

Man in a briefcase: the social construction of the laptop computer and the emergence of a type form

ATKINSON, P. <<http://orcid.org/0000-0002-6633-7242>>

Available from Sheffield Hallam University Research Archive (SHURA) at:

<http://shura.shu.ac.uk/965/>

This document is the author deposited version. You are advised to consult the publisher's version if you wish to cite from it.

Published version

ATKINSON, P. (2005). Man in a briefcase: the social construction of the laptop computer and the emergence of a type form. *Journal of design history*, 18 (2), 191-205.

Copyright and re-use policy

See <http://shura.shu.ac.uk/information.html>

Man in a Briefcase: the social construction of the laptop computer and the emergence of a type form

©Paul Atkinson 2005

This is a text-only version of a published article. Images have been removed to alleviate copyright problems. References to images appear in bold in square caps. For the full version with images, please see the *Journal of Design History*, 18(2): 2005: 191-205. [doi:10.1093/jdh/epi024] This is available from: <http://jdh.oxfordjournals.org/content/vol18/issue2/index.dtl>

Abstract

Dominant design discourse of the late 1970s and early 1980s presented the introduction of the laptop computer to be the result of 'inevitable' progress in a variety of disparate technologies, pulled together to create an unprecedented, revolutionary technological product. While the laptop was a revolutionary product, such a narrative works to dismiss a series of products which predated the laptop but which had much the same aim, and to deny a social drive for such products, which had been in evidence for a number of years before the technology to achieve them was available. This article shows that the social drive for the development of portable computing came in part from the 'macho mystique' of concealed technology that was a substantial motif in popular culture at that time.

Using corporate promotional material from the National Archive for the History of Computing at the University of Manchester, and interviews with some of the designers and engineers involved in the creation of early portable computers, this work explores the development of the first real laptop computer, the 'GRiD Compass', in the context of its contemporaries. The consequent trajectory of laptop computer design is then traced to show how it has become a product which has a mixture of associated meanings to a wide range of consumers. In this way, the work explores the role of consumption in the development of digital technology.

Keywords: computers, consumption, gender politics, popular culture, product design, social construction of technology

Introduction

The laptop computer is a piece of technological hardware which holds a particular position in the panoply of technological products of today. Laptops have managed to retain an element of prestige and interest that I have previously argued has long been lost by the desktop computer¹. Considering that the technology employed is the same, and that the first true laptop computer appeared more or less around the same time as the first desktop

personal computer, a comparison of their consequent reception over time reveals a great deal about the perception of portable technology itself.

As will be shown, the arguments about which computer was the first laptop depend on the definition used. The whole notion of discussing 'firsts' in historical terms is fraught with difficulty, especially when the object concerned is a complex one containing a number of different technologies, and is potentially able to appear in more than one form. Judging from the number of dissimilar computers that have been hailed as 'the first laptop' (particularly by their creators)² the accolade of designing this particular first would seem to be an important one.

Here, the stance is taken that the term 'laptop' refers to a device which is easily carried while travelling, has its own source of power, a means of storing suitable amounts of data, a full alphanumeric keyboard for input of text, and a screen suitable for displaying a reasonable amount of text and graphics, at a size which is able to be supported comfortably and easily on a seated person's lap.

By this definition, the 'Compass' computer [1], designed in 1980, and manufactured by GRiD Computer Systems Corp. was indeed the first true laptop. This development was presented in the design discourse of the day as the result of the convergence of technological developments in the fields of flat displays, rechargeable batteries, and computing memory; creating a product that was "ready to happen"³. This is where the notion of technological determinism is still evident – Bill Moggridge (responsible for the industrial design of the 'Compass') states

...why was the laptop ready to happen? Why did John Ellenby come up with this concept? I think that it is mostly to do with the convergence of technologies. It would take a man of his vision to understand the possibility, but if you look at the reason it was possible to happen then rather than some other time, it was because all these different technologies were coming together.⁴

However, the pre-history of the laptop shows a stream of developments in which the concept of the laptop's capabilities, if not the actual form, was a clear aim for many. There was a distinct desire for computing technology at a very personal level, even if the exact nature of its use was confused. In the late 1960s, in his doctoral thesis, Alan Kay envisaged the 'Dynabook'.⁵ Later, Kay's 'Learning Research Group' at Xerox-PARC saw the development of the 1973 ALTO computer (the precursor to the Apple Macintosh) as 'a step towards the Dynabook', described then as a powerful portable computer in the form of "a personal dynamic medium the size of a notebook which can be owned by everyone and has the power to handle virtually all of its owners information-related needs".⁶ Kay envisaged these owners as including "children from age 5 or 6 and 'non computer adults' such as secretaries, librarians, architects, musicians, housewives, doctors and so on".⁷

The visions of Xerox-PARC researchers appear to have been looking towards a Utopian future where ownership of advanced technology was available to

all, and consequently free of any associations of status. The mainstream view of portable technology at this time was, however, loaded with associations of prestige as it was so expensive and uncommon – reflected in the names of products such as ‘The Executive Terminal’. Somewhere along the line, it appears that the briefcase - a well established and well understood signifier of executive status became entwined with a ‘macho mystique’ of concealed technology, and subsequently with portable computing.

