

#M0054356NC

T1990~

NC 0021264 4



National College of Art and Design
Industrial Design

form follows fun



the history of Apple Computers

by
Danny lane

Submitted to the faculty of History of Art and Design and Complementary Studies in Candidacy
for the Degree of:

~~B.A.~~ Industrial Design
1998

contents

introduction		1
chapter 1	the garage dream	4
chapter 2	the big mac	16
chapter 3	rotten apple?	28
chapter 4	apple pie again?	38
conclusion		49
bibliography		52
glossary		56

illustration guide

fig.1	The Altair 8080, 1975
fig.2	Steve Wozniak & Steve Jobs, 1978
fig.3	The Apple I, 1977
fig.4	The Apple II, 1978
fig.5	The Apple Logo
fig.6	The Apple III, 1980
fig.7	The IBM PC, 1981
fig.8	The Apple Lisa, 1983
fig.9	The Apple Macintosh, 1984
fig.10	Icons used on the Mac GUI
fig.11	The Mac GUI
fig.12	Hartmut Essingler
fig.13	Advertisements for the Apple Macintosh
fig.14	Steve Jobs & John Sculley
fig.15	The Macintosh Plus
fig.16	Essinglers concept for the Macintosh II
fig.17	The Macintosh Plus, SE, and Macintosh II
fig.18	Bob Brunner
fig.19	Jonathan Ive & Daniel Deluiss
fig.20	The Color Classic II, 1992
fig.21	The Newton MessagePad 110, 1994
fig.22	Gil Amelio
fig.23	The eMate, 1997
fig.24	The return of Jobs
fig.25	1997 'Think Different' advertising campaign



introduction

introduction

If one had to pick one global American high-tech company that symbolised a flair for blending pop culture sensibilities with clever design, that company would have to be Apple Computer. To an astonishing extent, the company faithfully reflected co-founder Steve Jobs "Hey, putz!-I-know-what's-best" arrogance and his obsession with the aesthetics of innovation. Then again, if one had to pick a single company that symbolised the shocking mismanagement of golden opportunities, that company too is Apple. No company has so recklessly squandered so rich an endowment of ideas, image and human capital. What's particularly sad about Apple, is that its deepest and bloodiest wounds have been self-inflicted.

The discussion of Apple is not only a discussion of a company, but of an ideal and a society in which it grew. Its life has become legend, its logo has become world-recognisable, despised and adored in the same breath. Its products have fluctuated from the sublime to the ridiculous, the innovative to the evolutionary. Its story is like that of a daytime soap opera, with deaths, births, cliff-hangers and twists in a plot which would almost seem unimaginable in the real world, but in the world of Apple anything is possible.

With a history so imaginative, yet so volatile, when I came upon the story of Apple, I found it hard not to be interested. Apple computers always seemed different to ordinary PCs, in the way they looked and the way they worked. What I didn't realise was not only embodied in the products, but was part of the company itself. In searching for this, I examined many journals and articles

on the Internet, not only with a view to the design aspect of the company (e.g. Graphis) but towards an overall view of what it was, why, and how it has become what it is today (e.g. Wired).

It is important to understand these aspects to perceive a company which once seemed indestructible, but now lies in ruin. Apple's history is one of many questions, the most significant being how it manages to capture the imagination of many, even in its darkest hour?



chapter 1

the garage dream

the garage dream

chapter 1

With the dawn of the seventies, the birth of a revolution in technology would, within a decade, change the world forever. The microcomputer industry was still very much in its infancy, with few "home computers", that one could choose from, and their capabilities very much limited. The first microprocessor chip, the 4-bit 4004, had been released by Intel back in 1971. The first video game, Pong was created by Nolan Bushnell of Atari in 1972. Also in that year, Intel had gone a step further in microprocessor development and released the 8-bit 8008, and then 8080 in 1973. The year 1974 saw Scelbi Computer Consulting sell what some consider to be the first commercially built microcomputer, the Scelbi 8-H, based on Intel's 8008 chip. However, it had a limited distribution and, due to the designers health problems, it didn't go far. The first home-built computer, the mark 8, was released that same year, using the 8008 chip. It had no power supply, monitor, keyboard, or case, and only a few hobbyists ever finished their kits. "Overall, the microchip had yet to make much of an impact on the general public beyond the introduction of the hand held calculator."(Weyhrich, 1991, P2)

With the start of 1975 came a significant event in microcomputer history, one that would change the world. January of that year saw the birth of a special package, which would be known as the Altair (fig. 1). Produced by the newly-formed company, MITS, Inc., it measured 18-inches deep by 17-inches wide by 7-inches high, and it weighed in at a massive 256 bytes. Called the

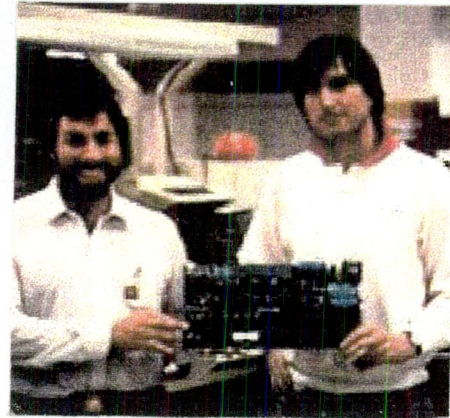
"world's first minicomputer kit to rival commercial models" (Popular Electronics, 1975), the Altair 8080 used the Intel 8080 chip, and sold for \$395. MITS hoped that they would get about four hundred orders for clones of their machine, trickling in over the months which would supply the money MITS needed to buy the parts to send to those who ordered the kits. This "trickle" of orders would give MITS time to establish a proper assembly line for packaging the kits. However, they misjudged the burning desire of Popular Electronics' readers to build and operate their computer, for MITS received four hundred orders in one afternoon.



(fig. 1) The Altair 8080, 1975.

An inspiration to build computers was born in a generation of technical wizards, one of those being Steve Wozniak (fig. 2). Palo Alto, California represented the beginning of this vision for the 26 year old employee of Hewlett Packard and a long-time digital electronics hacker. For years he had designed many of these machines on paper, and even written FORTRAN compilers and BASIC interpreters for these theoretical machines, but a lack of money kept him from carrying out his desire. He looked at the Intel 8080 chip, but at \$179 decided he couldn't afford it.

Another chip, the Motorola 6800, interested Wozniak because it resembled his favourite microcomputers (such as the Data General Nova) more than the 8080. However, cost was still a problem for him until he and his friend, Allen Baum, discovered a chip that was almost identical to the 6800, while considerably cheaper. MOS technology sold their 6502 chip for \$25, as opposed to the \$175 Motorola 6800. Wozniak decided to change his choice of processor to the 6502 and began writing a version of BASIC that would run on it. A friend over at Hewlett Packard programmed a computer to simulate the function of the 6502, and Wozniak, using this information, designed a computer he could run it on.. To make the computer easier to use, Wozniak favoured a keyboard over the front panel switches that came on the Altair. He also made it simple to use a television for a video terminal for an output device. There was no speaker, no graphics, no colour and no case, but what had emerged was the first A.P.P.L.E. computer.



(fig. 2) Steve Wozniak & Steve Jobs, 1978.

Enhancements and modifications followed at the bi-weekly Home-brew Computer Club meetings and with this an interest was spawned in another member of this meeting, Steve Jobs (fig. 2). He had worked with Wozniak(Woz) in the past and during the design process, Jobs made suggestions that helped shape the final product and suggested to Wozniak that they get some printed

circuit boards made for the computer and sell at the club for people to assemble themselves. They pooled their resources by selling a Volkswagen van and a pocket calculator, and on April 1st 1976 they officially formed the Apple Computer Company.

Jobs approached the owner of a new computer store in the bay area called 'The Byte Shop'. This businessman, Paul Terrell, expressed an interest in this new Apple computer, but only wanted fully assembled computers to sell. If they could provide this, Terrell told them he would order fifty Apples and pay cash on delivery. Due to the raising in cost, Jobs and Wozniak managed to get the parts on 30 days credit and set up in Jobs garage to assemble and test the Apple I. "After a marathon session of stuffing and soldering PC boards, Jobs delivered. July 1976 witnessed the official release of the Apple I and it sold for \$666.66. Two hundred Apple I (fig. 3) computers were manufactured and all, except twenty five of them, sold over a period of ten months."(William & Moore, 1980, p. A69)



(fig. 3) The Apple I, 1977.

