Low-budget collection management at the Criminal Museum, School of Forensic Medicine, University of Athens

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Resumo

O Museu Criminal é o único do seu tipo na Grécia. Foi fundado pela Escola de Medicina Forense da Universidade de Atenas em 1933 e possui uma colecção de peças do século XX relacionadas com crimes infames e violações. Durante largos anos, o Museu enfrentou sérios problemas relacionados com o estado de conservação das colecções e desajustamento da exposição. Em 1999, a Escola de Medicina Forense estabeleceu um protocolo de colaboração com o Departamento de Conservação de Antiguidades e Obras de Arte do Instituto Técnico e de Educação de Atenas por forma a melhorar a qualidade geral das instalações. Este artigo descreve as principais medidas de conservação e de intervenção tomadas durante o processo.

Abstract

In Greece, the Criminal Museum is unique in its kind. Founded by the School of Forensic Medicine of the University of Athens in 1933, it has a collection of materials connected to infamous crimes and violations that took place in Greece during the twentieth century. For several years, the Museum faced serious problems in relation to both the collection and exhibition. In 1999, the School of Forensic Medicine established a collaborative project together with the Department of Conservation of Antiquities and Works of Art of the Technical and Educational Institute in Athens in order to improve the museum's facilities. This paper explains the measures taken to improve the facilities for display and for preserving the collection on a low budget and employing both preventive and interventionist approaches.

Introduction

In 1999, the Department of Conservation of Antiquities and Works of Art at the Technical and Educational Institute of Athens (TEIA) established a programme, in collaboration with the School of Forensic Medicine (Athens), in order to improve, develop and upgrade the Criminal Museum, so as to preserve its collection and to enhance the display of objects. The following preventive and interventionist approaches were necessary for the preservation of the objects:

a) study and improvement of the environmental conditions of the museum and display cases (microclimate, lighting, internal pollution);
b) reorganisation and re-design of the museum exhibit and display cases;
c) collection inventory and management;
d) collection treatment and maintenance.

A practical approach was followed to upgrade the facilities of the museum and the condition of the objects, in which the staff of TEI-Athens included the work in their conservation research, carried out

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by undergraduate dissertation students. Conservation laboratories and practical internships (under the supervision of Professors of Conservation) took part in the treatment of the extensive collection of knives and guns at the School of Forensic Medicine. The treatment of the collection had to be carried out *in situ* due to the collections' sensitivity and the problems that would have arisen if an object was lost outside the School of Forensic Medicine. Besides, the presence of the conservators *in situ* helped to educate the staff of the school by demonstrating the amount of work required in managing such a collection.

This paper discusses the problems encountered during the process of reorganisation and the solutions employed to solve them.

Brief history and description of the Criminal Museum

Antonis Georgiadis, Professor of Medicine, was an important collector of criminal evidence and the founder of the Criminal Museum in 1933. For 40 years he organised and registered heterogeneous objects related to criminal acts. The main aim of the museum was the study of Greek criminality and its history by collecting and presenting objects related to criminal acts. The museum's collection consists of a large number of historical guns and arms, dating from the nineteenth century to the Second World War, human specimens (malformations, abortions etc.), a collection of 12 human heads (not mummified) of infamous criminals from Athens in the 1920s, objects connected with psychopathic illnesses (schizophrenia, sorcery, etc.), and several other objects depicting 'idiosyncrasies' of the human mind. The collection is used for the instruction of medical students and other faculties of health sciences, law students, and students of the Police Academy.

