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PREVENTIVE CONSERVATION: REDUCING RISKS TO COLLECTIONS  
International Course – Sibiu, June 18 June-6 July 2007

**SOURCES OF INFORMATION  
FOR CULTURAL HERITAGE RISK MANAGEMENT**

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**AA:** Author abstract

**ICCROM:** ICCROM abstract

**RW:** Robert Waller notes

**SM:** Stefan Michalski notes

## A. Risk Management outside the heritage field

### Books and articles

#### **AS/NZS 4360:2004 : Australian/new Zealand Standard for Risk Management**

2004, 28 pages, ISBN: 0-7337-5904-1

**AA:** Provides a generic guide for managing risk. It may be applied to a wide range of activities or operations of any public, private or community enterprise, or group.

#### **Against the Gods: The Remarkable Story of Risk**

Bernstein, Peter L., John Wiley & Sons, 1998, 400 p. ISBN: 0471295639

**RW.** A very well written and entertaining book about the history of risk. Its focus is on financial and particularly investment risk but is of general interest. It discusses the development of the concepts and mathematics behind risk analysis beginning with the earliest games of chance and proceeding through to complex computer-based investment strategies.

#### **Cartographies of Danger: Mapping Hazards in America**

Monmonier, Mark, The University of Chicago Press, Chicago and London, 1995, xiv+363pp.

#### **Introduction to Decision Analysis, A Practitioner's Guide to Improving Decision Quality**

David C. Skinner, Probabilistic Publishing, USA, 2001, 370p.

**AA:** Introduction to Decision Analysis is a practical, step-by-step guide to making better decisions. The book is designed for the practicing manager, technical professional, and decision analyst. The book provides proven techniques based on solid experience to help face complex, challenging, uncertain, and ambiguous choices. Decision analysis provides a process whereby all parties affected by the decision can be involved and participate in building a win-win solution. New to the second edition are: new thinking about uncertainty and ambiguity, Monte Carlo simulation, guides to implementing large projects, "How 2" guides, and full interactive integration.

#### **How do societies manage risks?**

Mileti D.S. and Peek-Gottschlich L.A., In: *Rational Decision-making in the Preservation of Cultural Property* edited by Baer N.S. and F. Snickars, Berlin: Dahlem University Press, 2001, p. 35-45. ISBN 3-934504-07-8

**AA:** Two fundamental approaches of societies in dealing with and managing the risk of losses from the occurrence of natural disasters are reviewed in order to raise questions and draw parallels for the preservation of cultural property from the yield of natural hazards. The two risk management approaches in the natural hazards field that are identified include dichotomizing risk and redistributing risk, costs, and losses onto others. These fundamental approaches are summarized and then related to how they result from the tendency of societies to adhere to the approach that most closely fits with the basic value system of that society, rather than the approach that might work best.

#### **Probabilistic Risk Assessment and Management for Engineers and Scientists**

Kumamoto, Hiromitsu, Henley, Ernest J., Institute of Electrical and Electronics Engineers, Inc. New York, USA, 1996

#### **Risk Analysis and Society, An Interdisciplinary Characterization of the Field**

McDaniels, Timothy and J. Small, Mitchell (eds.), Cambridge University Press, 2004

**AA:** This book provides an interdisciplinary and international characterization of the state of the art and science of risk analysis. Such an analysis is needed to ensure better management of choices concerning environmental, health and technology-based hazards that increasingly affect peoples' lives on an international scale. Including chapters by many of the world's leading risk researchers, this comprehensive work will provide insight into the scope of important social and technical issues that influence risks and their management.

#### **The Logic of Failure**

Dorner, D., Perseus Press; 1996, 222 p. ISBN: 0201479486

**RW:** This book describes the ways in which humans have difficulty in managing complex systems over time. In particular, the problems of maintaining a sense of priority in managing systems that provide little or no meaningful and timely feedback about the effect of implemented strategies. This speaks directly to the difficulties in preventive conservation planning where the consequences of measures taken will usually not be known for decades, if ever.

***The Psychology of Judgment and Decision Making***

Plous, S., McGraw-Hill Higher Education, 1993, 352 p. ISBN: 0070504776

**RW:** This book provides a very engaging and enlightening review of the ways we, as humans, make judgments under uncertainty. Heuristics (rules of thumb for thinking) and their resulting biases are explained. An interesting feature of this book is that representative questions, from many of the psychological studies referred to in the book, have been grouped together into a questionnaire at the beginning of the book. By completing this before reading the book, we can see to which fallacies we are subject before we are influenced by recently reading about a particular heuristic or bias. The book helps establish a sound perspective for considering the quality of our judgments in complex situations.

