

# **Curating 20th Century Science**

17-18 October 2005

Utrecht University Museum

**Monday, 17 October 2005**

9:00 - 10:00 Registration  
10:00 - 10:30 Introduction by Klaus Staubermann and Diederick Wildeman

Morning Session: History  
Chair: Roland Wittje

10:30 - 11:15 Sofia Talas: Bubble Chambers at their Beginnings - The Italian Contributions  
11:15 - 12:00 Sebastian Soubiran: The Protection of the first French Nuclear Reactor, Zoé, as "Monument Historique": Is Heritage Concern realistic for Scientists?  
12:00 - 12:45 Richard Kremer: What happens to Corporate Museums when the Corporations Disappear?

12:45 - 13:45 Lunch

Afternoon Session: Instruments  
Chair: Christian Sichau

13:45 - 14:30 Willem van der Poel: How to collect and preserve Computer Software  
14:30 - 15:15 Marian Fournier: Collecting the Electron Microscope: a Retrospective  
15:15 - 16:00 James Caplan: Have Scientific Instruments become more complex?  
16:00 - 16:45 Klaus Staubermann: Monument, Instrument, or Entertainment: what to do with the GDR's most Modern Planetarium?  
  
17:00 - 18:00 Reception with Welcome Address by Director Peter de Haan at Museum Café

**Tuesday, 18 October 2005**

Morning Session: Uses  
Chair: Paolo Brenni

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| 10:00 - 10:45 | Jane Wess: Scientific Instruments: Central or Incidental?  |
| 10:45 - 11:30 | Christian Sichau: Things that once were new are getting old - and other Problems of 20th Century Science in the Museum |
| 11:30 - 12:15 | Steven de Clercq: Keeping for the Future: University Museums at a Crossroad  |
| 12:15 - 13:00 | Marvin Bolt: From Astronomy to Space Science: Implications for Collections   |
| 13:00 - 14:00 | Lunch  |

Afternoon Session: Policy  
Chair: Cyrus Mody

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|---------------|--|
| 14:00 - 14:45 | Catherine Cuenca & Girolamo Ranunni: Prepare new Museums   |
| 14:45 - 15:30 | Randall Brooks: Making the Hard Decisions  |
| 15:30 - 16:15 | Roland Wittje: Chemical Heritage at the Norwegian University of Science and Technology   |
| 16:15 - 17:00 | Trienke van der Spek: A Systematic Approach in 20th Century Collecting: Evaluation of the Museum Boerhaave's five-year-old Acquisition Strategy with the Help of some Practical Examples |
| 17:00 - 17:30 | Discussion and Concluding Remarks  |

# HISTORY

Chair: Roland Wittje

## ► *Histories and Historiography of 20th Century Scientific Instruments*

In the 20th century instruments changed from scientific cabinets to complex research laboratories. Industrial and state laboratories emerged outside the educational institutions. Mass production and complexity of scientific instruments changed the relationship between instrument makers and scientists. Other aspects of 20th century scientific instrument development are associated with the influence of the world wars on science, the upcoming of the military-industrial complex and the arguably controversial notions of big science and technoscience. How should one write histories of scientific instruments and experiments in the 20th century, and, is there a need for a re-interpretation of the relationship between science and technology? In this session we want to include histories of 20th century scientific instruments and instrument development as well as historiographical contributions.

10:30-11:15

**Sofia Talas**

### *Bubble Chambers at their Beginnings - The Italian Contributions*

D.A. Glaser designed his bubble chamber in 1952 and physicists immediately realized the importance of Glaser's device. In Europe, early bubble chambers were successfully made in Padua from 1954 to 1958 and one of these was used at CERN in 1958. It was the first collaboration between inside and outside CERN physicists. By that time, a national collaboration between five Italian Universities was set up in order to achieve the so-called National Hydrogen Bubble Chamber. The analysis of these early chambers will bring us to discuss the transition that took place in those years from small groups of researchers to large collaborations and big science experiments.

11:15-12:00

**Sebastian Soubiran**

### *The Protection of the first French Nuclear Reactor, Zoé, as Monument historique: Is Heritage Concern realistic for Scientists?*

The protection as «Monument historique» in France is a state procedure by which heritage is instituted. Since the 1990s, a significant number of scientific places were officially protected. In my paper, I would like to present a contemporary scientific place for which the protection is engaged because of its historical interest: the first French nuclear reactor, Zoé. With this study I would like to understand the complexity of the relationship between the scientists working at the CEA (Atomic Research Centre) and their heritage. Further, I would like to raise the question of how to reconcile research and innovation with heritage and past?

