

## Education and training needs for the conservation and protection of cultural heritage: Is it a case of 'one size fits all'?

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### Summary

*This keynote presentation in Workshop 2 'Education and training needs for the conservation and protection of cultural heritage' in the 5th EC Conference, Cultural Heritage Research: a Pan-European Challenge, held in Cracow in May 2002, argues that the complexity and diversity of world cultures gives us a global perspective that accepts that total control is impossible. It therefore argues that transparent and consistent methodologies and procedures might serve us better than prescriptive standards that simplify reality, and that while thinking globally, we must act locally with sensitivity towards local traditions, craft skills and language. The paper comes to the conclusion that education and training needs cannot be satisfied with a 'one size fits all' approach. Finally, it uses 2 case-studies to suggest way in which the results of scientific research can be integrated into conservation education courses.*

### Introduction

Ever since the signing of the Treaty of the European Union, conservation and safeguarding of cultural heritage has been central to the development of European Policy. This has largely been achieved through research programmes that have contributed to the development of EC Directives such as the 'Clean Air for Europe' (CAFÉ) Directive. But have research results been as successfully integrated into education and training courses?

### Conservation principles

The Venice Charter (1964) and subsequent ICOMOS charters on architectural conservation, identified a number of key conservation principles relating to minimum intervention, reversibility, compatibility and retreatability. Minimum intervention aims to preserve as much original material as possible, doing no more than is strictly necessary to guarantee the proper use, conservation and prolongation of the 'life' of the original fabric. Its aim is to protect the original elements, not just appearance, by applying a proportionate response to any intervention. Reversibility originated in the field of paintings conservation, where it is still a major criterion in the selection of appropriate treatment. In building conservation reversibility is harder to achieve, and in the conservation of archaeological sites, reversibility is harder still to gauge. Reversibility has more recently been replaced by principles of

compatibility and retreatability: a more sustainable conservation strategy that at the same time stresses the importance of maintenance regimes. Compatibility requires that treatment materials do not have negative consequences, and retreatability requires that the present conservation treatment will not preclude or impede future treatments. These principles are more sustainable because they are more realistic and enable future treatments to take advantage of progress in scientific knowledge. Maintenance is implied: in other words it is acknowledged that the next treatment is not likely to be the last.

These principles provide a framework for deciding on acceptable and unacceptable conservation interventions. Yet these principles are not static: they have evolved with time, partly as a consequence of the internal development of conservation as a profession, and partly in response to changes in the human perception of the world and in particular of the environment.

### A changing context

Our world perspective has changed from one of universality, a single approach and the belief that reality can be modelled and understood through a discrete set of parameters, to one in which we recognise the complexity and dynamism of the world we inhabit and its variety of species and cultures. We have a global rather than a universal perspective in which diversity is a key issue, whether it is cultural or ecological and where sustainability is a social, economic and political force to be reckoned with. This perspective accepts that it is impossible to control everything. Standards are being challenged by methodologies and procedures that are transparent and consistent. Universal solutions, it seems, are not the answer; deterministic approaches and an eagerness for standardisation oversimplify reality. Through all these societal shifts and changes, the philosophical and ethical principles upon which all conservation activity is constructed still stand, though modified and reinterpreted.

The amendments to the Burra Charter in 1999 overtly recognised that heritage value and significance may be embodied in the uses, meanings and associations of a place, in addition to the physical fabric of a place or structure. This represents a significant shift towards integrating the tangible and intangible heritage.

So, are these paradigm shifts in conservation thinking often instigated by research, matched by changes in our approach to education and training provision for the conservation and protection of cultural heritage? Do education and training prepare professionals to face these challenges? Challenges of changing societal needs, developing definitions of heritage use and the broad context of sustainable development?