***The rational manager; a systematic approach to problem solving and decision making***

Kepner, C.H and Tregoe, B.B. Kepner-Tregoe, Princeton NJ. 1976

**SM:** A classic and readable book on basic decision-making using lists of pros and cons, etc.

***The wisdom of crowds***

Surowiecki, James. Doubleday, New York. 2004.

**SM :** A readable and entertaining book on how to get the best “collective wisdom” out of groups of people. Useful ideas for how to collect risk assessment expertise from museum staff. Explains when (and why) it is best to let individuals contribute prior to any group dynamics, and when (and how) to use groups in committees. Contains many of the elements that are more technically described in the literature on “eliciting expert opinion.”

***Uncertainty, A guide to Dealing with Uncertainty in Quantitative Risk and Policy Analysis***

Morgan, M. Granger and Henrion, Max, with a chapter by Small, Mitchell, Cambridge University Press, 1990

**Web pages*****Presidential/Congressional Commission on Risk Assessment and Risk Management, Final Report, 1997.***

Download at <http://www.riskworld.com/Nreports/nr7me001.htm>

***Risk Management, Australian/New Zealand Standard, AS/NZ 4360:2004.***

Can be purchased online at [www.saiglobal.com/shop/Script/search.asp](http://www.saiglobal.com/shop/Script/search.asp). The glossary in its 1999 form, as well as a full training program, at <http://www.riskmanagement.qld.gov.au>

***Institution of Occupational Safety and Health, Risk Management Toolkit***

<http://www.iosh.co.uk/index.cfm?go=technical.details&scid=13>

***Society for Risk Analysis (SRA)***

Provides an open forum for anyone interested in risk analysis

<http://www.sra.org/>

***Understanding Risk Analysis, American Chemical Society, 1998***

<http://www.rff.org/rff/Publications/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=14418>

***United Nations International Strategy for Disaster Reduction***

<http://www.unisdr.org>

## B. Risk management within the heritage field - general

### Books and articles

#### ***An integrated approach to risk assessments and condition surveys***

Taylor, Joel, In: *Journal of the American Institute for Conservation*, Vol. 44, N. 2, 2005, p. 127-141, ill., ISSN 0197-1360

**ICCROM:** Discusses the integration of risk assessment and collection condition surveys, with reference to the uncertainties inherent in each of these two procedures. While condition surveys provide information on a collection's immediate condition, risk assessments add predictive aspects on the collection's potential for deterioration. Looking at probable causes of damage in a condition assessment can provide a link to the agents of deterioration examined in a risk assessment. Combining these two complementary assessments can provide useful insights and clarify priorities for the collection's management goals. Comparison of the advantages and disadvantages of two types of evaluation processes in visual perception, top-down and bottom-up, are discussed as they apply to the integration of the two assessments. Additionally, the article describes the use of an integrated assessment approach for a survey of the English Heritage collections. In conclusion, it was found that integrating condition surveys with risk assessments could increase the knowledge and understanding of current and future expectations of a collection.

#### ***Archival management: preliminary risk assessment***

Halfen, Lawrence N., In: *The abbey newsletter*, Vol. 27, N. 2, 2004, p. 13-15, ISSN 0276-8291

#### ***Assessing the Values of Cultural Heritage: Research Report***

de la Torre, Marta (ed.); Los Angeles: The Getty Conservation Institute, 2002, 123 p.

**AA :** This report covers the assessment of values and consultations with the stakeholders, and it explores methods already used in ethnography, geography, economics, and environmental conservation.

[http://www.getty.edu/conservation/publications/pdf\\_publications/assessing.pdf](http://www.getty.edu/conservation/publications/pdf_publications/assessing.pdf)

#### ***Assessment and management of risks to cultural property***

Baer, N.S.; Baer, N.S. (ed.); Sabbioni, C. (ed.); Sors, André I. (ed.) , In: *Science, technology, and European cultural heritage: proceedings of the European symposium, Bologna, Italy, 13-16 June 1989*, Guildford, Surrey: Butterworth-Heinemann Publishers, 1991, p. 27-36, figs. ISBN 0-7506-0237-6

**AA :** Formal computations of risk are now a common-place in the nuclear power and chemical industries. Similarly, those responsible for the preservation of cultural property in museums, libraries and archives are beginning to consider more objective decision-making procedures for selecting conservation options. The process whereby sources of risk are identified and quantified forms the discipline of risk assessment while the selection among alternative policies developed in response to that risk is known as risk management. Sources of risk to cultural property are identified and characterized. Examples of risk management for cultural property based on laboratory data, e.g. the setting of light levels for exhibitions are presented.