The Macho Mystique of Concealed Technology

This ‘concealed technology’ aspect of the image of the briefcase most likely emerged from its representation as one of the main elements of the secret agent’s toolkit in mainstream popular culture of the period. From *James Bond* to *The Saint*, from *The Avengers* to *The Man from U.N.C.L.E.* and from *Department ‘S’* to *Mission: Impossible*, the briefcase was presented in novels, comics, film and television as being likely to hold anything from an assassin’s rifle to hidden compartments for alternative identities and false passports – anything but boring paper documents. In these popular texts, the briefcase was presented as having a cachet of ‘cool’, superiority and an element of danger far beyond its mundane appearance.

It is well documented that far from being sheer escapism, popular television series such as those in the ‘action’ genre mentioned above played an important role in redefining the self-image of the male and his relationship with technology in both America and Britain:

The 1960s incarnations of both Bond and Templar [The Saint], therefore, testify to a shift in dominant articulations of masculinity. In an age increasingly pervaded by consumption, advertising and style, 007 and the Saint both became agents for the upwardly mobile jet-set – the two characters breaking with the constraints of traditional masculinity and moving into a mythologized world of hedonism, consumer pleasure and individual autonomy.⁸

and

The Avengers was able to respond to and influence developments in various realms of popular culture (notably fashion, pop and the broader image-and-style oriented consumer culture which emerged in the 1960s and 1970s), as well as light-heartedly mediating contemporary social agendas (including gender and class mobility and the relationship between tradition and modernity in an increasingly science- and technology-based society).⁹

This ‘increasingly science- and technology-based society’ was being presented with ever smaller and lighter products, increasing the ability of people to carry technology with them wherever they went. An early example of this trend occurred with the introduction of a miniature radio by Sony in the late 1950s¹⁰. As products continued to miniaturise with the widespread adoption of the transistor, equipment for tape recording disguised as cigarette cases, microphones and ‘bugs’ for eavesdropping on the enemy and ‘walkie talkies’ for communication all made appearances in popular cultural representations of the secret agent’s briefcase. The popularity and acceptance of this imagery can be measured by its replication in the

production of a number of now collectible children's toys from the era, including, in particular, the 'Bond Briefcase' spy kits of the 1960s [2].¹¹.

The processes of appropriation of this type are explained in some detail by Stuart Ewen, who stated that for an image to be appropriated into popular consumer culture it had to fulfil three criteria: it must be "able to be disembodied, separated from its source....[be] capable of being 'economically mass produced [and] be able to become merchandise, to be promoted and sold"¹². In this way "the original cultural commodity's representational aura refurbishes these other marketable forms with much of their value"¹³. The James Bond briefcase fitted these criteria and enabled it to become a successful toy in its own right, and perhaps allowed the adult executive briefcase to act as an icon of masculinity and reflect "the growing accent on espionage within the playboy-adventurer formula that followed the American success of James Bond"¹⁴.

Osgerby's 2001 work *Playboys in Paradise* provides further evidence that throughout the 1960s and 70s, the 'imagined identity' of film and television characters such as Bond "made significant connections with the material world, offering representations of masculinity through which men could make sense of their place within a profoundly shifting cultural landscape"¹⁵. This phenomenon is the reason for the title of this article. 'Man in a Briefcase' is a play on the title of the 1967 television series *Man in a Suitcase*. This now cult British TV programme told the story of a government agent who, falsely accused of a crime, is forced to leave the service, travel incognito, and offer his services on a freelance basis. The glamour of the lead character (or at least part of it) came from being constantly on the move, living out of a suitcase as compared to the everyday drudgery of repetitive life at work and at home, and being in part a 'man of mystery', free to arrive and leave whenever he pleases rather than being subject to a hierarchy of establishment control and being tied to an office.

Popular films, as well as reflecting changes in concepts of masculinity, also reflected changing relationships between people and technology. Further evidence that there was an extant desire for portable computers as signifiers of futuristic technology and the associated status that goes with that technology can be seen in Science Fiction films of the period and the predictions they presented. As an example of this, in May 1966, *Esquire* magazine reported that Stanley Kubrick, then working towards the filming of *2001: A Space Odyssey*, had commissioned a number of major international corporations to produce conceptual designs for technological products of 35 years in the future. The same article shows a concept design produced by the American computer manufacturer Honeywell, showing their vision of what computers were going to look like. Bear in mind that this concept was put forward at a time when computers still filled whole rooms, and personal desktop computers were at least 14 years away. Honeywell's prediction was a computer in a briefcase [3]. The accompanying text to the concept design stated:

Electronics in an attaché case will transform the hallmark of executive life.
Designed by Honeywell, the case would allow a government scientist to carry

with him a computer, a telephone with computer memory, a TV camera and monitor, and a TV receiver linked to a micro-storage file so a book page or other reference could be displayed at will. There is also a small space for medicines, contact lenses, playing cards. Feasible within three to five years; commercially available in ten to fifteen.¹⁶

Taking all the above into consideration, that popular culture was presenting audiences of the 1960s and 1970s with a glamorous image of masculinity tied to the notion of the 'playboy adventurer' alongside predictions of an exciting future of mobile technology, it can be argued that the driving force behind the development of the laptop computer was not so much the desire for smaller technological products as status symbols per se, but the desire for a product which would allow its owner to be demonstrably free of the ties of everyday office activity; to be a 'Man in a Briefcase'.

