Can everyone know everything?

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MUSEUM PROFESSIONS AND NEW TECHNOLOGY

Everyday work of curators, conservators, management, security staff etc. in museums is influenced and to a certain degree changed by digital technology. Frequent use of digital technology in museums is the result of rapidly changing social, technical and working environment. If museums and other institutions for protection of cultural heritage, manage to keep the pace with technological development, they will have more ways to fulfill main missions of the museums defined in first article of ICOM Code of Ethics for Museums – to preserve, interpret and promote the natural and cultural inheritance of humanity (ICOM, 2013). These new possibilities raise important questions – how are assignments of all museums professions changed by the influence of digital technology? Where and how museum personnel could be educated? When so many things are possible, is every one of them necessary and equally important?

These questions and many more need to be answered in accordance with actual professional standards keeping in mind the context of any particular museum or other institution for protection of cultural heritage. One way could be to analyze the importance and types of data and information created during museum activities, technology used as tool for everyday assignments and knowledge and education background of involved employees. Result could be ideas for preparing persons with different level of knowledge and interest, to contribute to museum work without interrupting existing workflow.

MUSEUM DOCUMENTATION

One of museum professions most affected by new technologies is documentation and it could be said that its goals and objectives are changed by possibilities of new technologies. Development of computers hardware and software technologies, above anything else, enables data, such as full identification and description of each item, its associations, provenance, condition, treatment and present location to be supported by retrieval systems while providing access to information by the museum personnel and other legitimate users (ICOM, 2013). All these activities imply joint efforts of various professionals, curators, conservators, scientists, museum management and other experts, and could be divided in three main groups – using, creating and managing documentation.

Every one of these activities implies different assignments and technical knowledge. For example, administration needs practice in using available computer equipment and software in order to obtain any information about museum objects, employees activities etc. However, things get complicated on the next level because employees involved in creating museum documentation are usually professionals with various educational backgrounds in humanitarian, social, and other sciences - history of art, archaeology, history, anthropology, psychology, philosophy, sociology, biology, chemistry, technology, conservation of different materials. Their obligation in accordance with professional standards and institution's policy, among others, is to create different types of documentation about cultural heritage using various technologies – computers hardware and software, digital cameras, laser scanners, laboratory equipment etc.

Managing museum documentation requires extended technical knowledge necessary to analyze documentation needs, institution policy and financial condition, in order to come up with best decision about selecting digital asset management systems that includes computer hardware, database software, backup strategies, security systems etc.

Ideally, management team making these decisions would be composed of information specialist, curators and conservators, as noted in Code1.15. CIDOC Statement of principles of museum documentation (CIDOC, 2012). While it is usually the case with large institutions, in small museums there are no appropriate experts in documentation systems, but museum employees are in charge of creating and managing documentation. A part from occasional external collaboration, museum documentation and management will be done by professionals with background in humanitarian, social, conservation and other sciences, which could need additional training in order to use all technological equipment, maintain workflow and respond to public and experts demands. This additional training should be tailored to working assignments and filled with short explanations and instructions, types of practical knowledge that is not part of former education.

CONSERVATION DOCUMENTATION

Conservation is museum profession much influenced by development of technology. There are various computers with specific hardware and software, digital cameras and other electronic and laboratory equipment for researching objects, conservation and then documentation of the treatment. Just to list few – computer algorithms for component analyses, software for creating visual reconstructions of hidden paintings using X-ray images, databases, digital single-lens reflex camera (DSLR), IR and UV cameras, light microscopes with digital color image capture etc. All these equipments require correct handling and produce enormous documentation in various formats and size. It has made easier to research cultural heritage objects and to plan and perform treatment. Techniques and methods for documenting researches and treatments needs to adjust to this fast development in order to maintain its purpose to acquire, to release and to store specific information, so it could contribute to attending the final goal and that is to preserve cultural heritage (Konrad, 2000).

Conservation documentation consists of textual reports combined with images, drawings, maps, graphic documentation, scientific analyses end other data gathered during investigation, treatment and monitoring of cultural heritage. It enables us to better understand cause and effects of deterioration, make a coherent conservation proposal, evaluate treatment in future, avoid unnecessary or possibly harmful treatments (Heritage, 2000). It is done by conservators who have working and ethical obligation to create documentation that should not be just "treatment record but also analytical and investigative tool" (Heritage, 2000). They have at their disposal various programs to create textual and graphic documentations, as well as photographic and laboratories equipments. And now the main questions are not why and how to document, but they could be the ones Francesca Pique summarized in her paper (Pique, 2000):

- What to record?
- What level of detail?
- How much time will it take?
- How many people and who?

Again, every institution organizes documentation according to available recourses. This paper will present experience of Central Institute for Conservation with organizing conservation documentation.

