

Interrupting the Festivities: Digitising HAL's Memory

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The potentials and problems of the digital and analogue environments need to be oriented into critical theories of information, knowledge, entertainment, pleasure and education. David Lowenthal (1985), just fifteen years ago, argued that the past is a foreign country. Increasingly though, it is the present that is becoming a tourist destination. The most significant analytical task for contemporary critics is to disrupt the dual ideologies punctuating the now: inevitable technological change and progress (1). Only then, may theorists ponder the future of a digitised past. This paper investigates how digitisation challenges not only knowledge workers

such as archivists and librarians, but raises the dilemma of obsolescence and the role of nostalgia in policy decisions. Disempowered groups, denied a voice and role in the analogue history of the twentieth century, will have inequalities reified through the digital archiving of contemporary life. Notions of preservation, cataloguing and the structure of knowledge will be considered in the new/old intellectual environment. The final part of the paper investigates the formation of a virtual middle class, arguing that digitisation is actually and actively reinforcing the social exclusions of the analogue world.

Sorry to interrupt the festivities Dave, but we have a problem.

HAL 9000, 2001: A Space Odyssey

The Festivities

The potentials and problems of the digital and analogue environments need to be oriented into critical theories of information, knowledge, entertainment, pleasure and education. The ideologies of the analogue, invoking constant, subtle movement and continuity, are defined against the discontinuous, binary structure of digitisation. The two states – on/off – are triggered by the profound simplicity of the binary-based computer language: 0 and 1. Digitisation may appear as a neo-modernist manifestation of scientific discourse, but this New World order has major advantages. Digital information is flexible, networkable and dense. While seeming to solve myriad problems, the extent of digitisation in the contemporary environment can be over-stated. It

will be several years, and probably a decade, before videodisc technology is able to surpass the convenience and economy of analogue videotapes. As Tony Feldman has suggested, “while the future may well belong to thoroughbred digital systems, right now it is a question of satisfying today’s need with today’s technology” (Feldman 1997: 38) The transformation of analogue media into bits and bytes often appears as a commonsensical, inevitable formation. In response, libraries, offices, archives and educational establishments are altering their budget and training structures.

The institutions that store, trade or teach information are being moulded by digitisation generally, and the Internet specifically. While the binary language of computer-mediated communication allows a smooth transference of data, meaning systems are not exchanged as easily. Classifying, organising and preserving information make it *useful*. A more significant query explores *who* is using this material and *why*. (2) The Internet is

like a rapier that slices through the political boundaries of the nation state. While data can move through space, it is also marketed to a wider audience. The PointCast Network (PCN) is a personalised delivery of Web-based information. While it is a 'free' product, the display is cluttered with what Jim Seymour describes as "ugly, intrusive ads, which are ever-present parts of the display" (Seymour 1999). This 'personalised' material confines the reader's sphere of interest in a precise manner. Narrowcasting actively blocks knowledge being extended, challenged or critiqued.

The PCN is one mode of information management for the digital environment. As a system, it actively blocks the range and depth of Internet resources. While the Internet is a social phenomenon, its uses are frequently reduced to e-mail and the most basic of search engines. Critical skills in information research and on-line communication are lacking. A socio-technical approach, such as that instigated through Social Informatics (1998), provides modes of thought and meaning for the challenges of digitalisation. Information is not useful until it is accessible. Libraries, archives and museums are sites dedicated to classifying, storing and preserving cultural materials. The Dewey Decimal Classification scheme and the Library of Congress subject headings are being used to classify web-based resources. However the English language dominates the directory system, and Cyberstacks (CYBERSTACKS 1999) are still 'stacked' through national allegiances. Nineteenth century modes of organising space and time are ordering the *World Wide Web*.

The problem

The uneven nature of web search engines increases the vulnerability of digital information. Archival procedures have been both late and irregular in their application. Bocher and Ihlenfeldt (1999) assert that 2500 new web sites are coming on-line every day. The difficulties and problems confronting librarians and archivists who wish to preserve digital information is revealed in the Australian government's PADI (Preserving Access to Digital Information) Site.