#### ***Care and preservation of collections***

Michalski, Stefan, In: *Running a Museum: A Practical Handbook* edited by P. Boylan, Paris: International Council of Museums & UNESCO, 2004, p. 51-90

**AA :** Conservation and preservation literature can often seem to be dominated by huge (and ultimately unachievable) lists of things to do. One can become so busy following parts of this good advice that there is never time to stand back to see if this really is the best way to achieve the fundamental objective of preserving the collection. This chapter therefore adopts a recently developed way of viewing the preservation and conservation of collections as a whole, before focusing in on the details. At the same time, collection preservation remains an intensely practical business in which detailed practical advice is needed alongside this new way of thinking. Therefore this chapter also contains many practical examples and case studies (based on real events or an amalgam of real cases) drawing on the author's experience in surveying and advising museums, large and small, in many countries, including Egypt and Kuwait. Deciding priorities and assessing risks are among the topics discussed.

#### ***Climate Change and the Historic Environment***

Cassar, May, London: Centre for Sustainable Heritage, university College London, 2005, 104 p.

**AA :** Commissioned in 2002 by English Heritage, the report and underpinning research provides a view on the potential impact of various climate change scenarios on a range of historic assets over time.

**Conservation risk assessment: a strategy for managing resources for preventive conservation**

Waller, Robert , In: Preventive conservation practice, theory and research: preprints of the contributions to the Ottawa congress, 12-16 September 1994 / Roy, Ashok (ed.); Smith, Perry (ed.); IIC. London: International Institute for Conservation of Historic and Artistic Works, 1994, p. 12-16, fig., table.

**Conservation skills: judgement, method and decision making**

Caple, Chris , London: Routledge, 2000 ; XIV, 232 p. : ill. ; 25 cm. ISBN 0-415-18881-4

**ICCROM:** An overview of the issues facing conservators of historic and artistic works. This extensive work not only describes the nature of conservation but also provides an ethical framework to which the conservation of objects as diverse as 'old masters' to the ephemera of the twentieth century can be related. Drawing on case studies of well-known objects such as the body of the Lindow Man, Michaelangelo's Sistine Chapel frescoes and the Statue of Liberty, the author addresses the following issues: perception, judgment and learning; reasons for preserving the past; the nature and history of conservation; conservation ethics; recording, investigating, cleaning of objects; stabilization and restoration; preventive conservation; decision making and responsibilities.

**Cost/benefits appraisals for collection care: a practical guide**

Cassar, M., London: Great Britain Museums and Galleries Commission, 1998.

**AA :** This book demonstrates how museums can move away from decisions based solely on cost, towards a more balanced assessment of benefits of different decisions. 2 case studies demonstrate the use of cost/benefit appraisals in conservation and collection care decisions.

**Covering Your Assets: Facilities and Risk Management in Museums**

Merritt Elizabeth E. (ed.); Washington D.C.: American Association of Museums, 2005, 203 p.

**AA :** Presents the results of a national survey on how museums develop, set and implement policy for facilities use and risk management. Featuring insightful essays on best practices from experts inside and outside the museum field, the book compares and contrasts the very latest data on how museums around the country operate their facilities, manage space and risk, and prepare for emergencies.

**Cultural property risk analysis model: development and application to preventive conservation at the Canadian Museum of Nature**

Waller, Robert R. , Göteborg: Acta Universitatis Gothoburgensis, 2003 ; XVI, 189 p. : fig., tables ; 28 cm. , (Göteborg Studies in Conservation, 13) , Doctoral Dissertation, Göteborg University. Institute of Conservation, Göteborg, Sweden ISBN 91-7346-475-9, ISSN 0284-6578 .

**AA :** A cultural property risk analysis model was developed to guide priorities for resource allocation to preventive conservation under conditions of uncertainty. This model recognizes the preservation system as a subsystem within a collection management system, which, in turns, nests within progressively broader systems. Within this set of systems and subsystems, the contribution of preventive conservation to the continuance and betterment of humanity is recognized. Carefully defining the scope of the preservation system ensures clear understanding of interactions with surrounding systems. The risk analysis model then disaggregates risk through hierarchies both of sources of risk and of divisions of collections. The level of technical risk analysis varies throughout these hierarchies depending on the potential significance of the disaggregate portion considered. This approach makes the entire modeling process as efficient as possible. This approach is applicable to all forms of cultural property. Its broader adoption will benefit the fields of preventive conservation, conservation research, and cultural heritage management.