### **The STOA Report**

In March 2001, the European Parliament Scientific and Technological Options Assessment (STOA) Unit commissioned a study, 'Technological Requirements for Solutions in the Conservation and Protection of Historic Monuments and Archaeological Remains' (STOA Project 2000/13-CULT/04). The report, prepared by an interdisciplinary group of researchers from across Europe, led by the UCL Centre for Sustainable Heritage, set out to address the technical and political realities within which cultural heritage must not only survive but flourish. In examining trends, we discovered that since the 1980's, European scientific research on cultural heritage has been supported primarily by the European Commission's DG XII (later DG Research). At the end of the 1980's, the STEP Research Area 'Protection and Conservation of European Cultural Heritage' funded research in the areas of: assessment of the mechanisms of the deterioration; critical evaluation of factors; damage assessment; material characterisation and conservation techniques. By 1995, output from research projects was shifting from a focus on historic stone buildings and the damage by acid rain to a far broader range of threats. Increasing deterioration of materials (stone, brick, leather, paper, wood, paintings, metals, etc) was of growing concern throughout the European Union. Atmospheric pollution, urbanisation, tourism or inappropriate conservation treatments were all identified as important contributing factors. Since environmental effects have no frontiers, Member States had everything to gain by combining their efforts and resources to evaluate common knowledge and strategies for protecting their cultural goods. It drew attention to the need to understand the common causes, mechanisms and consequences of the damage through collaborative international research and to establish practices based on sound scientific and technological evidence.

By the mid 1990's, the results of the transformation of research in this area began to appear in publications: a series of reports 'Protection and Conservation of European Cultural Heritage' began in 1994 as well as conferences beginning with a large meeting in Bologna 'Science, Technology and European Cultural Heritage' in 1989 gave a platform to the output from EC funded projects. Yet, the Study also uncov-

ered a widespread problem of access to 'grey' literature in unpublished reports, even if scientific outcomes of EC-funded research have been published in high-quality, well-cited international journals.

It is clear also that a range of electronic forms of communication and dissemination are becoming increasingly important to this field. Expert systems have been developed in projects on brick and stone. The project that developed an expert system for evaluation of deterioration of ancient brick masonry was especially innovative in producing the video 'Not just another Brick in the Wall'. Web pages are increasingly seen as important. In the future, the use of new information and communication technologies (ICT) will increase in scale, sophistication, complexity and availability, both in research and as educational tools. A smooth transition to full exploitation of the Web's potential is needed, so that scientific research is integrated into current developments in e-learning. The EC has also funded advanced study courses, such as the one at the Louvre in September 1998 'Sciences and Technologies of the Materials and the Environment for the Protection of Stained Glass and Stone Monuments' and one in April 2002 on 'Science and Technology of the Environment for Sustainable Protection of Cultural Heritage' at the UCL Centre for Sustainable Heritage.

Among the many achievements associated with European scientific and technological research for the protection and conservation of cultural heritage discovered by the STOA Study were an active research community; a body of research of unparalleled and enviable international quality and character, and a substantial rate of publication and imaginative tools of dissemination and publication. But we found only limited evidence of sustained integration of research results into conservation education and training courses, although researchers have taught and continue to contribute to courses of a practical as well as academic nature in universities and schools making particular use of research outputs.

### **Key role of education and training in bridging the gap between research and practice**

The STOA Study made several recommendations. Of particular relevance to this conference is recognition of the key role of education in bridging the gap between research and conservation practice. Communication of the usefulness of scientific research to future practitioners should form an integral part of education and training courses. Whether up-to-date information is included in course curricula seems to depend on the interest and scientific competence of the teacher. Practitioners should be made aware of the relevance to their work of sophisticated scientific re-

search carried out in research institutions and universities. Advanced techniques and instrumentation, the products of scientific research, also need re-engineering for use by small-scale practitioners. Education has the potential to be a key link between researchers and practitioners as part of the emergence of e-science. The STOA Study recommended that this could be improved if separate funding sources for research, evaluation, dissemination and integration are merged. This could be also achieved if EC DG Research and EC DG Culture and Education work more closely together on evaluating and disseminating research results to teaching institutions by supporting the development of manuals and other course materials. Education and training programmes can also take practical steps to integrate research into their courses. Existing material can be organised to integrate the concepts and tools from recent research, making it useful for not only education, but also project design and implementation, advocacy and institution building. Material can be contextualised by finding complementary material from related fields, including social and economic development and environmental protection.

