

Recording, Documentation, and Information Management for the Conservation of Heritage Places

GUIDING PRINCIPLES

Robin Letellier

with contributions from

Werner Schmid and François LeBlanc



The Getty Conservation Institute

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The Getty Conservation Institute, Los Angeles

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The Getty Conservation Institute works internationally to advance the field of conservation through scientific research, field projects, education and training, and the dissemination of information in various media. In its programs, the GCI focuses on the creation and delivery of knowledge that will benefit the professionals and organizations responsible for the conservation of the visual arts.

For further information on the RecorDIM Initiative, visit the Getty Web site at www.getty.edu/conservation/field_projects/recordim/index.html

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Heritage information—the activity and products of recording, documenting, and managing the information of cultural heritage places—should be not only an integral part of every conservation project but also an activity that continues long after the intervention is completed. It is the basis for the monitoring, management, and routine maintenance of a site and provides a way to transmit knowledge about heritage places to future generations.

Today the world is losing its architectural and archaeological cultural heritage faster than it can be documented. Human-caused disasters, such as war and uncontrolled development, are major culprits. Natural disasters, neglect, and inappropriate conservation are also among the reasons that this heritage is vanishing. Although we should strive to preserve as much as possible of our architectural and archaeological cultural heritage, we cannot save everything. One of the options available to heritage managers and decision makers is to document this heritage before it is lost.

Since its earliest days, the work of the Getty Conservation Institute (GCI) has included the recording, documentation, and information management of built cultural heritage. Over the past twenty years, the GCI has offered its leadership in this area by conducting training courses, organizing expert meetings, and undertaking model field projects in different parts of the world.

In 2002 the GCI brought together a group of international experts at the Getty Center to explore ways to strengthen the documentation component of built heritage conservation through the development of tools and training and through improved communication between users and providers. This group—working together as the Recording, Documentation, and Information Management (RecoDIM) Initiative—identified a series of issues, which included the urgent need for a publication on principles and guidelines for recording and documenting cultural heritage places. The GCI undertook the task of addressing this need. The result of this effort is this book: *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Guiding Principles*.

This publication provides a comprehensive overview of the fundamental principles and guidelines for documenting cultural heritage places. It seeks to aid heritage managers and decision makers in understanding their roles and responsibilities in this essential activity. It acknowledges the work by international organizations such as ICOMOS and the World Heritage Center in this field, and adds to their efforts by offering arguments and a framework for integrating documentation into the conservation process. The section on effective documentation and information management offers

new concepts and ideas to advance the field. The glossary and annotated selected bibliography will help the reader to further explore this important subject.

Robin Letellier, the author of this book, began writing the manuscript in the 1980s. This book is a synthesis of all he has learned throughout his professional career, which ended abruptly a few months prior to the publication of this book. Robin passed away on April 20, 2007.

Robin Letellier was a person highly regarded for his professional skill and his humanity. He was well known internationally for his work in the field of recording and documentation of cultural places, carried out first at Parks Canada, and later as an independent expert. Robin had further explored the subject in his involvement with CIPA (Comité international de photogrammétrie architecturale), where he was secretary, then vice president, and with the GCI/ICOMOS/CIPA RecorDIM International Initiative, which he coordinated from its inception in 2002. We will remember him and his work.

For their work on this project, my particular thanks are extended to the late Robin Letellier, for revising and updating his manuscript, and to Werner Schmid, for his contribution to the Overview section, the key definitions, the glossary, and the bibliography. I am grateful for the insight, creativity, and tenacity they have brought to this undertaking.

I would also like to thank François LeBlanc, head of field projects at the GCI, for his leadership of the institute's documentation initiative, and Rand Eppich, GCI senior project manager, for his work on the companion volume, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, which illuminates, through practical cases, the application of these guiding principles.

It is hoped that this publication and its companion volume will be a valuable tool for those responsible for the safeguarding of our cultural heritage.

Timothy P. Whalen

Director

The Getty Conservation Institute

Who is this book for?

R*ecording, Documentation, and Information Management for the Conservation of Heritage Places: Guiding Principles* is for all those who are managing cultural heritage places. It is meant to be particularly useful to heritage managers and decision makers who are developing recording, documentation, and information management strategies for territories, sites, groups of buildings, or single monuments, or who feel the need to improve current policies and standards by reviewing and more effectively integrating them into the conservation process. It is also for all those inside or outside the conservation profession who have a particular interest in heritage places and wish to learn more about best practices in making sure that information is produced and made available.

