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Recommendations from the ICOMOS Scientific Council Symposium: Changing World, Changing Views of Heritage: Technological Change and Cultural Heritage

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Introduction

In Quebec City, Canada, in October 2008, during the 16th General Assembly of ICOMOS, a group of 14, representing half of the 28 International Scientific Committees (ISCs) as well as two National Committee (NC) presidents, met to debate and propose the 2009 and 2010 Advisory Committee meetings' scientific symposia. Building on the symposium held in Pretoria, South Africa in 2007 on Global Climate Change (GCC) and its effects on cultural heritage, the themes of Technological Change (TC) for 2009 and Social Change (SoCh) for 2010 further explore change elements. A brief for the former was circulated in April 2009.

Technological Change was also selected to coincide with ICOMOS's choice of "Heritage and Science" as the theme for the 2009 International Day for Monuments and Sites, as well as UNESCO's adoption of 2009 as the International Year of Astronomy. Fourteen papers were submitted and published on the web[1] . Some of the papers also related TC to GCC. The seven papers presented were grouped around documentation, intangible aspects, energy technology, and historic technology.[2] These were followed by breakout sessions of five separate groups, which debated how TC assists or hinders the area of interest of each ISC. 21 of the 28 ISCs were represented along with many National Committee presidents.

Breakout Session Discussions

There were several common themes that came out of the breakout sessions.

General:

Forces in society are driven by changing technology (i.e. the development of highways and a car-focused society resulting in the abandonment of inner cities for the new suburbs, etc). Technological developments tend to not respect cultural values because market forces dictate the changes.

[1] http://www.international.icomos.org/adcom/malta2009/symposium.htm
[2] TC and Its Effects on Cultural Heritage, Pamela Jerome; Laser Scanning, David Mitchell, Douglas Pritchard and Ben Kacyra; Developing a "Non-Destructive Toolkit" to Monitor Monuments and Sites, JD Meneely, BJ Smith and J Curran; Using Technology to Monitor and Counter the Impacts of GCC on Traditional Management Systems of Cultural Landscapes, Andrew Hall; Paradise Lost: Paradise Regained – A New Dynamic for the Significance of Cultural Heritage Monuments and Sites in the Context of Technological Change, Sue Millar; Paradox? The Energy Paradigm and the Preservation of the Modern Movement, Stephen Kelley; The Protection and Preservation of Greek Archaeological Landscapes in the Context of Technological Change: the Case of Lavrio, Attica, Elena Korka; Appropriate Technology, John Hurd.

IT is part of the increase in the pace of change. Rapid change engenders poor planning. Heritage is often left out of the planning process when change is very fast. Old 'stuff' tends to get discarded by rapid change.

With the fast pace of change, the age of what is significant gets younger, so there is concern for possible gaps in the historical record. Technological development is very rapid – but somehow our 'pace' is not the same.

We need to avoid the seduction of the 'quick fix' – a precautionary approach is needed, while embracing new tools that can help us work better, and with more global equality.

New technologies, as discussed in the plenary sessions, may be more useful in research rather than in conservation work.

In the end, professional judgement, understanding and wisdom gained from thoughtful experience are still our primary tools.

Documentation and archives:
Modern technologies can be very impressive and useful tools for the professional. There should be good communication between the professional and the specialist, because one needs to make sure that the information one gets is what is actually required; it must be appropriate. There must be clarity in the process. In addition, software needs to be accessible and easy to use.

Documentation in a number of specific situations seems well suited to high-tech techniques – such as responses to disasters (where the speed is an advantage due to the pressures and volume of work); or in the polar region (where there is a lot to do urgently), but very short field seasons; or for recording the vast wealth of the world's fragile vernacular architecture. However, in the case of developing countries, low-tech methods may be more appropriate and cost effective.

A small village in the developing world may not be as easy to document using high-tech methods (should ICOMOS set up measures to manage local towns?). ICOMOS could provide recommendations to set up a structure for archiving information. It is important not to neglect traditional technology; oral documentation is critical and people with these types of intangible knowledge should always be consulted.