12:00-12:45

**Richard Kremer**

***What happens to Corporate Museums when the Corporations Disappear?***

From 1915 until 2001, the General Radio Company of Cambridge, Massachusetts invented, produced and marketed a select set of high-quality electronic test instruments. They began selling components for amateur wireless enthusiasts; branched into broadcast frequency monitors, oscillators, and meters; briefly offered oscilloscopes; and then by the 1960s began making digital IC testers and other complex circuit system testers. One of America's early, premier 'electronics' companies, General Radio proved unable to compete when the company went public. After selling off various lines, General Radio was acquired by Teradyne in 2001 and most of its employees and products disappeared. But not entirely so. During its final decades, some of General Radio's senior engineers and vice presidents established a company museum, displaying selected products and archival materials in the corporate headquarters building. This museum currently sits in its original home, now an otherwise empty Teradyne building, visited occasionally by its ever more elderly curators and ignored by its new owner, Teradyne.

This talk will consider possible futures for the General Radio corporate museum, and will discuss the importance of the museum's artifacts and documents for the history of the twentieth-century electronics industry.

## **INSTRUMENTS**

*Chair: Christian Sichau*

► ***They are already there! Exemplary studies of 20th century scientific instruments***

Although there are various aspects of 20th century science which bring new challenges for its study and presentation, we have on the other hand already some experience in museums how to deal with these instruments and apparatuses. Thus, analyses of our experiences can complement the general insights about twentieth century science. These examples might help to stimulate a discussion: Are our general notions about 20th century science really confirmed by these individual cases? (For example, the "black-box"-character of 20th century scientific objects, or the aesthetic differences compared to the shiny brass objects of previous centuries, or visitors attitudes towards these objects.) Or: Is there a (great?) divide between "theory" and actual "practice". What can we learn by looking at our own practices in museums?

13:45-14:30

**Willem van der Poel**

***How to collect and preserve Computer Software***

In the short history of computers advances in technology have been very fast over the last 55 years. Of the old historical computers of the fifties some hardware has been preserved. However, software developments of that period have very often been thrown away or got lost. In this lecture several cases of historical machines will be demonstrated where by means of simulators on present-day machine this material has been revived. In particular the case of the ZEBRA computer, which has been the first and only computer starting in 1958 in the universities of Delft, Groningen, and Utrecht, will be demonstrated. Such a revival is very difficult to make. The old media, e.g. paper tape, are no more readable on present day machines. Some necessary documents have completely disappeared and have to be "reinvented". Nevertheless, for the ZEBRA even the ALGOL60 compiler has been made fully operational after great effort. Only the defining document, written in ALGOL60 itself and a handful of cracked paper tapes was available. All intermediate documentation was unfindable. The lecture will be illustrated by several demonstrations, now running at more than 1000 the speed at which the original machines have worked.

14:30-15:15

**Marian Fournier**

***Collecting the Electron Microscope: a Retrospective***

In 1977 the Museum Boerhaave acquired a number of artefacts related to the early development of the electron microscope in the Netherlands. These included the experimental electron microscope built by Jan le Poole around 1940. That instrument became the starting point for the electron microscopes manufactured by Philips in Eindhoven after World War II. The various items were initially retrieved from various cupboards and attics to celebrate the 25th anniversary of the Dutch Society for Electron Microscopy. For some years after that event a commission, consisting of members of the society and the director of the Museum Boerhaave, added a number of items with the intention to document the development of the Dutch (= Philips) electron microscope.

Recently, I became interested in the early history of the electron microscope in the Netherlands. Now that I am conversant with that history from books, articles and archives, it is possible to establish whether the collected items do indeed document the important steps in that history.

15:15-16:00

**James Caplan**

***Have Scientific Instruments become more complex?***

Not necessarily, although they may be bigger. I shall argue, with examples from astronomy, that many of the complex parts of modern instruments are simply standard modern technology not requiring any understanding by scientists, whereas the heart of the instrument, which the scientist must use in a "scientific" way, is the only part that deserves to be considered a real scientific instrument. If we are willing to make a distinction between science and technology, the real "scientific" instrument is often relatively simple. Good examples of this are the various space telescopes like Hubble and Spitzer, whose observer's manuals read very much like those of ground-based instruments. To use a space telescope you need to be an astronomer and you must have a good understanding of how the scientific parts work, but it is irrelevant whether you are a rocket engineer. With these considerations in mind, I shall give examples of how my colleagues and I plan to display and explain 20th century astronomical instrumentation in Marseille.