The focus of the book is conservation driven. Readers will find up-to-date information on how to integrate recording, documentation, and information management into the conservation process and make it a powerful tool for decision making and planning. Valid reasons for investing in recording, documentation, and information management activities will be explored, stressing the concrete benefits for better heritage management and conservation.

Guiding Principles was conceived in conjunction with and is complementary to the publication *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, edited by Rand Eppich of the Getty Conservation Institute (GCI). This companion volume consists of a collection of practical cases that emphasize how recording, documentation, and information management can contribute to better results in the conservation of cultural heritage places. *Illustrated Examples* has a more technical focus and is intended to assist heritage managers and conservation professionals in selecting recording tools and methodologies and in matching different information requirements and project needs.

In order to create a common language between these two publications and to make the information as clear as possible to the reader, a number of key terms and definitions have been defined. A list of these terms, with which the reader is advised to be familiar, appears on page xv. A complete glossary of terms is provided at the back of this book.

We hope readers will find these publications useful, obtain answers to their questions, learn to appreciate the benefits of recording, documentation, and information management, gain enough specific information to assess current practices and perhaps revise some of them, feel more confident in

discussing documentation-related issues, and become advocates for the importance of recording, documentation, and information management as an integral part of the conservation and management of heritage places.

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and

Robin Letellier, author, international coordinator
for RecorDIM Initiative

Werner Schmid, technical editor, private conservator
with additional editorial support from Amel Chabbi

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Over the past two decades, many conservation professionals have taken the time to review and provide feedback on this publication at various stages of development. The first reviews took place in the 1990s, when the first manuscript was developed and tested as a teaching aid within ICCROM's Architectural Conservation Course, or ARC program. The second reviews took place between 2002 and 2007, during several workshops and meetings organized by the Getty Conservation Institute (GCI).

The acknowledgments hereafter relate primarily to organizations and people who understood the need for, and the benefits of, high-quality heritage recording and supported in a significant way the idea of integrating the activities of recording, documentation, and information management to conservation processes and practices. Their encouragement provided the support needed to undertake the writing of this volume.

I would like to acknowledge the assistance and commentary received in the project's early stages from ICCROM, and in particular Jukka Jokilehto, who was at the time responsible for the ARC program, and Sir Bernard M. Feilden, former director of ICCROM. Both encouraged the writing of such a publication and suggested it could be a complement to their own publication, *Management Guidelines for World Cultural Heritage Sites*.

I would also like to acknowledge the support provided by Parks Canada, in particular that of Christina Cameron, director general of national historic sites, in encouraging the production of these guidelines, and of Susan Buggey, director of the historical research division, who inspired me to provide Parks Canada with a long-term National Heritage Recording Program for Canadian-designated historic sites.

It is important to mention that this publication would not have been possible without the interaction that took place between Canadian heritage recorders and conservation professionals of all disciplines while making use of heritage-recording expertise over the past thirty years. This interaction was largely initiated by the Public Works and Government Services Canada conservation group, formerly managed by Susan Hum-Hartley, former director general of real property services for Parks Canada; Ron Malis, former director of the Heritage Conservation Directorate; and Jack Vandenberg, director of the Heritage Conservation Directorate. All of them strongly supported technical transfer of recording practices through missions abroad and training programs such as ICCROM's ARC program.

I also acknowledge the support from Louis Patenaude, secretary general of the Canadian Commission for UNESCO, who financially helped me contribute to the ARC program with the understanding that this publication's content would benefit organizations in all regions of the world.

I would like to acknowledge in particular the very important contributions of Herb Stovel, past secretary general of ICOMOS and past president of ICOMOS Canada, whose persistent questions and challenges helped build structure and improve clarity of expression in the first manuscript. His international experiences provided the knowledge needed to articulate how best to create inroads worldwide through these guidelines.