Although the Apple I was easier to begin using than the Altair (thanks to the built-in ROM code), it was still a time-consuming process to set it up to do

something useful. To broaden its appeal, Woz designed a cassette interface mounted on a two inch high circuit board to enable BASIC to be loaded to achieve this process, without the usual two hours typing that was normally needed. The card sold for \$75 and a cassette tape of Woz's BASIC was included with it. The Apple advertisement stated "Our philosophy is to provide software for our machines free or at minimal cost." The interface worked, but worked well only on expensive tape recorders. To further try to enhance sales, the Byte shop stores found a local cabinet-maker who made some koa-wood cases for the Apple computer, so it would no longer be just a naked circuit board.

"Interestingly, although most of the action was going on in Silicon Valley, news of the Apple I made its way East. Stan Veit, owner of the East Coast's first computer store, brought an Apple I to a meeting of the Association of Computer Machinery. Those attending were quite sceptical that a real computer could fit into a small briefcase; they were sure that the machine was just a portable terminal, attached by a hidden phone-line to a mainframe somewhere!"(Chien, 1986, p.12)

Apple computers grew, and with this came a growth in the company with the inclusion of Mike Scott (National Semiconductors), Mike Markulla (Intel) and Rod Holte (Atari) . Expanding on this and the company itself, came the introduction of the Apple II at the West Coast Computer Fair on April 5th, 1977, based on Woziniaks Apple I, but with several additions. The first was a plastic case, a rarity at the time, which was painted beige. The second was the ability to

display colour graphics, a holy grail in the industry. The Apple II also included a larger ROM, more expandable RAM (4K to start) and 8 expansion slots. It had integer Basic hard coded on the ROM for easier programming, and included two gaming paddles and a demo cassette for \$1,298. Apple also released a disk drive for the machine, one of the most inexpensive, easy to use available.

Designed by Gerry Mancock, the Apple II (fig. 4) was a revolution in a most logical design sense, in an effort to make the personal computer personal. Through the simple integration of keyboard and hard drive, in a plastic case, it transformed the former hobbyists toy into a product for people to use. Software like VisiCalc gave a purpose to this new technology for the person to use it and helped deliver the immense power of the computer into the hands of the people who didn't even know that they needed it. Orders for it were multiplied several times after its introduction. Apple became one of the fastest growing companies in American history, with "a flamboyant, devil-may-care culture that was encouraged to pursue any technology, in a Californian environment which inspired a young and enthusiastic creativity." (Wickens, 1990, p. 39)



(fig. 4) The Apple II, 1978.

The logo (fig. 5) itself reflected the mood of the company, the fruit of knowledge, with a bite (byte) taken out portraying the ideal of giving people

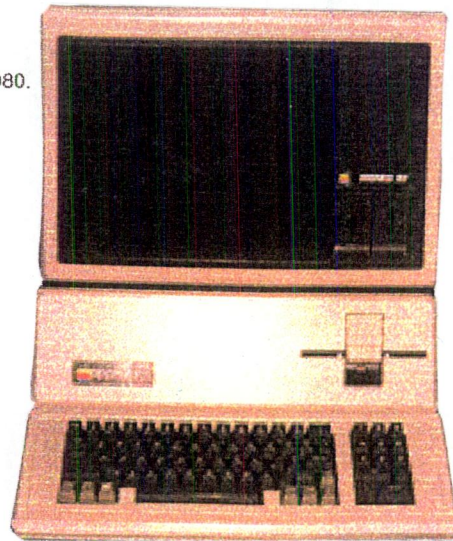
knowledge while the rainbow colours in disarray symbolised the anarchy within the young and fresh company, but an anarchy that was fun, as the form and the brightness of the object suggested. No words, no letters, no name, just a graphic symbol which told more about the reasoning behind the company than a hundred words could ever do



(fig. 5) The Apple logo

This uncontrollable growth in size also led to a growth in confidence and with its aim squarely targetted at the business market came the Apple III (fig. 6) in June of 1980. This computer contained a Synertek 8-bit 6502A processor which could run at a speed up to 2 MHz. It contained 128K of RAM and a 4K ROM. It could run most Apple II programmes through emulation, and came with a sophisticated new operating system. Through it, the very evolution of Apple in design terms can be seen. It was the first Apple to include a built-in 5.25" disk drive, and graphics built-in to the motherboard. It was designed to be Apple's business offering but sold very poorly, selling initially for between \$4,340 and \$7,800, depending on the configuration. The computer was poorly developed and was bug infested and although many attempts were made to rectify this, with the Apple IIIplus, introduced in late 1983, it became too little too late. Sales of the Apple III reflected an anxiety which was growing within Apple, an anxiety which became reality in 1981 with the introduction of the IBM PC (fig. 7).

(fig. 6) The Apple III, 1980.



Initially Apple had envisaged a "one person one computer society"(Jobs, 1978) and attempted to get computers into everyone's home. This quickly back-fired after the introduction of the Apple II when it was realised that few consumers wanted several thousand dollars of equipment to damage their credit rating once a month. Apple's first failure with a business computer had led to the success of IBM's because of the stability and responsibility that IBM were able to evoke with companies that already had incorporated the traditional mainframe system and associated the strength of these with the practicality of the microcomputer. Apple's background, inspired by the Californian lifestyle, was opposed to that which inspired IBM, which was a "traditional hierarchical company whose business core was the development of large mainframe systems (used for processing and transferring vast amounts of data) based on technology developed in the 60's and 70's."(Wicken, 1990, p. 38) With the introduction of IBM's own microcomputer, Apple faced its toughest challenge yet. IBM knew that, although inferior and fiendishly complex to operate, their products, through a built up respect, would achieve success in the business

world. IBM used its well-known, well-respected, well-grounded membership of corporate society to infiltrate this market with a computer that had a lack of technical innovation and an ignorance of the genuine trends in the world of information technology processing.



(fig. 7) The IBM PC, 1981.

Using components which were freely available to all computer manufacturers, IBM to cut costs, sourced much of its machine from without the company itself and in so doing opened itself up to the possibility of cloning, due to their inability to patent what was freely available to all. With the emergence of this new competition, a decision made back in 1976 to use the Motorola technology in Apple computers, was fateful because Intel would gain the licence from IBM to make the microchips that went into almost every IBM-compatible computer. Its repercussions, however, would not be fully felt for another 14 years. Motorola was a big company in its own right, a giant in cellular phones and pagers. But Apple which soon after the first design by Woz began using Motorola chips exclusively, became Motorola's only sizeable customer for personal computer microprocessors. "Intel's whole life, on the other hand, revolved around the microprocessor." (Carlton, 1997, p. 124) By doing so, it created an industry standard, since every company but Apple was using the Intel chips. Technical specifications for all new computers would have to be designed around that Intel standard. Emerging with this were the founding

blocks of the Microsoft empire in the form of the operating system which was to become known as MS-DOS, and just as had happened with Intel, MS-DOS became an industry standard that everyone in the world of IBM compatibles had to use. Another operating system couldn't just be popped into the box, because Apple was really the only other game in town and it was already using Motorola chips. MS-DOS was not designed to run on Motorola chips. Apple's operating system, which was completely different from MS-DOS, was designed to run only on Motorola chips.

It cannot be concluded, that this is all that was created with the introduction of this new machine, for so too were the seeds of competition and battle set between two companies with two ideals which clashed constantly. Apple had been portrayed as a young, enthusiastic and innovative company that relentlessly pursued new technology, harking back to the two ambitious youths in a garage who managed to change the world of computing and in so doing, targeted its products at a changing world. There had never been a wanting for power, for greatness, to be the biggest but just to create the best. Apple, with its lack of high brow structure as in IBM, where a clear direct order or an organisation chart blended with the conservative authoritarianism, existed in this world of blue jeans, long hair and yoghurt, its counter-culture type organisation allowing innovative product offerings and market savvy to expand uncontrolled, with a distinct lack of reality.

By 1983 the gravity of this weakness in Apple revealed itself when, for the first time in its six year history, it was demoted into second place by the

power of IBM (aka the Big Blue) and a realisation that something new and radical would have to emerge, gripped both the company and the financial power that lay behind it. Steve Jobs' answer lay in the Lisa (fig. 8), a \$9,999 computer.

(fig. 8) The Apple Lisa, 1983.