16:00-16:45

**Klaus Staubermann**

***Monument, Instrument or Entertainment: what to do with the GDRs most Modern Planetarium ?***

In 1987 the most modern planetarium of the German Democratic Republic, the Zeiss Grossplanetarium in Berlin, was built. With its Zeiss Jena-designed Cosmorama projector, its about 300 seats, and its architecture it marks the peak of GDR modernism. All the Grossplanetariums technology and equipment is still in use. However, with much of the equipment deteriorating, suppliers having gone out of business, and limited financial means available decisions need to be made how to preserve, modernise, and present the Grossplanetarium in the future. This presentation will look at the range of challenges ahead, i.e. with regard to future audiences.

## USES

**Chair: Paolo Brenni**

► ***The Study, Preservation, and Presentation of Late 20th Century Instruments: A Difficult Challenge for the Future***

20th century instruments, and in particular the ones produced after WWII, are substantially different from the instruments of the previous centuries. In a few decades the massive use of electronic elements rapidly increased their complexity, their miniaturization and subsequently their impenetrability. Therefore, today even a smaller tabletop instrument enclosed in a "black box" is often much more complicated than the most sophisticated optical or electrical apparatus of one century ago. Furthermore, "big science" has produced instrumental systems of incredible size and complexity. These facts create a series of problems for instrument historians and museum curators, who will have to find a new approach and develop a new methodology not only for studying and preserving this part of the late 20th century scientific heritage but also for presenting it in an attractive and understandable way in public exhibitions.

10:00-10:45

**Jane Wess**

***Scientific Instruments: Central or Incidental?***

The paper argues that the approach favoured by many science museums in the early 21st century is the 'Objects as Incidental' one. Galleries and exhibitions tell a story about science or mathematics using objects and other display material rather like illustrations in a book. This means that 'important' topics are covered, as defined by standard texts in the history of science and mathematics. However, when we come to the 20th century, and in particular the second half of the 20th century, it becomes very difficult to tell these stories about science using objects. The objects do not reveal the science easily, there may be no objects available, or no objects involved at all. The paper argues that exhibitions should take a different approach, that of the 'Objects as Central'. The contents of the gallery would be defined by what is available in the collection, which becomes important and tells a parallel but different history to that defined by the textbooks. The types of information an object imparts can be the starting point of the display.

10:45-11:30

**Christian Sichau**

***Things that once were new are getting old - and other Problems of 20th Century Science in the Museum***

20th century scientific instruments and apparatuses have been collected at museums like the Deutsches Museum for and very long time. However, they have been in a different class of objects: They weren't meant to be historical but to show the new world of the sciences of today. They weren't in the same category as the shiny objects of the real past. This crucial difference has had important consequences for the way 20th century scientific objects have been exhibited, looked at and treated in museums. In this paper I will discuss some of the problems arising from this difference by analysing the history of physics exhibitions in the Deutsches Museum and how they affect any future plan of exhibiting 20th century physics.

11:30-12:15

**Steven de Clercq**

***Keeping for the Future: University Museums at a Crossroad***

University museums (of the history) of science may well be at a cross road in their existence, as they are increasingly split between their task as guardians of the material scientific heritage, and at the same time as communicators of the research activities of their parent institutions. Museums of science have to perform their dual tasks against the background of two worldwide trends: on one hand institutions that produce scientific heritage (universities and research laboratories) increasingly (consider to) dispose of their museums and collections, whereas institutions that traditionally collected and kept the material evidence of object-based research (museums) increasingly focus on their engagement with the public, to the detriment of research, and consequently the knowledge and skills required to select for the future. The aim of this paper is to explore this situation and in particular to discuss how universities and their museums can respond to these developments, with special emphasis on the question, who is or should and/or could be responsible for the material scientific archive, and how and where it should be kept, and made accessible for future use.

12:15-13:00

**Marvin Bolt**

***From Astronomy to Space Science: Implications for Collections***

Recently, Chicago's Adler Planetarium & Astronomy Museum adopted a solution to synthesizing historic collections with modern science: it expanded its mission to transform it from a planetarium with supportive collections, exhibits, and programs into a center for experiencing and learning about space science. We will discuss the forces behind this movement and the implications not only for the Adler but also for other science museums facing similar challenges, including needed changes to collections policies and selection criteria for new acquisitions.

