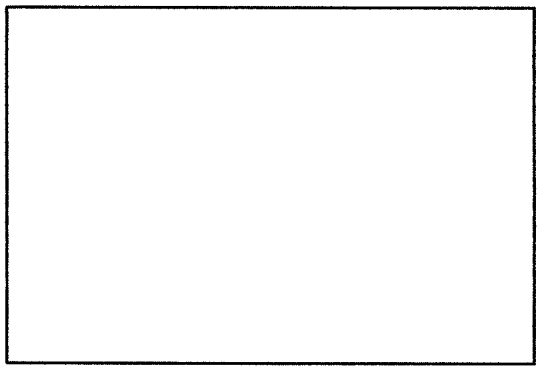
DRAFT COPY

In 1987 Canon USA Inc. released a new computer named the Canon Cat. This computer was targeted at low-level clerical workers such as secretaries. After six months on the market and with 20,000 units sold Canon discontinued the Cat. The Cat featured an innovative user interface that did not rely upon a mouse, icons, or graphics. The key person behind the Cat was Mr. Jef Raskin, an eclectic gadgeteer, who began the design of the Cat during his work on the first Macintosh project at Apple Computer in 1979.

The design and history of this computer is a fascinating story which this paper attempts to tell. I am not a Cat owner nor have I unfortunately ever used a Cat. All facts within this paper are based on various documents relating to Jef Raskin and his work at Apple and Information Appliance, Raskin's company that created the Cat.

THE CANON CAT: HARDWARE

The Cat is a 17-pound desktop computer system containing a builtin 9 inch black-and-white bit-mapped monitor, a single 3.5-inch 256K byte floppy disk drive, and an IBN Selectric-style keyboard.



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The product specs follow (Ezra Shapiro, *A Spiritual Heir to the Macintosh*):

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Components	Processor	Motorola 68000 running at 4 MHz
	Memory	256K bytes
	Mass storage	One 256K byte internal 3.5-inch floppy drive
	Display	9-inch black-and-white built-in, bit-mapped
	Keyboard	Compatible with IBM Selectric typewriter plus control functions on front face of the keys
	I/O Interfaces	One Centronics parallel port, one RS-232C serial port (DB-25 connector), two RJ-11 jacks (for telephone connections)
	Modem	Internal 300/1200 bps, Hayes compatible
	ROM	256K bytes
Price	$1495	

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The Cat came with an extensive collection of applications stored in the Cat's ROM. These applications supported word processing, spell checking, mail merging, calculator calculations, communications, data retrieval, and programming in the FORTH or 68000 assembly languages. Also present in the ROM was a spelling dictionary based on the 90,000 word American Heritage Dictionary. System setup information and a small personal user dictionary were stored in 8K of battery-backed up RAM.

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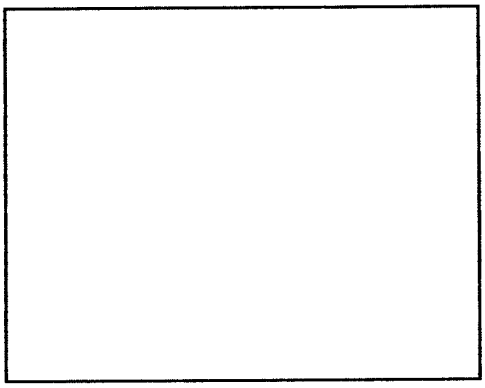

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David T Craig

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January 2000

Canon's Cat Computer: The Real Macintosh

941 Calle Mejia, Apt. 509, Santa Fe, New Mexico 87501
CompuServe 71533,606

swhite@stf.org
This paper was written for *Historically Brewed* , the newsletter of the Historical Computer Society of El Paso, Texas. Contact Mr. David Greelish at CompuServe address 100116,217 if you're interested in old computers and want to read fascinating stories about such computers and the people behind them.