CENTRAL INSTITUTE FOR CONESERVATION

Central Institute for Conservation is interdisciplinary, educational, scientific, research and conservation centre, specialized for cultural heritage protection. There are photographic studio, laboratories and conservation studios for conservation and restoration of several types of materials – mosaic, stone, organic materials, paintings on canvas and wood, textile, metal, glass and ceramics. Photographic studio is equipped for digital photography with digital single-lens reflex camera and IR camera. Institute policy is that every object has to have a high resolution photography that illustrate its condition before and after conservation. Apart from images obtained in UV, IR and visible spectra, objects are often photographed in raking light as well, as to provide the information on surface character. Conservation process and selected details of the objects during treatment are made with compact camera that every conservation studio have. Conservators are additionally engaged in condition assessment for heritage objects in museums and other institutions and for objects in private ownership. These assessments results in official recommendations for conservation treatments. Architectural studio use digital camera and 3D laser scanner to research and assess the condition of built heritage. Laboratories perform mechanical and chemical analyzes with equipments for multispectral analyses, Fiber Optics Reflectance Spectra, optical microscopy.

From 2009 about 440 objects were ore are treated by 18 employed conservators and over 70 students and intern at training and practice. Most of these objects, about 90%, are from public museums and galleries, and 10 % from privet owners.

For management of conservation documentation, ARTEMIS database was created in FileMakerPro software in 2010. Conservators were involved in defining database

structure and functions using personal experience in conservation, as well as creating and utilizing conservation documentation. There are 7 different structures of conservation reports - modules, with diferent information organization in accordance with the type and specificity of conservation treatments of several materials - for metal, mosaic, textile, stone, paper, paintings and one module for ceramic, porcelain, amber and glass. There is no limitation in length of text entry. Photographs, examination records, reports, research results and other documents are entered by conservator and located in database so there are available in every segment of a conservation file.

What to record – Institute policy recommend to record as much information as possible about:

- Objects existing condition, before treatment,
- Analysis of material composition and technology,
- Treatment proposal,
- Treatments techniques,
- Materials used during treatment,
- Condition after treatment,
- Administration details.

What is the level of detail – this decision is left to conservators who should create informative, detail record about every object and it's treatment. While detailed textual descriptions are common, our experience is that conservators create many images of objects parts or deteriorations, without accompanying information about the content of photography.

How much time will it take – creating coherent record is time-consuming. There are many factors – the durations of treatment (for example, conservation of wall paintings and mosaics last for several months), complexity of research analyses and conservation treatment, requirements of the owner, importance and value of the heritage object etc. Also, there are more employees involved in creating documentation because digital images and science analyses are done by others. Management team does take into account these facts when planning conservation activities but at the end, it is left to conservators to organize their work activities.

How many people and who – some aspects of conservation documentations are done by experts - information specialist for developing database software, experienced professionals for camera settings, creating high-definition images and image processing, scientist for laboratory analyzes. Since it is not cost effective to have one or two personnel in charge for all conservation reports, conservators are in charge of using database and programs for graphic documentation. This requires additional training, consultation with written manual, and practice.

In five years since foundation of Central Institute for Conservation over 40.000 image files were created. It illustrates Institute's activities in condition assessment, research and conservation of cultural heritage, and other Institutes activities – educational courses, seminars and conferences, experts meetings etc. In order to implement documentation

standards, which presume everyone can find particular images along with information about what's in these images, we need to define institutional policy for creation and management of images. This enormous images documentation created by employees made it clear that it is not enough just to point camera and shoot and download images in database or network attached storages. Every images files about Institute activities has to be supported with metadata that inform the user about event shown in the photography – date, time, place, cause, participants, locations of related documents etc. Conservation images can give more information about objects then just it's visual appearance, if they are created in adequate way. Images have to contain, beside the object, some administration data (inventory number, number of conservation record…), an indicator of objects size, information on conservation phase. Also, in conservation photography, data about camera settings and additional equipment are very important because they enable the object to be recorded in the same conditions, thus making photography a valid source of objective information about appearance and state of the object of cultural heritage. This data is required for images of objects before and after treatment.

Upcoming guidelines are the result of five year experience in organizing image documentation. Employees will be involved in defining the work flow in the guidelines, but it is evident that implementation of the new policy will require additional training of staff.

CONCLUSION

For conclusion, here are answers to some of the questions raised in this paper.
Work assignments of all museums professions are changed by the influence of digital technology. Usage of modern technology requires specific knowledge because it will improve everyday work only if it is used properly and responsibly. With all its possibilities to acquire, release and store information, it should facilitate museum work and open new fields for research and promotion of cultural heritage and its values.
In many institutions this will surely require additional education and training for employees. It should be tailored to working assignments, in a form of manuals, instructions, joint practice, courses and seminars. But even this permanent education of museum professionals has it's limits and specialist has to be engaged to establish information systems.

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