## **POLICY**

**Chair: Cyrus Mody**

► ***The Policies of Curating 20th Century Scientific Instruments: A Global Perspective***

This session will address the challenges of acquiring, managing, and deaccessioning 20th century scientific instruments. Drawing on participants, expertise and experience, it will concentrate on issues such as scope, documentation, significance, duplication across institutions, and collecting photographic representations of objects that are too large themselves to collect. The aims of this session are to establish global perspectives on these issues and generate dialogue beyond this workshop. Ultimately, this ongoing dialogue may generate agreed upon international policies which will guide and empower curators in their efforts to make decisions regarding their own institutions' collections.

**14:00-14:45**

**Catherine Cuenca & Girolamo Ranunni**

***Prepare new Museums***

In the scientific and technological world, there is a diffuse conviction that scientific instruments constitute an essential part of the research memory in contemporary time. We know the difficulties: abundance, obstacles to understand how they work for lay people, similarity in their external shape but profound differences in their functioning the action. Curators are asked to operate in a frame of save all what is possible in a hurry. It is urgent to change the strategy. The first action is to alert the research communities on the importance to save the scientific and technological instruments and machines in order not only to save memory but to save a scientific and technological culture necessary for the research in action. The second is the necessity to organise a kind of veille in order to be prepared to select the instruments at the moment when they go out from the laboratory. An essential instrument to connect the research communities and the curator communities is the data base on the instruments saved in a university, in a region, in a country and in an interregional zone. We will present how the Musée des arts et métiers has organised the collection of contemporary scientific instruments, i.e. after 1950, in order to constitute the new collections which would permit to present the way science and technology works in different field of research.

**14:45-15:30**

**Randall Brooks**

***Making the Hard Decisions***

Physics, the most fundamental science, deals with the properties and interactions of matter and energy. The challenges of collecting modern physics apparatus is that the equipment is often very large and therefore within the capacity of only a few institutions to acquire. Equally importantly, for 99.9% of the population, the apparatus is "black box" technology and most people have little knowledge to make it relevant to them.

Such artifacts require us to make hard decisions on what is desirable to represent in a collection and what national or international stories are most representative of the work of physicists. The reality is that historical significance and provenance is still important. As a rough approximation, Nobel related research is a good, though insufficient, beginning point to make preliminary judgements because of the politics of the nomination process. The apparatus used by scientists that have been recognized by national scientific organizations also provide useful guidance for the most noteworthy contributions for preservation.

There are other problems related to physics acquisitions that may skew a collection over time and this is a uniquely 20th century problem. That, of course, is the problem of radio active equipment or equipment in the post 9-11 environment that is classified as controlled technology. At the low end of the hazard scale are instruments with radium dials, but other apparatus from high energy radiation facilities such as Canada's historic NRX or NRU reactors may never, in our lifetimes, safely be able to be removed from the originating institution.

**15:30-16:15**

**Roland Wittje**

***Chemical Heritage at the Norwegian University of Science and Technology***

The Norwegian University of Science and Technology in Trondheim is the successor of the Norges Tekniske Høiskole (the Norwegian Institute of Technology), which was inaugurated in 1910. About one year ago we have started a project at the different chemistry departments to map, collect and catalogue artefacts of historical value, including scientific instruments, glassware and collections of chemicals. The large majority of these artefacts dates from the 20th century. In my talk I want to present the practical aspects and problems of the project as well as the policy and motivations for collecting and curating artefacts from the history of chemistry in the university setting.

**16:15-17:00**

**Trienke van der Spek**

***A Systematic Approach in 20th Century Collecting: Evaluation of the Museum Boerhaaves five-year-old Acquisition Strategy with the Help of some Practical Examples***

In 1999 the curatorial staff of Museum Boerhaave developed a strategy to tackle the acquisition of 20th century science and medicine in a systematic way. The main purpose of this new approach was to extend the museum collection with maximum efficiency. The new acquisition strategy should enable a strategic choice of objects, resulting in an adequate, multifaceted sketch of the practice of 20th century science and medicine in The Netherlands. Over the past five years I used this new strategy to acquire many 20th century objects, sometimes ensembles measuring up to hundreds of items. These practical experiences in collecting modern instruments will be used to examine both the benefits and disadvantages of our acquisition system in retrospect. Furthermore, the merits of our acquisition strategy as a whole will be evaluated, and ultimately I will try to answer the most vital question: did we manage to bring the modern times into our museum collections?