If many faultes in this paper you fynde,
Yet think not the correctors blynde;
If Argos heere hymselfe had beene,
He should perchance not all have seene.
Richard Shacklock (1565)

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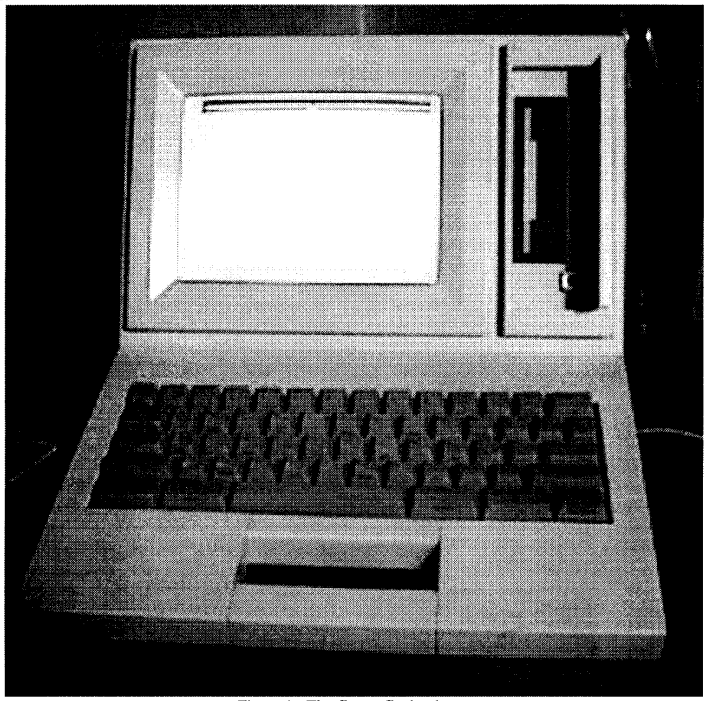

THIS IS THE CAT'S PARENT, THE SWYFT.
DTC/31 JAN 2000

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> *It is as advanced (in terms of human interface) over the Mac as the Mac was an advance in its day.*

Raskin's thoughts on the Cat's user interface and other user interfaces from the perspective of 1994 follow (*The Mac and Me: 15 Years of Life with the Macintosh* , Draft copy, May 1994):

> *The current paradigm of using application programs is inherently wrong from an interface design point of view. This is widely recognized, but the solution offered is to make them inter operable, which solves some of the problems but by no means all. GUIs as presently designed and used are an interface dead end. Though they can be patched endlessly, a large jump in usability can only come from a completely different approach. The Cat computer, which I developed for Canon, demonstrated that my alternate approach is implementable and both more productive and more pleasant than GUIs.*

JEF RASKIN AND THE FIRST MACINTOSH

One can say that Jef Raskin began designing the Cat during his tenure at Apple Computer. He started at Apple in January 1978 as head of its publications department. From 1979 to 1982 Raskin was responsible at Apple for a research project called Macintosh. He resigned from Apple in February 1982 when he was Manager of Advanced Systems over a disagreement with Steve Jobs, one of Apple's founders, concerning the Macintosh's direction. Steve Jobs took over Macintosh development and the Macintosh became a mini-Lisa computer which was totally opposite of Raskin's ideas for the Macintosh.

In Raskin's paper *The Genesis and History of the Macintosh Project* (February 1981) he provided his thoughts on the main software design criteria for the Macintosh:

> *My concepts in designing the software were extreme ease of learning, rapid (and thus non frustrating) response to user desires, and compact and quickly developable software. Key elements in designing such a system are freedom from modes, the elimination of "levels" (e.g. system level, editor level, programming level), and repeated use of a few consistent and easily learned concepts. Such software also leads to simple and brief manuals without having to sacrifice completeness and accuracy. The editor is similar to the LISA editor but does not require the expensive mouse. A careful study showed that is is probably faster to use than a mouse driven editor -- although it is probably not as flashy to see when demonstrated in a dealer's showroom.*

In 1994 Raskin had the following to say about the original Macintosh's software design (*The Mac and Me: 15 Years of Life with the Macintosh*):

> *My unifying software originally was to be a graphics-and-text editor within which applications could run as additional commands (via menus), all input and output being through the interface designed for the editor. Later, the PARC desktop metaphor was adopted from the Lisa group (and that from the Xerox Alto and the Star computers). Due to the incredible work of the Mac software team, the necessary code was designed and squeezed into a Toolbox that fit into a relatively small ROM (Read Only Memory) that we could afford to put into the product.*