Designed by Bill Dresselhaus, it combined the highest technology with ease of use in the form of a graphic interface. However, it was overt ambitious in its execution and a somewhat uncomfortably costly product which in turn led to its complete and utter failure. It seemed that nothing that Apple could do was right, that the imaginative force had lost its way and that Steve Jobs was on a demented crusade to annihilate Apple, in dreams that could not become a successful reality. The future looked bleak with no solution in sight except for one hope. Its name was the Macintosh.



chapter 2

the big mac

"If you've ever turned on a Macintosh, you've probably experienced a mild shock of recognition: that little face in the middle of the screen is actually smiling at you! A cute little happy face that says 'its okay, I may be a computer, but I'm going to make it easy for you to work with me.'" (Calderhead, 1989, p. 58)

And so it goes, through the prompts and menus and icons, proving to you every day how much easier it is to use than those fiendishly complex operating systems that IBM and its clones have foisted on the hapless public. IBM, with its terminally mainframe-centric attitude, showed almost no interest in the limited computer skills of the ordinary people. Their engineers "simply dragged in their complicated computerised baggage, stuffed it into a small box and called it a personal computer." (Kunkel, 1995, p. 52) It remained for Apple to bring computers down to people size in much the same way that Henry Ford revolutionised the automobile business. This concept, a concept to provide affordable dependable machines for the American working class in the new computer age, translated into taking the, until then, "strangelovian computer, long since the province of those who spoke COBOL or FORTRAN" (Calderhead, 1989, p. 58) and making it accessible to ordinary folk. They did it first with their original Apple computer, then they really did it when they brought out the Macintosh in 1984.

The history of the Mac however has its roots firmly planted several years before in the early seventies, with a company not recognised with the world of computing, when a group at the Xerox Palo Alto Research Centre (PARC) developed the Alto Star, a graphical user interface-based computer. It was a revolutionary step in the design of computer systems. Most system engineers would start by specifying the computer hardware and deciding what the software to run it should do before finally fitting the poor user right at the end of the process. Star began by defining a conceptual model of how users would relate to the system. "The interface was completed before the computer hardware had been built to run it, and two years before a single line of product software code had been written." (Jones, 1992, p. 64) The problem with computing until this point was the abstract nature of the machine's operations. There was no direct visible relationship between what the operator had to do and task the machine was being asked to perform. This new system presented this information about what the computer system could do for the user as a visual desktop, with icons representing physical objects such as documents, folders and filing cabinets. The theory based on early research in ergonomics and cognitive psychology, was that the user would intuitively understand what to do with the icons. And they did. Yet Xerox never managed to make the Star a commercial success. The Alto Star was the size of a large desk, and Xerox believed it unmarketable. Steve Jobs had other ideas and on his visit to PARC in 1979, realised that this was the future of personal computing

Work started earnestly on a machine that would revolutionise the way people would think about computers and with the force of Steve Jobs behind it, the ill-fated project known as Lisa began. Jobs however proved to be a poor project manager and was taken off the Lisa by Mark Markkula, president of Apple, and one of the major stockholders. Jobs, who owned only 11% of Apple, decided to take over somebody else's project and began working with the Macintosh, which started as a \$500 personal computer. Jobs made sure it was much more.

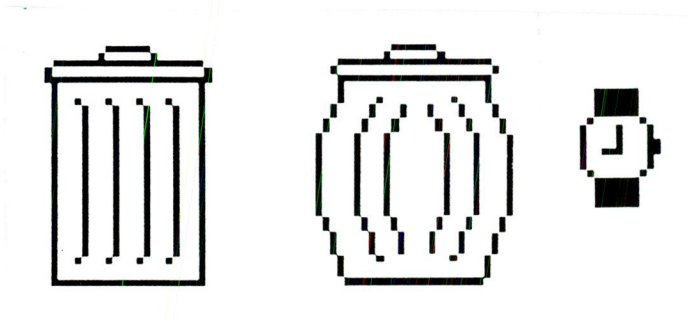
Until then the computer market lay out in front of Apple with sales of the Apple II dominating almost 50% of the market. Rumours had mounted about IBM, the multinational business computer leader and their plans to launch a personal computer and these came to fruition in 1981, when IBM launched its first PC. With the power of the Big Blue behind it, the PC quickly began to dominate the playing field. Jobs' team would have to work very quickly if they hoped to compete with IBM in the personal computer market. Jobs began to realise that Apple would have to become a grown up company and he realised he was not the man for the job. In his search, Jobs came across John Sculley, president of Pepsi-Cola, and with the simple words "do you want to sell soft drinks for the rest of your life or do you want to change the world" wooed him into this revolutionary company to sell what would be Jobs "insanely great" product, the Apple Macintosh (fig. 9).

This machine revolutionised the very way that people thought, worked and lived. On January 24, 1984 it seemed the world would change forever. "1984 would not be 1984."(Ellison, 1994, p.40)



(fig. 9) The Apple Macintosh, 1984.

In an effort to revitalise the company and prevent it from falling victim to the bureaucracy, Jobs launched a campaign to bring back the values and entrepreneurial spirit that characterised Apple in its garage days. "In developing the Macintosh, he tried to re-create an atmosphere in which the computer industry's highly individualistic, talented and often eccentric software and hardware designers could flourish."(Young, 1988) The design attitude at Apple was so young and so fresh that although they were marketing a breakthrough piece of electronic equipment, the symbol they chose for the user to use when discarding a document was a tiny garbage can! (fig. 10) Stuffy middle managers would never have agreed to that, just like they would never have dreamed of welcoming you to the start-up of the system with that little smiling face.

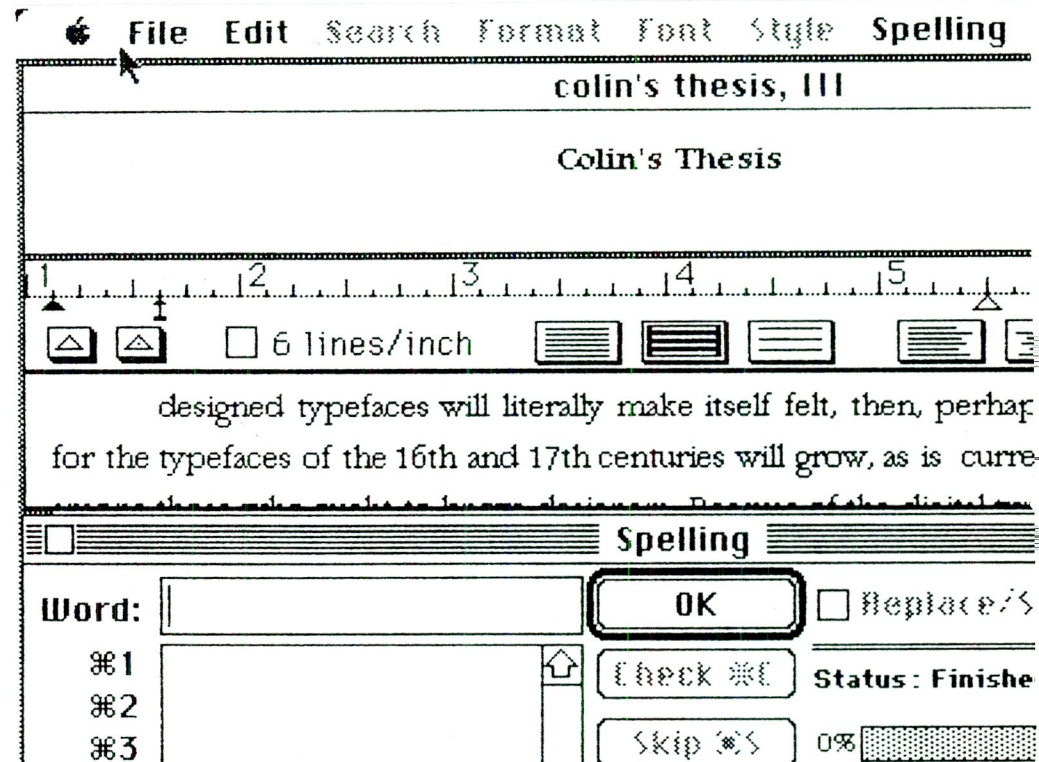


(fig. 10)The iconic symbol used to discard files.

Behind the brain lay something special in the form of a 32-bit microprocessor, which was far more powerful than the 16-bit 8088 found in the generation of IBM compatibles available at that period, powering the Lisa technology at an affordable price. With this came a 3 1/2" floppy disk, integrated serial ports and a polyphonic sound generator. The power to talk, paint, draw but most importantly to understand had been delivered into the hands of those who could control it with the simple natural motion of "point click" with the new hand held device, wickedly called a mouse, which moved in a GUI (fig. 11), slicker than that of Star, more self-consciously iconic. The Macintosh came to symbolise the whole idea of the graphical interface: a pointing device, pull down menus on the screen, overlapping windows displaying information, icons representing files and directories, and a whole array of easily recognisable dialogue boxes, buttons, sliders, scroll bars and such like. This enveloped in a design language called Snow White, established the commercial viability of a whole new way of presenting digital information. Apple strictly enforced its unique selling point: with a myriad of software suppliers such as Microsoft and Lotus busily developing new products for the new Mac, having to comply with a set of rigidly applied rules governing the interface and with this changing the way people understood what a computer could be. The real genius wasn't the technology inside the computer, or the software, the real genius was that you didn't have to be a genius to use a Macintosh. By contrast, IBM personal computers have traditionally not utilised an inherent graphic interface, relying on a substantial degree of literacy on the part of their users, or by leaving the screen presentation up to the design whims of third-party software companies

such as Microsoft who developed "Windows" as an imitation of the GUI and thus lacking the sense of integration which was vital in Apple. The user had triumphed with Apple with a true materialisation of a people's computer.

