

"A case "study in adaptive museum presentation of medical Science"

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Conferencia CPCT 21-24/5/91

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Second International Meeting, Public Communication on Science and
Technology, Madrid, 21-24 May 1991

A CASE STUDY IN ADAPTIVE MUSEUM PRESENTATION OF MEDICAL SCIENCE

In order to examine museums as communicators of scientific knowledge we need to be aware of both how they operate now and the institutional history which colours their present day activities.

CURRENT ISSUES AFFECTING BRITISH MUSEUMS

In Britain, established museums are experiencing a period of profound, controversial and confusing states of change in relation to their purposes and operations. They now have a larger audience since increased mobility and changing uses of leisure time in the general population have promoted, for example, an increase of one third in visits to local authority and independent museums in the decade between 1979 and 1989. At the same time, there has been a reduction in the central government funds which support the research and educative objectives of museums. Increasingly, our museums must earn a significant part of their income from charges made at the door and from sales in museum shops. By great effort, the national museums doubled their earned income, as a proportion of their total income, in the two years between 1987 and 1989 (Cultural Trends No.8, 1991).

These factors have led to the rise of a new group of museum professionals which includes finance, marketing, public service and interpretation specialists. The newer professionals, and the changes in attitude which they bring with them, are not always assimilated comfortably into the traditional staff curatorial structure, and the institutional ethos, which previously existed. The consequent institutional stress occasionally bubbles over into the media so that it is not unusual for internal conflicts to be conducted uncomfortably in a very public arena.

Against this background of popularization, financial stringency and the difficulty of management for change, we also have many continuing academic and professional debates. One is about the political, ideological and aesthetic purposes of museums (McDonald, 1990). Another is about a perceived conflict between education and entertainment, an argument in which the notion of educating entertainingly seems to have been lost (Shortland, 1987; Griggs, 1984). A third is about the epistemological ramifications inherent in the unstable

representational nature of the museum object, an instability accentuated by the varying possibilities for its display (Saumarez Smith,1990).

Our science museums have been strongly affected by this varied catalogue of pressures. In addition, they have publicly been asked to take on a heightened profile. They are more and more likely to be perceived as tools capable of taking on the task of increasing the public understanding of science (Royal Society,1985).

Our science museums are willing to take on this role, since they have always had strong educative missions, but just how effective they can be is a matter open to conjecture. In England it has been possible, until quite recently, for school children to choose to cease studying the sciences at the age of fourteen. As a consequence, the general knowledge of, let alone the understanding of, many of the basic scientific concepts which form a framework for the acquisition of new scientific knowledge is woefully low (Durant,1989). Can an annual visit of a few hours in duration remedy this position? In addition, the catastrophic withdrawal of central government financial support for scientific research, and the failure of our industries to invest in technologies based on that research, has called into question the matter of the status of science in our society. This perception of science as a low status activity does not seem to affect public perceptions of the worth of scientific advance (Kenward,1989). However, it remains the case that adolescents and young people do not form a major segment of the science museum audience. At a time when they are forming predelictions for future professional and leisure interests the young ones are away somewhere else.

So we have a situation where our museum institutions are energetic and with a high public profile. However, there may be sufficient distracting internal and external factors affecting their future to disable them from making a concentrated commitment to communication at present.

SCIENCE MUSEUMS EXEMPLIFY THE SPECIAL CHARACTERISTICS OF MUSEUMS

In order to understand museums as a medium of communication, and hence to appreciate their strengths and weaknesses as communicators, we need to look closely at them to see what it is that sets them apart from other forms of popular communication such as newspapers, magazines and television programmes. Five central characteristics which impinge on the visitor experience are of interest : their focus on objects, their position as authoritative sources of information, their accepted media function, their tendency, however unconsciously, to subtly display ideological positions and, lastly, their mission, often embodied in trustee documents, to educate the public. Science museums embody, to a high degree, these central characteristics

of museums. As a consequence, they hold a special place in the pantheon of museums as detailed below.

Firstly, as observation has long held a prime place in the methods associated with scientific and medical practice, there is a special compatibility between the museological notion of the acquisition of knowledge through looking at objects and those museums which display scientific objects and artifacts. Nowadays this compatibility is down-played in science museums - curators devoted to the arts are more likely to promote the primacy of the object as a source of knowledge - but it does place science and medical museums at the heart of the museum enterprise.

Secondly, museums of science and medicine have direct subject matter links with practices associated with classifying the world in an authoritative manner in order to produce validated knowledge. This dimension is especially apparent in Natural History Museums where the development of taxonomy - the science of recognising, naming and classifying living and fossil species - has often been reflected in the displays. It is from this subject matter link that museums derive the authoritative status on which the claim to a pedagogical function is based. The links between classification, authoritative knowledge and pedagogy, which could be said to be at the heart of collections and curatorial practice, are more explicit in science and medical museums than in other types of museum.