Raskin also had some interesting comments to say in one of his many Macintosh design memos concerning the intended users of the Macintosh (*Design Considerations for an Anthropophilic Computer,* 28-29 May 1979):

> *This is an outline for a computer designed for the Person In The Street (or, to abbreviate: the PITS); one that will be truly pleasant to use, that will require the user to do nothing that will threaten his or her perverse delight in being able to say: "I don't know the first thing about computers".*

The Macintosh's early hardware design was very similar to the Cat's design. One early Macintosh design from January 1980 provided a small screen, a keyboard, and two vertical built-in disk drives. Also present in this early Macintosh design was a built-in printer.

Figure 2 - Preliminary Mock-up of Macintosh computer (circa January 1980)

INFORMATION APPLIANCE, THE SWYFTCARD, AND THE CANON CAT

The company that Jef Raskin founded in 1984 to implement his computing ideas was located in Menlo Park California and was named Information Appliance, Inc. Raskin's ideas about computers and the basic concepts for this company are summarized in his white paper *Information Appliances: A New Industry* (February 1986):

> *One of the prophets of the personal computer industry, Alan Kay, has said that the true personal computer has not yet been made. I disagree. We have, as the ancient curse warns us, gotten what we asked for. We do indeed have computers being bought by individuals for themselves; they are "personal computers". The problem is that many of us didn't want computers in the first place -- computers are merely boxes for running programs -- we wanted the benefits that computer technology has to offer. What we wanted was to ease the workload in information related areas much as washing machines and vacuum cleaners ease the workload in maintaining cleanliness.*
>
> *By choosing to focus on computers rather than the tasks we wanted done, we inherited much of the baggage that had accumulated around earlier generations of computers. It is more a matter of style and operating systems that need elaborate user interfaces to support huge application programs. These structures demand ever larger memories and complex peripherals. It's as if we had asked for a bit of part-time help and were given a bureaucracy.*

Information Appliances goal was to create a computer system that would be both powerful and easy to use. The company developed a prototype Cat system code named "SWYFT". Doug McKenna, a former company director and now the key person behind the Macintosh development tool Resorcerer, said that he proposed that "SWYFT" be read as "Superb With Your Favorite Typing" (personal phone call, 15 June 1994). Funding for this company came from around a dozen venture capitalists.

Raskin's business plan was to create and market the Cat using only Information Appliance. But the company's backers thought Information Appliances could not do this as well as a bigger and already established company. As such, the venture capitalists talked with several computer companies that had an interest in the Cat and selected Canon to market the Cat. Canon was responsible for giving the "SWYFT" the product name "Cat" (Doug McKenna, personal phone call, 15 June 1994).

While the Information Appliance engineers developed the Cat the company's venture capitalists thought it would be beneficial for the company to release some of the Cat's technology as a small board based product. The result of the was an add-on plug-in board for the Apple //e computer. This card was called the SwyftCard, a name which obviously was based upon the Cat's code name. The SwyftCard retail price was $90. It is interesting to read Raskin's comments concerning the origins of the SwyftCard (*Programmers at Work* , p. 237):

> *We didn't get into business to produce a board for the Apple //e, but it seemed like such a good idea that I would have felt very bad not to have released the product. I saw a lot of good products at Apple and Xerox pass from desktop to desktop, and never get to the market.*

Information Appliance wrote the SwyftCard's on-board software in FORTH, a computer language which Raskin saw as ideal for this product since it was compact and inexpensive to implement. Raskin's comments about how he hired a FORTH programmer show the distance Raskin had traveled from Apple, at least from a legal perspective (*Programmers at Work* , p. 238):

> *I went out and hired a FORTH programmer and a few other people, mostly personal friends of mine. Nobody from Apple. I didn't touch the company. I didn't want to get into any legal hassles, and Apple was nasty enough then that I worried about such things.*

The SwyftCard was well received by those who used it. One magazine reviewer had the following to say about the SwyftCard (David Thornburn, *The Race goes to the Swyft* , p. 86):