In 2000, Chris Gray, Gaetano Palumbo, and Rand Eppich of the GCI saw the value in making the above-mentioned manuscript available to the conservation community at large. I acknowledge their efforts in initiating discussions toward making these guiding principles of value to the GCI. Much of the credit for undertaking the second review of the manuscript, which began in 2002, goes to Jeanne Marie Teutonico and François LeBlanc's clear understanding that recording, documentation, and information management are essential activities that must be integral to any conservation practice. François LeBlanc expressed this vision during CIPA's 18th International Symposium in Potsdam in 2001, where he proposed to work toward bridging some of the gaps that exist between users and providers of information. His proposal led to the creation of the RecorDIM Initiative, which in turn led to this publication.

The publication's editorial board members, namely Alejandro Alva (ICCROM Centre, Rome), Kate Clark (Heritage Lottery Fund, United Kingdom), Rand Eppich (GCI, United States), John Fidler (English Heritage, United Kingdom), François LeBlanc (GCI, United States), Frank Matero (University of Pennsylvania, United States), and Giora Solar (ICOMOS International, Israel), undertook a methodical review of the

initial manuscript and provided constructive feedback toward making it a practical management guide that can be adapted to today's conservation practice in changing societies.

For assistance with the appendixes, I thank Bill Blake, Metric Survey Team, English Heritage; Marc de Caraffe, Historic Services Branch, Parks Canada; Shannon Ricketts, Canadian Register of Historic Places Initiative; Claude Charbonneau, Historic Places Initiative Standards and Guidelines; and, from the Heritage Recording Unit, Heritage Conservation Directorate, Public Works and Government Services Canada, Jean-François Leboeuf, Jean-Pierre Jérôme, and Christian Ouimet.

Finally, I would like to underline the important role that Werner Schmid played as technical editor during the final years of development of this publication. His attention to detail, coupled with his heritage conservation experiences at ICCROM and in private practice, has made him an exceptional editor and assistant—and a most enjoyable partner to work with—in making this book a useful communication tool for conservation managers and decision makers to promote the integration of heritage information activities to conservation practices in their organizations.

Robin Letellier

Recording has become one of the key activities in conservation management of immovable cultural heritage. We must make certain that future generations know *what* was done to a heritage place, *why*, *when*, and by *whom*. Producing adequate records of our actions, be it research, investigation, or treatment, not only is an ethical obligation for posterity but also implies immediate benefits in terms of project planning, interdisciplinary communication, and evaluation of results.

As a prerequisite for informed conservation, recording is a prime responsibility of everybody involved in conservation processes. All those involved with the understanding, care, and management of a heritage place must have access to existing information and will generate records, which must be preserved and made available to others. It is the task of heritage managers and decision makers to establish policies and programs for the correct recording and effective management of conservation-related information.

Heritage-recording programs, which produce measured surveys and other baseline data in a systematic way (i.e., not only in connection with a major conservation project), are of special importance. Such records, which describe in detail the physical and dimensional configuration of a heritage at a given point in time, may become invaluable in case of loss

and will serve as a reference base for the conservation team when dealing with investigation, project development, and treatment.

Heritage conservation is a multidisciplinary activity. As a result, documentation consists of records produced by professionals and people from different fields of expertise and interests. These records must be prepared with care and preserved for the benefit of future generations.

The Background section supplies information on the project's history, provides briefs about the author's personal experience in the field, and sets the publication in an international context. The ICOMOS document *Principles for the Recording of Monuments, Groups of Buildings and Sites* of 1996, a key reference for the development of this book, is discussed in detail and critically evaluated.

The Overview provides the general rules to keep in mind when dealing with recording, documentation, and information management for the conservation of cultural heritage places. A series of principles is presented using a question-and-answer format. This short overview is meant as an introductory summary, especially for top managers and other readers who are unable to read the entire book.

How guiding principles are applied to different situations is the focus of Guidance, the core of this publication. Four chapters provide concise information on what heritage managers must know about recording, documentation, and information management in order to communicate using technical language; evaluate proposals; know when and which specialist is needed; better integrate recording, documentation, and information management activities into conservation projects and budgets; control implementation; and give advice for the development of urgently needed policies.

Finally, the appendixes give the full text of important documents, such as *Principles for the Recording of Monuments, Groups of Buildings and Sites*, published by ICOMOS in 1996, and offer various practical examples and cases to help heritage managers and decision makers better understand the role, the importance, and the benefits of good heritage documentation.