False starts and broken promises

Much of the history of computers is presented from a technologically deterministic perspective; as a clearly linear development of new technology allowing the production of smaller, lighter, more powerful products with an accompanying ease of mobility, which in turn affected the behaviour of certain social groups. It is posited here that this linear development is far from the case, and that it was the extant social drive for portable computing described above that was in fact the cause of numerous attempts to create a suitable product, before appropriate technology was actually available. It took a number of years before the reality of portable computing caught up with the promises of the imagery portraying its use. The description which follows of these 'numerous attempts', some of which were concurrent, provides the content for a 'multidirectional' model of technological development described as "essential to any social constructivist account of technology"¹⁷ by Pinch and Bijker, in which products produced to solve problems are judged and either accepted by the relevant social groups involved, or rejected, leading to the development of alternative products.

Portable terminals

In truth, early attempts at portable computers were no more than dumb terminals having no computing power of their own, but which could be connected to a telephone by an acoustic coupler and transmit sales figures and orders for travelling sales executives. Portable terminals, however attractive as an image, failed to deliver on the promises of the high-flying executive of the corporate adverts. The lack of any suitable display technology and the need for 'hard copy' information due to the absence of any memory meant that the technical drive behind these items was in fact their printing capability. Silent thermal printers built into the terminals became a high priority, and ousted noisy mechanical Teletype printers.

Two of the many players in this field were the American company Texas Instruments with their 'Silent 700' range, and the British company Transdata

with 'The Executive Terminal' of 1972 and 1973 respectively [4, 5]. A mere six years after Honeywell's prediction, the image of portable computing looked to be set firmly as an executive briefcase.

The identity of the 'Man in a Briefcase' – carrying his office with him (and until the early 1980s it always was a 'him') was a recurring theme of corporate adverts and catalogues promoting portable computing throughout the 1970s. Status can be conveyed in many ways¹⁸, and although not necessarily expensive and easily available, the mere act of carrying a briefcase can be said to carry associations of authority and importance. There is no real economic value to a briefcase which works to give it a symbolic value, but there is a powerful sense of tradition. The 'James Bond' connotations of seemingly traditional briefcases filled with high-tech electronic gadgetry must have been highly appealing to many executives: people so important they didn't go to work in a car – they aspired instead to travel by private plane and helicopter [6, 7].

The appearance of portable data terminals as new technology is reflected in the nature of the adverts and brochures featuring them, in which associations with existing or known qualities are sought in order to explain the qualities of a product of which the audience is quite possibly unaware. Judith Williamson, in *Decoding Advertisements*, refers to the products used to make these associations as 'objective correlatives'. In the process of displaying the portable data terminal alongside a private aeroplane a number of qualities are transferred from one to the other – exclusivity, desirability, convenience, and reliability. The same occurs when a terminal is shown alongside a helicopter – the freedom of movement, cutting edge technology, and presumably an associated high price.

There is an obvious element of status being displayed here – operating on a variety of levels. When these associations are made it is not just the two aligned objects which are related, but their owners. The same characteristics of power and status are transferred, and the owner is imbued, as Csikzentmihalyi and Rochberg-Halton observed, with the 'distinctive or superior qualities'¹⁹ of the planes and helicopters in which they travel. This process, referred to by Williamson as 'individualism', being analogous to 'totemism', is clearly one of 'differentiation', where the objects act as symbols of the self, which 'stress the unique qualities of the owner, his or her skills and superiority over others'.²⁰

The other mode of representation identified by the same authors, and which is being employed here, is one of 'integration' in which the objects serve to 'represent dimensions of similarity between the owner and others'.²¹ The mode of transport 'symbolically expresses the integration of the owner with his or her social context'.²² By owning a portable terminal the owner will be recognised as a member of the executive hierarchy of the workplace. Here, Williamson's use of the word 'totemism' is used to describe the 'formation of groups which cannot be mistaken for the groups of class difference'²³. The system of social differentiation being created here is laid over the basic class structure of society and is one in which the meanings are 'bought with

products, not with money'.²⁴ However, Williamson uses Althusser's notion of 'alreadyness' to explain the subtlety of the process, in that 'you do not simply buy the product in order to *become* a part of the group it represents: you must feel that you already, naturally, belong to a group and *therefore* you will buy it'²⁵. This is where the consumer fits into the process of turning the product from signified into signifier by occupying the space between the two – the receiver of the advert becomes a creator of meaning, because they already feel created by it. This 'natural' belonging is where myth is created, and in effect, it is the receiver that creates the myth. As the sociologist Colin Campbell notes,

The central insight required is the realization that individuals do not so much seek satisfaction from products, as pleasure from the self-illusory experiences which they construct from their associated meanings. The essential activity of consumption is thus not the actual selection, purchase or use of products, but the imaginative pleasure-seeking to which the product image lends itself.²⁶

It is perhaps understandable that such blatant signification is employed when a new, and unknown, object is the subject of promotional literature: it has no 'meaning' with which the receiver can identify, and so has to 'be given value by a person or object which already has a value to us'²⁷. As I will show, as the notion of portable computing became more popular and widely understood, the representation of the laptop changed. As Williamson put it, the 'product merges with the sign, its correlative, originally used to translate it to us, one absorbs the other and the product becomes the sign itself'²⁸.

Portable computers

With the development of reasonably priced, durable memory devices during the late 1970s, a significant step forward in portable computing was made possible. The Texas Instruments '765 Portable Memory Terminal' of 1977 was aimed directly at the travelling salesman, and included 20K of a new solid-state technology called 'bubble memory'²⁹ to enable editing of around four pages of stored data before transmission over the telephone [8]. However, although the appearance of even a small amount of computing ability in a portable machine was a considerable advance, the negligible memory and the lack of a display screen meant that truly portable computing was still to be achieved.