"Compared with an object in a museum that may lay undisturbed for years in a storeroom, or a book on a shelf, or even Egyptian hieroglyphics

carved on the wall of a tomb, digital information requires much more active maintenance. If we want access to digital information in the future, we must plan and act now" (PADI 1999c).

Much information, particularly in governmental and university settings, is currently being released only in a digital form. If this material is lost, then significant "documentary heritage" (PADI 1999c) will be absent from the historical record. The speed of digitisation means that the responsibility for preserving information, and the skills necessary to enact this process, is increasing the pressure facing information professionals. Major structural problems confront the archivist. Inadvertent destruction of, or tampering with, data is matched with little systematic documentation of change.

An even greater difficulty when preserving digital information is what to keep, and what to release to the ephemeral winds of cyberspace. 'Qualitative criteria' constructs an historical record that restates the ideologies of the powerful. Concerns with quality undermine the voices of the disempowered, displaced and decentred. Institutions will validate particular information over others. However the time frame by which this decision is being made in the digital environment is shortened. The media's instability through technological obsolescence (see Figure 1) adds a time imperative that is absent from other archival discussions (3). The scale of preservation is also far more encompassing. If a hypertext document is preserved, then the links should also be maintained to grant the interactivity, context and affectivity of the site (4). A digital document without hyperlinks, is like a musical recording without rhythm: it is not presenting the capacity of the medium.

A far more profound question is who has the responsibility for preserving digital information. While the Australian government site argues that "creators of digital objects have the initial and in some cases a continuing role in preserving access to them" (PADI 1999a), this is a naïve expectation. Without refreshing or migration of the data, digital information can only be displayed and used through hardware that is continually tumbling into obsolescence. Therefore, the creators/preservers of these texts would also need to establish a collection of archaic computer systems, to 'guarantee' the survival of documents created

For example, I still own my first laptop computer, bought in 1991. It is an Olivetti M316. It functions, although the battery no longer does. It has a 40MB hard drive, which is not large enough to install a current version of Windows 98, let alone the ability to use the Windows environment to prepare documents. That is probably quite fortunate, as the 'F' key does not work, and most of the letters on the keyboard have been scratched off through excessive use. There is no possibility or space for a modem connection. It does, however, have an expansion slot that is filled with the full-card for my Hewlett Packard flat-bed scanner of the same period. It only scans in black and white, and in enormous TIF files, rather than JPEG or GIF. I actually maintained this computer, existing alongside my Sharp PC-M200, until February this year, because I needed the scanning technology, and had not yet bought a scanner for my new computer. Once this hardware was bought, the Olivetti computer and scanner became redundant and was 'taken over' by my father, who is teaching himself to use computers through Winders 3.1 and Word 5. He is managing the technology very well, placing marked stickers over the keys without letters. The 'F' still is causing problems. Between my current computer and the Olivetti, I owned an X-Press 420. The hard drive on this computer had a 'melt down' in April 1998, and five of the keys – the F (there is a trend here), G, S, L and O, did not work. This computer was still 'living' in my house for the year after it was replaced. I would not throw it away, even though it could not even be switched on. My inability to dispose of it had nothing to do with sentiment. In fact, I had a profound hatred for this machine, triggered by the aforementioned 'stuck keys' and the timing of the meltdown – just as semester started for the year. Even though I felt this computer was the digital equivalent of Damien, son of Satan, I could not throw something that cost me \$5 570 into the weekly garbage collection. Thankfully (well sort of), I did not have to bring myself to dispose of this computer, and I gained my revenge on the digital nightmare. Burglars robbed my house last December. Quite wonderfully, they took the obsolete computer that will not even power up for them. I do not know for whom I feel more sorry: my old computer or the burglars who will have to cope with the damn thing. The point of this story is that these three computers chart the tale of my intellectual life over eight years. These machines contain documents and images that can only be read on this hardware, because of obsolete word processing and scanning programmes. If this 'problem' of obsolescence is magnified to a national – and then an international – level, it is clear that no library or governmental institution could store this range of technological support systems for digital data

Figure 1: A personal look at digital obsolescence.

on them. It is technological obsolescence that is the primary problem facing archivists.

