

The material culture of the laptop

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Published version

ATKINSON, Paul (2001). The material culture of the laptop. In: Material and Ideal: things in time and space. A research conference on material matters, University of the Arts, Helsinki/ Design Museum, Helsinki, 18th-20th May 2001. (Unpublished)

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The Material Culture of the laptop

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Introduction

This paper is a continuation of an ongoing personal project, to explore and hopefully understand the relationships between people and computers. The basis for the choice of subject matter is clear – computers, as designed objects, can be seen (as Judy Attfield has said) as ‘things with attitude – created with a specific end in view – whether to fulfil a particular task, to make a statement, to objectify moral values, or to express individual or group identity, to denote status or demonstrate technological prowess, to exercise social control or to flaunt political power’.¹ The analysis of the subject matter is based on trying to understand the ‘unresolved relationship between the object and its meaning’² in which the subject is seen as the ‘objectification of social relations’.³

My previous research in this area⁴ has included an extensive analysis of archival material – trade catalogues, sales brochures and leaflets of office computers from the mid 1940s to the present day. This material (over 250 selected images) was organised in a structural manner to assess the distinct, physical forms of computers available at different times, and to create a chronological account of the changes in those forms over time as the computer developed from a room-sized behemoth to a desktop presence. This work concluded that the present form of the office computer had partly been dictated by technology and market forces, but more clearly by association with previously existing technologies used in the workplace, which were seen as either tools of production or tools of control.

A further piece of analysis of the above material⁵ took the evidence arising from this timeline of development of computing form and tried to assess why it was that computers had started out with a single form, rapidly diversified into a multitude of different forms, and then converged into the single, universally recognised form of the office PC. Here, the conclusions pointed to a situation where the connotative stylistic references of futurism had been removed as computing technology became more accepted, and where a sea change had occurred in the sexual stereotyping of office equipment and the gender relationships of people within the workplace. This led to a change in people’s relationship to the computer, as it arguably became, to all intents and purposes, an object without meaning.

The above conclusions, while relevant and informative, raised issues about material that was not included in the analysis, i.e. objects such as the laptop computer. Intrinsically the same object in terms of technology and performance, but one which at the same time, is a focus of a host of different and differing meanings and associations, the laptop has retained an air of status and excitement long lost by the office computer.

In a recent paper⁶ I explored the creation of what has fairly conclusively been identified as the 'first true laptop computer' – the 'Compass' computer produced by GRiD Systems Ltd. in 1980⁷. As an interesting case study, this showed the complexity of the design process itself and the nature of the inclusive teamwork and connections between a variety of bodies necessary to translate such a vision into reality. While the subject of this case study was discussed in terms of being, in many respects, an example of technological determinism at work, it was framed within a larger developmental process of design, or the social construction of technology, in which a long history of desire for portable computing is clearly evident. Here, I would like to briefly describe the historical development of the laptop, and then explore this history of desire by examining the imagery associated with its development.

Developing the Dream

Portable Data Terminals

In truth, early attempts at portable computers were no more than dumb terminals having no computing power of their own, which could be connected to a telephone by an acoustic coupler and transmit sales figures and orders for travelling sales executives [Fig 1].

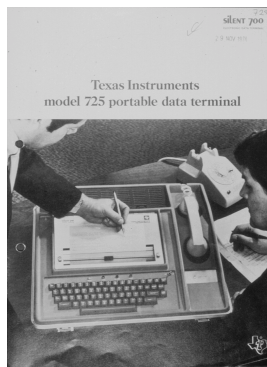


Fig. 1 Texas Instruments 'Silent 725', 1974

Although these units could send written messages (just as email today) it was actually illegal to do so, as the Post, Telephone and Telegraph Administration (PTT) had a monopoly on plain language data transmission. The lack of any suitable display technology and the need for 'hard copy' information meant that the technical drive behind these items was printing capability. Silent thermal printers built into the terminals became a high priority, and ousted noisy mechanical Teletype printers.

Portable Data Terminals remained the only forms of portable computing for the next five years.