(fig. 11) The Mac GUI, 1984.



This soul of Apple which Jobs evoked of a young and enthusiastic company, that relentlessly pursued technology and targeted its products at a changing world, also led to a design philosophy which became one of the most memorable of this period. A few years earlier, in the childhood of this newly-born company, each project had been treated as a single project with no overall sense of direction.

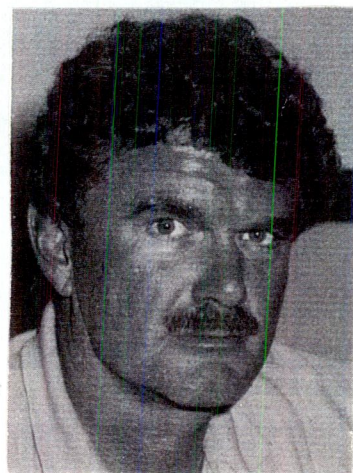
"That changed in 1982 when co-founder Steve Jobs authorised a world wide search for Apple's first design guru. Ultimately, Jobs hired Hartmut Essingler (fig. 12) and his German firm Frog Design, to design



a corporate design language, which became Snow White, which would govern the design of all future Apple products."(Aarland, 1989, p.54)

Essingler endowed each product with similar shapes and details, building a kind of family resemblance that is the hallmark of German design (e.g. Braun). With a clean integration of shape and form, Snow White with the logo aligned left against the front panel of pure white, echoing Germanic influence, made other designs dirty in their cream/fawn colour and clumsily arcane in their workings. The first evidence of this came in the form of the Macintosh which, with its crisp white integrated form, crystallised the vision of Apple. The fountain-head of this vision was Jobs.

"Everything about the product, down to the design of every last detail, was influenced by Jobs, as was the packaging, the literature, the factory itself and most importantly, the *esprits des corps* of the entire operation.....Steve radiated an attitude about the product, about how it should be a beautiful object and at the same time easy for people to work with. This infected us all with the desire to do some really great stuff." (Calderhead, 1989, p .52)

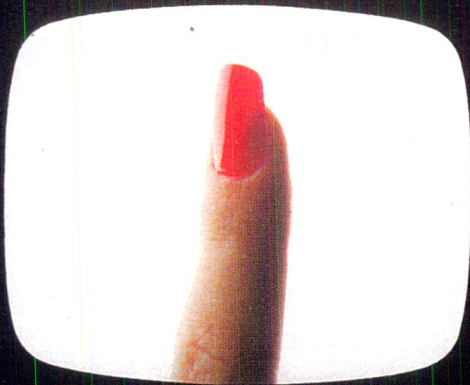


(fig. 12) Hartmut Essingler

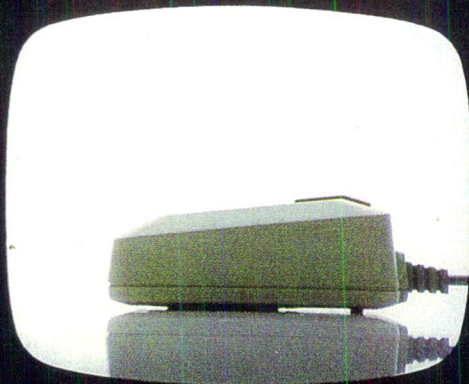
The Mac was his baby, it was basically Steve Jobs in the form of a computer, taking his ideals and placing them on the desktop of the people of the world. The strategy Jobs used to introduce the Macintosh in 1984 was radical. "The Macintosh with all its apparent vulnerability, was a revolutionary act infused with altruism, a technological bomb-throwing. When the machine was introduced to the public on Super Bowl Sunday, it was, as Steve Jobs described, 'kind of like watching the gladiator going into the arena and saying, 'here it is'"(<http://ei.cs.vt.edu/-history/Jobs.html>, 1997, p. 4)

Apple succeeded in taking on IBM in a radical onslaught, best symbolised by their enormously expensive and cryptic "1984" television advertisement, directed by Ridley Scott. In it we find a take-off of George Orwell's "Big Brother is watching you", envisaged as this mass corporate face filling a vast monitor, preaching words of propaganda. Between the rows of attentive droids rushes this woman with a sledge hammer, dressed in red running shorts and apple T-shirt amongst the drudgery of grey which IBM, in Apple's vision, had imposed onto society. She hurls the hammer through the monitor, shattering it. The impact of the hammer produced \$7.5 million dollars worth of sales within hours. The legend has it that 50,000 units were sold in just 74 days. From their marketing to their logotype, Apple had become the "funky punks" of the monolithic IT world in a way that would have made Malcolm McLaren proud; and IBM nervous. That week, countless newspapers and magazines ran stories with titles like "What were you doing when the '1984' commercial ran?"





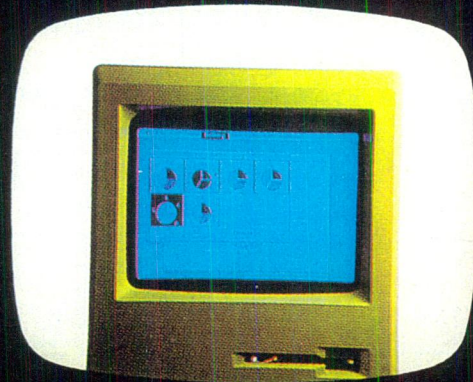
"YOU'RE ABOUT TO SEE



A FEW PEOPLE



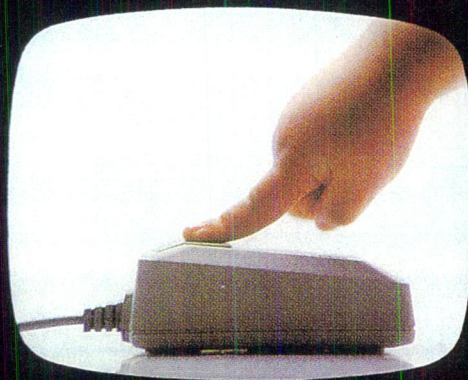
LEARN TO USE ONE OF THE SEWEST.



MOST ADVANCED BUSINESS COMPUTERS IN THE WORLD.



IF YOU KNOW HOW TO POINT.



YOU ALREADY KNOW HOW TO USE IT.

Macintosh



MACINTOSH. THE COMPUTER FOR THE REST OF US.

repeatedly clothed both public and private statements about the machine in revolutionary, sometimes violent imagery, first encouraging his compatriots to see themselves as outlaws, and then targeting an audience to imagine themselves as revolutionaries. Jobs, like all those who worked on the project, saw the Macintosh as something that would change the world. Jobs described his Macintosh developing team as souls who were "well grounded in the philosophical traditions of the last 100 years and the sociological traditions of the 60's. They pursued their project through gruelling hours and against formidable odds. The machines development was, in turn, traumatic, joyful, lunatic, rewarding and ultimately the major event in the lives of almost everyone involved". (Scott,1991, p. 72). It showed the creativity of an anarchic company which could transform technology into a personality which was combined with a recklessness and a mind which, although able to perform great achievements in technology and design, was unable to manage, practically, the financial monster. Jobs continued to strive for newness and innovation with the arrogance that had been implanted in the psyche of the company. An arrogance emerged which stated "we, Apple, are at the centre of the universe". Jobs, in his famously regarded "reality distortion field", which placed a mental block on practicality, created by the idealism of dreams, refused to believe that the Mac could be anything other than insanely great. All the dreams and aspirations of a better world were embodied in this computer and because this world had become reality, the arrogance began to be justified and the realities of business quickly disappeared into the background under the watchful eye of the newly appointed Sculley (fig. 14), the financial wizard.



(fig. 14) Steve Jobs & John Sculley.

Anxiety in the pockets of the suits set in, however, when the Macs sales tapered off in late 1984 and into 1985, due to its low memory capacity and scanty software. The people who were paying for the dreams were witnessing the first ever quarterly losses which had seemed unimaginable, especially in the idealistic world created by Jobs. Panic and doubt began to set in, not only in the Mac and the counter culture type organisation, but in the inspiration behind it - Jobs. In hiring Sculley, Jobs believed he would help Apple grow up, but had no idea how right he would turn out to be. Eventually, it would cost him his job.