A variety of educational techniques and media must be developed to meet the educational needs of different learner groups: primary learners, experienced professionals and SMEs, to explain the dimension and meaning of loss in order to sharpen the public's perception of cultural heritage. Research results must be broken down and presented in formats appropriate for defined learner groups, finding the most suitable means for communication. While lectures may suit primary learners, field campaigns may be more suited for seasoned professionals. Information can be publicised and shared in professional journals and on the web. Educational and training courses may themselves in turn throw up ideas which may develop into new or off-shoot research ideas.

### **Case study example: EC Advanced Study Course in London**

This integrated approach can best be illustrated with a practical example. An Advanced Study Course supported by the EC was held in April 2002 in London titled, 'Science and Technology of the Environment for Sustainable Protection of Cultural Heritage'. The course covered scientific, technological, environmental, architectural and engineering research for forecasting, monitoring and assessing damage to cultural heritage using the results of projects funded by the EC's Framework Programmes.

Fourteen leading researchers from 7 European member and candidate countries taught on the course held at the UCL Centre for Sustainable Heritage. 127 applications from 25 European member states, new-

ly accessioned states and candidate countries were received for the 35 free places on the course. The course concentrated on interdisciplinary learning and exchanges among European conservation scientists and preventive conservators in EU member states, newly accessioned states and candidate countries, to provide equal learning opportunities for all.

Using the 'Master Class' teaching model, a variety of learning methodologies and techniques were used: 40% of the time was devoted to traditional teaching, and 60% of the time spent on demonstrations, team exercises, laboratory work and site visits. Topics included: pollution effects on heritage materials, indoor environment and the moveable heritage, biodeterioration on monuments, surface and structural stability of historic buildings, mapping and expert systems, that is research subjects previously funded by the EC. The course also looked at how risk assessment and cost/benefits appraisal tools can be used to deliver sustainable protection of cultural heritage, that is, a balance between preservation and use. The teachers were asked to prepare session outlines, technical notes and bibliographies in advance. A course website was launched containing the aims of the course, timetable, course materials (including session outlines, technical notes and bibliographies), biographies of course teachers, a list of participants and other practical information. Course participants were asked to evaluate the course and to write an individual dissemination plan describing how they will diffuse the course information in their own countries. The EC is interested in following up the implementation of the dissemination plans.

We know the course has largely met the expectations of the 35 participants from the anonymous evaluation that we conducted. The evaluation asked all the participants to complete a questionnaire, rating the course overall as well as the specific sessions and asking for suggestions for improvements in future courses. The European Commission has been given copies of the completed forms. The general questions asked participants to grade the course from 1 to 5, where 1 is poor and 5 is excellent. Responses show that 93% of participants were satisfied with every aspect of the course grading it 3 or higher; 97% were satisfied with pre-course information and the structure of the course; 100% were satisfied with the course website; 88% were satisfied with the course content and 82% found the course relevant to their work.

Although this is a very good result, it is very difficult for an interdisciplinary course to meet everyone's expectation. The number of applicants demonstrates the demand for courses with certain characteristics: a high level of participant involvement, a problem-based

approach to learning and use of on-line course materials. There are many examples of specialized conservation education courses in Europe, yet there are no advanced 'in-service' courses that adequately bridge the interdisciplinary skills gap of practising professionals at this time when we are being asked to adapt to working on integrated research projects. We must develop quickly new skills including teamwork, project planning, management and evaluation, resource management, applying scientific and technological knowledge within a humanistic/art historical/architectonic/sustainability framework. Interdisciplinary courses are not there to make architects out of conservators or scientists out of curators. They give everyone a greater ability to do their own work better because of their exposure to and understanding of other professions' viewpoints.