Digital material is fragile. While migration allows the digital information to be transferred between hardware and software configurations, there are intellectual property rights and questions of copyright law (5), which result from this movement (6). The profound uncertainties derived from the preservation of digital documents are undermining the enormous potential that digitisation offers for disseminating data. Textual, numeric, pictorial, video, sound, multimedia and simulation will necessitate different preservation tactics. While the ASCII character sets (7) allow standardised character mapping, there are documents where these codes are not representative, such as those involving formulae or multiple languages. Once more, an (over)emphasis on Eng-

lish is serving to reduce the presence of other languages in the archived and preserved digital environment.

The consequences of digitisation are that the information industries and the professionals trained in them, hold enormous responsibilities. They are moulding and shaping the future of the past. While this process has always taken place in the analogue world, there were myriad alternative sites where ephemeral material was stored, such as the family home. Popular cultural information will suffer most from the 'blind spots' of digital archivists. While libraries rarely preserve the ephemera of a time, (8) many homes (including mine) preserve the 'trash' of a culture. A light sabre, toy dalek, Duran Duran posters and a talking Undertaker are all traces of past obsessions and fandoms. Passion evaporates, and interests

morph into new trends. Yet these objects remain in attics, under beds, in boxes and sheds throughout the world. Digital documents necessitate a larger project of preservation, with great financial (and spatial) commitments of technology, software and maintenance. Libraries rarely preserve the ephemera – the texture and light – of the analogue world. That task is left to popular cultural experts. The digital era reduces the number of fan-based archivists. Subsequently forfeited is the spectrum of interests and ideologies that construct the popular memory of a culture.

The tactility of popular cultural sources is already lacking from the historian's database of the post-war period. This absence will be exacerbated through digitisation. Even a scanned colour image of a talking Teletubbie is not an adequate – or perhaps even meaningful – representation of the three-dimensional object. As the Australian Society of Archivists has recorded, "archivists ensure that records which have value as authentic evidence of administrative, corporate, cultural and intellectual activity are made, kept and used." (Australian Society of Archivists 1999) There are ethical questions invoked through the preservation of digital documents. Ephemeral material, by definition, is transitory. Digital ephemera are merely an enhancement of the principle.

Cultural value ensures the activation of a hegemonic discourse, which will decentre the entertainment, and pleasures of disempowered groups from digital sources. This is not only an ethical question, but also a political concern. The stresses on archivists are enormous: gaining the space and financial support for analogue-based preservation is difficult. Archives, as "one of a kind information sources," (Understanding and using archives 1999) are person or organisation specific. It means that the ephemera of popular culture will be lost unless organisations like Sony Music, Philips, Mushroom Records, Lucas Enterprises and the World Wrestling Federation actively archive their history. But, as Peter Lyman (1999) revealed, "as information loses its commercial values, it is unlikely that commercial rights-holders will subsidise its continued existence." Libraries, as institutions of the public sphere, have a role in furthering an informed citizenry. How this process will be maintained through a networked, digitised environment, where the disadvantaged

are further excluded and unconnected, remains a site of debate and discussion. Tony Barry, while a self-described "patchy seer", (Barry 1999) predicts the long-term survival of a hybrid library, of both paper and bytes (9). The library building, a symbol of public life and community-based culture, is also vulnerable in the "library ... without walls" project (Benton Foundation 1999). As public institutions, libraries provide a framework for the formation of social relationships. As Lyman has recognised, "the 'digital' library is still a metaphor, not yet a social institution" (Lyman 1999). Of greater interest and concern for organisations placing (too) much budgeting emphasis on the digital future, is information from the United States showing that former Internet users outnumber current users (10). While Universities, schools, libraries and archives place great time and finance into Internet literacies, the World Wide Web is unable to maintain long-term interest for those actually and actively utilising hypertext.