'Luggable' computers

'Luggable' or 'transportable' were terms later associated with a series of products for which the term portable was, in hindsight, clearly an overstatement. The appearance of this form of computer reaffirms the point that the drive for portability was more important than the drive for miniaturisation. 'Adam Osborne – He Made the Computer Portable' is a chapter in *Portraits in Silicon*, in which Robert Slater describes the development of "the first commercially successful portable computer".³⁰ Developed at the same time as the GRiD laptop, Osborne's specifications for

his portable computer included it being small and sturdy enough for travel, easy to make, and cheap. The result, first shipped in June 1981, was certainly all those things, but the fact that it was relatively small didn't mean it was light. [9]

"Early portable computers were brutes: typical of them was the Osborne 1, a 13kg machine [in] a box the size of a small suitcase".³¹ Others described it as being "as portable as a suitcase full of bricks"³² and Osborne himself estimated "that at least 80% of its portables never left the office"³³. According to Slater, critics thought it looked like "a World War II field radio, with all its dials and wires in the front. Yet it was a computer: it had a detachable keyboard, a 5-inch screen, 64K of memory, and two built-in disk drives. And one could take it from home to office - and back home again!"³⁴

Although not the first attempt to put a computer in a suitcase (Xerox, for one, had done the same thing earlier), Osborne was the leader in a field of products largely following his exact format – a heavy computer inside a deep vertical case with a removable lid containing a keyboard. The weight was the factor that made all these units fail as a product type, as "people didn't really drag these sewing machine-sized units around that much"³⁵. Even though some of these computers (including the Osborne) were later available with optional battery packs, they were certainly not suitable products for a 'Man in a Briefcase'. The issue of weight and a suitable source of battery power remained a stumbling block for portable computers.

Battery Operated Portables

When the first computers specifically designed to be battery driven appeared in the early 1980s they were small and light, but they had more in common with large hand-held calculators than with a true laptop computer [10]. As such, they also proved to be unsuitable for a 'Man in a Briefcase'. They typically had very small amounts of memory, and small two or three-line LCD displays – hardly suitable for typing in large amounts of information. In fact, by 1983 two of the front runners in this class (the Tandy 100 (also stated as "World's 'first' laptop"³⁶) and the Olivetti M-10) were seen as striking due to being able to display eight lines of 40 characters and having 8K of Random Access Memory.³⁷

Laptop computers

Taking the above examples as "the latest step forward"³⁸ and considering the size and weight of the 'luggable' computer, the technical innovations embodied in the contemporary 'Compass' computer by GRiD Systems seem all the more impressive. Appearing on the market at exactly the point in time predicted by Honeywell 15 years earlier, the 'Compass' provided a portable computer which could fulfil the promises of the 'Man in a Briefcase' represented in popular culture.

The GRiD 'Compass' computer was the brainchild of John Ellenby, a British computer scientist who lectured at Edinburgh University and worked as a consultant to Ferranti Ltd on the Argus 700 computer before joining Xerox-PARC in California. Here, he worked on the ALTO computer and the laser printer before setting up his own computer development company, GRiD Systems. While looking to create a product development team, he came across Bill Moggridge who had just decided to start a second office of his successful design consultancy in America. It was John Ellenby's suggestion to put this office in Silicon Valley because of the huge opportunities, and so Moggridge set up I.D. Two there in 1979. At the end of the same year Ellenby asked Moggridge's team to help with the industrial design and mechanical engineering of a new product. Back in 1976, Ellenby had spoken to one of the managers who had received the ALTO computer on which he had worked. "He told me the ALTO was great, but that he had stopped depending on it as he couldn't take it with him to where problems needed solving. I said I could make one the size of a suitcase – he said 'no – make it half the size of my briefcase.' That's where the aim for the size of the GRiD computer came from."³⁹ "He gave me the belief that there was indeed demand for a powerful, really portable computer".⁴⁰

In order to raise the venture capital, Moggridge produced a conceptual model "based on a discussion that John Ellenby and [Moggridge] had about what a small, portable computer could be like and the collection of the technologies that were converging to make it possible".⁴¹ This unit [11] folded in half across the centre in a geometry similar to that of today's laptops (referred to as a 'clamshell' design). A small keyboard next to an off-centre display was to be used for telephone dialling. When serious development started "the real restraints of power supplies, printed circuit boards and component availability started to alter the form".⁴²

The most important of these technologies in terms of the appearance of the product was the display. The choice was made of a prototype electro-luminescent display by Sharp that could cope with graphics as well as text. The next technology exploited in design terms was the low-profile keyboard, which manufacturers suddenly reduced in depth by half to only $\frac{3}{4}$ inch. A slim casing became a realistic possibility. In purely technical terms the latest developments in computer chip design were exploited, as was the use of 'bubble' memory, which was light, compact, stable and had only come onto the market in the previous few years. The GRiD had 256K of bubble memory "because nobody would ever want more than that".⁴³ (This may seem ridiculous now, but Japanese portables that followed the GRiD a number of years later were sold with only 32K as standard). This use of memory ties in with another technological paradigm called 'GRiD Central'. Moggridge explained that "The concept of 256K being adequate was dependent on the fact that you would have information resident on a centralised server. So you would dial in [using the built in modem] to upload or download the files that you wanted to store or retrieve".⁴⁴

Finally, the choice of magnesium as the material for the casing involved a significant amount of technological development. The case material was

required to be light, robust, and to conduct large amounts of heat away from the power supply. In the overall scheme of the project, price wasn't too much of an issue, but weight was. Moggridge's team found magnesium being used in chainsaw casings and worked with a St. Louis chainsaw casing manufacturer to develop precise, thin-wall castings which enabled magnesium to become the "metal of choice for a lot of portable electronic equipment".⁴⁵ This allowed for the creation of a suitably rugged product, as the GRiD was designed to withstand impact forces equivalent to being dropped four feet onto a concrete floor. This was in order to meet the planned maintenance strategy John Ellenby had planned for the 'Compass' computer, which involved the unit being transported by a courier service.

