



Here is what I can tell you about Apple's Lisa.

I joined Apple in mid-1978. In the fall, Steve Jobs and I discussed plans for Apple's next generation product. At that time we considered using DEC's LSI-11 processor but they were not interested in selling us a chip version. Steve and I wrote the original memo, perhaps one page, detailing the principles and goals for this next generation product.

Then, nothing happened for several months. During this time I launched the Apple II as a business product. By mid-1979, Apple had hired some engineers who did indeed initially take a shot at designing a custom bit-slice processor. The project name was Lisa, named after Steve's illegitimate daughter.

In October of 1979, Steve asked me to report to him as the product manager for Lisa. By this time we were aware of the MC68000, and the bit-slice project died. Ken Rothmuller was brought in as engineering manager and work progressed on a 68000 system. However, the original engineering direction was a green phosphor display, no bitmap graphics capability, no mouse, and a very traditional computer user interface.

Around this time, Steve and Bill Atkinson made their first visit to PARC. Steve then took me back there along with John Couch and Tom Whitney. At that time, Whitney was VP Engineering and Couch was VP Software. We got religion. Glenn Edens, who was working for me at the time, acquired a mouse and smuggled it to Atkinson, who wrote a driver for it and a simple graphics demo that wowed many of the engineers. Rothmuller resisted the new ideas, and Whitney insisted that I produce a "marketing requirements document" (MRD) that would specify only what the product needed to be able to do, not how the engineers should do it.

In March of 1980, I did most of the writing of the Lisa MRD, along with key input from Glenn Edens. The MRD was around 100 pages in length and was basically a blueprint for the next decade of personal computing. We requested a GUI, a mouse, icons (which even Xerox was not yet using), a LAN, servers, and many innovative applications. Rothmuller was unhappy about the MRD, but Whitney and Couch were sold, and Rothmuller was forced to leave Apple.

Armed with the MRD, we now constructed a design process whereby all of us participated in daily design sessions to reinvent Lisa. Bill Atkinson and Larry Tesler deserve most of the credit for the GUI but many of us were key participants in the debates. At this time, Bruce

Daniels was appointed software manager. I recall the greatest divided opinion about how many mouse buttons to have and in what directions the scroll bar arrows should point, and was pleased that I was on the winning side of both of those. Atkinson invented the pull down menu bar. Tesler pioneered the folder filing system. We hired Hovey-Kelley, a design firm, to create a mouse for us that would not violate any existing patents, and suggested many improvements. Our mouse was the first opto-mechanical one and the first to have a non-slick ball, key to avoiding dust collection and breakdowns. All industry mouse since then have copied it. There was not a prominent head of hardware engineering for Lisa at first. After it was well under way, Wayne Rosing was hired from DEC to manage the project.

Jef Raskin had very little to do with Lisa. He was head of publications and wrote the original, and brilliant, manual for Applesoft BASIC. Instead, he had his own hardware idea, which he called Macintosh. His concept of Mac was basically a laptop computer. In the fall of 1980, Apple decided to go public. Mike Scott, our president, did not want Steve to have an operating role in the company. So he took Steve's "product marketing" group away from him, and created divisions. Scotty asked John Couch to run the Lisa Division, which I renamed POS. Jef Raskin by this time was managing a small project group to investigate his Macintosh idea. Steve was very upset by these changes, and very jealous of Couch, so he took over Jef's project, kicked Jef out, and turned it into the Mac we know today. He then started a systematic process of taking key people and technologies out of the POS divisions and undermining support for Lisa, so that Mac could supplant it. For example, the Twiggy drive was Steve's idea. He forced Lisa to use it, but then chose Sony for Mac's drive. From my point of view, Mac is simply Lisa 2.

None of us had any idea as to how big these ideas were and how long it would take to engineer them or explain them to the world. The first realistic schedule suggested it could be released in 1982. After starting his Mac division, Steve placed a \$5000 bet with Couch that Mac would beat Lisa to market. Of course both came out much later than expected. Originally, Steve had some pretty crazy ideas about Mac. I succeeded in convincing him that it had to have more than the 64KB of RAM he originally intended and that it had to have an initial price of \$2495, not the \$1495 he was shooting for. I also convinced him to support fixed space as well as proportional fonts, which was critical for business telecommunications. Rome was not built in a day.