Appendix G in particular discusses inventories. These are the most basic form of documentation and an indispensable tool for identification, legal protection, interpretation, and conservation management. Inventories list the heritage assets in a given region as well as their basic attributes. The level of detail about a single site or structure usually is not sufficient to make informed conservation decisions. For this purpose, the full documentation—that is, all existing information about the place—is needed and must be integrated if necessary with new research, investigation, and recording.

Appendix H is an overview of existing national and international charters and guidelines. This overview provides, in chronological order, the recording, documentation, and information management contents of the main international, regional, and national doctrinal texts referring to immovable cultural heritage. All of these documents confirm the essential nature of the recording activities within conservation processes and highlight key areas of concern in planning for, and in carrying out, recording work.

At the end of this volume are a glossary of terms and an annotated selected bibliography. The bibliography directs the reader to additional resources on recording and documentation, information systems and inventories, preservation of records and archiving, and important international meetings in this field.

N

*Note: Throughout this work, important terms other than those listed here appear in **bold**. Definitions for these terms can be found in the glossary (p. 117). To facilitate readers' understanding, some definitions also appear in sidebars.*

Cultural heritage place (also **heritage place, heritage asset**): Used in this book to refer in general to immovable cultural heritage, such as archaeological sites, single monuments, groups of buildings, historic towns, or cultural landscapes.

Documentation: The already existing stock of information. As an activity, it stands for the systematic collection and archiving of records in order to preserve them for future reference. It can be said: Today's recording is tomorrow's documentation.

Heritage information: The integrated activities of recording, documentation, and information management.

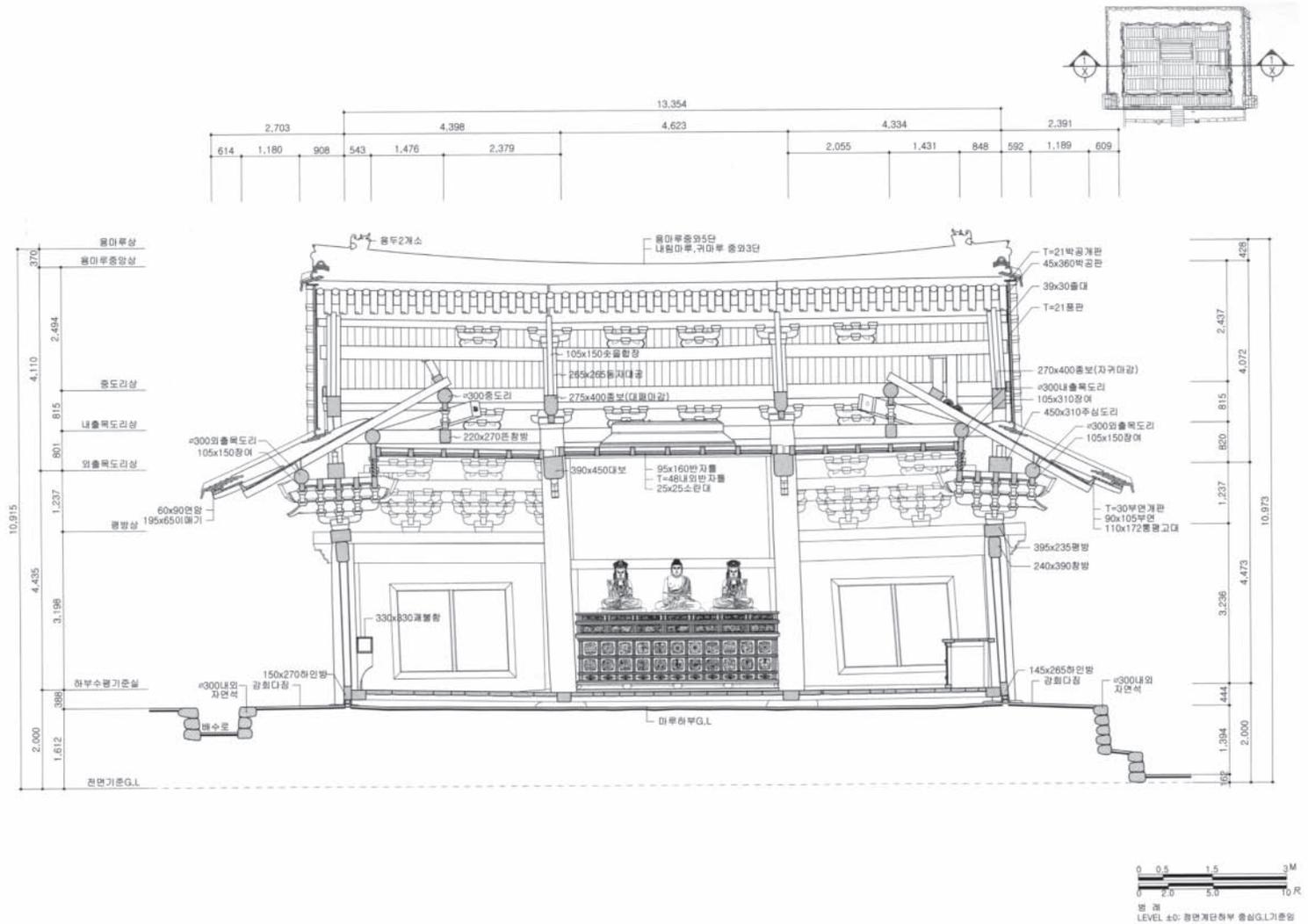
Heritage recording: The graphic or photographic capturing of information describing the physical configuration, evolution, and condition of a heritage at known points in time.