Moggridge states that although rugged, "the design was aimed at trying to make sure it was very prestigious and elegant with the executive in mind".⁴⁶ In his view, Ellenby was aiming at executives because the world-wide market was large, they had sophisticated information processing requirements, and weren't too price sensitive (at \$8,000, the GRiD was more than double the cost of an equivalent desktop machine). However, the product did fail in that one area – affordability. "The price was so high, and it was too early for it to be generally acceptable. So it became very much a niche thing".⁴⁷ They sold a number to executives from the 'Fortune 500' companies, but not enough to repay the venture capitalists, and so started to look for other niche markets. The GRiD's rugged design specification meant the unit was very attractive to another target group - the military, and a large number of specifically adapted computers were sold to the American forces; to NASA, for use in the space shuttle; and to the president of the USA for use on 'Airforce One' aeroplanes. The GRiD's iconic status achieved through this exposure was reinforced by MoMA, who placed it in their permanent design collection; *Business Week*, which dubbed it "the 'Porsche' of computers"⁴⁸; and by the American Industrial Design Society, who in 1982 gave the GRiD 'Compass' computer the award for Design Excellence for "substantially advancing the state of the art of computer design".⁴⁹

Amongst a confusion of less perfectly conceived alternatives, the 'Compass' must have shone like a beacon, its possibilities lighting the way forward for competitors to follow. The laptop computer John Ellenby uses today "has the same form, is the same size, and has the same aesthetics"⁵⁰ as the original 'Compass'. The durability of this designed form for portable computing, and the rapid demise of the 'luggable' computer and the small battery operated portables, all pay testament to the 'Compass' as an important and successful piece of design in setting a precedent for the visual identity of the laptop computer. It was a form readily accepted by the relevant social group. In following a functional directive to protect the keyboard and screen when not in use, the designers, in adopting the 'clamshell' form, also created an iconic sign in which the shape and the ritual of opening the product reflected that of an actual briefcase.

The vision of John Ellenby, who had realised the potential of flat-display technology for portable computing as early as 1973 while working on early plasma screens, brought together the very latest developments in a number of

disparate fields - flat panel displays, non-volatile data storage, miniaturised modems and multi-tasking operating system software; which, while certainly cutting-edge, had nevertheless all been previously imagined. Consequently, it is fair to say that had the GRiD 'Compass' laptop computer not been designed in 1980 it would have arrived eventually, although not necessarily in the same form, as Kay's vision of the 'Dynabook' did predict the exploitation of technological advances in miniaturisation with some accuracy. However, what the GRiD 'Compass' did achieve, via the input of Moggridge, was to fix the 'clamshell' design as the archetypal product form for laptop computers.⁵¹

The type of adverts and brochures containing contextual imagery described previously continued well into the 1980s, until such a time that the archetypal form of the laptop created by the GRiD became a 'sign' which could be read and understood by all, and alternative forms had disappeared after rejection by their relevant social group. This is the stage of the social construction of technology that Pinch and Bijker refer to as closure and stabilization, when apparent problems have disappeared and an object's 'final' form can be accepted. Once in this position, the competition between a number of manufacturers led to a proliferation of brochures depicting only the product itself, often devoid of any context at all. The inference is that the object needs to say nothing in terms of selling any associated status, which has become a 'given', and the way is left open to discuss the 'power' of one particular laptop over another [12].

Where these brochures do contain images of laptops being used by people, they are fairly general in nature. While in no way being put forward as a domestic item, it is presented as having limited kudos in terms of business hierarchies [13]. Yet there is still an element of status displayed in that anyone in given the freedom and responsibility to work outside the controlled environment of the office is perceived not to be in the lower echelons of a corporation. The laptop in this scenario is more often than not a 'role-setting' object as defined by Francis Duffy in *The Changing Workplace*, denoting the level of self-direction of time allowed to an employee, and an object necessary to fulfil their expected role in a suitable manner.

There are various ways in which these images can be perceived, but it is most important to remain aware of what it is that is being interpreted. The images are patently not of reality – they are not documentary evidence of the users of laptops going about their daily business, but a constructed 'reality' – a representation of an imagined or desired reality from the point of view of the manufacturer and/or the advertising agency in charge of product photography. As Hebdige observed, determining meaning through such a network of relationships is complex, as "there can be no absolute symmetry between the 'moments' of design/production and consumption/use, and ... advertising stands between these two instances – a separate moment of mediation".⁵² While the material remains valid for interpretation within these boundaries, and the results are meaningful in revealing possible perceptions by their audience, they still inevitably fail to expose any 'truths'.