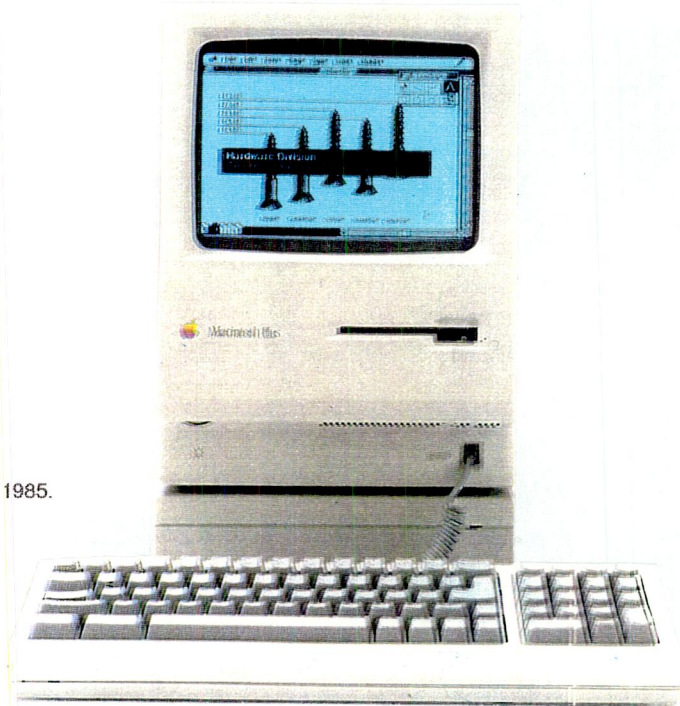
chapter 3

rotten apple?

Apple, which had risen on the maverick quality of its products, began to look decisively flawed. Now when the company turned to the money men for more cash to sustain its frantic research and development costs, the money men, advised by the quintessential 1980s creatures, the analyst, put on the pressure and tightened the purse strings. "What the money men could not fully appreciate was the passion for the Macintosh among those who really mattered"(Ellison, 1994, p. 40): the people who bought them and the people who created them. The image Jobs wanted the public to have of the Macintosh was young, wears blue jeans and lives in an 80's version of the 60's counter-culture. "Macintosh was impatient, uncomfortable and contemptuous of everything that was conventional or hierarchical. He/she was both creative and committed, believing strongly that his/her work ultimately matters. Even if we counted beans for a living, we secretly saw ourselves as romantic poets". (Scott, 1991, p. 73). John Sculley, however, did not feel the same way. He felt Jobs was hurting the company and persuaded the board to strip him of power. John Sculley tried to change the discipline of the company by controlling costs, reducing overheads, rationalising product lines to an organisation that some in the industry called 'Camp Runamok'. Sculley came to the conclusion that "we could run a lot better with Steve out of operations", for Jobs tended to value technological elegance over customer needs which was a costly luxury at a time of slowing sales. Jobs intense involvement with the Macintosh

project had a demoralising effect on Apple's other divisions, so he was exiled to an office in an auxiliary building that he nicknamed "Siberia". Jobs says he did not get any assignments and gradually found that important company documents no longer landed on his desk. "It was clear there was nothing for me to do.....I need a purpose to make me go". On September 12, 1985 this came to a head when the unthinkable happened. Jobs, the fountain head of Apple's vision, resigned. Steve rose in the Board Meeting and said in a flay, unemotional voice "I've been thinking a lot and it's time for me to get on with my life. It's obvious that I've got to do something. I'm thirty years old." John Sculley's take-over of Jobs position, only one year after the launch of the Mac, was an attempt to inflict "a systematic structure upon the anarchy by streamlining product development."(Aarland, 1989, p. 54) The main thing Sculley had to do to get the Macintosh back on track was to fix the obvious problems such as the low memory capacity and scanty software. Announced in January 1986, the Mac Plus (fig. 15) was the answer to the complaints of the original Mac. It doubled the ROM of the original from 64k to 128k, and increased the RAM to 1MB (expandable to 4 MB). It was the first Mac to include a SCSI port, allowing for a variety of external peripherals, including an 800k floppy drive, all of which sold for \$2600. With these improvements, the Macintosh flourished, bristling with technology that far bettered its main rival, IBM and the love affair for the Mac gathered momentum with a following which no other computer company ever quite equalled. Using the first LaserWriter, which could produce 11 different typeface families, dozens of styles and hundreds of sizes, combined in any combination with high resolution graphics and an innovative software package, Aldus PageMaker, a new concept, was

born: Desktop Publishing, opening up a market in which Apple could dominate due to the non-existence of competition. Apple was back, yet inside the company, without the creators vision in control, the focus of Apple was being lost and so too was any sense of purpose. A terrible transformation had begun, gutting the once fabled Apple culture.



(fig. 15) The Macintosh Plus, 1985.

During the gestation period of the Macintosh, Microsoft, already producing software such as Excel for the Macintosh and an operating system for IBM and its clones, had set upon working on a graphically-based operating system called Interface Manager, which later was renamed Windows, when the first version finally shipped in November 1985. Windows, as originally designed, was clearly inferior to the Macintosh system because it featured a tiled look as opposed to the Mac's use of overlapping windows. If you opened three word-processing documents on Windows, for example, they would appear as tiles that occupied equal amounts of space on the screen, obscuring much of

the text from view. On the Mac, however, those same three documents overlapped one another, just as if they were lying on a desk. Each could be manoeuvred to another part of the screen so that more of the document could be seen. The Mac, in short, mimicked the way people really worked, which is why it was so attractive, not only to the user but to Microsoft as well. This incensed Sculley, who began contemplating a lawsuit in the Autumn of that year, which in turn angered Bill Gates, the head of Microsoft. In response to this threat, Gates fired back:

"I think it's more like we both have a rich neighbour named Xerox, and you broke in to steal the TV set and you found out I'd been there first, and you said 'Hey that's not fair! I wanted to steal the TV set!'"

Due to Apple's dependence on Microsoft for software packages, Sculley really was in no position to fight Microsoft, but he was determined to keep the OS exclusive. Gates finally agreed to sign a statement to the effect that Microsoft would not use Mac technology in Windows 1.0. It said nothing of future versions of Windows, and Gates' lawyers made sure it was airtight. Apple effectively lost exclusive rights to its interface design. This would prove an important document in future lawsuits between Apple and Microsoft. This, combined with the fact that both Apple and Microsoft had got the idea of the GUI from Xerox, put a major dent in Apple's lawsuit against Microsoft several years later. Although much of the Mac OS was original, it was similar enough to the old Alto GUI to make a "look and feel" suit against Microsoft dubious.

The paranoia of a man obsessed, wreaked its toll on a company which had lost all sense of direction. In so doing, it had created an enemy, a monster within the company itself, which pandered to the idiocy prevailing in Apple.

The seeds of Apple's business demise had begun to appear with a company that functioned in many ways more as a church than a corporation, certain that its followers and their Macs would inherit the earth. Apple was always a religious company, and the religion of the Macintosh made the subject of licensing Apple's most contentious and divisive issue ever. Jean-Louis Gasse, head of the engineering department and his engineers believed that the Mac represented a quantum leap in technology, a watershed product every bit as significant as Woz's Apple II. No way would Gasse see his precious Mac turned over to a ragtag army of copycats, safe in his arrogant knowledge that "No one will ever catch up with the (Mac) GUI"

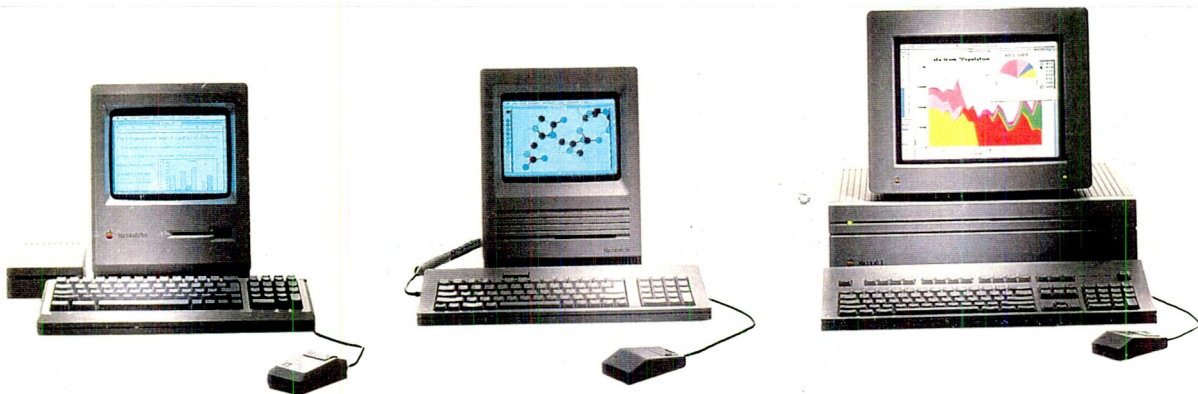
By the time Apple needed a successor to the Mac, the company had become a different place. In the Spring of 1985, with over a million Macs in circulation, Apple CEO, John Sculley, had to choose between two different approaches: a conventional design with the components on a circuit board inside the box, just like an IBM PC, or "a flexible cross platform design that allowed Apple to deliver the Mac to many more desktops at a lower price." (Kunkel, 1997, p.28) Designed by Apple engineer John Fitch and Frogdesign, a company whose inspiration was "form follows fun", the new concept (fig. 16) addressed Apple's declining market share by allowing Macintosh, MS-DOS, UNIX and Windows software to run side by side on a single platform. In so doing, it also solved