Information management: The process of finding, cataloguing, storing, and sharing information by making it accessible to potential users now and in the future.

Recording: Used in this publication in a broad sense, meaning the acquisition of new information deriving from all activities on a heritage asset, including heritage recording, research and investigation, conservation, use and management, and maintenance and monitoring.

Research and investigation: Used to describe in general a variety of activities aimed at the acquisition of information pertinent to increasing knowledge of a cultural heritage place. While research is related more to off-site surveys (e.g., archival research), investigation relates to the direct acquisition of information from the heritage place as a primary source. Recording is an essential component of research and investigation at each step and at each level of the conservation process.

Fig. 1 Architectural drawing with dimensions showing section through the Hall of Paradise (Geukrakjeon) in Bongjeong Temple, South Korea. One of the major gaps identified during the 2002 workshop was training for professionals in preparing accurate and complete drawings. Drawing: © Soon-Kwan Kim.



어칸 횡단면도(수리 전)

THE GUIDING PRINCIPLES

What are the guiding principles of heritage information management?

The twelve guiding principles can be identified and described in answer to the following questions.

1. *Why?* Heritage information is required to acquire knowledge, understand meaning and values, promote the interest and involvement of people, permit informed management, and ensure long-term maintenance and conservation of heritage places. It may also be considered as a kind of insurance policy against loss and as a posterity record for future generations.
2. *When?* Acquiring information on heritage places should be undertaken when compiling inventories or creating a heritage information system; when critical decisions are made; when historical evidence is revealed; before, during, and after any conservation or other type of work; where heritage places are at risk; or when use changes.
3. *Who should carry out heritage information activities?* Heritage information activities should be carried out first and foremost by professionals; however, everyone with an interest in the heritage place and who has information to contribute should also participate.
4. *Who is responsible?* Managers of heritage places are responsible overall for ensuring the adequate recording and cataloguing of information and the quality and

