

?Nurslings of immortality?: Being human or being digital?

Philip Lee

Digital technology is radically transforming traditional concepts of historical and social memory with far-reaching consequences for self-awareness and identity. Now that anything can be digitised, including the human body, how will our understanding of ?past? and ?future? change? How will people cross the borders of their real and virtual worlds?

A few years ago, browsing in a second-hand book shop, I came across several volumes in faded covers stacked on a chair. They contained the printed photographs of army officers killed during the Great War of 1914-18, that unnecessary and largely unforgiven European conflict which killed 15 million people. The albums were a memorial to a particular class ? the mute reproach of gentlemen?s sons who lost their lives in the ?sucking mud? (Sassoon) of Flanders.

I was reminded of my find while reading a chapter in Chris Arthur?s *Irish Nocturnes*. The theme of ?*Ne Obliviscaris*? is loss of memory ? not amnesia or the calamitous effects of Alzheimer?s disease, but how each and every one of us will be forgotten by the world in which we live:

Our physical extinction is close-shadowed by a series of scarcely audible echoes of oblivion as, one by one, the pinprick glints of memory which may hold some likeness of us for a while gutter and go out (Arthur, 1999: 60).

The essay asks what survives of an Iron Age girl drowned collecting mussels on the sea-shore, of Tutankhamun, Shakespeare, Rembrandt. or Beethoven? Apart from fragments of cloth, gold artefacts, paintings, compositions, what survives of the person? Very little. Of course, the nearer the person is in time, the more there is that lasts. There are countless biographies and reminiscences of Beethoven, although no photographs. When Beethoven?s body was transferred from the cemetery at Währing to Vienna?s Central Cemetery in 1868, the Austrian composer Bruckner was among the last to gaze on his remains. Returning home he was overjoyed to discover that he might have inadvertently dropped his pince-nez inside the coffin before it was sealed (Johnson, 1998: 159).

Of Rembrandt, there is a magnificent series of self-portraits, whose surfaces bear the marks of his brush. Of Shakespeare, there remain the greatest plays in the English language, but not a trace of the man. Of Tutankhamun, on display in Cairo?s Museum of Antiquities, the empty shell that housed his soul, but nothing to tell us the timbre of his voice.

There is a genre of television programme today of the kind that involves ?meeting the ancestors?. By digging up the foundations of a monastery or by reconstructing someone?s face using forensic techniques, a shadowy light is thrown on the past. But ?time purges the particular, the individual, into the anonymity of the nameless mass? (Arthur, 1999: 63) and what is uncovered is often also unremarkable.

Until very recently the recording of history was always a political enterprise. Official histories are those that create and reinforce national identity, political and economic boundaries. Edward Gibbon described history as ?little more than the register of the crimes, follies, and misfortunes of mankind? (Gibbon, 1778) ? most often written from the point of view of the victor. Yet social history ran invisibly parallel to official history and it is here that new technologies increasingly offered the opportunity to record alternative lives and points of view.

Photography ? the poor man?s portrait

Until well into the 19th century having a portrait painted was the prerogative of the rich. The clients of Europe?s famous portrait painters ? Titian (1485-1576), Hals (1582-1666), Reynolds

(1723-92), Gainsborough (1727-88), Winterhalter (1805-73) ? were noble and/or rich. While Bruegel (1525-69) sought inspiration in Flemish peasants, and Rembrandt (1606-69) painted himself, his wife and civic dignitaries, the people who bought their paintings were cardinals, merchants and bankers. Generally speaking, paintings of poor people (except faces borrowed to add ?character? to frescoes or crowd scenes) are absent from history until the revolutions and Romanticism of the 19th century brought social awareness into vogue.

It was fortuitous that the rise of a more affluent middle class coincided with the development of photography. Frenchman Louis Daguerre (1789-1851) discovered how to produce photographic images on a copper plate coated with metallic silver sensitised to light by iodine vapour (the ?daguerrotype?). The process was sold to the French government in 1839, the same year that English physicist Fox Talbot (1800-77) perfected a system of making photographic prints on silver chloride paper. In 1841 Talbot patented the ?calotype?, the first process for photographic negatives from which prints could be made, and in 1844 published *Pencil of Nature*, the first book to be photographically illustrated.