The benefits are based on the fact that these methods can be fast and non-destructive. This is useful given that the documentation burden is very heavy due to the expanding definitions of what is heritage.

Specialized technology for archaeology has had positive effects because it offers the possibility of less excavation; technology can mean non-destructive analyses, taking less material and analyzing more extensively. Technology is good for research – such as Carbon-14 dating; perhaps protocols are necessary for employing technology. The problem is the incorrect application of technology, for instance: the use of a backhoe for Aboriginal sites. Techniques that are 'recipes' are an issue – governing authorities/public servants with no field experience then dictate techniques.

In Japan, archaeological sites consist of tree-post holes and are very flat with little structural remains. Technology can be used effectively for virtual reconstructions, interpretation and presentation.

The intentions of research, however, should be clear. Modern archaeology should be rationalistic; otherwise, there are no limits to the use of technology, except funding.

Cost is potentially both a benefit and a challenge: the cost of acquiring the equipment and skills to use it can be high; but once obtained, the volume of output can be very cost effective. Clearly this will be a problem for developing countries.

The challenges are also many when considering these techniques – such as the issues of intellectual property, the use of rapidly superseded proprietary software (ie built-in obsolescence), and archiving. Archives are a serious issue. It requires maintenance to perpetuate records; there is a concern over archiving technologies and their migration. The speed of modern technology is such that material can become inaccessible after a relatively short time. Documentation with technology becomes obsolete; virtual reality is outdated; machines are double-edged swords. A program of regular updating is essential. There is a cost issue here.

However, there is also the issue of protection of digital archives from natural or other disasters. Therefore, redundancy is encouraged; for instance, storage in more than one location may be required, as well as within fireproof structures, vaults, etc.

The use of digitized databases and libraries for archival research, on the other hand, has developed into a enormously beneficial tool.

Intangible aspects:
Heritage professionals may be confronted by a popular enthusiasm for technological change. For instance, there are popular attitudes that include: the hope of less future maintenance – new is better; the illusion of cheapness; the following of fashions; and aesthetic preferences – new is perfect, e.g. straight lines. Politicians may share these attitudes and influence outcomes.

There are also attitudes towards the use of new technology in traditional societies. We need to be aware of a prejudice that differing technologies are seen as appropriate for different societies. For heritage in a Western-developed-nations context, it may be seen as appropriate to introduce IT and, say, electricity. For heritage in developing countries, a strong Western perception may be that more traditional styles of intervention are expected.

However, we must not accept technology for its own sake and abandon old or traditional technologies. These older technologies are intuitive but they need to be fully understood. They have an inherent value. They are often very appropriate for local communities and they have been tried and tested over time and are sustainable.

Why do we need to keep so many monuments and sites exposed? Instead, we should be leaving some for future generations. Do heritage sites need to be visited and how much do visitors know about them? Is documentation training and 3-D recording enough? Is the real site required for the emotional feeling?

Technology enhances the ability to understand a monument. However, it is not just about visiting sites, but also about using them (churches, ancient theatres, etc). The public may insist on access; therefore, limiting the number of visitors is important.

On the other hand, the amazing quality of data of laser scanning can make the virtual copy so close to reality that there is a danger that the original is no longer significant. Possible problems with digital documentation of heritage are: too great a reliance on digital information reduces human observation, and virtual copies could engender demolitions.

The use of IT to record cultural values is a wonderful tool. But IT can work against conservation of cultural values because technology may merge different cultures into homogeneity as people communicate and become more alike.

However, technologies can help to record traditional practices that are being lost. Young people want to go with new technologies and abandon the old traditions. There should be a

way to marry the two rather than choosing one or the other. It is not necessary to see contemporary and traditional knowledge as a dichotomy. These are both essential and useful, evolving and adapting.

Values of cultural respect and identity are overlooked when market forces are unleashed at World Heritage Sites. ICOMOS can act as moral authority and offer advice on good management. Market forces tend to take advantage of TC to make money. But it is possible to manage change with respect for heritage, and TC can be harnessed to show design alternatives, guidelines and best recommendations.