Portable Memory Terminals

With the development of reasonably priced, durable memory devices a significant step forward in portable computing was made. The Texas Instruments '765 Portable Memory Terminal' of 1977 was aimed directly at the travelling salesman, and included 20K of solid-state bubble memory to enable editing of around four pages of stored data before transmission over the telephone [Fig 2]. Truly portable computing - with more memory and display screens instead of only hard copy output - was still a few years away.



Fig. 2 Texas Instruments 'Silent 765', 1977

Transportable Computers

'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".⁸ Osborne formed his computer company in 1980, stating "I wanted to make something people could really use. I knew that people would be very happy to move a computer from one desk to another without getting a hernia, or without having pieces falling all over the place, having to unplug everything and plug it up again."⁹

Osborne's specifications for the 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 [Fig 3]:



Fig. 3 Osborne 1, 1981

"Early portable computers were brutes: typical of them was the Osborne 1, a 13kg machine [in] a box the size of a small suitcase".¹⁰ Others described it as being "as portable as a suitcase full of bricks"¹¹ and Osborne himself estimated "that at least 80% of its portables never left the office"¹². 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!"¹³

It was a hugely successful machine: Osborne became "one of the fastest growing companies in the short history of Silicon Valley"¹⁴ earning up to 100 million dollars a year and selling over 100,000 computers, before folding just as quickly in 1983.

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. Compaq, DOT, Fox, Hyperion, IBM, ITCS, Jonos, Kaypro, Miracle, Philips, Scorpion, Televideo, Zita, Zorba and other companies all produced similar mains powered products, and the Osborne 1 was perceived at the time as "the archetypal transportable"¹⁵ and represented the accepted form of

serious portable computing. Even when the Osborne 1 became obsolete because of its dated operating system, the same form continued with the marginally smaller and lighter IBM-compatible Compaq.

Although some of these computers (including the Osborne) were later available with optional battery packs, a suitable source of battery power remained the stumbling block for portable computers.

Battery Powered Portables

The problem of discussing 'firsts' in historical terms is fraught with difficulty, especially when the object is a complex one consisting of a number of components, and which is subject to a number of incremental developmental changes. Judging from the number of different computers that have been hailed as 'the first laptop' (particularly by their creators¹⁶) [Fig. 4] the accolade of designing this particular first would seem to be an important one.



Fig. 4 Husky, 1979

When battery driven computers did appear in the early 1980s they were small and light, but had more in common with large hand-held calculators than with 'real' computers. 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"¹⁷] 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.¹⁸

Taking these examples as "the latest step forward"¹⁹ the technical innovations embodied in the contemporary 'Compass' computer by GRiD Systems seem all the more impressive. This computer [Fig. 5] brought together the very latest and emerging technologies in bubble memory, flat screen displays, complex magnesium casting and rechargeable batteries to create a product which was a fraction of the size and weight of any of its competitors, and used the 'clamshell' form now standard for laptops today.



Fig. 5 GRiD's 'Compass', 1980

Selling the Dream



Fig. 6 Transdata '305', 1972

The appearance of the portable data terminals as new technology is reflected in the nature of the adverts and brochures featuring them [Fig. 6], 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 [Fig. 7] – the freedom of movement, cutting edge technology, and presumably an associated high price.



Fig. 7 Texas Instruments 'Silent 700', 1972

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'²⁰ 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'.²¹

The other mode of representation identified by the same authors, which is being employed here, is one of 'integration' in which the objects serve to 'represent dimensions of similarity between the owner and others'.²² The mode of transport 'symbolically expresses the integration of the owner with his or her social context'.²³ 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'²⁴. 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'.²⁵ 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'²⁶. 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.

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 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.

The type of adverts and brochures described above continued throughout the 1980s, until such a time that the laptop as a 'sign' could be read and understood by all. 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 its associated status, which has become a 'given', and the way is left open to discuss the 'power' of one particular laptop over another [Fig. 8].



Fig 8 Acernote, 1997

Where these brochures do contain images of the product 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 [Fig. 9].



Fig. 9 Toshiba Notebook, 1997



Fig. 10 Sharp PC9000, 1997

There is still an element of status in as much as anyone in what is patently a ‘work’ situation that is not ‘tied to a desk’ and 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. [Fig. 10] But 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.