Over the years, the location of the museum has changed several times. At present, it is housed under one roof together with the Forensic Laboratory. As far as we know, objects have never been restored in the past and as a result, many suffer from severe deterioration, particularly the organic tissues, guns and knives. Most have been badly affected by climatic fluctuations, some organic materials have lost their original shape due to careless handling or the absence of adequate maintenance and, in general, many objects are damaged and deteriorated due to the absence of a conservation programme. Additionally, no inventory records or photographs were kept. For security reasons, this situation was considered problematic in view of possible thefts. It was decided to begin with putting the collection of weapons, mostly guns and knives, on record. A database was designed to describe each object, record its condition, and describe the treatment needed for its conservation. Furthermore, the objects were photographed and given identification numbers. An electronic database was designed by two students using Microsoft Access 97 to help create a standard form for the collection, in which simple codes are used to characterize the object, employing several predetermined characteristics. The information for each object includes its category, characteristics, techniques and material of construction, type of decoration, conservation condition, and other information such as materials and techniques used in conservation treatment.

The main problem in connection with the conservation of the collection were the display cases used to store weapons. It was thought that by placing the treated objects back into the same environment, the metal parts would quickly begin to corrode again. Despite the protective anti-corrosion treatment applied to them, it was considered important to retrofit the display cases, in order to minimize emissions from harmful volatiles. Two final year conservation students, working closely together with a museologist/conservator, conducted a survey of the museum and the collection to determine the measures needed in order to manage and preserve the entire collection.

The museum and collection survey

A first survey of the location and facilities showed severe deterioration of the collection due to a number of factors, the most important being uncontrolled environmental conditions (i.e. temperature, humidity, light, pollution). Furthermore, since there

was no concept behind the display, the exhibition of objects was inadequate.

During a preliminary survey in November 1999, we noted and prioritized the following problems affecting the overall condition of the collection: i) absence of equipment for environmental control and measurement of temperature, relative humidity and light; ii) inadequate heating and ventilation system; iii) inadequate and insufficient artificial lighting system; iv) inadequate and unstable construction materials of showcases, leading to accelerated corrosion of metal objects; v) inadequate display of objects (for example absence of a storyline, poor labelling, etc.); vi) no written or photographic documentation describing objects and provenance; vii) urgent need of treatment in the majority of cases, particularly the collection of guns and knives; and viii) absence of anti-theft security measures.

After having analysed these problems, we decided that our approach for the preservation of the collection would develop in three phases. The first step was to proceed with retrofitting the museum by upgrading exhibition facilities. The next step was to document the entire collection, both by photography and written description (in the form of a database). Finally, and in parallel with previous steps, the aim was to treat those objects in urgent need of stabilization. Our ultimate objective was to restore and preserve the collection, to make it more accessible to researchers, while at the same time protecting the objects from the public. Furthermore, the conservation and management part of the retrofitting were considered as pilot and not holistic and was applied largely to the collection of guns and knives, which represent half of the collection.

We employed both a 'preventive approach' and an 'interventionist approach' to retrofit the museum and protect its objects. The preventive approach entailed control and study of climatic parameters within the museum facilities in order to understand and improve environmental conditions. Furthermore, a management and inventory informatics system was developed for the creation of an archival database. As far as the interventionist approach is concerned, it encompassed retrofitting of exhibit design and display cases for improved presentation. In parallel, the collection was inventoried, objects were selected, and restoration procedures were applied to objects in urgent need.

Preventive approach: Environmental monitoring methodology

Climatic parameters applied to safeguard and preserve the collection were: i) temperature (too high or too low); ii) humidity (absolute, relative humidity, condensation); iii) radiation (natural and artificial lighting); iv) and pollution (internal pollutants). To monitor the temperature and humidity, it was necessary to undertake a preliminary survey of these parameters – intended to establish climatic cycles and their possible effects on the collection over a prolonged period. This was realized by using an electronic data logger positioned in different locations throughout the museum to document different environmental conditions (e.g. facing an exterior wall, an interior wall, next to external doors and windows, and the microclimate of showcases). To study radiation, we took measurements with a photographic camera, using ANON (2000) guidelines. To survey pollutants (volatile organic compounds only), we used a common and simple qualitative test, the 'Oddy Test' (GREEN & THICKETT 1995, BAMBERGER *et al.* 1999), which requires simple and inexpensive equipment, while results are available within a month.