Thirdly, perhaps because of the explicit role of observation and subject-matter authority inherent in science museums, science and medical museums appeal to a wide audience - they are not seen as places reserved for the cultured elite in the way that some art and history museums are. The demonstrable popularity of science museums indicates that museums can be considered as a valid medium for communication with the public.

Fourthly, the self-conscious endeavours of Western science to achieve mastery over nature has produced many artifacts for display. These vary from natural objects, which either demonstrate the fundamental characteristics of the physical world or the intellectual achievements of various branches of science, to instruments used in the acquisition of knowledge. We also have simulations or reconstructions of both nature and scientific and medical activities. These prized objects express victory, control and dominion over nature and reflect an ideology of progress. Many contemporary science museums hardly conceal the fact that they promote the value of science and the worth of scientific progress and this transparency puts them at the centre of contemporary debates on the social and ideological aspects of museums.

Lastly, science and medical museums, in their exemplification of advances, tend to associate experiment and a relaxed but concentrated tinkering and general exploration of ideas - words

which could describe the elusive activity 'play'- with the development and the acquisition of scientific knowledge. This simultaneously brings them into accord with modern psychological views of learning and places them at the forefront of current debates on approaches to the public. Nowhere is this association of play with the getting of knowledge more obvious than in the trend to introduce interactivity into thematic science and medical exhibitions and in the proliferation of hands-on science centres. Such centres are very popular and successful - at least ten have been established in Britain in the past five years.

These five 'consumer' characteristics of museums - their focus on objects, their position as authoritative sources of knowledge, their media function, their inherent tendency to display ideological positions and their mission to educate the public - do not interplay with equal strength now, nor have they done so in the past. It is the history of that interplay which is of interest if we wish to pin down the evolving, present-day form of science museum communications.

THE HISTORICAL DEVELOPMENT OF THE COMMUNICATIVE ROLE OF SCIENCE MUSEUMS

We have gone some way towards developing historical concepts of other forms of media which help in understanding how to perceive and use them. Modern day tabloid newspapers have an ancestry based on the broadsheets of past centuries which helps define their ephemeral nature. Also, it has been demonstrated that the ancient oral narrative form applies to the construction of modern day science programmes on television (Silverstone, 1984). Comparatively, very little has been written about the communicative history of science and medical museums. We need to look at the origins of museums, and the history of their development over the past two hundred years, to form a clearer idea of how they function as media today.

Looking back at science museums can be difficult because they can appear to be both young and old at the same time. Most were established within the past one hundred and fifty years so they are relatively young public venues. On the other hand, as exhibitions can appear, at times, to endure indefinitely, science museums can also appear as old, out-of-date places. In large national museums it is not unusual to find that the museum of the 1990's also houses the museums of the 1940's or the nineteenth century with each element demonstrating the communicative priority of its time. This 'stratification' occurs because there have been four stages in the development of science museums and the larger museum buildings have housed at least three of them.

The four stages I refer to can be thought of as an ancestral form followed by three generations. My classification differs slightly from that of Friedman (1989). Not all science museums are third generation. Some, as I have indicated, are mixed

generation hybrids while others stick firmly in the generation of their establishment. The museum endeavour embarked upon by Henry Wellcome at the turn of this century happens to illustrate the four stages in science museum development with particular clarity. In this case adaptation to the requirements of the newest generation has always involved a separate diversification which has preserved the best of the previous generation's presentation intact.

THE COLLECTIONS OF HENRY WELLCOME AND HIS TRUSTEES

Henry Wellcome and Silas Burroughs founded the pharmaceutical firm Burroughs Wellcome in London in 1880. Silas Burroughs died fifteen years later in 1895 and from then on, till his death in 1936, full control of the prosperous company passed to Henry Wellcome. On his death, the Wellcome Trust, which is the largest non-governmental, general medical research grant-awarding body in Britain, became the sole shareholder in the Burroughs Wellcome enterprise which by then was known as the Wellcome Foundation Ltd. They also became administrators of his collections.

Throughout his life, but especially in his last forty years, Henry Wellcome was a great collector of items related to man's medical past. His collecting activity was all embracing rather than selective and his motivating purpose was educational rather than aesthetic. A guiding principle was that 'the study of the roots and foundation of things greatly assists research and facilitates discovery and invention'. When he died it was found that he had amassed more than one and a half million items (Turner, 1980).