One of the main players in the British portable computing industry in its earliest days was the company Transdata founded in 1970 by John Neale. Transdata's '305' model was promoted as 'The Executive Terminal', but as discussions with Neale showed, it was actually bought by anybody but executives:

The advert...was a message into the unknown. With hindsight, it was not company executives who were interested in portable computing; they had little knowledge or experience of computing. It was the protective enclave of the data processing department. An interesting customer for these terminals, because they required no PTT modem and could be outlocated as demand required, were the programmers at ICL on maternity leave, since they could be easily located in employees' homes economically. All other sales came from the Computer Time Sharing companies.⁵³

As discussed, the GRiD also had problems with its target audience. The venture capitalists had said, 'managers at the time did not use computers', but Ellenby believed "the market was there, only latent. We had to create the demand by taking the equipment out to show to people – mainly mobile sales forces and niche sales people such as pharmaceutical representatives".⁵⁴ Not exactly the imagined user of a high-flying executive.

As the laptop has become a more commonplace, affordable object, the market has, as might be expected, become more diverse. Laptops are now sold not only as portable business machines, but larger versions are sold as 'desktop replacements' where the performance is more important than the portability. 'Rugged', vibration-proof laptops are sold for use in hazardous environments (or, like four wheel drive vehicles, to anybody wanting to project that image), and bright yellow or green 'Alienware' laptops are coveted by VJs (video jockeys) and gamers.

Examining adverts for recent laptop computers shows a series of mixed and confused messages are being delivered and received. Some, such as Dell [14] are equivocal or ambiguous. The 'Inspiron' notebooks, being sold with taglines such as 'combining style, power and value' and being 'slim, fast and very attractive', are visually placed in neither a domestic or work setting, but closer reading reveals the same object is meant for both with the amount of memory, choice of software and price defining the lesser product for the home and the superior product for the office. Others align the laptop with work by the choice of name for the product such as Toshiba's 'Satellite Pro' [15], which is backed by copy reading 'for mobile business users'.

Packard Bell [16], who opted for the design iconography of the iMac for a whole range of home computers, appears to associate their 'Chrom@' laptop with the individual rather than the work or home environment. The tagline 'The creation of a new lifestyle' is followed by copy referring to the 'stunning looks and leading edge technology' representing 'the ultimate sensory experience in mobile computing'. While no doubt powerful enough to cope with the demands of business, the continuing text refers only to 'enjoying top-quality games and DVD movies on your TV screen', placing it firmly in the domestic arena.

An early advert for one of Apple's recent creations, the Titanium Powerbook, is devoid of context altogether, and shows the product in almost complete isolation [17] – a few words of text which combined with the imagery draw attention to its remarkably thin casing and very large screen, which perhaps as a deliberate reference to their 'arch enemy', bears a colourful picture of *The Road Ahead*, the title of a book by Microsoft's Bill Gates.

Diverse as all these adverts may be, the basic form of the laptop has arguably remained a masculine technological object. As has been shown, portable computers started as fairly heavy objects, with rugged designs aimed at a male audience. A comparison could be made, though, with other technological artefacts which have not remained as clearly masculine. Mobile phones started with exactly the same target audience as laptops, and yet have successfully lost all their original connotations. This may be due to their having a role which is clearly more 'personal' than 'work', and the fact that interchangeable covers enable them to be more easily personalised. Personal Digital Assistants (PDAs) have an overt business/work function, yet their small size enables them to be carried in jacket pockets or small bags, again stressing the 'personal' aspect. It seems, however that, by and large, the laptop still acts as a simulacrum of a briefcase and as a signifier of the corporate world.

Conclusions

So, it seems the difference between the so called 'clear' messages being sent out by manufacturers in the design of their literature and in the design of the products themselves, and the actual consumption of the technology in the marketplace was marked, and serves as a reminder that such conclusions about 'reality' cannot reliably be drawn from advertisements.

For example, far from remaining executive in status, by the late 1990s it had become commonplace for service engineers from companies such as British Telecom and British Gas to carry laptops with them to type in and print out test results in the field, and yet no trace of this is evident in the material gathered. Therefore, the apparent 'natural' status of the laptop in brochures from this period also has to be questioned, and this points perhaps to the need for more research to be done in the area of interviewing manufacturers and consumers.

It is unclear exactly where the laptop resides in our culture at this present moment. As an inherently mobile piece of technology, it can move freely between the environments and cultures of home and business with ease. While it can still be seen as carrying an amount of executive status, in many respects it carries no more than does an expensive briefcase, and the act of carrying a briefcase is no longer the exclusive domain of the male.

Yet the representation of 'concealed technology' as an element of 'macho' culture persists to this day. The gadgetry designed for James Bond to use in

the field is still a major component of the films, and children still play with 'James Bond' briefcases (which now, of course, contain a laptop computer). Other examples in recent popular film texts include the remake of *The Jackal*, starring Bruce Willis, controlling an unfeasibly large weapon by means of a computer in an aluminium briefcase, and a laptop with wireless capability being used by Tom Cruise to transfer laundered money between bank accounts while travelling on a train, as shown in *Mission: Impossible*. Also, much has been written about the gendered appropriation of technology in a domestic setting⁵⁵, and as Elaine Lally points out in *At Home with Computers*, "powerful role models for women are less visible than the stereotyped gendered representations of the computer advertising"⁵⁶. Indeed, the popular representation of laptop computer usage appears to remain largely masculine.