Results of environmental monitoring

Temperature and Relative Humidity

Temperature (T) and relative humidity (RH) data were collected during one year. Results indicated the internal environment of the museum to be strongly correlated to external conditions. Large RH variations were caused by sunlight falling on the concrete walls. The concrete museum building has a low *R value* [heat flow resistance; KONTOROUPIS (1998) gives 0.06 m^2K/W for a thickness of 0,10m]. This

means that when there is an important temperature difference between interior and exterior values, heat can be transferred more easily. Furthermore, the windows of the museum have single glass and their frame is aluminium, which is not sealed. Because of heat transfer and air leakage, this can result in a large difference in temperature between the lower and upper parts of the room. This is the main reason why the exterior environment directly affects the interior conditions. In winter, the increase in moisture content (absolute humidity) inside the building depends on air leakage, the location of the leakage, the shape of the room and the building direction. The opposite happens during summer when direct sunlight hits windows.

Natural and Artificial Lighting

The museum is lit artificially by eight ceiling lights holding two tubular fluorescent lamps and covered by translucent plastic cover. Moreover, natural light is provided by windows along the perimeter of the room. The measurement of the incident light on the artefacts surface showed that the light level is less than 150 lux. The literature recommends a maximum light level of 200 lux for moderate sensitive materials (e.g. BERGERON 1992). The majority of objects are kept in showcases which only receive reflected light. The light level in the museum is acceptable, but the quality of light has an unpleasant effect on the visitor (glare, distortion of colours, reflection, etc.). Besides, it is well-known that fluorescent lamps produce a high quantity of ultraviolet radiation, unacceptable for museum objects because it acts as a cumulative deterioration agent.

Internal Pollutants

The collection of the Criminal Museum is mixed and comprises a significant number of metal objects and organic materials. Our survey indicated that metal objects are more unstable than any of the other materials in the showcases. For this reason, we tested all materials that make up the interior of showcases (wood, paper, tape) using the Oddy test. The results indicated that all materials used in the display cases had a corrosive effect on metal. Severity of the corrosion depended on the humidity level - the higher the relative humidity, the more severe the corrosion.

Display

The collection was displayed without order and most objects were randomly joined in the showcases, some of which were filled up, while others were almost empty. Besides, wooden shelves were used inside the showcases, causing the lower levels to be darker and obstructing proper view. Moreover, the positioning of the showcases made the museum too crowded, there being no clear pathways for visitors.

To categorize special needs for display and to evaluate the space required for the exhibition, we recorded and surveyed all objects. During our inventory, we used a volumetric system of measurement for objects and showcases (WALSTON & BERTRAM 1993). This system evaluates the volume of objects of similar height or length by placing them in categories and, in parallel, calculates the total utilitarian volume of the showcases. The system can provide information about the volume necessary to store and exhibit the entire collection. Furthermore, the system allowed us to inspect the general condition of the objects and to evaluate their needs, such as mounting systems, special supports, pillars and new materials for decorating the interior of the showcases.

Retrofitting measures

Temperature and Relative Humidity

To date, climatic control has yet to be accomplished. The solutions to improve the internal environment have still to be applied to the building envelope and to the interior conditions. There are two broad courses of action that may be taken: passive measures and retrofitting measures. Passive measures consist of reducing or cutting heating inside the room during winter and increasing the amount of fresh air during summer. This measure was implemented at the very beginning of the museum upgrading. Retrofitting

measures on the building envelope consist of weather-stripping windows, cutting down solar heat gain by using awnings and shading devices and, where possible, by insulating external walls. Moreover, it is necessary to equip the space with humidistat connected with a heating system for winter and a ventilation system for summer. Furthermore, it is important to provide the space with a humidification/dehumidification system connected to the humidistat in order to obtain more gradual fluctuations and to normalize diurnal fluctuation of relative humidity. Such a system has not yet been implemented, the museum will purchase one in the future.