HAL's World

Digital awareness, while growing, does not counter the rhetoric of the Internet's egalitarian ethos. The phrase 'virtual communities' mobilises boundaries that hegemonically mask legal, physical, social, linguistic, religious and ethnic affiliations. Symbols can be disempowering or enabling, allowing some groups to express meaning, while disenfranchising others. Communities claim interpretative frameworks, and seek out surroundings that are filled with symbols in which they are literate. Those who are poor, old, young or a member of a minority, have few resources or iconographic databases within responsive environments. The ideology of a digital revolution makes possible the reproduction and dissemination of cultural symbols. Like the agrarian and industrial societies, the informatic age is determined through the primary commodity of exchange. This will leave communities with few resistive options in the increasingly capitalised and commodified information economy. As Nils Zurawski has suggested, "the value of the Internet as a means of resistance will have to be proven in the future" (Zurawski 1996). Access to the digital realm, and the development of literacies in the communication mode, is the most significant issue to address.

The new virtual middle classes are hegemonically dangerous to democracy because egalitarianism is the marinade of the Web. Feldman offers an off/back hand corrective to this pseudo-utopia.

The global reality is that 60 per cent of the world's population has never made a phone call and more than 50 per cent could not do so because of a lack of phone lines. So, while we glibly agree that the telephone is the most widely available form of network technology in the world, we should – in a small corner of our minds – remember the privileged position from which we make such judgements (Feldman 1997: 76).

Discussions of the massive potential bandwidth of cable over the telephone network are not tempered by social justice concerns, and only occupy a 'small corner of our minds.' Internet access is dominated by affluent employed men, under the age of thirty-five (Liff and Watt 1999). (11) Meanwhile, Patrice McDermott reported that only fifty percent of households in the United States headed by women with children possess a telephone (McDermott 1999). Virtual media is not homogeneous or evenly distributed through society. The information rich and poor is a new division of societal disadvantaged overlaying the old. Remarkably, fifty percent of Australian Capital Territory residents access the Internet (12). Yet studies of this technological permeation have not broken down the suburbs of Canberra to observe how access is dispersed through the city. Fyshwick, the industrialised, working class area of the Australian Capital Territory, would be distinct from 'comfortable' suburbs of Cook or Barton. Class is an often-neglected variable in theorising the users of computer-mediated communication. Those with access to networks, on-line fora and cable television are offset by those citizens who do not possess regular use of a telephone. Telecommunication firms in the United States for example, bypass minority areas. Frequently though, search engines can by-pass entire regions of the globe. Alastair Smith reported that Australia and New Zealand have a low Web Impact Factor (WIF) on worldwide databases (Smith 1999).

All identity is reliant on context and societal positioning. Political struggle is activated through differences in history and language. As Klaus-Dieter Lehmann has suggested, "increasingly vast bodies of knowledge are becoming inaccessible

to people with average educations" (Lehmann 1996). The changes to information, and the way it is communicated through digitisation, are fortifying already existing inequalities. The future of ephemera in the digital age is an under-represented discussion in the preservation discourse. Feldman predicted that "the future, therefore, is digital" (Feldman 1997: 38). This statement may be true, but that truth may cost us a popular memory of the past.

Once bits replace atoms, the recorded world becomes structured by digital codes. Only particular texts will be significant enough to store digitally. Archivists, librarians and academics are becoming pivotal arbiters of public value and taste. Samuel Florman stated that "in the digital age nothing need be lost; do we face the prospect of drowning in trivia as the generations succeed each other?" (Florman 1997) The trivia of academics may be the fodder (and pleasures) of everyday life. Digitised preservation, like analogue conservation, will never 'represent' plural paths through the past. There is always a limit to what is acceptable obsolescence. The loss of cultural texts through digitisation will further erode the status, role and place of disempowered groups.

HAL, in the 1968 film *2001: A Space Odyssey* interrupted the 'festivities' of progress and technophilia to warn of a problem. HAL's 'death' was a reflexive and pertinent commentary on the digital future of the popular cultural past.

Stop, Dave. I'm afraid. I'm afraid, Dave. Dave, my mind is going. I can feel it. I can feel it. My mind is going. There is no question about it. (2001 1968)

2001 has survived the transition from analogue to digital video. Yet HAL's fear has been realised, and it is worse than predicted. The mind of the analogue age is going, but the feeling, passion, humour and affectivity have already left us. There is a lesson there.

