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STATE LIBRARY OF NEW SOUTH WALES

NEWTECH 2

LASER : SUPER TOOL OF THE 80s

OFFICIAL OPENING OF LASER EXHIBITION

MITCHELL GALLERY, 19 JULY 1984

July 1984

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The Hon Justice MD Kirby CMG

Member of the Library Council of New South Wales

OF BREVITY, PARIS, HG WELLS & GOLDFINGER

Brevity is not a natural quality of Her Majesty's judges. I am warming to the task of opening ceremonies. I definitely regard this as a step up from book launching -- (the lowest form of public speaking) -- which seems to have been my fate in recent months.

A few days ago I was in Paris for a meeting of the OECD Working Party on Trans Border Data Flows. We were examining the way in which the remarkable technology of informatics (of which lasers are but a part) conspire to circumvent man-made frontiers and undermine legal sovereignty, economic policy and cultural diversity.

At the end of the meeting, whereas most of the delegates scurried to the Lido or the Folies Bergere, I sought my entertainment elsewhere. I made my way to Les Halles. There, near the Pompidou Centre is a small and special museum dedicated to laser art. I entered and for the first time saw laser at work. It was not exactly like Keats on first looking into Chapman's Homer. But here was literally a realm of gold. Beams of light recreating photographic images with an uncanny three-dimensional effect.

In his book The War of the Worlds published in 1898, the English author HG Wells described the way in which aliens from another planet destroyed our planet with their 'heat ray'. They used a beam of energy so powerful and hot that it destroyed everything it touched:

Suddenly there was a flash of light. It was sweeping round swiftly and steadily, this flaming death, this invisible inevitable sword of heat.

The early public knowledge of laser (which stands for light amplification by simulated emission of radiation) centred around the 'laser' ray gun. So it was in the James Bond spy thriller Goldfinger in the early 1960s. However, although lasers have in fact been used for target designation in military purposes and for art (as I have described) the other uses of the technology are much more important. They are illustrated in this exhibition. They include use in surgery. But it is in informatics — the transmission of information — that the greater potential of the laser lies.

THE LIBRARY, LASERS AND INFORMATION

And that is the concern and interest of the State Library of New South Wales. It is a principal provider of information to the public of this State. The Library Council is therefore critically interested in the potential of new information technology to enhance the supply of information to the citizens. The decision made by the government, and specifically by Mr Wran, to proceed with the new Library building adjacent to these galleries, evidences a strong commitment to the future of the State Library. In that future, books will increasingly be replaced by new technology. It is therefore vital that the State Library should be in the vanguard of these developments.

It is also essential that the Library should play a part in demystifying science and technology. It must promote public awareness, informed media discussion of costs and benefits of new technology. It must encourage public participation in government decisions. It must stimulate discussion and debate and allow the community to be fully conversant with technological change. These are some of the objectives listed in the National Technology Strategy document issued by Minister Barry Jones on Empire Day -- 24 May 1984. If Queen Victoria would not have approved, almost surely Prince Albert, with his German dedication to technology, would have.

The State Library's Innovative Technology Group was formed early in 1983. One of its roles is to monitor and evaluate new and emerging information technologies. It also performs a function in technology transfer — spreading knowledge on information technology to the public and private sectors of business and to the general public.

Before the development of the laser as a control beam of coherent light in the 1960s, the theory that light could carry information was well recognised. Now, optical storage of data promises to solve some of the previously intractable problems of information storage. These include, particularly, the problems requiring rapid access to large quantities of data. This exhibition seeks to distinguish between video disk and optical digital disk. It seeks to clarify the applications to which optical disk technology may be put. As I understand it, there is no real difference in the basic technology involved

in either technique. Only the purpose to which it is applied differs. 'Video disk' is aimed largely at the home video market. Apparently it has not yet had the commercial success that was expected against conventional magnetic tape video recording. Compact audio disk systems are currently being introduced in high quality home audio equipment. Optical digital storage technology is aimed more at information storage in general, particularly information of an archival or reference nature. It is of greater interest to a body such as the State Library in its internal professional uses. Video disks and audio compact disk systems are non-erasable. They require specialised facilities for recording. Optical digital storage systems offer 'read' and 'write' capabilities. The great advantage of optical digital storage is the very high information densities that can be achieved. Extremely large amounts of information can be stored on single disks.