> *SwyftCard is a small, multipurpose circuit board that plugs into slot 3 on an Apple //e, turning it into one of the most useful tools you could ever want for word processing, information retrieval, calculation, BASIC programming, and -- if you have a modem -- communication. SwyftCard has accomplished something that I never knew possible. It not only outperforms any Apple II word-processing system, but it also lets the Apple //e outperform the Macintosh.*

The SwyftCard reviewer also had the following to say about the philosophy behind the SwyftCard (p. 89):

> *SwyftCard was the result of extensive thought about how people might want to use computers if they had a choice in the matter, and as a result is a spectacular piece of programming.*

THE CAT'S DEMISE

After six months as a product, Canon discontinued the Cat in 1987. Bruce Tognazzini, a computer user interface guru, had the following to say about the Cat's demise (*TOG on Interface* , 2nd printing, 1992, p. 182):

> *The Canon Cat did not sell well, but this should be attributed to the hardware on which it ran, as well as Canon's decision to target this ideal interface for professional writers almost exclusively to low-level clerical workers, who didn't need its functionality and were confused by its "invisible" interface.*

Some people have said that the reasons for the Cat's demise were political. One story says Canon's electronic typewriter and computer divisions fought for control of the Cat. Canon's president learned of this fight and ordered the division to resolve the matter soon. The matter was no resolved and the president canceled the Cat to teach the divisions a lesson. Another story contends that when Canon wanted to invest in Steve Jobs' new post-Apple company, NeXT, jobs told Canon that it could invest only if Canon dropped the Cat. Jobs supposedly was very hostile toward Raskin since Raskin had created the Macintosh and Jobs could not stand to be associated with him in any way. Canon did buy around 16% of NeXT stock in June 1989 for $100 million. (These last two reason were told to me by Owen Linzmayer, the author of the forthcoming Macintosh book *The Macintosh Bathroom Reader*).

Raskin's thoughts on the Cat's demise follow (*The Mac and Me: 15 Years of Life with the Macintosh*):

> *Canon, possibly because the moribund Electronic Typewriter Division had been given the task, failed to market the product effectively, and it is now a dead cat.*

When interviewed in 1986 Raskin answered the interview question "What do you think is the biggest problem that your business faces?" (*Programmers at Work* , p. 239)

> *How in the world do you sell something that's different? That's the biggest problem. The world's not quite ready to believe. It's like in the early days at Apple, they said, "What's it good for?" We couldn't give a really good answer so they assumed the machine wasn't going to sell. But I do know the way I plan to sell my product is by word of mouth. Some people will try it and say, "This product really gets my job done. It doesn't have fifteen fonts. I can't print it out in old gothic banners five feet long, but I sure got that article finished under the deadline." That's how I can sell it. Later, people will understand it.*

In retrospect, it appears that most computer users just didn't get it when it came to the Cat.

In 1989 Information Appliance ended. Dough McKenna, one of the company directors, claimed that the venture capitalists behind Information Appliance no longer wanted to be part of what they considered a risky venture so they pulled out their financial resources causing the company to close its doors (personal phone call, 15 June 1994).

Information Appliance also had on the drawing boards at the time of its demise a 2-lb, Cat laptop. Only around two were ever built, none exist today (personal phone call with Doug McKenna, 15 June 1994).

Jef Raskin currently owns the patents that formed the Cat's core technology. These include a patent for the Cat's LEAP method and the saving and loading of all the Cat's RAM to disk and from disk. Information Appliance licensed several of these patents to other computer companies, but these companies did nothing with this technology.

One other comment about Information Appliance and the Cat deserves mentioning. Raskin claimed the Cat was made on budget and on schedule, a claim that is very rare in the computing industry (*The Mac and Me: 15 Years of Life with the Macintosh*).

REFERENCES

The following documents are useful in understanding Jef Raskin's work with the Macintosh computer, the SwyftCard, and the Cat computer. Document arrangement is by how useful I found them for this paper. Documents marked with * are present in the Historical Computer Society's library. The size of each document in pages appears at the end of each entry and is enclosed in ()'s.

* Ezra Shapiro, "A Spiritual Heir to the Macintosh", BYTE Magazine, October 1987, pp. 121-123 (3 pages)
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The End

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