Apple's central dilemma of how to position the Macintosh as an alternative to the IBM PC without giving up its proprietary status. Sculley had already refused offers from Bill Gates to license the operating system, viewing it as Apple's crown jewel. By marketing the Macintosh as a proprietary system, Apple could keep its prices high but also establish a bridge between the Macintosh and the Microsoft world, allowing PC users not only to sample the Mac but to recognise its superiority. The moment Sculley saw the design, he rejected it fearing that Mac users would cross over to PC and wind up preferring Windows ,the dreaded enemy. Sculley, the man to whom many looked for direction, it seemed, had less faith in the Macintosh than in the inferior technology of its competitors, yet was willing to sacrifice everything for it.

(fig. 16) Essingler's concept for the Mac II



Within a company where the hatred of Microsoft and the arrogance which the superiority of the Mac had been instilled into those who worked there, emerged the Macintosh's successor in the form of the Macintosh II in 1987. Launched in March of that year, the Mac II (fig. 17) was the ultimate expandable Mac. Based on the new 68020 processor, the Mac II was the first 32-bit Mac. It ran at 16MHz, its basic 1 MB of RAM was expandable to a staggering 68MB, and it included 6 Nubus slots, which allowed for a number of different Apple and Third Party expansion cards. It also had colour capabilities (a graphics card could be installed capable of handling up to 16.7 million colours.) and included also were a SCSI port and two ADB ports which originally sold for \$3,898. But all this was a development of the theme which had been created in the original Mac and this, in reality, was nothing more than an extensive facelift.



(fig. 17) The Macintosh Plus, SE and Macintosh II, an evolution of a theme.

The excitement of past products seemed to have faded with a technology which was but an evolution and a design theme which had clearly suffered with the vacating of Hartmut Essinger, who had developed the Snow White for the original Macintosh. This lack of ingenuity became more apparent with the

launch of the Mac Portable in September 1989. The Mac Portable was Apple's first attempt at a more easily portable Macintosh with a 16 MHz 68000 processor, 1-5 MB of RAM, SCSI, floppy ports, a bay for a 3.5" half-height drive and support for two super drives. However, the execution of this idea was mediocre. Reaction to the portable was poor, for it was slow, clunky and was incredibly expensive at \$6,500. Apple was going rotten at the core. Instantly dubbed the luggable due to its weight, it seemed that this product embodied the rot which had eaten away at Apple's core.

Apple, however, were once again the "Wall Street Darling" (Rolling Stone, 1989), shipping 50,000 Macs a month. It seemed in 1989 that Windows would be a flop and that the Mac would be riding high for the next decade. It didn't. The company let its famous operating system go without a major rewrite for years, standing still for so long that Microsoft was quickly matching the Mac's key software, while IBM and others started building into their machines most of the Mac's hardware features and simplifying the set-up process. By 1990 the market was saturated with PC clones of every conceivable configuration and Apple was the only one selling Macs. In late May, Microsoft rolled out Windows 3.0, which could run on virtually all of the PC clones in the world. By 1993, after a brief resurgence in 1992 to 17%, Apple's market share plummeted to 10.8%. This, plus the fumbled launch that same year of the long awaited Newton personal, hand-held digital Organiser, a massive technical and marketing disaster, led to massive layoffs. Sculley, who instigated the project in a desperate attempt to recapture the inventiveness of yore in a new revolutionary product, resigned in October of 1993, followed by a \$188 million

quarterly loss. All of a sudden the strange isolation of the front runner became the loneliness of being left behind by the pack.



chapter 4

apple pie again?

After Jobs resigned in 1985, Essingler's departure soon followed, after he had been chosen to design hardware to clothe the operating system that Jobs was creating. This forced Apple to implement Snow White through a series of independent design firms, which caused confusion in the design of Mac products. With the expansion of products under the Macintosh name, products began to be designed by these different groups, each obeying the laws of Snow White, yet each adding their own element to the design. What emerged was an unwieldy roster of products which "spread the Apple reputation too thinly, losing the cohesion that made the company so successful." (Hall, 1993, p. 7) Lunar Design, in Palo Alto, was one of these firms where Bob Brunner (fig. 18) was a founding partner. By 1989 the design process had broken down. Convinced that they needed a design superstar to lead the company into the future, Apple conducted a second world-wide talent search. This time "their choice was the Turin-based car and product designer, Giorgetto Giugiaro, who soon provided concepts for an early version of the Newton and a future Macintosh, code-named Jaguar, which eventually became the PowerPC." (Schrage, 1995, p. 54) Convinced that it also needed a strong internal presence, Apple hired Brunner to manage their in-house design group. Yet once he arrived in 1990, the strategy changed, for it was clear that Snow White had reached the end of its feasibility. Realising that the company wanted to grow the product line in several areas such as the Newton, it became clear that Snow White was not extensive enough to use on a laptop or a hand-held

product. The Giugiaro relationship wasn't working either for, unlike the type of design practised in his area, computer design tended to be data intensive and could not work well over oceans due to the rapid change in design decisions and the need for these to materialise quickly. That just could not happen with a design team in Turin. Yet certain aspects of Giugiaro's work could not be ignored. "Ultimately, we looked at the Jaguar programme, made selections, and developed the roots of a new design language we called espresso."(Schrage, 1995, p. 54)



(fig. 18) Bob Brunner.

With IDg, one of the few centralised departments left at Apple, doing work for every other group, Brunner saw how Sculley's decentralisation had left the company completely fragmented. No two departments had the same vision. Reversing this trend, IDg developed Espresso to "reunite Apple's visual identity and balance the growing diversity"(Schrage, 1995, p. 54) with a series of physical designs that would be consistent and recognisable yet tailored for individual products.

With the recruitment of some of the best consultant designers he could find, including Tim Parsey and Daniele Deluiliis (fig. 19) from ID Two in San Francisco; Jonathan Ive (fig. 19) from the London design firm Tangerine;

Masamichi Udagawa of New York and Calvin Seid, who had studied at the Royal College of Art in London, Brunner set about creating a team that already included veteran designers Ray Riley, Larry Barbera, Gavin Ivester and Lawrence Lam. As the team assembled, they decided to forget about the original Macintosh in their quest for something new, yet it had to look like an Apple product. "A long exercise was undertaken exploring new shapes and product types and eventually an identity was developed which looked liked Apple, but wasn't Snow White."(Brunner, 1995)



(fig. 19) Jonathan Ive & Daniel Deluiss.

Eschewing Snow White's Nordic austerity, Espresso became inherently complex, with curves and bulges, occasionally tears in the surface and visual surprises intended to catch the light and attract the eye. "Unlike Snow White's machine like sensibility, Espresso products functioned like desktop animals, with a strong sense of grounding and short stubby feet that extended up the sides of the product like the gently curved sides of a Neolithic carving."(I.D Design Review Award, 1993, p. 52) While Snow White's, badges and logos were justified left (like a proper German business letter), Espresso's detailing emanated from a central axis. With function alone, you force people to make a

buying decision. With design in the equation, the decision becomes both logical and emotional.

The first product to incorporate the new language was the Colour Classic II (fig. 20), unveiled in 1992. Its slab-like front bezel, short stubby legs and microphone planted in its forehead, combined with a 16-Mhz 68030 microprocessor, 4MB of RAM, an 80MB-hard drive and a 10-inch colour display, made the colour classic a hit on college campuses (shipping some 200,000 units in its first year) and receiving a 1993 I.D. Design Review Award. While it maintained the original Mac footprint, it was more user-focused than before, featuring an over-sized front bevel that is tilted back six degrees for better viewing, volume and contrast buttons below the screen and four stubby legs that both elevate the machine and give it a fresh identity. With this, industrial design began to be viewed once again as an important functional group within Apple. Where once it was the technology that challenged the user to look beyond the present, now it was the turn of design to fill that void. Apple's new goal was to stay ahead of the competition without getting too far ahead of the user.