ANCESTRAL FORM MUSEUMS

By the time that he was twenty seven years old Henry Wellcome had collected sufficient curiosities to put on a well received display for physicians at the 1880 American Medical Convention. The next year he moved to London and there is a record of his having removed his infant collection, which he called his museum, from America and installed it in his London residence.

At this stage, Wellcome's collection could be said to represent the ancestral museum form - the Cabinet of Curiosities. These small rooms and galleries in private houses were commonly created by European men of wealth in the seventeenth and eighteenth centuries. They housed all kinds of interesting rarities including natural history items such as jars of preserved specimens, shells and fossils, along with instruments related to optics, Newtonian physics, mechanics and electricity, coin collections, paintings, sculptures and antiquities of various kinds. The collections were displayed in especially built furniture so that they could be shown for the pleasure of close friends and important guests. Two famous English cabinets, those of John Tradescant and Sir Hans Sloane were to form the basis of,

respectively, the Ashmolean Museum in Oxford and the British Museum in London.

The essence of the 'ancestor museum' form lay in a personal style which was derived from the acquisitive drive of an individual who retained the freedom to alter the display. Their prime 'consumer' characteristic was their connoisseur focus on objects. In pre-revolutionary France the amassing of such collections of specimens and artifacts came to be seen as a tangible expression of an encyclopaedic world-view (Hill, 1986). This view would have appealed to Henry Wellcome as soon after his move to London he was to start the expansion of his collection for a never-to-be-realized Museum of Man. The elements of a Cabinet of Curiosities collection can be seen to this day dispersed in various executive rooms at the Wellcome Trust.

FIRST GENERATION SCIENCE MUSEUMS

The first generation science museums were derived from subject matter breakdowns of Cabinet of Curiosities collections. The science museums among them include the great natural history museums and those devoted to collections of instruments used in scientific research. The British Museum was founded in 1753 and its great natural history section became a distinct natural history museum in its own right in 1881. The Musee Nationale d'Histoire Naturelle was established in Paris in 1793 while the Academy of Natural Sciences was founded in Philadelphia in 1812.

The first generation science museums had strong affiliations with academic disciplines in the universities. Many universities still have their own museums today while many public foundations have become world renowned scientific research institutions. The staff in these museums were given titles parallel to those in the universities : curators were given life-time tenure just as professors were, there were associate and assistant curators and any lower ranked staff, such as educators or designers, were hired. This staff split accentuated the private activity of research in contrast with the public activity of exhibitions and education - a split which still exists in many museums of this type today (Friedman, 1989). Their primary goal was to contribute to scientific knowledge although public education was usually stated as a twin aim in trustee documents.

Throughout the nineteenth century, and well into our own, the exhibitions shown to the public in such museums were the research collections put out as 'open storage'. The exhibitions were prepared by curators and were usually object-rich 'three dimensional textbook' presentations of deep interest to other curators. The curator would select the items for display, write the labels and hand the lot over to a designer to arrange in glass cases. Sometimes very beautiful dioramas were made, especially at the turn of this century, and these were much more sympathetic to the needs of a public largely untutored in

science. In times past, and today, when education staff were employed in the first generation museums they were there to look after visitors and school children and had no influence at all on the selection and development of exhibitions. The chief 'consumer' characteristic of such museums were object saturation and authoritative information and, if there were permanent education staff, verbal interpretation of displays by staff experts.

A second stage in the development of first generation museums has taken place quite recently. In the late nineteen sixties and seventies museum staff became increasingly uncomfortable about their neglect in failing to present exhibitions which were comprehensible and enlightening to the public - they were failing in one of the obligations placed on them at their foundation. Gradually a new approach to the visiting public was hammered out with exhibitions which would involve the visitor with carefully structured information and engaging displays with which they could interact. As this enterprise was somewhat revolutionary, new professionals came on the scene - interpreters to break down and design information formats and the museum evaluator whose work was confined to visitor and exhibition description.

Much of the foundation work in the field of educational exhibitions was done in America, especially the evaluation element, but the first and most influential exhibition in the field was the Hall of Human Biology which opened at the Natural History Museum in London in 1977. The revolution in exhibition presentation has displaced the curator as the initiator of exhibitions and recast him or her as a subject matter expert - a process which was not painlessly accomplished. The educational function of museums came to the fore while the research function, while still very vigorous, slipped further out of public view. For the first time, it became possible to say that science exhibitions were a media for communication with the public. The new orientation in the museums' approach to the public heralded the development and establishment of the third generation of science museums.