The impact of fibre optic technology on modern communications cannot be over-stated. Fibre optic links between metropolitan telecommunications exchange are already a reality in Sydney. Long-distance links, as between Sydney and Melbourne, are under contemplation. The great advantage of fibre optics for telecommunications is the enormous capacity for transmitting information using the very high optical frequencies. The demand for high quality hard copy, associated with computer-based systems, has resulted in laser printing technology. Laser printers are now very much a commercial reality. For example, weather satellite pictures produced for television at Macquarie University are written by laser in a computer-controlled system developed at the University.

Although the artistic use of laser displayed in Paris and at this Exhibition is important, I am sufficiently Philistine to suggest that much more important are the industrial, administrative and surgical applications of laser. The purpose of this exhibition is to explore various ways in which the laser can be used -- video disks, optical digital disks, holograms and optical fibres. Laser is the tool that is making use of all these remarkable applications.

SOVEREIGNTY AND VARIETY

Having exhibited Philistine qualities, can I add a touch of Xenophobia whilst I am about it? I am informed by Professor Jim Piper, Professor of Physics at Macquarie University and a world expert on laser, that the medical applications of lasers are probably the fastest area of laser application internationally and the one in which Australia is making a most important contribution. At the risk of offending most of the exhibitors (something that they and I will bear with equal fortitude) I should observe that most, if not all, of the commercial systems on display here are the product of foreign research and foreign development.

It is essential that there should be a greater involvement within Australia in hightech development in the field of informatics generally (computers linked by telecommunications) and in laser technology in particular. I do not repeat the scandalously low Australian figures on research and development which put us at the bottom of the OECD table with Turkey and Portugal. If we are to survive in our region against the competition of Singapore, North Korea and Japan. If we are to maintain our living standards and if we are to take advantage of the opportunities presented to us, we must do better in hightech: whether in energy sciences, biological sciences or informatics. This point is vividly and repeatedly made on behalf of the Federal Government by Mr Barry Jones. It is recognised by the CSIRO in major shifts in its research investment towards biotechnology and informatics. Let us hope it is not a case of too little too late. The future is fuelled by science and technology and Australia must join the future.

This is not a travelogue or if it is I approach the end of it. But at another international conference in Rome two weeks ago for the Intergovernmental Bureau for Informatics, I wrote the final statement for the conference. It collects the concerns of the poor, developing countries about their perceived loss of sovereignty in worldwide information technology. Those countries expressed anxiety and puzzlement at the way in which new information technology and trans border flows of data will reduce the capacity of home governments to regulate the social consequences of informatics. But they also expressed concern that the rapid increases in data flows would destroy not just legal sovereignty but cultural identity, linguistic variety and local variation. If Australians, as anglophones of a sort, laugh at these concerns as the obsessions of French speaking nations, we should reflect upon the dominance we already see in our films, features, soap operas and even news broadcasts of the culture of North America. Let us hope that the global village is not a boring homogenised place but preserves national variety and individual idiosyncrasy.

Laser technology by its capacity to enhance massively the storage of data, to increase radically the speed of its retrieval and to step up exponentially the movement of data, including over great distances, will have a great impact on libraries, on information supply generally and on the lives of all of us.

I have much pleasure in declaring this exhibition on the supertool open.

It has been said that a judge should never believe anything in evidence unless it is repeated three times over and then only in a courtroom. We do not have a courtroom. But we have these magnificent galleries. To say things three times over I now call on the State Library's Innovative Technology Group. They will unravel for us the mysteries of laser. And then we may believe.