**Dalla carta di rischio archeologico di Cesena alla tutela preventiva urbana in Europa**

Gelichi, Sauro (ed.) / Comune di Cesena. Assessorato all'urbanistica. Cesena, Italy , Firenze: All'insegna del giglio, 2001 ; 118 p. ISBN 19990305-19990306.

**Defining suitability of museum galleries by risk mapping**

Bradley, Susan , In: *Triennial meeting (14th), The Hague, 12-16 September 2005: preprints* / ICOM Committee for conservation. London: James & James, 2005, p. 574-581, figs., ISBN 1-84407-253-3

**AA :** In the British Museum, attitudes towards the exhibition of objects in museum galleries are changing. Adaptation of existing galleries can go ahead within tight financial constraints and without a feasibility study phase, limiting the opportunity for conservation specifications to be implemented and creating opportunities for new exhibits without considering preservation needs. To ensure that conservation concerns are taken into account, a gallery risk mapping exercise has been begun at the British Museum. Published work on risk assessment in conservation which has focused on objects has been adapted to nine environmental factors (temperature, relative humidity, ambient pollutants, particulates, visible light, ultraviolet light, vibration, and insect pests). The outcome will provide planners with the information to design object-friendly galleries.

### **Developing professional uncertainty**

Ashley-Smith, Jonathan , In: *Tradition and innovation: advances in conservation*. Contributions to the IIC Melbourne congress, 10-14 October 2000 / Roy, Ashok; Smith, Perry (ed.); International Institute for Conservation (IIC). London, United Kingdom. London: IIC, 2000, p. 14-17, fig., ISBN 0-9500525-9-0

Descriptors / Mots-clés

**AA :** Hard Sciences such as chemistry contain small but significant areas of unpredictability. Where there is complexity there may be greater unpredictability. This is the case with the relationship between museum collections and their environments. The deterministic laws of science can only be applied to museum objects with great uncertainty, made even greater by the value judgments that drive museum policy. Study of individual objects will lower that uncertainty, but in general a probabilistic approach to future outcomes is the only one that can be used with confidence.

### **Effective preservation: from reaction to prediction**

Waller, Robert; Michalski, Stefan , In: *Conservation: the Getty Conservation Institute newsletter*, Vol. 19, N. 1, 2004, p. 4-9, ill.,

[http://www.getty.edu/conservation/publications/newsletters/19\\_1/feature.html](http://www.getty.edu/conservation/publications/newsletters/19_1/feature.html)

### **Fragments of the world: uses of museum collections**

Keene, Suzanne , Oxford: Elsevier Butterworth-Heinemann, 2005 ; X, 198 p. : ill. ; 23,5 cm. , ISBN 0-7506-6472-X

**AA:** The role of the museum is changing, from object- and collections-centred to people-centred. Further, there are political pressures on museums to make proper use of all their resources, including the stored collections. What then, is the purpose of the collections, besides exhibition? How can we defend their value? What will be the effects of digitization? Should collections be disposed of or dispersed? The book examines these questions using clearly explained cultural theory with examples of collections used for research, learning, memory and identity, creativity and enjoyment, from around the world.

### **Gestion des risques par l'étude de l'environnement**

Arnold, Andreas , In: *Entretien continu du patrimoine culturel contre la pollution fondé sur les actes du séminaire "Entretien continu du patrimoine culturel contre la détérioration due à la pollution et à d'autres facteurs similaires: évaluation, gestion des risques et sensibilisation du public"*. Séminaire organisé conjointement par le Conseil de l'Europe et le Riksantikvarieämbetet (Direction nationale du patrimoine) / Conseil de l'Europe = Council of Europe. Strasbourg, France. Strasbourg: Editions du Conseil de l'Europe, 2000, p. 55-63, (Patrimoine culturel, n. 40) , ISBN 92-871-4232-7

### **Group report: paradigms for rational decision-making in the preservation of cultural property**

Ashworth G.J., Rapporteur , In: *Rational Decision-making in the Preservation of Cultural Property* / edited by Baer N.S. and F. Snickars, Berlin: Dahlem University Press, 2001, p. 277-293. ISBN 3-934504-07-8

**AA :** Decision-making is a central task in the preservation of cultural property. This chapter explores potential paradigms from which a system of rational decision-making can be constructed. The usefulness of the economic paradigm and economic rationality for this task is considered, especially cost-benefit analysis and utility. This is then compared with other possible approaches, such as decision-making models in bounded rationality, simple marketing paradigms, and risk management strategies. Some practical organizational aspects using decision trees and economic rationalism are introduced. Conclusions are drawn on the implications of a global approach and upon the usefulness of the economic approach.