Lighting

For retrofitting the lighting of the museum, we decided to change the ceiling boxes and replace them with new ones with alveolar diffusing mirrors, covered with ultraviolet filters which have no effect on the illumination level or on the lighting quality (colour rendering, colour temperature, intensity of light). The selected filter belongs to the category of acrylics giving a UV emission between 200-350 nm, i.e. a reduction of 95%. The sheets are cut *in situ* to the size of the ceiling box and fitted by using the existing screws of the fixture. The UV filters are not permanent, but they can last longer if lighting time is reduced. As the museum usually receives only one visitor a week and the time of a visit is about 20 minutes, lights can remain shut most of time. Moreover, to control natural light we permanently keep the curtains down.

Construction materials

The materials used for the display cases were harmful to a large proportion of the collection. The cases were made around 1950 and the museum board committee decided to keep them as an historical element of the exhibition. For this reason any major intervention into the shape, colour, or construction of the cases was not permitted. The exterior was kept unchanged and improvements were made to the interior through the exclusive use of removable materials that reduced the harmful volatiles emitted by the wood. Materials for the interior of the showcases were selected in order to be: i) chemically stable and inert; ii) easily disposable and easy to use without the need of special equipment; and iii) of low cost.

The retrofitting of the showcases began by removing all corrosive materials as determined by the Oddy tests (commercial paper, coatings, tapes). After coating the interior with a sealing water-based varnish, a thin high density polyethylene sheet was used as a second layer of protection. A final layer of washed natural cotton textile covered the polyethylene layer. White was chosen to provide contrast with the objects, which would be brightened by the reflection of light. In addition, white makes it easy to observe any new signs of corrosion, dirt or other infestation. To improve the internal environment of the cases, activated carbon was placed in round glass containers (Æ 10 cm). This can absorb organic volatiles, such as formaldehyde and acetic acid emitted by the wood. The activated carbon is regenerated every two days by heating it to 200°C for six hours.

Display design

Our volumetric study showed that less showcases were sufficient for the display of the objects. Moreover, the survey of the collection revealed the necessity of constructing one new display case for an oversized rifle. As a result, we removed unnecessary wooden shelves, replacing some with polycarbonate (plexiglass) shelves in order to increase the visibility of objects. We also organized the collection thematically to depict the following topics: i) narcotics, toxic materials and their utensils; ii) historical guns, arms and knives from the nineteenth century until now; iii) organic specimens, human residues; and iv) crime proofs and samples of psychic distortion.

Needless to say, some of the objects, such as the collection of the human tattoo pieces, written documents, and bank notes, need special framing in order to be preserved from distortion and other physical damages. To enhance their preservation, we decided to use techniques for archival materials. The

selected materials were acid free cardboard, polyethylene film, double sided tape and Melinex®.

After grouping the objects, we relocated them in order to create a pathway for visitors. In particular, we were concerned about the human residues exhibition because we had to take into consideration the visitor's reaction towards such unusual and perhaps shocking objects. The ethics rules concerning the use of human remains for scientific purposes are quite specific and strict (GARRAT-FROST 1992, PUGH-SMITH & SAMUELS 1996).

For this reason, we had to treat the exhibition of these objects with care. It was deemed unacceptable to merely consider them as 'artefacts' and display them in such manner. After consulting with the director of the museum, we decided to display these specimens in the far end of the exhibit room and to create a 'corner' where they could be preserved in an adequate environment rather than being exhibited. In this way, those interested could view the collection, while those sensitive to such matters could easily avoid them. In view of their specific value and history, the human remains are not described and labelled separately, but rather as a whole.

Conclusions

The upgrading and retrofitting of the Criminal Museum was accomplished in one year by a museologist with the help of two undergraduate conservation students. All relevant preliminary studies and improvements to the museum were conducted *in situ* without the need of special equipment. This approach was taken because of the sensitivity of the collection and the impossibility of contracting external manufacturers or employees who could not stand the view of some of the objects. The team developed a systematic approach to the upgrading of the display by often borrowing from archival techniques and other conservation fields. The project demonstrated that upgrading and retrofitting a small museum with a mixed collection could easily be accomplished by professionals of conservation, using inventive yet simple techniques and on a low budget.

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