Technological Change can hinder with digital billboards, and values lost by losing the sense of place. But IT can also be used to battle the forces of corporate marketing campaigns that do not respect cultural values.

Construction and energy technologies:
In the discussion about new materials, there were many specific examples given of both problems and advances. However, these were well contextualized by the remark of Steven Kelley (ISCARSAH) who said that there are no good or bad products or materials – just good or bad applications of them.

There has been a certain amount of technical abuse – manufacturers misled the public for 30 years. Acrylic paints were touted as products that protect against water. Common sense has prevailed now with the return of original traditional materials. There are thousands of years of repair technologies that should be considered.

Many technological changes have tried to make buildings or building components maintenance-free, but the longevity of these newer materials and assemblies has sometimes been poor and not easily sustainable. Monitoring of treatments and their effectiveness over long-term periods is essential – we know from earlier experiences that sometimes, new treatments and products can actually accelerate deterioration or damage; therefore, great caution is needed.

There are problems with introducing new technologies too quickly; for example, new adhesives, where their use *in situ* has been less successful than laboratory tests indicated, or concrete, where *in situ* use has shown different expansion rates. Therefore, testing needs to be *in situ* as well as in laboratories.

New innovative building-fabric repairs and engineering technologies can be beneficial. These can give an added value to existing structures. Full documentation must be adhered to in any process. Long-term effects may be hard to evaluate and caution must be exercised when using new technologies. Combining new construction technologies with old can result in unforeseen issues that impact monuments negatively. At the World Heritage Site of the Walled City of Shibam, cementitious mortar was used in the foundation stonework of the wall during the 1980s; the 2008 flash floods mobilized salts in the cement that are now destroying the mud-brick superstructure.

A materials-science-based approach is relevant, where materials are well understood along with the complexities of the processes of decay and physical change as a basis for developing interventions.

Some advantages of new techniques and products occur where they can be less destructive than what is commonly practiced in areas such as analysis, dating, cleaning, etc (i.e. replacing dendrochronology for timber analysis).

Authentic materials are typically used in archaeological sites in Europe. Modern materials often destroy monuments, but are cheaper. Roman mortars, for example, are better but more expensive. There is a concern over pollution of the environment; Portland cement is never useful in archaeological sites because of chloride salts.

In terms of protective shelters at archaeological sites – there is literature and special publications but these are rarely consulted; the most interesting and popular shelters like, such as Piazza Amerina, are problematic. Shelters are common in the Mediterranean for display of vulnerable sites; tourism brings much-needed hard cash, but there has to be a balance.

Sustainability is very important; the Charter of Cairo was presented to the United Nations (World Habitat) in 2003.

However, the ecological impact of technological change on the environment must be considered. What is the actual cost of 'green' building? A holistic approach is required, from initial conception to ultimate disposal. This will provide a realistic evaluation measurement.

Building Energy Rating (BER) can have a negative impact on heritage buildings. This is a very important current issue in the EU. There is a need to challenge manufacturers and find ways to make sure that new technologies, if appropriate, are sympathetic to the historic fabric.

TC has brought pressure on older buildings to be energy efficient when they were not always designed for that purpose. IT (information technology) can prove that many older buildings are good performers in terms of low-energy consumption, and TC can be used to develop improvements to performance of existing buildings.

Overall principles need to be maintained – authenticity and integrity – and the Venice Charter followed. In the conservation of physical material, new technologies and techniques should remain as close as possible to the original. Comprehensive documentation is paramount.

Communications:
Communication technology is also a key element in developing tools for training, interpretation and transmission of knowledge. The great benefit is the chance to share heritage, and the work of heritage more easily.

Sites are becoming more accessible through technology; this is an important change and a move away from academic focus. In-depth virtual reality can provide simulated environments; real sites are fragile and erode.

Digital information gives intellectual access, which is good, but also makes sacred and secret places accessible with GPS and information gained from satellite views, which is bad.