Constructed ‘realities’

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 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. 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."²⁹

The designer of GRiD's stunning technological leap, the 1980 'Compass' computer says, "the design was aimed at trying to make sure it was very prestigious and elegant with the executive in mind."³⁰ In his view, John Ellenby [the founder of GRiD Systems] 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 dollars, The GRiD was more than double the cost of an equivalent desktop machine).

However, when the product was launched GRiD's marketing people were disappointed about the small number of people who took it up. "The price was so high, and it was too early for it to be generally acceptable. So it became very much a niche thing".³¹ 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 rugged design specification meant the unit was very attractive to the military for use in the field, and a large number of specifically adapted computers were sold to the American forces. It's robustness also attracted the attention of NASA, and GRiD computers were screwed to the bulkheads in space shuttles where the graphical display showed astronauts where they were in relation to the ground when in orbit. A number were also purchased for use on the president's 'Airforce One' aeroplanes, further enhancing the product's acknowledged 'iconic' status.³²

Ellenby believes the GRiD computer was "about four years ahead of its time – too advanced for many people. The venture capitalists said, 'managers at the time did not use computers', but 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."³³

The laptop now

The original research I alluded to at the start of this paper, which concentrated almost solely on the computer in the workplace, nevertheless identified that home

computing had come from a very different background. Where the office computer developed from mainframes built originally for military purposes and appropriated for the business requirements of dealing with large amounts of numerical data, the home computer had grown from the self-build kits of enthusiasts, becoming an 'informal' artefact connected to the domestic television and used largely for playing games. The two developmental trajectories of office and home computers coincided with the introduction of the Apple II computer and the 'VisiCalc' software package written specifically for it in 1979. Since that time, the home computer and the office computer have been identical in form and inextricably linked in terms of technological development. It was not until the launch of the Apple iMac in 1999 that a serious computer was specifically aimed once more at the domestic market to take advantage of the growing number of people using the Internet in a home environment. The impact of the iMac on the aesthetic design of computers in general (as well as other products) is noticeable, but while such changes may be the result of an attempt to untangle the increasingly blurred distinctions between work and leisure, and the home and the office, we are left with a series of products which appear to have no distinct or clear tie to either.



Fig. 11 Dell 'Inspiron', 2000



Fig. 12 Toshiba 'Satellite Pro', 2000

Examining current adverts for laptop computers can highlight this situation, where a series of mixed and confused messages are being delivered and received. Some, such as Dell [Fig. 11] 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' [Fig. 12], which is backed by copy reading 'for mobile business users'.

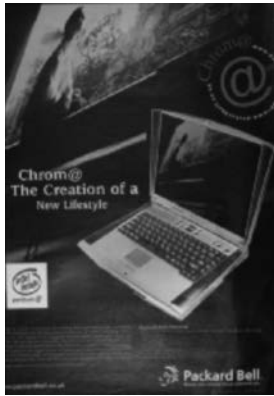


Fig. 13 Packard Bell 'Chrom@', 2000 Fig. 14 Apple Titanium Powerbook G4, 2001

Packard Bell [Fig.13], who have 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.

The advert for Apple's latest creation, the Titanium Powerbook G4, is devoid of context altogether, and shows the product in almost complete isolation [Fig. 14] - 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 the only real competition, bears a colourful picture of 'the road ahead'.

Conclusions

I mentioned earlier that it is important to remember that the information we receive from these advertisements has to be considered as a constructed reality only and that it in no way reflected the true nature of the situation. The difference between the so called 'clear' messages being sent out by both Transdata and GRiD Systems in the design of their literature and in the design of the products themselves, and the actual consumption of the technology in the marketplace is marked, and serves as a reminder that such conclusions cannot reliably be drawn. 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 more research in the area of interviewing manufacturers and consumers needing to be done.

It is unclear exactly where the laptop resides in our culture at this present moment. As an inherently mobile piece of technology, it moves 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 like a briefcase it is no longer an object that is gendered in any way. Perhaps the current location of the laptop is best described by the tagline in this recent advert for the HP Omnibook [Fig. 15], which alludes to the fact the laptop is an object which has clearly lost its place: 'What you choose to do with it, is up to you'.