It is interesting to note that mainstream advertisements for laptop computers which have, for a number of years, been devoid of context are once again showing the product's use in situ in order to explain the new features of wireless and Bluetooth capability. Although it in no way impacts on the form of the laptop, in some respects these features could be seen as destabilising the laptop from its accepted position, as an important new product function has come into play. Comparing a recent advert from Samsung [18] with the Texas Instruments advert from 1977 [4], it seems very telling that the perceived user of this latest incarnation of the laptop remains clearly a travelling businessman; and that in many respects little appears to have changed over the last quarter of a century. Although the reality of its use may be very different, the laptop is still represented as the object of choice for a 'Man in a Briefcase'.

Notes

Images in published version:

1. The Compass Mk 1 Computer designed for GRiD Systems by IDEO, 1980
2. The 'James Bond Attaché Case' children's toy manufactured by Gilbert/Multiple Products, 1965
3. 'Electronics in an Attaché Case', concept design by Honeywell, 1966
4. Brochure for the Texas Instruments 'model 725 portable data terminal'. Part of the 'Silent 700' range, 1972
5. Brochure for the Transdata 'Model 305 Portable Data Transmission Terminal', 1973
6. Image from the brochure for the Texas Instruments 'Silent 700' range, 1972
7. Image from the brochure for the Transdata 'Executive Terminal', 1974
8. Image from a magazine advert for Texas Instruments 'Silent 765' memory terminal, 1977
9. Osborne 1 transportable computer, 1981
10. Husky rugged handheld computer, 1981
11. Concept model produced by IDEO for GRiD Systems, 1979/1980
12. Image from Acernote Portable Computers brochure, 1996
13. Image from Toshiba 'Notebook' brochure, 1977
14. Newspaper advert for Dell 'Inspiron', 2001
15. Newspaper advert for Toshiba 'Satellite Pro', 2000
16. Newspaper advert for Packard Bell 'Chrom@', 2000
17. Newspaper advert for Apple 'Titanium Powerbook G4', 2001
18. Newspaper advert for Samsung X10 Notebook, 2003

I would like to thank all the people who have contributed to the material for this article. In particular, my thanks go to Clive Grinyer for encouragement, to John Ellenby, Bill Moggridge and John Neale for their help in answering my questions, to Jon Agar for his help in accessing archive material, and to the Editorial Board of this Journal for their

valued advice and comments. Certain sections of this paper have been presented at conferences in Portugal, Finland and Denmark prior to publication as a completed article in this journal. My thanks go to the audiences of those conferences for their feedback.

- ¹ Atkinson, P. 'The (In)Difference Engine: explaining the disappearance of diversity in the design of the personal computer', *Journal of Design History*, Vol. 13, No.1, 2000, pp. 59-72.
- ² Westly, J, the founder of 'Husky Computers' claims his battery powered 'Husky' (see fig. 10) to be the first laptop, but it had no alphabetical keyboard input, and was specifically designed as a rugged computer for data collection in adverse environments. See *The Obsolete Computer Museum*: <http://www.obsoletecomputermuseum.org>> [Accessed 10 February 2001].
- ³ Interview with Bill Moggridge at the London Offices of IDEO, 15 June 2000. (See also 'The Compass Computer: The Design Challenges Behind the Innovation' in *Innovation – The Journal of the Industrial Designers Society of America* Winter 1983 pp. 4-8).
- ⁴ Ibid.
- ⁵ Hiltzik, M, *Dealers of Lightning: Xerox PARC and the Dawn of the Computer Age*, London, Orion Business Books, 2000 p. xiv suggests the date of the first appearance of the 'Dynabook' to be in this thesis in 1969. However, interviews with Alan Kay on websites state the date he conceived it as 1968 (http://www.squeakland.org/school/HTML/essays/dynabook_revisited.htm (accessed 3 March 2005) and http://en.wikipedia.org/wiki/Alan_Kay (accessed 10 March 2005)). However, a Dynabook-type concept was presented to potential clients of Xerox (Wesleyan University, Middletown Connecticut, USA) in 1967 as part of a fully digitised library and student learning system (Tim Putnam, personal communication), before Kay joined Xerox (1970 or, on some sites, 1972).
- ⁶ Learning Research Group, 'Personal Dynamic Media' cited in Press, L 'Before the Altair: The History of Personal Computing' in *Communications of the ACM*, Vol. 36, No.9, September 1993, p. 31.
- ⁷ Kay, A 'Personal Computing' cited in Press, L (1993) Op. Cit., p. 29.
- ⁸ Osgerby, B, 'So You're the Famous Simon Templar' in Osgerby, B & Gough-Yates, A (Eds) *Action TV: Tough Guys, Smooth Operators and Foxy Chicks*, London, Routledge, 2001, p. 44.
- ⁹ O'Day, M 'Of Leather Suits and Kinky Boots' in Osgerby, B & Gough-Yates, A (Eds) *Action TV: Tough Guys, Smooth Operators and Foxy Chicks*, London, Routledge, 2001, p 222.
- ¹⁰ Sony introduced the TR-63 'pocketable' radio in 1957, at a cost equivalent to an average Japanese worker's monthly salary. Unfortunately, it was just larger than a businessman's normal shirt pocket. Sony salesmen were consequently issued with custom-made shirts with slightly larger pockets. (<http://www.sony.net/Fun/SH/1-6-h2.html> [accessed 6th January 2005]).
- ¹¹ The famous Bond attaché case first appeared in the film 'From Russia With Love' (1963) and contained 50 Gold Sovereigns, 40 rounds of ammunition, a folding rifle with infrared telescopic sight, and a can of tear gas. (<http://www.007forever.com/mystique/gadgets003.html> [accessed 5 January 2005]) A collector's website describes the children's toy version as being produced by Gilbert/Multiple Products from 1965, and states they are currently valued at \$2000. (see <http://www.towson.edu/~flynn/toys.html> [accessed 5 January 2005]).
- ¹² Ewen, S (1988) cited in O'Day, M., Op. Cit., p 229.
- ¹³ Ibid. p. 229.
- ¹⁴ Osgerby, B., Op. Cit., p. 46.
- ¹⁵ Osgerby, B *Playboys in Paradise: Masculinity, Youth and Leisure-style in Modern America*, Oxford, Berg, 2001, p. 162.
- ¹⁶ Anon, 'In the year 2001, the shape of everyday things...', in *Esquire*, May 1966, p. 116.
- ¹⁷ Pinch, T and Bijker, W 'The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other' in Bijker, W, Hughes, T & Pinch, T (Eds) *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*, MIT Press, 1987 p. xxx.
- ¹⁸ See McCracken, G, *Culture and Consumption*, (Indiana: IUP, 1988) Part III, which describes objects as markers of status and hierarchies of relationships.
- ¹⁹ Csikszentmihalyi, M & Rochberg-Halton, E, *The Meaning of Things: domestic symbols and the self*, Cambridge, Cambridge University Press, 1981 p. 29.
- ²⁰ Ibid. p. 38.
- ²¹ Ibid. p. 38.
- ²² Ibid. p. 39.
- ²³ Williamson, J. *Decoding Advertisements*, London, Marion Boyars, 1978, p. 47.
- ²⁴ Ibid.
- ²⁵ Ibid.
- ²⁶ Campbell, C, *The Romantic Ethic and the Spirit of Modern Consumerism*, Oxford, Basil Blackwell, 1987, p. 89.
- ²⁷ Williamson, J., Op. Cit.. p. 31.
- ²⁸ Ibid. p. 35.
- ²⁹ Bubble Memory stored data in cylindrical magnetic domains, or 'bubbles' in a thin film of magnetic material. The presence of a domain indicated binary 1, the absence, a zero. (<http://www.xs4all.nl/~fjkraan/pc5000/bubble.html>) "It was once widely believed that bubble memory would become one of the leading memory technologies, but these promises have not been fulfilled" (http://www.webopedia.com/TERM/b/bubble_memory.html) [both accessed 7 January 2005].
- ³⁰ Slater, R (1987) *Portraits in Silicon*, Massachusetts: MIT Press, p. 323.