HENRY WELLCOME'S FIRST GENERATION MUSEUM

In 1896 Henry Wellcome began to employ staff to acquire objects and to research into the history of medicine. He had conceived the grand project of the creation of a Museum of Man. The museum was to have archives of all kinds of material for scholarly research. It was also to contain objects of all sorts so that exhibitions on the history of man and his search to maintain health could be displayed to a wider public.

Since conservation, cataloging and display took second place to acquisition, the proposed museum was never fully opened to the public in the form that he would have liked during Wellcome's lifetime. The museum had its public premiere as an

Historical Medical Exhibition in his museum building in Wigmore Street, London, at the time of the International Medical Congress in 1913. War curtailed activities but by the 1920's the museum was opened for a series of congresses, for lectures and meetings and for visits by distinguished people. In 1932 the Historical Medical Museum was given superior accommodation in the newly constructed Wellcome building in Euston Road, London. In 1936 the exhibitions were still in the process of a re-ordering and as Wellcome died that year he, unfortunately, never saw his collection on full public display.

The Wellcome Trustees inherited a vast collection of largely uncataloged material and the next twenty years were to be spent trying to bring order to the material. The Wellcome Historical Medical Museum was transferred to Portman Square in 1948 and the Trustees began to contemplate the difficult problem of finding a suitable home for it. By 1950 it had been decided to limit the collection to specifically medical material and many anthropological and ethnographical objects were given to other established museums. The slimmed down museum, now known as the Wellcome Medical History Museum, returned to Euston Road in 1954 and exhibitions for the public were established. In 1965, an exhibition on Medicine in the time of Shakespeare's England attracted 18,000 visitors.

In 1972 it was decided to transfer the Wellcome Medical History Museum, which was still largely in store, to one of the national museums. The Trustees wished to ensure the cataloging of the collection and to fulfill Henry Wellcome's wish that the public should be able to learn from and enjoy a permanent display of a selection of objects related to medical science.

The decision to pass the collection to the Science Museum was announced in 1976. The first gallery there was opened to the public in 1981. The exhibition is devoted to the evolution of modern medicine and it contains beautiful dioramas and reconstructions of rooms devoted to medical care and treatment. A second gallery, containing myriad glass cases full of fascinating objects and a large section devoted to medical advances from the 1800's to today, was opened soon after. The permanent loan is known as the Wellcome Museum of Medical History. Henry Wellcome's first generation museum had at last found a home where it has received popular acclaim ever since.

SECOND GENERATION SCIENCE MUSEUMS

The second generation of science museums were founded as fully functional public institutions. They are essentially science and industry museums. Preservation of older collections was not their concern since they were established to meet the practical needs of industry. The first of the industrial museums was the Conservatoire des Arts et Metiers which was established in Paris in 1794. The collections were used as teaching aids to train

craftsmen and designers. America followed with the foundation of the Franklin Institute in 1824. The main objectives of such museums were training, collection, conservation and research (Friedman,1989). The chief 'consumer' characteristics of the science and technology museums were their status as authoritative sources of information and their promotion of the world of work and scientific advance.

The second stage of the history of the science-technology museums, in Europe and America, was influenced by the great spate of wildly successful, temporary, public exhibitions and fairs which occurred in the period between 1850 and the second world war. These exhibitions and trade fairs contained a heady mix of entertainment, with fun-fairs and the like, and education supported by many demonstrations of machinery and edifying displays (Greenhalgh,1990).

At the beginning of the twentieth century the ideas of the training-orientated, serious technology museums and the popular industrial expositions were fused in the establishment of our familiar science and technology museums - institutions such as the Deutsches Museum in Munich, the Museum of Science and Industry in Chicago and the Science Museum in London. As the collections in these museums had grown, they had long ago adopted the professional staff structure of the first generation museums. The curators were devoted to the study of the history of areas of scientific advance and technological progress. As a result, some of their exhibitions took on the appearance of those in first generation museums but they were still, and are today, interspersed with pieces of working machinery. These mature first generation museums retained the collections of touchable and operational exhibits of the technology museums, and their research into the history of science status, but traded the training element of their function for that of mass education - with a built-in hands-on element in the communicative approach. The chief 'consumer' characteristics became public education and the depiction of the progress of science.

WELLCOME'S SECOND GENERATION MUSEUM

Henry Wellcome supported the establishment of a second generation medical science museum which remained in the pure first stage form. In 1901 he financed a medical laboratory in the Sudan at which pioneer work on tropical medicine and hygiene was carried out. In 1912 its director, Andrew Balfour, returned to London to direct the new Wellcome Bureau of Scientific Research where he established a museum of specimens and illustrative material on tropical diseases as a part of the Bureau. By 1919 the Wellcome Museum of Tropical Medicine, which was later to become known as the Wellcome Museum of Medical Science, had become a teaching and training resource which has been in constant use by the medical profession and ancillary workers ever since. From the 1920's onwards the display was essentially a

series of study areas for specialists, each containing specimens and graphic material depicting the most up-to-date knowledge of different diseases, the history of the knowledge of them, and descriptions of prevention and treatment (Turner, 1980). There are somewhat similar training museums attached to many of London's teaching hospitals.