### **Group Report: Values and Society**

R. Nanda, Rapporteur , In: *Rational Decision-making in the Preservation of Cultural Property* / edited by Baer N.S. and F. Snickars, Berlin: Dahlem University Press, 2001, p. 211-222. ISBN 3-934504-07-8

**AA :** Preservation of objects and sites of cultural value now involves or influences many actors; in turn, what is preserved, depends on decisions based on "value" criteria. These values are often complex, diverse, continuously evolving, and influenced by society—local and global. In today's world economy, where interest in cultural heritage transcends national boundaries and where the range of cultural objects and properties has broadened manifold, it is imperative to ensure that preservation decision-makers take into account a variety of factors before concluding on "what" should be preserved and "how." A sustainable approach towards preservation coupled by the availability of a platform to share views and the involvement of the public should guide preservation decisions in the future. The future of the preservation movement should be based not on elite ideas but on the involvement of the masses, led by the process of consultation, partnership, and management.

**Interfacing research and risk management for a better safeguarding of cultural heritage**

Brokerhof, Agnes et al. in *Proceedings of the 7<sup>th</sup> European Conference "SAUVEUR"*, Safeguarded cultural heritage, Understanding & Viability of the Enlarged Europe, 31<sup>st</sup> May – 3<sup>rd</sup> June 2006, Prague, Czech Republic, ITAM, Institute of Theoretical and Applied Mechanics of the Academy of Sciences of the Czech Republic, Volume 2 – Posters, p. 1030 - 1033

**Les facteurs quantifiables: la gestion interne du risque**

Kleitz, Marie-Odile, In: *Biodétérioration et désinfection des collections d'archives et de bibliothèques: actes des deuxièmes journées sur la conservation préventive*, Arles, 18 et 19 novembre 1996 / Desproges, Camille (ed.); Arles: Centre de conservation du livre, 1999, p. 64-87. ISBN 2-913624-01-4

**Know risk**

Jeggle, Terry (ed.) / United Nations Inter-agency secretariat of the International Strategy for Disaster Reduction (UN-ISDR). Geneva, Switzerland, Geneva: United Nations ISDR, 2005 ; 376 p. : ill., figs., tables ; 30 cm. , ISBN 92-1-132024-0

**Managing conservation in museums**

Keene, Suzanne, London: Butterworth Heinemann, 1996 ; XI, 265 p. : fig., tables ; 23 cm. , ISBN 0-7506-2384-5  
**ICCROM:** This book aims to show conservators and other professionals in museums and libraries that professional management information can be as useful to them as is their own specialist expertise. It reviews the climate in which museums operate today, and then describes the most up-to-date and relevant management techniques. The management information techniques which are explained and skeptically reviewed include performance indicators, strategic planning decision making and priority setting, data analysis and presentation, risk and cost-benefit analysis, and information analysis. These are applied to preventive conservation, work management and conservation planning. In this way, a link is established between the world of professional management and the current priorities and preoccupations of conservators. These are set in the context of the present museum management climate.

**Negotiating the climate: a plan for the appraisal of control options in historic houses**

Taylor, Joel, In: *The conservator*, N. 26, 2002, p. 85-92, figs., tables ISSN 0140-0096

**AA :** A decision making tool for assessing priorities for climate control in historic houses has been piloted at two English Heritage (EH) historic houses. The tool, an environmental management plan (EMP), had been designed by EH to help decision-making regarding control strategy by bringing together all the relevant information and expertise at the same time. The focal point of the EMP is a facilitated meeting between various stakeholders and experts about the importance of the climate issues and the effectiveness of different control options, using a framework based on cost-benefit analysis. This article reports trials of such meetings to reach agreed broad solutions about climate control at Kenwood House and Chiswick House. It is shown that by careful pre-planning, use of a prepared decision matrix and an external facilitator, agreed solutions can be achieved in 1 day. Attention is drawn to the need for the issues affecting the decision to be extremely well defined, and to the importance of negotiation.