-
- ³¹ Aartsen, M, 'Portable Computers, a buyer's guide', in *Design*, March 1984, p. 48.
- ³² Stobie, I, 'They all laughed, but...', in *Practical Computing*, January 1983, p. 108.
- ³³ Aartsen, M, Op. Cit., p. 48.
- ³⁴ Slater R, Op. Cit., p. 326.
- ³⁵ Cringely, R, *Accidental Empires*, London, Penguin, 1996, p. 173.
- ³⁶ Carlson, T, *The Obsolete Computer Museum*, Op. Cit.
- ³⁷ Stobie, I, 'Tandy 100', in *Practical Computing*, August 1983, pp. 96-98; and Stobie, I, 'Olivetti M-10', in *Practical Computing*, December 1983, pp. 88-89.
- ³⁸ Stobie, I, Op. Cit., (August 1983), p. 98.
- ³⁹ Interview with John Ellenby conducted over the telephone, Op. Cit.
- ⁴⁰ Interview with John Ellenby conducted by email, Op. Cit.
- ⁴¹ Interview with John Ellenby conducted by email, response dated 11 February 2001.
- ⁴² Ibid.
- ⁴³ Interview with John Ellenby conducted by email, response dated 11 February 2001.
- ⁴⁴ Ibid.
- ⁴⁵ Ibid.
- ⁴⁶ Interview with Bill Moggridge, Op. Cit.
- ⁴⁷ Ibid.
- ⁴⁸ 'The Compass Computer: The Design Challenges Behind the Innovation', Op. Cit., p. 7.
- ⁴⁹ Ibid., p. 4.
- ⁵⁰ Ibid.
- ⁵¹ It is important to note that even though other forms of portable computers have since appeared, such as PDAs and 'tablet' computers, they have complemented rather than replaced the laptop. PDAs have significant amounts of memory, but are usually seen as a detachable peripheral of the computers with which they dock. Tablet computers are laptops with demountable screens, but have yet to prove popular. The flat form and way they are held and used with a stylus could arguably connote a clipboard and hence not appear 'executive' enough.
- ⁵² Hebdige, D., *Hiding in the Light: on images and things*, London, Routledge, 1988, p. 80.
- ⁵³ Interview with John Neale conducted by email, response dated 28 January 2001.
- ⁵⁴ Interview with John Ellenby conducted over the telephone, 9 February 2001.
- ⁵⁵ See, for example, Silverstone, R & Hirsch, E., *Consuming Technologies: media and information in domestic spaces*, London, Routledge, 1992, and Cawson, A., Miles, I & Haddon, L., *The shape of things to consume: Delivering information technology into the home*, Aldershot, Avebury, 1995.
- ⁵⁶ Lally, E, *At Home with Computers*, Oxford, Berg, 2002, p. 167.