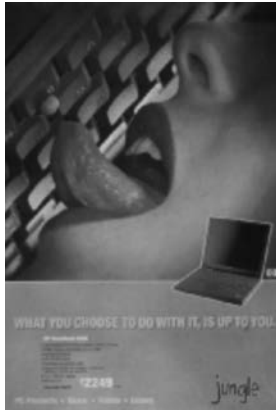


Fig. 15, HP Omnibook, 2000

¹ Attfield, J. (2000) *Wild Things*, Oxford, Berg, pg. 12

² Ibid. pg. 15

³ Ibid. pg. 29

⁴ Atkinson, P. (1998) 'Computer Memories: The History of Computer Form', *History and Technology*, Vol. 15, Nos. 1&2, 89-120

⁵ Atkinson, P. (2000) 'The (In)Difference Engine: Explaining the disappearance of diversity in the design of the personal computer', *Journal of Design History*, Vol. 13, No.1, 59-72

⁶ Atkinson, P 'Laptop~ Design or Desire?' in *Design, Designum, Desire*, the proceedings of the 4th European Academy of Design Conference, Aveiro, Portugal, April 2001.

⁷ For the purposes of this research, the definition of portable computing is an important one, especially with regard to the claim in creating the 'first' laptop computer. The term 'portable computer' is taken here to describe 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 typing input, and a screen suitable for displaying a reasonable amount of text. The term laptop defines a similar specification, with the added dimension of size, being able to be supported comfortably and easily on a seated person's lap.

⁸ Slater, R (1987) *Portraits in Silicon*, Massachusetts: MIT Press, pg. 323

⁹ Ibid., pg. 325

¹⁰ Aartsen, M, 'Portable Computers, a buyer's guide', in *Design*, March (1984), pg. 48

¹¹ Stobie, I, 'They all laughed, but...', in *Practical Computing*, January (1983), pg. 108

¹² Aartsen, M, Op. Cit., pg. 48

¹³ Slater R, Op. Cit., pg. 326

¹⁴ Ibid., pg. 323

¹⁵ Aartsen, M, Op. Cit., pg. 50

¹⁶ Westly, J, the founder of 'Husky Computers' claims his battery powered 'Husky' 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 (2001) The Obsolete Computer Museum [online], Available at: <URL: <http://www.obsoletecomputermuseum.org>> [Accessed 10 February 2001]

¹⁷ Carlson, T (2001) The Obsolete Computer Museum [online], Op. Cit.

¹⁸ Stobie, I, 'Tandy 100', in *Practical Computing*, August (1983), 96-98; and Stobie, I, 'Olivetti M-10', in *Practical Computing*, December (1983), pp. 88-89

¹⁹ Stobie, I, August (1983), Op. Cit., pg. 98

²⁰ Csikszentmihalyi, M & Rochberg-Halton, E. (1981) *The meanings of things*, Cambridge, Cambridge University Press, pg. 29

²¹ Ibid. pg. 38

²² Ibid. pg. 38

²³ Ibid. pg. 39

²⁴ Williamson, J. (1978) *Decoding Advertisements*, London, Marion Boyars, pg. 47

²⁵ Ibid.

²⁶ Ibid.

²⁷ Ibid. pg. 31

²⁸ Ibid. pg. 35

²⁹ Interview with John Neale conducted by email, response dated 28 January 2001

³⁰ Interview with Bill Moggridge at the London offices of IDEO, 15 June 2000.

³¹ Ibid.

³² The GRiD 'Compass' computer has been placed in the MoMA permanent design collection; dubbed "the 'Porsche' of computers" by *Business Week* ("The Compass Computer: The Design Challenges Behind the Innovation", Op. Cit., 7); and in 1982, the American Industrial Design Society gave it the only award for Design Excellence issued that year (as opposed to the normal 60 or so awards they usually bestow) for "substantially advancing the state of the art of computer design". (Ibid., 4)

³³ Interview with John Ellenby conducted over the telephone, 9 February 2001.