**Out of the darkness**

Keene, Suzanne, In: *Museums journal*, Vol. 105, N. 8, 2005, p. 26-29, ill., ISSN 0027-416X

**A paradigm shift for preventive conservation, and a software tool to facilitate the transition**

Waller, Robert; Michalski, Stefan, In: *Triennial meeting (14th), The Hague, 12-16 September 2005: preprints / ICOM Committee for conservation*. London: James & James, 2005, p. 733-738, figs., ISBN 1-84407-253-3

**AA :** Historically, like other industries and agencies that assess and manage risk, conservation adopted a process-control model of preservation. These industries and agencies recognize the process model is fundamentally inadequate and are replacing it with a predictive model based on anticipated risk. Over the past decade, preventive conservation also witnessed the development of systematic and predictive methodologies, but on a somewhat ad hoc basis. This article introduces a more rigorous intellectual framework adapted from the risk analysis and operations research fields. A comprehensive predictive model is necessarily complex and dependent on large amounts of shared expert knowledge but is possible.

**Practical uses of risk analysis**

Ashley-Smith, Jonathan, In: *The paper conservator*, Vol. 25, 2001, p. 59-63 ISSN 0309-4227

**AA :** What distinguishes professional conservators from others who have a practical involvement with historic objects is the reflective nature of their decision-making. Decisions about practical treatments involve elements of risk: probabilities of unwanted outcomes that reduce the value of the treated object. The continuing development of

conservators should be aimed at reducing the uncertainty of decision outcomes by increasing knowledge, and decreasing the uncertainty of action outcomes by increasing practical skill.

***Preparación ante el riesgo: un manual para el manejo del patrimonio cultural mundial***

Stovel, Herb / UNESCO. World Heritage Centre = Centre du patrimoine mondial. Paris, France / ICCROM. Rome, Italy, Rome: ICCROM, 2003 ; X, 196 p. : ill., tables ; 24 cm. , ISBN 92-9077-182-8

***Preserving what is valued***

Clavir, M.; Museums, Conservation and First Nations. UBC Press 2002, The University of British Columbia, ISBN 0-7748-0860-8.

***Rational Decision-making in the Preservation of Cultural Property***

Baer N.S. (ed.); F. Snickars (ed.), Berlin: Dahlem University Press, 2001, 304 p. ISBN 3-934504-07-8

**AA:** The term value is most often used in the context of relative monetary worth. It is in this context that economists and other social scientists have sought to define the value of such environmental goals as clean air and clean water, leading to concepts of "green values." Yet the term implies more than simple financial valuation, especially when applied to often intangible public goods, as it also considers the relative place that such goals hold in the choices we as individuals and society as a whole make. Those charged with the stewardship of cultural property, be it an individual document in an archive, an historic landscape or an entire art city on the World Heritage List, are faced daily with decisions based on often conflicting value systems. It has become obvious that public policy — as determined by such socioeconomic concepts as environmental accounting, cost-benefit analysis, sustainable development, valuation of loss of cultural property, and intergenerational equity — plays a major role in determining what cultural properties will be saved: which books, documents, artifacts, and monuments. So also, public policy determines which portions of our cultural history will be lost to decay and development. In a synthetic approach, an international interdisciplinary group of experts drawn from the social and physical sciences together with specialists from the fields of architectural preservation, museums, and library and archive preservation confronted these issues. The usefulness of "World Heritage" as a planning concept, the mechanisms by which society sets its priorities, the balance between short- and long-term risk factors, the definition of what constitutes the artifact in the information age, and the validity of the application of the value systems of industrialized nations to the cultural property of developing nations are considered in the examination of the applicability of economic and other models to rational decision-making in the preservation of cultural property at the several levels of society and institutions.

***Risicoanalyse in Museum Amstelkring, Ons'Lieve Heer op Solder: Wallers "Cultural property at risk analysis model" toegepast op een uniek historisch gebouw en zijn collectie***

Muller, Tine, In: *CR: interdisciplinair vakblad voor conservering en restauratie*, Jaargang 5, N. 3, 2004, p. 30-37, ill., ISSN 1566-3876

Descriptors / Mots-clés

**AA :** Museum Amstelkring, Ons'Lieve Heer op Solder and the ICN extensively researched the museum building and its collection to establish the influence of a series of risk factors defined in Robert Waller's Cultural property risk analysis model. His method is based on quantifying chances of risks for different parts of a collection, with the aid of a calculation system. The results show the different risk factors and provide an instrument for management decisions for the complete collections. Ten generic risk factors can be divided into three types: seldom occurring but catastrophic, hardly ever occurring with considerable damage and frequently occurring with only slight damage. Fine tuning these combinations for every part of the collection of Museum Amstelkring gave a result of 58 specific risks, with an explanation how they can occur. It is necessary to establish the value of the different parts of the collection beforehand. These values can be cultural, artistic, historic, functional or emotional. The analysis helps awareness of the knowledge of the collection and omissions. Risk assessment influences management decisions and teambuilding within the organisation. Risk assessment is an aid for the formulation of procedures within the organisation, for (technical) adjustments that need financial and proposals for further research to fine-tune the calculations.