I left Apple to start Electronic Arts in May 1982. I was appalled later to learn of the plan to charge \$10,000 for Lisa's, that they had not replaced Twiggy with a working floppy drive, and that they were overly focussed on the Fortune 500 and not even using their mainstream distribution channel. Of course none of these mistakes were made with the Mac and it was much more successful.

Ironically, the first consumer product to use an icon-based GUI was Pinball Construction Set, published by Electronic Arts in 1983. Bill Budge designed it. He had consulted with us at Apple in 1981, seen Lisa, and derived his pinball system from it. Bill ended up on the front page of the Wall Street Journal and helped put Electronic Arts on the map. He was the most famous software artist of that generation, but ironically he was getting credit for ideas from the Lisa product that had not been announced yet.

By the way, many Apple documents became public record as a result of a shareholder lawsuit around 1985. I am sure if you make inquiries you could locate many interesting documents including the Lisa MRD. It's almost a bible of personal computing.

Best of luck with your project, and by all means check out 3DO!

Regards,

A handwritten signature in black ink, appearing to read "Trip Hawkins". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Trip Hawkins
President and CEO

MR. TRIP HAWKINS
PRESIDENT AND CEO, THE 3DO COMPANY
600 GALVESTON DRIVE
REDWOOD CITY, CA 94063

Received:
03 Mar 1994

Re: Apple Lisa computer

Dear Mr. Hawkins:

Thank you very much for the generous reply to my recent letter concerning the origins of the Lisa computer. The remarks you made in your letter of 07 February were fascinating reading. I plan to incorporate them into the revision of my Lisa legacy paper.

If you can answer some more questions about the Lisa I would be very appreciative. These will be the last questions I have for you since I assume you have more pressing matters at hand, e.g. running 3DO. I've enclosed a SASE to make this reply easier (or you can e-mail me at my CompuServe address in the letterhead):

- 0) May I make your letter available to others with an interest in the Lisa? *yes*
- 1) Who came up with LISA = Local Integrated Software Architecture? I assume you did. *± don't remember*
- 2) Were there ever other names for the Lisa, besides Lisa? For example, Apple IV. *not really to some degree*
- 3) I noticed that Apple changed its corporate phone number around 1983 to end in 1010 which is the A-line trap value in binary that Lisa (and Macintosh) programmers use for making system calls. Was this change done during the Lisa's development? Were you involved with this change? *The phone number was 408 996 1010 for as long as I can remember, well before 1983!*

Thanks for the comment about the Lisa MRD. I will look around and see if I can find a copy. FYI, I have a copy of the Lisa PIP and found that a very interesting read.

Good luck at 3DO.

Sincerely,

David T. Craig

Regards,

Trip

*we debated it a bit
but it was always
the "Lisa Project"*

David T. Craig

Wednesday, February 23, 1994

*I recommended we
call it Apple One*

Apple Lisa Historical Info from Trip Hawkins

21 April 1994 -- David T. Craig

The following information was provided by Owen W. Linzmayer of San Francisco, CA via CompuServe:

David,

April 21, 1994

I'm pretty busy finishing up my book, but I just got a nice missive from Trip Hawkins that I thought you might like.--OWL

I worked for Steve Jobs until Lisa was taken away from him in the fall of 1980, on the eve of Apple's IPO. A few months after that, Steve took over Jef Raskin's project, continued to call it Macintosh, and totally changed it into Steve's vision of a scaled-down Lisa. All of the core ideas were the same for both Lisa and Mac. Steve did have some legitimate concerns about Lisa being too high-end in its conception, but ironically over time the Mac grew to have as much memory and cost as Lisa had.

I have a huge amount of respect for Steve's intelligence, product instincts, and ability to whip people into a frenzy to make things happen. In the past I have been unfortunately mainly quoted as being critical of Steve simply because I was one of the few quotes available. I'm not interested in being quoted saying negative things about Steve and I feel that many of my prior remarks were taken out of context by writers and blown out of proportion.