Notes

1. For example, Janet Collins, Michael Hammond and Jerry Wellington, in: *Teaching and learning with Multimedia*, (London: Routledge, 1997), stated that "the message is simple: we now have

- the technology to inform, entertain and educate. Miss it and you, your family and your school will be left behind," p. 3
2. Herb Brody described the Net as "an overstuffed, underorganised attic full of pictures and documents that vary wildly in value," in "Wired Science," URL: <http://www.techreview.com/articles/oct96/brody.html>. The interesting question is, whose values will predominate when the attic is being cleared and sorted?
 3. This problem is extended because the statutory provision of legal deposit, which obliges publishers to place copies of publications in the national library of the country in which the item is published, does not include CD-ROMs or software. For a discussion of this problem, see "PADI 1999b – What digital information should be preserved," URL: <http://www.nla.gov.au/padi/what.html>
 4. HyperText Markup Language, which allows the movement between different digital texts, grants integrity to digital documents. However, it is very difficult to preserve both the document and links. There is a movement in preservation circles to rely on an URN, rather than URL, system to locate a unique and permanent digital object. The URL can frequently change, but does grant a specific place and location of the site on the World Wide Web. The URN however, is designed as being independent of a particular temporal location. For a discussion of the repercussions of this transference for archivists, please refer to "Information objects in the digital landscape," URL: <http://lyra.rlg.org/Arch/TF/tfadi.objects.htm>
 5. Please refer to Patrick Fair and Michael Handler's assessment of the "Developments in Digital Copyright," URL: <http://www.csa.edu.au/special/online99/proceedings99/fair-handler.htm>. They problematise conceptualisations of authorship of electronic databases and the very serious – and confusing – issue of the intellectual property rights involved in collecting and citing information on the web.
 6. For a discussion of the "refreshing" and "migration" of digital items, please see "The challenge of archiving digital information," URL: <http://lyra.rlg.org/ArchTF/tfadi.challenge.htm>
 7. ASCII grants every punctuation, symbol and setter a universal standardised code. While there are no single codes for pictures, audio or video, there are different codes for representing them as numbers, such as JPEG and GIF.
 8. Murdoch University Library, in Perth, Western Australia, has a long-term teaching and research interest in popular culture and media studies. Therefore, a small space has been set aside for ephemera. This wonderful space is called the 'Q Room.' However budgetary constraints means that the enthusiasm for this project in the early and mid-1980s had to be displaced for other more 'serious' problems, like maintaining the unbroken run of important journal collections. To visit the Q Room now is a sad experience. It is still a rich source of popular culture, but the bulk of the collection is in boxes, ill-organised and uncatalogued. Qualitative criteria, fed by budget-cuts, are narrowing the representative nature of library preservation, even in the analogue archive. The ephemeral nature of digitised, fan-based netsites is far easier to lose.
 9. While reference books will rarely survive in paper, the novel will remain in a bound book form. Anne Lipow feared that "administrators believe the hype the search engines are a handy substitute for librarians." She highlights the problem for distant students and remote users of technology. "Serving the remote user: reference service in the digital environment," URL: <http://www.csu.edu.au/special/online99/proceedings99/200.htm>
 10. This remarkable finding was reported and discussed by Sally Wyatt of the University of East London at the 1999 London-based conference. A synopsis of her findings is found at "Virtual Society? The social science of electronic technologies," 1999, URL: <http://www.brunel.ac.uk/research/virtsoc/text/reports/socex2.htm>
 11. Sonia Liff and Peter Watt reported the repercussions of this narrow social range of usage in "How much public access is there to the Internet," 1999, URL: <http://www.brunel.ac.uk/research/virtsoc/text/reports/socex2.htm>
 12. A report on the Canberra Wired programme, the plan of the ACT Government, community and business organisations, to develop a strategy for the digital future, was discussed by Beverley Forner, "Globalisation and electronic communities," URL: <http://www.csu.edu.au/special/online99/proceedings99/102c.htm>

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