Communication systems – such as early warning systems for natural disasters – can be of great use and benefit to conservation, and for site managers.

Social networking as a means of sharing information, and as a way of expressing multiple narratives and values of heritage is considered to be of great potential benefit.

IT allows professionals to network and know who can perform or wants specific services.

Younger people communicate differently, and older professionals can use IT to connect with and educate younger professionals.

There is a need to build dialogue and bridges, to listen and learn, with patience and soul in relation to several sets of contrasting elements in this discussion:
- The users and the providers of technology;
- Traditional and contemporary knowledge and the need to transfer knowledge, which can be challenging when things are changing very fast;
- Expertise in technology and expertise in heritage conservation – all are very much needed;
- Development of technology and the development of applied science;

- Highly scientific approaches and locally-adapted or older ones;
- Heritage practice and information networks that would enable us to make better use of the knowledge that has been gained;
- Younger professionals and their elders.

Education:
Education and communication play an important role. Education will lead to an understanding of values and help in the making of objective judgements at all levels. Good communication will lead to community involvement; communities need to take back their heritage.

Change has been promoted; students are supported by industry for their research. Innovative materials get funded (and then end up in building codes), whereas research in traditional materials is less likely to be funded. With new technologies, it is possible to develop research opportunities; however, such technologies need to be sustainable.

Training is an incredibly important element of addressing the challenges and making the best of the potential benefits – and to bridge the potential gaps between the knowledge of techniques and their application, and the always-important application of professional conservation wisdom.

It all comes down to education – archaeological schools use techniques that become adopted; new schools of thought are needed from professionals not bound by national policies.

There need to be responses to popular attitudes in the form of professional education (preservation courses inserted into architecture and engineering curricula), and community education (public lectures, greater use of public libraries – i.e. the Smithsonian is digitizing its collection of otherwise ephemeral trade catalogues, use of on-line technology by libraries and others).

Recommendations
The following recommendations were reached:

1. Caution is required in the use of digital/magnetic technologies for documentation, monitoring, and archives, as they can become rapidly outdated and/or can deteriorate without use.

2. Specialized technologies are useful for non-destructive techniques in archaeology. However, research intentions should be clearly defined.

3. There needs to be limited use of sites; carrying capacities should be defined. Virtual reality may supplement for actually visiting a site. However, technology may make the original less significant.

4. Caution is necessary in the utilization of modern materials (good or bad applications), particularly if they are used in combination with traditional materials.

5. Material technologies are datable, and of our period. More analyses are necessary of ancient and historic repair techniques.

6. Education can drive the use of technology.

7. Ready access can be used as a communication tool.

8. A structure needs to be developed for archiving in illiterate societies.

9. The pace of change results in poor planning. More coordination is needed between disciplines.

10. We need to understand the differences in expectations of the lay people and professionals.

11. Judgment and interpretation is necessary for sustainability and an understanding of how historic resources suffer.

12. Technology is a double-edged sword.

And some suggestions for ICOMOS and especially for the Scientific Council:
- More cooperation is needed between International Scientific Committees (ISCs). In this group, the representatives of CIPA (Heritage Documentation) and CIF (Training) especially felt that not enough engagement with their expertise is happening with other ISCs, and they are very ready to collaborate.
- More dialogue is needed beyond the walls of heritage practice – symposia need to mix ICOMOS members and experts with people from other relevant fields.
- There is a need to interrogate new things – and ICOMOS can play a role in doing this, including the ideas about 'good' applications' and the ability to set standards.
- As everyone already knows, ICOMOS needs to open its doors very widely.

Conclusions

Two comments summed up well the discussions:
- Dinu Bumbaru (ICORP – Risk Preparedness) said that we need to shift from technologically-dominated conservation to technologically-supported conservation.
- Robyn Riddett (ICORP - Risk Preparedness) said that we need to understand and respect all technologies and proceed with caution when mixing old and new; and to look at what is required and do as little as possible but as much as necessary so as to preserve heritage for as long in the future as it has existed in the past.

Rapporteurs:
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