The Wellcome Trust's medical science museum continues to exist with its character unchanged. However, its presentation is at present being transformed to meet the needs and style of the times. The material is being transferred to an interactive video-disc format so that it will be available to the many who need to use it for learning and training, no matter where they might be in the world. By 1992 video-disc stations will be established in the re-furbished Euston Road headquarters of the Wellcome Trust.

THIRD GENERATION MUSEUMS

Third generation science museums differ markedly from the previous generations of museums because they have moved a long way from an object based approach. Their main aim is avowedly public education rather than scholarly research. They are concerned with the transmission of scientific ideas and concepts rather than the contemplation of scientific objects or the history of scientific developments. Their emphasis is on contemporary science and technology and they use interactive exhibits requiring visitor thought and manipulation as vehicles for communication. Typically, the communication presented in these museums is prepared by project teams which are bought together for single projects. The teams include a wide variety of professionals which may include subject matter and interpretation specialists, evaluators, engineers, architects and designers, fabricators of special exhibits, video producers and editors.

One of the first of these museums was the Palais de la Decouverte which opened in Paris in 1937. The American space programme was a great impetus to the establishment of third generation science museums in that country. Public science education came to be seen as an urgent national need and the new approach was enthusiastically adopted. The New York Hall of Science opened in 1964, followed by the Lawrence Hall of Science in 1968 and the Exploratorium in San Francisco in 1969.

At present there are two strands to the third generation. The first is the non-object based thematic exhibition, with interactive exhibits, which was described as the late development of the first generation museum (and present also in some second generation museums). Such exhibitions are often concerned with larger concepts of science which are likely to arouse a personal response - ideas such as those related to heredity, evolution, nutrition and food production, ecology and the human body.

The second strand is the science centre in which a

decontextualized scattering of interactive exhibits, which can be thought of as exploring stations of ideas (usually in the physical sciences) is presented. Such science centres have proliferated rapidly. American professionals established the American Association of Science and Technology Centres in 1973 as a museum grouping which did not require conservation and research for full membership. Fifteen years later the association had two hundred members from around the world and over half of them had not been established at the time of the foundation of the association (Friedman, 1989). Recently a similar organization has developed for European centres. Many science centres are established as separate entities within more traditional museums.

WELLCOME'S THIRD GENERATION MUSEUM

The Wellcome Trustees are currently refurbishing the Euston Road building to which Henry Wellcome moved his first generation museum in 1932. When it re-opens it will house a medical science exhibition of the third generation called 'Science for Life'. I helped the Wellcome Trust to prepare and develop the brief for the exhibition.

The exhibition will be a 'museum of ideas'. It falls into four sectors which are subdivided into nodes. The first sector has many interactive exhibits and deals with the subject matter of medical science. It aims to give a feeling for the complexity of the problems studied by today's biomedical scientists. The second sector, which contains a laboratory demonstration area, deals with the variety of people who work on medical research and also describes the nature of research work and activity. The third sector, which is more traditional in approach, is directed towards recent advances in medical science and present areas of work. The last sector explains how medical science is supported financially in Britain.

CONCLUSION

I return to the question of how science museums function as media for the communication of science to the public. I have described the historical antecedents of the various forms of presentation which we see in our science museums today. It can be seen that they are as various as the publics which they serve and any critic or student of science museums as media needs to take this fragmentation into account.

As for the communicative effectiveness of science museums, it depends on what you expect them to do. I do not think that public exhibitions are the best place to learn a list of scientific facts. I do think that they are an excellent form of media for giving largely uninformed people an idea of the issues involved in any particular scientific topic or field of work - they can describe science as a cultural activity in a way which can help people to understand the sorts of questions they can

profitably ask of scientists.

Science museums are available whenever people choose to visit them. people usually visit them with family and friends and all comers are welcome. Social interaction and the opportunity for the shared investigation and exploration of ideas are known to promote understanding - science museums are one of the rare public resources with such elements built into their functioning. It is certain that the third generation museums, centres and exhibitions are very popular with the public and the responses from their visitors appear to indicate that they fulfill their aims successfully. However, they are still evolving as a communication form and much work needs to be done on the assessment and nature of their communicative activities.

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