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New Documentation Technologies at the Getty Conservation Institute

Documentation detail, "America Tropical" mural by David Alfaro Siqueiros (Los Angeles, 1932). Photo by Leslie Rainer, courtesy the J. Paul Getty Trust.

For a number of years, the Getty Conservation Institute (GCI), a program of the J. Paul Getty Trust, has been involved in developing new systems for documenting its conservation work. Initially, digital forms of documentation were experimental systems in a research context. The success of these systems and collaborative work with other institutions has led to the beginning of their adoption for the routine documentation of GCI's projects.

Graphic documentation can be an effective tool for the diagnosis of damage to cultural property. The recording of damage types, degree, and extent can aid conservators in the diagnostic process and in preparing a conservation project. Moreover, the documentation process should become the essential element in diagnosing the state of the monument and planning the conservation project.

There is an important difference between traditional graphic documentation and computer documentation. To justify the added expense of digital documentation systems, one must extract some form of added value from the system. Typically, this takes two forms: first, we are able to capture a deeper level of information which can be dynamically accessed. Software makes it possible to elucidate relationships not readily apparent in static graphic documentation. An example of this is simple quantification of characteristic areas documented: areas of loss, linear dimensions of cracks, etc. A more profound understanding can be derived in geographic information system (GIS) software which can extrapolate significant relationships among recorded features, such as those between paint loss in a wall painting and areas of moisture, as well as the quantifications possible with CAD software.

The second form of added value is the ease of viewing and presentation afforded by digital systems. Since buildings, objects, and sites are recorded via software in their actual size and printed to scale, a radical leap in understanding the documentation can be achieved. Traditional graphic documentation removes the viewer from what is being documented—documenting the object at its original scale is a faithful spatial description of what is documented.

Data can easily be manipulated in 3D programs, draped with surfaces, and turned into virtual reality depictions. It is inherently easier to understand something from viewing this kind of presentation as opposed to stacks of drawings, photographs, and overlays found in the traditional documentation system. Also, these depictions can be disseminated electronically. The world of cultural heritage has been slow to adopt this technology for a number of reasons. To understand this we need to review the aims of traditional conservation documentation and the perspective of the conservator doing documentation.

Aims of Graphic Documentation

The objective of graphic documentation is to describe the state of conservation of a monument in order to create a baseline for analysis and diagnosis of the causes of deterioration. Further, it also serves to document conservation interventions and to function as a monitoring tool. The system we envision is computer-based, for several reasons. First, the model obtained can be reproduced in infinite originals and at scales selected by the operator; the object, whatever its size, is stored as a 1:1 model and can be displayed and analyzed in its entirety, with thematic maps. Second, significant relationships between classes of information and precise calculations of real extents can only be retrieved with the help of a computerized system. Third, the various categories of information composing the documentation record can be better organized, managed, and controlled using a computer-based management system. The use of information technology can help realize the primary goal of documentation: reproducibility and ability to be shared. Many, if not all, of these tasks are impossible using traditional graphic documentation.

One of the barriers to the adoption of digital conservation documentation has been the steep learning curve for training conservators in such systems. Working with a colleague, Giancarlo Buzzanca, at the Istituto Centrale per il Restauro (ICR) in Rome, we have developed, tested, and implemented an easy-to-use AutoCAD® menu system. Buzzanca has spent several years developing a CAD interface allowing conservators unfamiliar with computers and CAD to directly input condition information. We have found that a simple user interface customized for the project can manage most of AutoCAD's® complex functions. We have also found that menu customization builds a bridge between the average user and complex vector-based systems. These systems are important because they are becoming standard in fields requiring spatial documentation. Complex databases, images, sound, and video files can be spatially-referenced using specialized software.

This means that the system can become the foundation of an interactive archive and management tool for a project. This is our second field of investigation, which aims at building a modular system of data management in which all classes of information can be closely related. The modules are managed by a spatially-referenced software system: a query to a certain physical point can recall graphic, photographic, textual, and analytical information in database form. This allows the data to be viewed and presented in context; it also presents data in relationship to other relevant data, making it a perfect planning and management tool. For example, if a building has been thoroughly documented and is being monitored, an intervening problem can immediately be viewed in the context of previous interventions, materials introduced, environmental data, and condition history.

Test Sites: Laetoli and "America Tropical"

An image of the Laetoli project appears on page 4.

We are currently in the process of developing a pilot modular information management system (IMS) using data obtained from the Laetoli hominid footprint site in Tanzania. The site consists of a tuff layer bearing a series of well-preserved footprints of three *Australopithecus afarensis* individuals and various animal, insect, and plant impressions. This 3.5 million-year-old-site was discovered by Mary Leakey in 1979, and reburied after investigation. As part of the conservation intervention, Heinz Rüther of the University of Cape Town, South Africa, made a photogrammetric recording of the site. The 1 mm contour digital topographic model of the site is accompanied by a wide range of data, from handwritten site notes to digital photographs, including traditional graphic condition documentation of each footprint. The IMS will allow the user to query each footprint and retrieve related data regardless of its original format.

"America Tropical," a mural by David Alfaro Siqueiros in downtown Los Angeles, was painted in 1932 and immediately whitewashed due to its strong political content. The site was abandoned and is badly deteriorated. We documented the mural using high-resolution digital photographs and collected digital graphic condition documentation obtained on-site using laptop computers equipped with a customized version of AutoCAD® designed by Buzzanca and the conservators. The software enabled the conservators to draw directly on digital images. This precise spatial document will serve as a basis for future treatment plans and for monitoring the mural's condition.

Future Directions

The development of a comprehensive digital information management system should begin in the planning stage of a project. Usually, the decision to begin the IMS is mid-way or at the conclusion of a project. This is unfortunate because setting up a system at the feasibility stage of a project can be a valuable tool in the design, planning, and management of a project. A hypothetical example is a project currently in development at the GCI, involving the development of management plans for a series of archeological sites in five Central American countries. The variety of geographical, environmental, cultural, economic, and social data necessary to collect and organize in order to build baseline documentation requires complex data management systems which can only be computer-based. Assembling a body of data of this scale at the beginning of a project and using it for project planning and management is an important new undertaking for the GCI.

Condusion

Public outreach and publication of project activity and results are becoming increasingly important for the GCI and other organizations dedicated to the preservation of cultural heritage. The worldwide threat faced by cultural heritage resources makes it imperative that we speak directly to the public. Information management systems of the type we are developing better fulfill the ethical and technical requirements of conservation documentation; they can be disseminated to the public via multimedia, the Internet, and traditional publication venues. Hopefully, public access to information will be facilitated by these tools, leading to greater awareness of the cultural patrimony, and of the activities of individuals and institutions working to preserve it.

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