***Risikoabschätzung als Werkzeug der präventiven Konservierung: die Sammlung der Schack-Galerie in München***

Herdin, Marcus, In: *Restaura: Zeitschrift für Kunsttechniken, Restaurierung und Museumsfragen*, Jahrgang 109, Heft 6, 2003, p. 400-407, ill., figs., tables, ISSN 0933-4017

**AA :** Risk assessment is a comprehensive description and assessment of the various damaging factors. The gathered information (data on environment, light, pollutants, etc.) is then evaluated in relation to each other. As an example, risk assessment was conducted for the collection of Adolph Friedrich Graf von Schack, especially built for it in Munich's Prinzregentenstraße, a much traveled and congested street. From a conservation point of view, the building



possesses a number of deficits. The heating system cannot be adjusted as needed. Drafty windows make controlling the environment difficult and allow pollutants to enter. The wall-to-wall carpets in the exhibition rooms are dust collectors. The dimming system on the overhead lights is inadequate which means additional unsatisfactory environmental and light conditions for the collection. The main risk factors determined are: environment, light, gaseous and solid air pollutants. Various software and graphs are used to evaluate and demonstrate the measuring results. The recommendations drawn from the assessment are manifold. For example, dividing the gallery into zones could stabilize, in particular, the environment in the entrance area. The drafty windows and the entire heating system need attention, respectively the heating system should be replaced with one that provides an even temperature.

#### **Risk assessment for object conservation**

Ashley-Smith, Jonathan , Oxford: Butterworth Heinemann, 1999 ; XIV, 358 p. : ill., fig. ; 23 cm., ISBN 07506 2853 7

**ICCROM:** This book explains the mechanisms of deterioration of museum artifacts, quantifying the probability that damages will occur and estimating the rate of progress when it does. The principles outlined and the information provided from a foundation for cost-benefit analysis of conservation proposals. It also gives comprehensive explanations of scientific or mathematical material to take into consideration the readers who have no background in these areas, alongside a basic introduction. The structure of the book provides a logical progression through tools concepts information and examples.

#### **Risk assessment of Museum Amstelkring: application to an historic building and its collections and the consequences for preservation management**

Brokerhof, Agnes W.; Luger, Tessa; Ankersmit, Bart; Bergevoet, Frank; Schillemans, Robert; Schoutens, Peter; Muller, Tine; Kiers, Judikje; Muething, Garnet; Waller, Robert , In: *Triennial meeting (14th), The Hague, 12-16 September 2005: preprints / ICOM Committee for conservation*. London: James & James, 2005, p. 590-596, figs., ISBN 1-84407-253-3

**AA :** Museum Amstelkring is an historic building with a hidden church and mixed collections. It attracts a large number of visitors and the church is still in use. The museum is concerned that it can no longer adequately balance preservation and presentation requirements. ICN was asked to give an integral advice on preventive conservation, visitor impact, and collection management, and to investigate whether building an extension to the museum might ease the pressure on the main building and create better opportunities for the collection. A complete risk assessment and other investigations were carried out to attach objective measures to perceived issues and quantify risks so that their relative importance could be determined. This approach enables museum management to prioritize and make well reasoned decisions about improvements and investments. For museum staff it draws attention to weaknesses in working procedures while for conservation scientists it reveals issues that need further research.

#### **The impact of climate change on cultural heritage: evidence and response**

Cassar, May; Pender, Robyn , In: *Triennial meeting (14th), The Hague, 12-16 September 2005: preprints / ICOM Committee for conservation*. London: James & James, 2005, p. 610-616, figs., ICOM Committee for conservation triennial meeting, 14th, The Hague, Netherlands, 20050912-20050916. ISBN 1-84407-253-3

#### **Risk assessment: a tool to compare alternative courses of action for the conservation of iron-gall ink containing objects**

Pedersoli, José Luiz, Jr; Reißland, Birgit , In: *Restaurator: international journal for the preservation of library and archival material*, Vol. 24, N. 4, 2003, p. 205-226, tables, ISSN 0034-5806

**AA :** A framework for the quantitative estimation of the risks associated with possible courses of action for the conservation of iron-gall ink containing paper objects has been developed. It includes the identification of all possible undesired effects resulting from each course of action, followed by the estimation of the probability that a given undesired effect will occur, as well as of the loss of value it would lead to. Four alternative courses of action were considered in this study: 1) no action, 2) preventive conservation, 3) combined calcium phytate/calcium bicarbonate treatment and 4) paper splitting. Because the magnitude of risk closely depends on the condition of a particular object, it is suggested that risk assessment for entire collections should be preceded by dividing the collection into sub-group of objects having similar condition. By quantifying the risks involved in different possible scenarios, a comparison among conservation alternatives may become more objective, and decision-making is likely to be based on a better informed judgment.