(fig. 20) The Color Classic II, 1992.

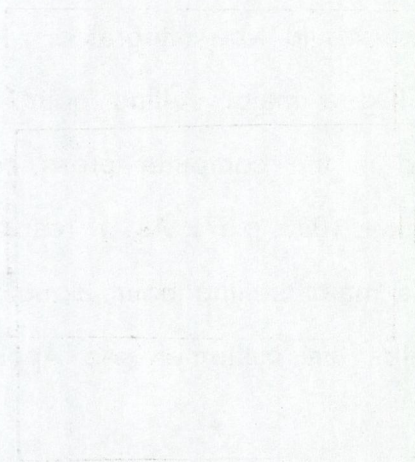
In simplifying complexity and overcoming the diversity of a new product range, this new design language was used in the 1994 Newton MessagePad 110 (fig. 21), the new personal digital assistant and the replacement for its predecessor 1993 MessagePad. Developed when pen computing was still not fluid enough, the original, the brainchild of Sculley in his final days at Apple, was under-developed and not nearly as successful as Apple had hoped it would be. To release the new generation, Apple hoped to convey the product with a design that would make the product seem brand new, to overcome the criticism that surrounded the first. Commissioned by Apple's PIE Group, designers Jonathan Ive, Danny Deluiliis and Brunner matched the 110's improved handwriting recognition with a more responsive contoured design. Trying to formulate an identity based on the products own functionality - one minute a travel guide, the next a fax machine - seemed inappropriate. The prime focus became the design of the personal nature of the Newton's intelligence: software that learns and adapts to the users individual habits and preferences. The most explicit change from the earlier model was the addition of a hard-backed cover over the screen that folded back and snapped securely under the unit when in use. Gone was the original flat stylus, replaced by a heavier spring-loaded pen that retracted to store neatly into the top of the unit. When joined to the charging station, the MessagePad 110 assumed a desktop posture with computer connections, continuous charge and an upright pen as an inkwell to clarify its identity. It was also felt that "fiddling with the retractable pen or playing with the pop-up lid, elicits the more abstract emotions of intrigue and surprise, which ultimately lead to a product's perception as

personal".(Ive & Delullis, 1994) This new view towards design made this a "sensual personal computer, a pleasure to touch and use".(Ive & Delullis, 1994)

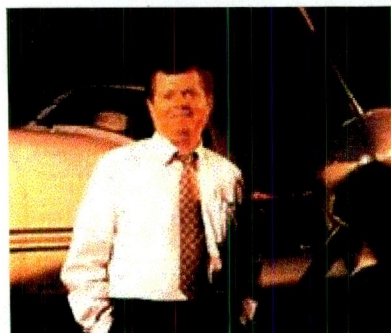


(fig. 21) The Newton MessagePad 110, 1994

As Apple distanced itself from the Sculley era, reorganisation continued apace. Apple structured its Hardware R&D (comprising Advanced Technology, User Interface and Industrial Design) into a single group, meaning that the future product design and development would be integrated. Indeed, Apple's world-wide sales force considered IDg a major selling point. "Every time a new piece of hardware is reviewed in the computer press, one of the first areas they focus on is design"(Kunkel, 1995, p.57) As a result, we have our sales force talking about design as a major selling point along with technology and ease of use. Good design helps the customer see Apple as a totally integrated solution.



At this time, Michael Spindler, an aggressive German nick-named the Diesel, who became Sculley's replacement, set about slashing costs and tried to get Apple back on its feet, mounting an assault on the small business, education, and personal computer market. With the decision to license the Mac OS, Apple's prospects rebounded in late 1994 and revenues soared to \$2.65 billion in the first quarter of 1995, with a 400 percent rise in profits over the first quarter of 1994. But his changeable decisions were blamed for an overall continuing decline. He made miscalculations about market demand, producing too many computers in 1994, a dearth of them during the 1995 boom and another glut at the end of the year that forced Apple to slash prices and lose money. He departed and was replaced by Gil Amelio (fig. 22), an engineer with a physics PhD and 16 patents to his name. Amelio had just rescued National Semiconductor from near bankruptcy. Amelio's formula, which transformed National Semiconductor from its worst performance ever (a \$151m loss in 1991) to its best (\$262m profit in 1995), was achieved by cutting costs and staff. But critics said his "by the book" management style missed the opportunity to transform the company and left it unable to take advantage of a subsequent microchip boom.



(fig. 22) Gil Amelio.

In January 1996 when Gil Amelio joined the company as CEO, it was also a time of change in the design department with the introduction of Jonathan Ive as director of design. Gil Amelio immediately "bought the design thing", says Ive, who joined Apple in 1991. "This came after a time in which we had perhaps lost our way a little". Amelio seemed to be sensitive to the emotional attributes of the Macintosh and when touring the facilities announced his determination to "close the gap" between the visionary ideas he saw under development there and the increasingly conservative products the company had been putting into the market. In doing so, the newly assembled team of IDg standing achieved an all time high. The first of the core products to come out of the IDg was the eMate (fig. 23) designed by Thomas Meyerhoffer. Announced a few days before Halloween 1997, the eMate is an \$800 portable with a type-in or write-on desktop, a translucent knock-about body with a built in handle, internet connectivity and battery life that can be measured in days. Running off the Newton operating system, it is compatible with both Mac and Windows-based computers.

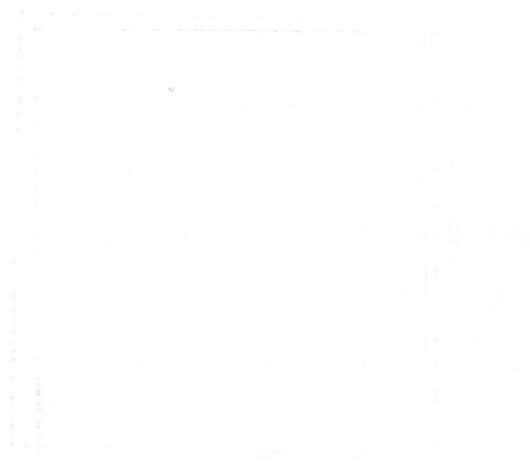


(fig. 23) The eMate, 1997.



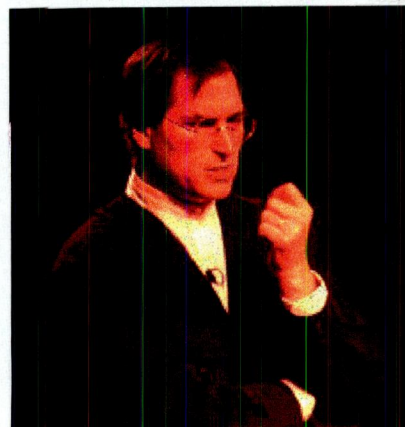
Through it, it could be seen that what was really being re-engineered was not the machine but the philosophy that stood behind it. "We did not start with a computer and ask, 'Who can we sell it to?' We started with a population of real people and asked, 'What do they need'"(Ive, 1997) in a bid to return to the 'democratic' Apple of yore. With a strong sense of what the brand equity stood for in the past, Ive and his team began a mission to reclaim this. The problem is that times have moved on since Apple's heyday. Now the battle centred around new media. The debate is software led, with the seductive potential of hardware a side issue. In designing people's perceptions, Ive believes that the design can be used to give an outward meaning to the virtual meaningless internal stuff inside the computer.

Already Apple had had a series of disappointments in its attempt to develop a new operating system to replace that of the Macintosh. Improvements had been continuously made to the old system including the successful launch of the PC Power platform on which it ran. Launched on the 17th March 1994, it held new hope for Apple. The PowerPC 603e processor effectively ended the ten year history of the Mac. Designed around this completely new chip jointly developed between Motorola, Apple and IBM, it exploited the Reduced Instruction Set Computing (RISC) techniques which made all other machines available seem quite slow. It is not however, just what lies under the bonnet of these machines that made them notable for the history of Apple. Both the Newton and the Power PC represented a turning away from Apple trying to control a propriety computer architecture. That is to say, the established policy of creating machines which only Apple could make over