The idea has been mentioned at the start of this conference of having a standardised interdisciplinary Masters curriculum, and work is underway in Europe to develop a conservation science curriculum. Both are interesting ideas if they apply to teacher education and to international researchers. But it would be a grave mistake to presume that the same approach can be applied everywhere for educating practitioners. True, we must think globally, but we must also act locally, with sensitivity towards local traditions, craft skills and language. I should like to conclude with an example: a postgraduate course currently under development – a course that has an international outlook but firmly rooted in the pioneering and progressive academic environment of University College London (UCL).

### **Case study example: Master of Science Course in Sustainable Heritage at UCL**

The UCL Centre for Sustainable Heritage was established in 2001 to address the gap in interdisciplinary teamwork in research and learning among the different strands of cultural heritage: historic buildings, collections and sites. Preventive conservation projects depend on the strength and cohesion of interdisciplinary teams and successful teams depend on reflective, competent and skilled practitioners. The FULCO Discussion Paper 'A Framework of Competence for Conservation-Restorers in Europe' presented in Vienna in 1998 and supported by the EC DG X (now Education and Culture) described reflective practice as 'the exercise of those moral, intellectual, discriminatory and human skills that characterise the mature professional and support the performance of core tasks'. The Centre has identified the need for an English language postgraduate course that is interdisciplinary in its approach, with a problem-centred and self-directed approach to learning and which makes

appropriate use of innovative technologies. This course will interest practitioners with some years' work experience and, in order to attract mid-career professionals, the course intends to be offered at times and in formats that suit them.

This course will mix professionals from widely different disciplines, and will utilise a range of innovative pedagogies, from C&IT to support self-directed learning to traditional face-to-face. It will develop technical knowledge, alongside negotiation and mediation skills and will give strong emphasis to issues relating to sustainability of the historic environment. It is expected to attract senior level architects, building services engineers, conservators, preservation managers and curators. As part of the course design, key aspects of the practitioner's work (professional, inter-professional, legal, financial, managerial/political and personal), the functions to be performed and indicators to demonstrate that these functions can be performed are being developed. This information is guiding the development of the core curriculum, learning strategies, teaching strategies and materials, course evaluation and review.

Course content may include:

- Heritage conservation in sustainable development, including urban regeneration.
- Heritage materials, characterisation, behaviour and assemblies: conservation and use requirements.
- Diagnostics, monitoring and predictive modelling for conservation and use.
- Methodologies, tools and techniques for developing solutions for adaptive re-use of the heritage.
- Designing appropriate solutions: balancing conflicting conservation requirements of buildings and collections, and people comfort.
- Maintenance, life-cycles and evaluation of solutions.
- Project management, including dealing with other professionals.

The aim of the course will be to provide professionals with the necessary understanding and skills to enable them to engage successfully as team players in today's complex conservation environment and to develop key skills which are generic and transferable, and which are needed alongside a knowledge-based curriculum. The Web will be used as an educational tool. The extent to which this will happen will depend on the comfort level of teachers and students and on the level of available resources. For example, a case-study could be interactive, but not the whole course which will be launched in October 2003 and advertisements will appear early in 2003 on the Centre's website at [www.ucl.ac.uk/sustainableheritage](http://www.ucl.ac.uk/sustainableheritage).

## Conclusion

The issue as to whether we are educating professionals or training individuals to develop specialised skills has still to be debated. On the one hand, there are those who have passed through a formal education who will feel that they have imbibed the philosophical/ethical theory and that as practitioners what they now need is to develop specialised skills. On the other hand, there are those who would argue that in day-to-day practice, they are continually developing their skills and what they now need is to develop their thinking. Both approaches are useful, necessary and applicable in different circumstances. Our challenge is to prepare professionals at whatever level for a future in which work is interdisciplinary and integrated teams are commonplace.