**Risk management at the Fitzwilliam Museum, Cambridge**

Greeves, Margaret , In: *Journal of architectural conservation*, Vol. 7, N. 3, 2001, p. 67-79, ills., ISSN 1355-6207  
 Descriptors / Mots-clés

**AA :** The Fitzwilliam Museum, Cambridge, is a Grade I listed building housing an internationally important art collection of half a million objects. The building and the collections belong to the University of Cambridge, of which the museum forms a department. Maintenance of the fabric and equipment is the responsibility of the university's Estate Management and Building Service, with whom museum staff work closely to ensure appropriate conditions for the collections and the reduction of risks objects and staff. Following the drafting of a conservation plan and an examination of risks and their management, this case study reviews the museum's risks. It proposes the development of a building bible and attention to staff communication as essential elements of the risk management strategy it outlines. A second paper will examine the effectiveness of the conservation plan in relation o maintenance works and an extension of 3,000 square meters, which will be built in 2002-3.

**Risk management by environmental monitoring**

Arnold, Andreas , In: *Sustained care of the cultural heritage against pollution*. Based on the seminar entitled "Sustained care of the cultural heritage against deterioration due to pollution and other similar factors: evaluation, risk, management and public awareness". Seminar organised jointly by the Council of Europe and the Riksanstvarieämbetet (National Heritage Board) / Council of Europe = Conseil de l'Europe. Strasbourg, France. Strasbourg: Council of Europe Publishing, 2000, p. 53-61, Cultural heritage, n. 40. ISBN 92-871-4233-5

**Risk management of digital information: a file format investigation**

Lawrence, Gregory W.; Kehoe, William R.; Rieger, Oya Y.; Walters, William H.; Kenney, Anne R. / Council on Library and Information Resources. Washington, United States , Washington, D.C.: Council on Library and Information Resources, 2000 ; VIII, 75 p. : tables ; 28 cm. , ISBN 1-887334-78-5

**Risk management, value and decision-making**

Baer, Norbert S., In: *The paper conservator*, Vol. 25, 2001, p. 53-58 ISSN 0309-4227

**AA :** In over three decades of teaching at the Conservation Center of the Institute of Fine Arts, New York, the author has explored a number of organizing principles to synthesize the vast body of materials science encountered in the conservation of cultural property. Among these has been the concept of risk management as defined by various committees of the National Academy of Sciences. This led logical to the question of value and values. In the recent past, the author has engaged in interdisciplinary dialogue with economists, mathematicians and political scientists, considering mechanisms of decision-making in the preservation of cultural property. Using selected examples drawn from the assignments the author has given his students, the evolution in his teaching methods and the parallel evolution of the discipline of conservation are examined.

**Risk map: a project to aid decision-making in the protection, preservation and conservation of Italian cultural heritage**

Accardo, Giorgio; Altieri, Antonella; Cacace, Carlo; Giani, Elisabetta; Giovagnoli, Annamaria , In: *Conservation science 2002: papers from the conference held in Edinburgh, Scotland 22-24 May 2002* / Townsend, Joyce H. (ed.); Eremin, Katherine (ed.); Adriaens, Annemie (ed.); London: Archetype Publications, 2003, p. 44-49. ISBN 1-873132-88-3

**AA :** The Risk Map of Cultural Heritage is a current research project of Istituto Centrale del Restauro (ICR) which was undertaken in order to plan in a more rational and economical way the maintenance, conservation and restoration of architectural and archaeological monuments of Italian cultural heritage. The first step of the project was to produce a Geographic Information System (GIS), which works as a data processing centre and is located in the Physics Laboratory of ICR. The GIS collects, processes and manages both cartographic and alphanumerical data, generated from the peripheral units based in many Italian towns - Soprintendenze - which are territorial departments of the Ministry of Culture. The connection between environmental danger in the territory and the risk situation for the monument can be highlighted more specifically through a mapping process, i.e. the overlapping of computerised maps with information content (air pollution, climate, earthquake, etc.) and the distribution of cultural assets. The second step was to ensure that the data mentioned above were homogeneous through the definition of standardised schedules at different levels of detail. The schedules concern information both on the environment and the conservation state of the monuments.