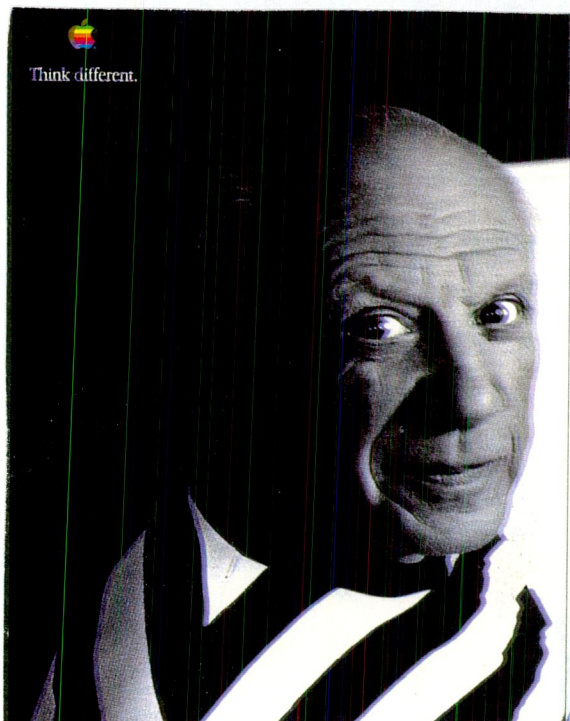


However, the operating system stayed virtually the same with an evolution appearing in the form of the OS8 in 1997, 13 years after the first Mac appeared. It had made six attempts to find a replacement over the past few years and as recently as 1996, Apple had abandoned its previous effort, called Copland, after spending \$5000m. It then planned to buy Be, a software company that had developed an operating system considered by most to be more advanced than Windows or Mac operating systems. Amelio claimed the deal fell through because Be wanted too much money, although this has been disputed by Gasse, Be's chief executive, who claimed that there was a change in Apple's plan under the helm of Amelio towards an enterprise corporate market instead of a multimedia market. A decision to acquire NeXT, Jobs software company, for \$400m, in which they planned to create an innovative, new operating system for its computers based on NeXT's technology called Rhapsody was made. However, no matter how important the new purchase may have been, the reintroduction of Jobs (fig. 24) into the company he created overshadowed everything else. Since then he has carefully worked his way from the ambiguity of being "special adviser" to former CEO to becoming the real decision-maker in the beleaguered company, which is desperately searching at its roots looking for a direction to grow.

(fig. 24) The return of Jobs.



The emotional pull of the Apple brand is what Jobs knows is vital to the company's salvation. For many Steve is the Mac, the reception he has received, indicates that "Mac enthusiasts are investing their hopes in him. He is their hero and they think that he has come to save them."(Burgoyne, 1997, p.88) Jobs has outlined his plan recently for bringing Apple around with a new board, a sales and marketing shake up, a new, better, more logical product line and better partnerships with key software developer. Many in the design industry will be hoping that their optimism is not misplaced and will be looking to Jobs to deliver on the vital promises he made to bring out products that "will blow away any Wintel product by two to one" in the very near future. Jobs is seeking to reclaim the Mac's unique position in the computer market using a print and television campaign by Chiat/Day, featuring inspirational figures such as Mohammed Ali, Einstein, Gandhi, Bob Dylan and Picasso. The theme: Think different (fig. 25). Jobs recognises that Apple has the only lifestyle brand in the computer industry. "We want to communicate that we are not just about selling a box that gets the job done some of the time. We believe that people with ideas, passion and creativity can change the world". Steve Jobs should know: he is one of those people.



(fig. 25) The 1997 'Think different' advertising campaign.



conclusion

conclusion

Apple, throughout its relatively young life, has defined a generation through its design and its ideals. Apple's heritage is unique. Growing like a person, it has had achievements, made mistakes, been a winner and a loser but above all has created its own personal identity. The fact that it is not just a company but a way of life and that it has a life of its own has endeared it to many. Apple products personified this, through the actions of the people who designed them, and the inspiration (or lack of inspiration) which they felt. These feelings which the products embody have allowed relationships to form between the user and the product, unlike any other computer brand. But these relationships have wavered. In the late eighties, the loss of ideals and enthusiasm within the company was reflected in a product range which lacked imagination. The seeds of Apple's destruction were set. People no longer recognised the company for what it once was and it became what Steve Jobs had feared, a company ruled by the financial head rather than the emotional heart. Its individuality became less and less obvious and harder to recognise. The ideal to create a people's computer, just like the Mac had symbolised, had become lost in bureaucracy. People could no longer find the personality which had allowed them to bond with their computer. No longer was it rebellious to own an Apple, now it was impractical. The character and all that it had created seemed to have disappeared. Recently, however, a change has begun, and a glimmer of light has emerged. Apple's refusal to die has sparked emotions within the company. A realisation of its greatest strength, the emotive attachment of its products, seem to be emerging under Steve Jobs leadership. The talk is that of survival, of a battle to recreate what

was once Apple. With the apparent success of such ideas as the eMate, it seems that slowly Apple is arousing emotions once again. The fight for survival is far from over, and according to realists it's an impossible task. Apple however, is not a company of realists, but a factory of dreamers-and sometimes dreams can come true.



bibliography

bibliography

AARLAND, Mikkel, "MacDesign", Graphis, Vol. 45, no. 259, Jan\Feb. 1989, pp.44-57.

ALDERSEY-WILLIAM, Hugh, "Who killed Snow White?", Design, no. 535, Jul. 1993, pp. 16-28.

BURGOYNE, Patrick, "The second coming", Creative Review, Vol. 17, no. 11, Nov. 1997, pp. 87-88.

CALDERHEAD, Dick, "The art of advertising Apple", Graphis, Vol. 45, no. 259, Jan\Feb. 1989, pp. 58-65.

ELLISON, Julian, "The ancient history of Apple Computers", Blueprint, no. 105, Mar. 1994, pp. 38-40.

HALL, Peter, "The empire strikes back", Design Week, Vol. 10, no. 39, 29 Sept. 1995, p. 27

HALL, Peter, "Upsetting the Apple cart?", Design Week, Vol. 8, no. 8, 28 Feb. 1993, p. 7.

JACOBS, Kattie, "The Platform Shift", I.D., Vol. 43, no .6, Nov. 1996, pp. 72-75.

JONES, Mike, "Apple interface", Design, no. 523, Jul. 1992, p. 64.

JONES, Mike, "California digital dreaming", Design, no. 498, Jun. 1990, pp. 14-25.

KATZ, Barry M, "Jonathan Ive/Apple Computer", I.D., Vol. 44, no. 1, Jan\Feb. 1997, p.26.

KUNKEL, Paul, "Apple redesigns itself again", Graphis, Vol. 51, no. 299, Sept\Oct. 1995, pp. 52-59.

KUNKEL, Paul, "How fear kills great design", Graphis, Vol. 53, no. 311, Sept\Oct. 1997, pp. 58-64.

PEARLMAN, Chee, "A conversation with John Sculley", I.D., Vol. 40, no. 6, Nov. 1993, pp. 44-49.

SCHRAGE, Michael, "Apple's troubles", I.D., Vol. 43, no. 3, May\Jun. 1996, pp.34-36.

WICKENS, Brett, "Apple's invisible earnings", Creative Review, Vol. 10, no. 7, Jul. 1990, pp. 38-41.

WOOD, Colin & GRIFFITHS, Anna, "Robert Brunner, Industrial Design Apple", Design World, no. 29, Nov. 1994, pp.14-23.

"Jonathan Ive", Creative Review, Vol. 17, no. 1, Jan. 1997, p.26

"Macintosh Color Classic II", I.D., Vol. 40, no.4, Jul/Aug. 1993, p.52.

"Newton Message Pad 110 and ChargingStation",I.D., Vol. 41, no. 4, Jul/Aug. 1994, pp. 48-49.

BICKNELL, Craig & LINDSEY, Daryl, "Timeline: Apple, from garage days through the Amelio Era", <http://wired.com/news/news/business/story/5059.html> , 9 Jul. 1997.

MOSSBERG, Walter S, "Apple won battle, lost war",
<http://detnews.com/menu/stories/33885.htm> ,30 Jan. 1996.

WEYHRICH, Steven, "Apple][history",
<http://www.hypermail.com/History/AH02.Html>, 1991

"A brief history of Apple", <http://www.stolaf.edu/people/handel/a2/apple.history.txt>, 1997.

"History of Apple Computers", <http://www.apple-history.com:Catalogue> , 1997

"Steve Jobs", <http://ei.cs.vt.edu/-history/Jobs.html>, 1997



glossary

glossary

Bit	Smallest measurement of computer memory
Byte	8 bits, sufficient to store a single character of information
Circuit Board	A board made up of electrical components inside the computer
FORTRAN	A language understood by the computer to perform tasks
BASIC	A language understood by the computer to perform tasks
Microprocessor	The Brain of the PC, which controls all operations
Ram	This is the main memory system of a computer that is used to execute programs.
ROM	This is the secondary memory system that is necessary for basic computer operations.
Mainframe	A computer that controls a network of less powerful computers.
Operating System	Known as the OS, this is an interface for controlling programmes, allows the user to carry out tasks.
Motherboard	Main circuit board.
Serial Ports	Connections for attachment (e.g. printers) to the main computer