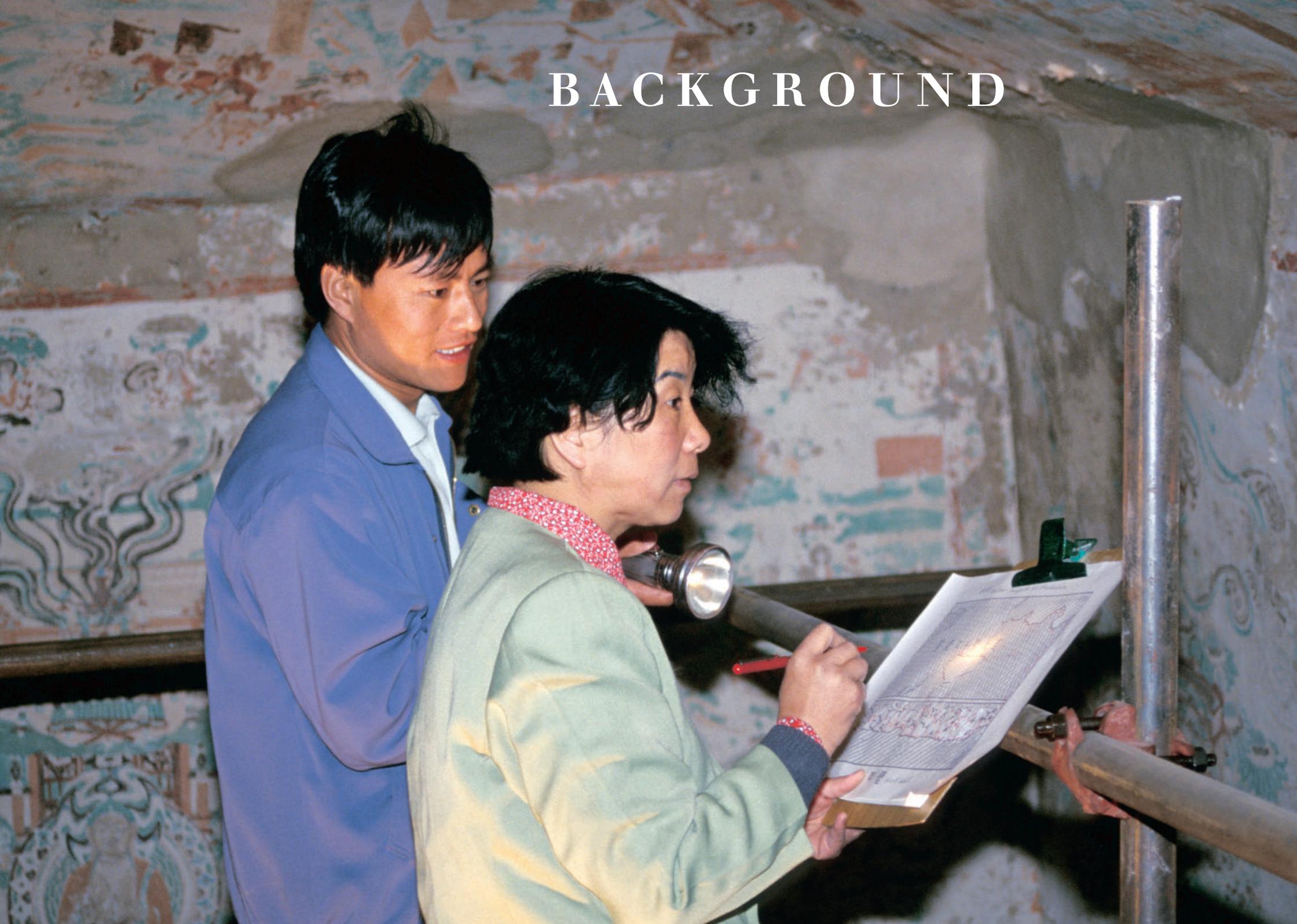
updating of the records; however, everyone else involved in the conservation process also has specific responsibilities for recording, conserving, and sharing information.

5. *Where do heritage information activities fit into the conservation process?* Recording, documentation, and information management of heritage places are essential activities of all phases of the conservation process and should be fully integrated into this process. All heritage information products should be kept in a central repository and managed as part of an integrated project dossier.
6. *What is the first planning step?* Research is the first step. Before new records are prepared, existing sources of heritage information should be found and examined for adequacy.
7. *What should the records contain?* Heritage records must clearly and accurately identify and locate the heritage places and their setting, and note the sources of all related information. They must also include metric, quantitative, and qualitative information about the assets, their values and significance, their management, their condition, their maintenance and repairs, and the threats and risks to their safekeeping.

8. *What level of commitment is needed from decision makers?* The commitment to conserving heritage places requires an equal commitment to acquiring heritage information through the establishment of clear policies for recording, documentation, and information management activities; guidelines and standards for defining, planning, and implementing recording for all projects; and guidelines and standards for archiving all records and for information exchange and dissemination.
9. *Who should have access to heritage information?* Since heritage is what the community wishes to protect and pass on to future generations, dissemination of heritage records should be as wide as possible, and the location of the records should be made public.
10. *What level of detail is required?* Recording and other heritage information activities should be undertaken to an appropriate level of detail to provide information for sensitive and cost-effective planning and development; for efficient research, conservation work, site management, and maintenance; and for creating permanent records.
11. *What scope, level, and methods should apply?* The selection of the appropriate scope, level, and methods of recording requires that the methods of recording and type of documentation produced are appropriate to the nature and importance of the heritage place, the project's needs, the purpose of the record, the cultural context, and the resources available. Preference should be given to nonintrusive techniques. The rationale for the intended scope and for the selection of the recording method must be clearly stated, and the materials used for compiling final records must be stable.
12. *How should records be kept and identified?* Original records of heritage places must use standardized formats, be preserved in a safe and accessible place, be backed up, and, in the case of digital records, be