The invention of photography transformed at a stroke how ordinary people were seen and how they saw themselves. The new medium was relatively cheap and professional photographers began to flourish. People did not have to be wealthy to have a ?portrait? photo taken and whole families could be photographed at one sitting. In the same way that explorers were ?discovering? unknown continents, Carlo Naya (1818-82) took his now famous series of photos of Venice; Francis Frith (1822-98) of Egypt, the Holy Land and Britain; Mathew Brady (1823-96) photographed the American Civil War; Roger Fenton (1819-69) stage-photographed the Crimean War; and Eugène Atget (1857-1927) began his monumental series of photos of urban and rural France. The ?social? and the lives of ordinary people became topics of fascination and could now be visualised.

The commercial development of photographic equipment swiftly followed and in 1888 the North American inventor and philanthropist George Eastman marketed the first Kodak box camera under the slogan ?You press the button ? we do the rest?. By the early 1890s untrained non-professional photographers had avidly seized upon the first medium of mass communication that was ?popular? in both its usage and its content. People were now able visually to be the subjects as well as the objects of social history.

Capturing sound

The first device that could record and reproduce sound was the ?phonograph?, built in 1877 by Thomas Alva Edison (1847-1931), the most prolific inventor since Leonardo da Vinci. (A year later Edison was photographed by Mathew Brady demonstrating his new machine.) Edison?s phonograph recorded sound on tin foil wrapped around a grooved metal cylinder. Other inventors worked with him to improve this design and in the 1890s the ?phonograph? was marketed as a dictation machine and for home entertainment.

Essentially this was the invention that first allowed posterity to hear the voices and sounds of an earlier age. In the 1890s the limitations of technology determined what could be recorded: brass instruments and loud sounds were preferred. By the turn of the century almost any sound could be recorded reasonably well. Recording companies, which had sprung up in the USA, Britain, France and Germany, found that music ? rather than the spoken voice ? was commercially attractive. They competed to market recordings of bands like that of John Philip Sousa (1854-1932) and opera singers like Enrico Caruso (1873-1921).

The initial success of sound recording was given a boost by the subsequent development of radio and film. Guglielmo Marconi (1874-1937) had sent Morse code by wireless telegraphy in 1895, but it was Reginald Fessenden (1866-1932), one-time chief chemist in Thomas Edison?s research laboratories, who on Christmas Eve 1906 succeeded in transmitting a short speech followed by phonograph music. A number of wireless operators on ships in the Atlantic, alerted in advance, heard the broadcast.

While Marconi was experimenting with wireless telegraphy in Italy, the indefatigable Thomas Edison was working on film, accidentally capturing 'Fred Ott's sneeze' as part of a publicity stunt on 7 January 1894. But most people credit the 'invention' of cinema to the Lumière brothers, who showed films of a steam train arriving at a station and workers leaving a Lyons factory to a paying public in Paris on 28 December 1895.

Radio expanded as a medium for news, drama, light entertainment, jazz, classical music, and advertising. Motion pictures started out as scenic shots of interesting locales (which evolved into documentaries), short newsworthy events (which evolved into newsreels - Pathé was founded in 1907), and filmed acts of famous performers like the American sharp-shooter Annie Oakley. The 'silent era' ran from the mid-1890s to the period 1928-35, when most film industries switched to production with sound, thus merging the two technologies.

For the first time in human history people could see and hear about contemporary events - about themselves as actors in history. They could be recorded aurally and visually, but more significantly they could record themselves. When magnetic tape was developed at the end of the 1940s, closely followed by video tape (developed in 1956 but only available domestically from 1969), tape recordings and home movies could be sent to distant relatives instead of letters. Reel-to-reel tapes were replaced by audio cassettes, home movies by video cassettes, and miniaturisation became the name of the game. People took communication literally into their own hands.