A few noteworthy anecdotes. I think I had a lot to do with convincing Steve that 64KB RAM was not enough for Mac. He changed his mind and ended up launching with 128KB and upgrading quickly from there. Also, I convinced him

to have more screen flexibility to not be limited to proportionally-spaced fonts only. Also, our Lisa group provided all of the printer and peripherals technology used by Mac, including the mouse (Glenn Edens, who worked for me, brought the first Xerox mouse into Apple at my request in early 1980, and an old friend of mine, Dean Hovey, was hired to design Apple's), dot matrix printer, laserwriter, and font and networking software. Most of the designers from Lisa, including Bill Atkinson and Steve Capps, moved over and transferred key software technologies to Mac. Basic things like the user interface and the graphics primitives for drawing the screen are essentially the same ideas implemented by the same people on both Lisa and Mac (in a fashion, Mac is "version 2.0" of these ideas, and it is not uncommon for it to take a few iterations to get it right). I also had a celebrated debate with Steve about Mac pricing. He was convinced it could debut at \$1495 and I argued with him that his bill of materials was wrong and that he would have to introduce it at \$2495. I left Apple in May of 1982. Mac was introduced in January of 1984 at a price of \$2495. Lisa was introduced in 1983; Steve had forced Lisa to use his idea for an Apple-invented floppy drive that never worked properly; he had also pre-announced Mac, which helped kill interest in Lisa; and finally, the pundits at Apple priced Lisa too high, did not fix the disk drive problem, and limited distribution severely (nevertheless \$100 million of Lisas were sold in the first year). A year after the Mac intro, Steve killed Lisa and consolidated the Lisa group into the Mac division. There should have been more synergy between Lisa and Mac; Steve for example would not allow any degree of software compatibility between them. Without question, Mac was a better product than Lisa, but if Mac had been Lisa 2.0, Mac would have been even more successful. Instead, there was no synergy, and in fact there was unnecessary conflict that created a lot of inefficiency. Steve was obviously a great entrepreneur, because he got Mac done and made it successful. And he was able to kill Lisa and ultimately eliminate the confusion and inefficiency between the two. But if he had been a brilliant leader and politician, he might have united the company behind one unified vision for the two products as part of the same family. There was a lot of discussion about this, but obviously Steve felt more comfortable just doing Mac independently of the rest of the company, and since it was ultimately successful maybe he was right and that a group-think process in the company would not have had as good a result.

One other item. In early 1982, we were selling the Apple II as a separate box with add-on floppy drives and display. By that time most customers were buying all the

add-ons and the total cost was around \$2500. I figured out that with a new PC board layout of the Apple II electronics, and an enclosure similar to the planned Mac enclosure, we could repackage the Apple II with the peripherals built-in, and cut the retail price to \$1500. The Apple II Division got very excited about this, but Steve would not allow it. He wanted to reserve the packaging concept of building the display in for the Mac. I was at that time suggesting a marketing campaign called "Apple II is Forever" in which we could make these packaging changes, open up new markets, and extend the product life. Steve would not allow the Mac enclosure style to be used, so the Apple II division made the Apple IIc, which had only the built-in floppy drive, and introduced this in 1983 with the slogan "Apple II Forever." Incidentally, even before I arrived at Apple in 1978 industry vets were saying the Apple II was on its last year, and this continued every year I was there. The Apple II sold quite well for 10 years, from 1977 thru 1987!

Trip Hawkins

Biography

Trip Hawkins, 40, is President and Chief Executive Officer of The 3DO Company, a pioneering multimedia venture that is establishing a new standard for interactive multimedia in consumer electronics. 3DO was formed in October 1991, and has forged strategic partnerships with a variety of industry leaders including Matsushita, AT&T, Time Warner, MCA, Electronic Arts, and the venture capital firm, Kleiner Perkins Caufield & Byers.

Mr. Hawkins is also Chairman of Electronic Arts, which he founded in 1982. Despite entering a tumultuous marketplace with 135 competitors, Electronic Arts rose in only four years to become the largest supplier of computer entertainment software in the world and has achieved a consistency in profits and growth that is unrivaled in the industry. Mr. Hawkins' vision has been the driving force behind the company's successful growth strategy and unique organization.

Prior to starting Electronic Arts, Mr. Hawkins was one of the early managers at Apple Computer where, over a period of four years, he provided leadership for Apple's successful entry into the business market. Mr. Hawkins holds a degree in strategy and applied game theory from Harvard College and an M.B.A. from Stanford University.