## References

CASSAR M., BRIMBLECOMBE P., NIXON T., PRICE C., SAB-  
BIONI C., SAIZ JIMENEZ C. and VAN BALEN K., *Technological Requirements for Solutions in the Conservation and Protection of Historic Monuments and Archaeological Remains*, Final Report to the European Parliament, Scientific and Technological Options Assessment Unit (Stoa Project 2000/13-Cult/04), 2001.

*Clean Air for Europe (CAFE) Programme: Towards a Thematic Strategy for Air Quality*, Brussels, 04.05.2001 COM(2001) 245 final, 2001.

ICOMOS, *International Charter for the Conservation and Restoration of Monuments and Sites (The Venice Charter)*, 1964.

ICOMOS, *The Australia ICOMOS Charter for Places of Cultural Significance (The Burra Charter)*, 1999.

## List of conferences, workshops and courses on results of cultural heritage research supported by the European Commission

'Science, Technology and European Cultural Heritage', European Symposium organised by the European Commission (DG XII – Environment Programme) as part of Bologna University's Ninth Centenary celebrations, Bologna, 13–16 June 1989.

'Research and Policy Issues related to the Conservation of Paper and Leather', Conference organised by the European Commission (jointly DG XII – Environment Programme and DG X – Culture Unit). The conclusions of two STEP research projects (analyses of the effects of air pollutants on paper and on leather) were presented, Delft, 27–28 June 1994.

'Research on the Conservation of Brick Masonry Monuments', Workshop organised by the European Commission to promote the establishment of a European network between the EC core-group of projects dealing with environmental research on brick masonry monuments and other initiatives in the same field, EUREKA: Eurocare, NATO and some national programmes, Leuven, 24–26 October 1994.

'Environmental Degradation and Conservation of Granitic Rocks in Monuments', Workshop organised by the European Commission. The results of two STEP research projects dealing with granite were presented. (See also Research Report No. 5 from the series, 'Protection and Conservation of Cultural Heritage'), Santiago de Compostela, 28–30 November 1994.

'Research on Effects of the Environment on Indoor Cultural Property', Workshop organised by the European Commission. This workshop presented the research results to date of an EC core group of 5 research projects funded under the Environment, Würzburg, 11–13 December 1995.

'Non-destructive Testing to Evaluate Damage due to Environmental Effects on Historical Monuments', Workshop organised by the European Commission, Trieste, 15–17 February 1996.

'Effects of Salts on Degradation of Monuments in Marine and Continental Environment', Workshop organised by the European Commission, (see Research Report No. 4 from the series, 'Protection and Conservation of Cultural Heritage'), Bari, 25–27 March 1996.

'Research for the Protection of Cultural Heritage: Opportunities for European Enterprises', 1st European Commission Conference, Rome, 18–19 December 1997.

'Research for the Protection of Cultural Heritage: Opportunities for European Enterprises', 2nd European Commission Conference, Aachen, 19–20 November 1998.

'Research for Protection, Conservation and Enhancement of Cultural Heritage: Opportunities for European Enterprises', 3rd European Commission Conference, Santiago de Compostela, 23–24 September 1999.

'Research for Protection, Conservation and Enhancement of Cultural Heritage: Opportunities for European Enterprises', 4th European Commission Conference, Strasbourg, 22–24 November 2000.

'Cultural Heritage Research: a Pan-European Challenge', 5th European Commission Conference, Cracow, 16–18 May 2002.

'Science and Technology of the Environment for the Sustainable Protection of Cultural Heritage', European Commission Advanced Study Course, London, 8–19 April 2002, Teaching materials can be found at: [www.ucl.ac.uk/sustainableheritage/learning/asc/index.html](http://www.ucl.ac.uk/sustainableheritage/learning/asc/index.html)

'Master of Science Course in Sustainable Heritage', UCL Centre for Sustainable Heritage, prospectus from: Joanna Saxon at [j.saxon@ucl.ac.uk](mailto:j.saxon@ucl.ac.uk)

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