Television enters the home

In the mid-1920s, as radio and cinema seized the public imagination, scientists were experimenting with 'television', a term coined in 1907 by the magazine Scientific American. The newly formed British Broadcasting Corporation, which by charter controlled all broadcasting activities in Britain, was criticised for not supporting the experiments of the Scots scientist John Logie Baird. In 1929 it agreed to joint experimentation and evolved the prototype of a television receiver. Parallel developments in the USA resulted in a different system, involving electronic scanning, unveiled at the 1939 New York World's Fair when Franklin D. Roosevelt became the first US President to appear (briefly) on television.

World War II intervened and its military technology contributed to developments that enabled RCA in 1946 to construct new television sets and stations. Two years later, millions watched coverage of the Republican and Democratic parties' national conventions. The era of television had finally begun. Once again it proved the medium par excellence where ordinary people could see themselves in public life. The domestic and commonplace became the stuff of national television, with soap operas moving from radio to television and, after the early years, taking up social questions.

Television drama and documentaries provide a public space in which people encounter contemporary problems. More recently soap operas have tackled a range of social issues such as teenage pregnancy, divorce, euthanasia, homosexuality, etc. and the ubiquitous game show offers its five minutes of fame (and large sums of money) to anyone foolish enough to take part. Today's television increasingly caters to the preferences of the majority of ordinary people (sport, soap operas, game shows) where they see something like a reflection of themselves. That reflection can also be recorded and kept for posterity.

Digital reproduction

The first digital computers were developed in the USA in the 1940s. The rapid developments that followed concentrated on reduced size and increased speed and capacity. Today's computers use miniature integrated-circuit technology in conjunction with rapid-access memory. Computers are desk-top, lap-top, palm-top and will soon be 'embedded' in other technologies. They are connected by cable or infrared links to global communications systems, the Internet and 'cyberspace'. The next generation of computers is expected to begin using forms of 'artificial

intelligence?.

All earlier developments in sound and vision converged in digital technologies that evolved via the computer industries. Digital was quickly taken up for audio (compact discs were introduced by both the Philips and Sony companies in 1982) and for video (DVD ? digital video or digital versatile discs ? hold up to 26 times more information than a CD):

Today, the text of a painting in the Louvre, a song by the Spice Girls, an article in the Journal of Communication may be digitised for transmission, and summoned via website ?libraries? by anyone with a personal computer, modem and telephone line (or ISDN line ? Integrated Service for Digital Network)... Such are the possibilities in the ?Digital Age? that each viewer or listener ceases to be, as in the past, part of a recognisable audience (Watson and Hill, 2000: 89).

It is not only information that can be reproduced in digital form. People can be digitised too. The Human Genome Project is a world-wide research effort aimed at analysing the structure of human DNA and determining the location of our estimated 100,000 genes. The information generated by the project is expected to be the source book for biomedical science in the 21st century. It will help scientists to understand and eventually to treat many of the more than 4,000 genetic diseases that afflict humankind.

Begun formally in 1990, the project expects to complete the initial phase of its work by 2003. Important issues surrounding this research remain to be addressed. Is it ethical to ?tamper? with the human genome? Who should have access to genetic information and how will it be used? Who owns and controls genetic information? How does personal genetic information affect the individual and society?s perceptions of that individual? How will genetic tests be evaluated and regulated for accuracy?

These questions require urgent answers. The Human Genome Project is not about replicating human beings, but its discoveries are fundamentally related to human cloning, about which there are very grave ethical questions. Already a US cult, led by a former French sports journalist and which worships unidentified flying objects, has announced plans to clone a human being (The Guardian, 11 October 2000). The parents of a 10-month old girl who died as a result of a medical mistake are reportedly paying US\$ 500,000 for the procedure. US law only prevents federal funds from being used for human cloning and no test case has yet gone before the courts.

Preserving bodies

The body of English philosopher and economist Jeremy Bentham (1748-1832) sits in a glass-fronted cabinet in the foyer of University College, London. A video camera pointed at the cabinet updates images of him on the Internet every five minutes. The creator of the panopticon ? a prison in the form of a rotunda designed so that the guards could continually observe their inmates ? has been preserved both physically and digitally and is under constant surveillance himself.

In the USA, the Visible Human Project (VHP) has created complete, anatomically detailed, three-dimensional representations of both the male and female bodies. The first ?visible human? was Joseph Paul Jernigan, a 39-year-old Texan convicted of murder and executed by lethal injection in 1993. His body was frozen to minus 160 F and ?imaged? with the same magnetic resonance and computer technologies used in medical diagnosis. He was then sliced into 1,878 millimetre-thin sections which were photographed and digitised. By late 1994 Jernigan had been reincarnated as a 15-gigabyte database. One year later, the body of a 59-year-old woman from Maryland who died of a heart attack was given the same treatment. Her identity is unknown, but she too was reincarnated as a 40-gigabyte record. Both digital bodies can be accessed via the Internet.

The intention of the Visible Human Project was ?to produce a system of knowledge structures that will transparently link visual knowledge forms to symbolic knowledge formats such as the

name of body parts? (from a VHP fact sheet). At least one person was quick to see the artistic potential of this new technique. In 1996 Christian Möller installed 'The Virtual Backbone' at the Kunsthalle, Vienna. The 1,878 sliced images of Joseph Paul Jernigan were exhibited virtually so that his body, magnified by a factor of 3.5, appeared to be present in the gallery for visitors to view.

Little of the research that led to the Human Genome Project and the Visible Human Project could have been done without computers. The outcome of both projects will be a complete digital blueprint of a human being. Couple this with work being done on artificial intelligence - the science and engineering of making intelligent machines (computers that can solve problems and achieve goals in the world in the same way that humans can) - and it is a small leap of the imagination to arrive at a digital replica that has the exact physical and mental characteristics of a particular individual.

The changing nature of immortality

By the end of the 19th century there were photographs of my grandmother as a young girl. By the end of the 20th century there were recordings of her voice and a video of her sitting in the garden. A diary resurrects a few episodes in her life, but the rest is a blank. For the grandmothers of future generations, all that is about to change.

Before the 21st century comes to an end, it will be possible to fabricate a digital replica of any person and to invest him or her with a complete biological and social life-history. Like Princess Leah in Star Wars, they will be 'all talking, all dancing' holograms that can enter into dialogue about their life and perhaps even reproduce certain abilities (for example, playing chess or the piano). No soul - perhaps - but every other human attribute. How will this change our perception of human history and of the uniqueness of each human being? Psychologically, how will we confront the possibility of a digital eternity?

No longer constrained by the fetters of time, such 'nurslings of immortality' (Shelley) will inhabit an electronic time-capsule as virtual memories of the past. They only await digital disinterment. In his essay 'Ne Obliviscaris', Chris Arthur writes:

As mortal creatures we may impress an enormous pressure of remembrance upon the fabric of the mind's brief consciousness, but in the end everyone will stumble, spilling their carefully garnered cargo. Civilisation, if it means anything beyond the brute accumulation of wealth and power and expertise, must surely have within it some mechanisms to staunch this ever-seeping wound of forgetting with which we are all afflicted (Arthur, 1999: 64).

Perhaps that mechanism is with us already, although it carries a warning label. According to Greek mythology, Prometheus (ironically the name means 'Forethought') stole fire from the gods and gave it to mortals. Zeus' punishment was to chain him perpetually to a cliff where an eagle would tear daily at his liver. The legend recounts the power struggle between the old order and the new, between the despotism of Zeus and the compassion of Prometheus, whose gift of fire (together with skills like arithmetic and writing) was intended to free mortals from the tyrannies of ignorance and abuse of power. Yet there was a price to pay: with knowledge came responsibility.

Prometheus also 'caused men no longer to foresee their death' by planting 'firmly in their hearts blind hopefulness' (Aeschylus), but he was unable (perhaps unwilling) to reveal the secret of eternal life. With the help of digital technologies, is a modern Prometheus about to wrest the fire of immortality from the gods? If so, what punishment will ensue? And who will get their fingers burnt?

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?He will watch from dawn to gloom

The lake-reflected sun illumine

The yellow bees in the ivy bloom,

Nor heed, nor see, what things they be;

But from these create he can

Forms more real than living man,

Nurslings of immortality!?

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