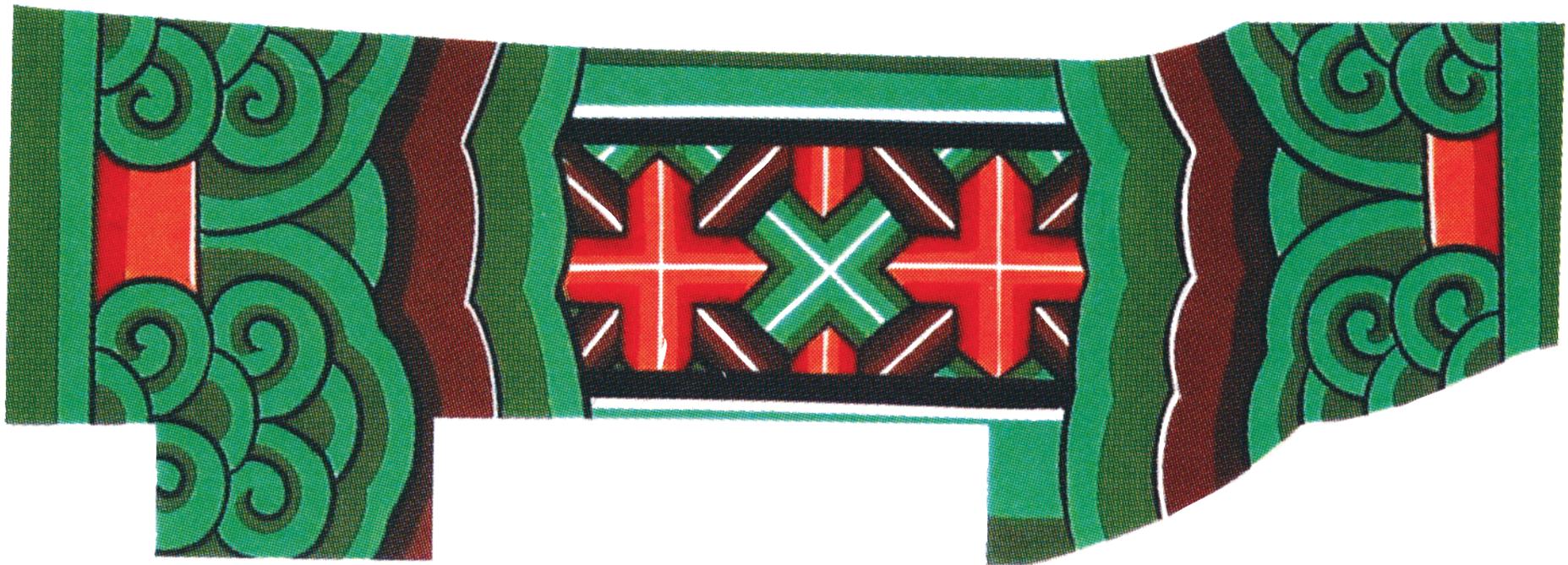
regularly migrated to the most current versions of software and support. Although costly, archiving hard copies of digital records is also a recommended practice. For records to be easily retrieved and managed, a unique identifier is required, such as standard longitude and latitude coordinates that define the location of a heritage place.

BACKGROUND



Overleaf: Recording the condition of wall paintings in cave 85 at the Mogao Grottoes, China, a World Heritage Site on the Silk Road. The ICOMOS *Principles* (1996) uses a broad definition of the term *records* to define the results of all the research or investigative steps that might contribute to a dossier. Photo: Francesca Piqué.

This page: Detail of the color recording system at the Hall of Paradise (Geukrakjeon) in Bongjeong Temple, South Korea. On the subject of responsibility for recording, the ICOMOS *Principles* (1996) recommends that those involved in the recording process possess the skills, knowledge, and awareness appropriate to the recording operations that are to be carried out. Illustration: © Soon-Kwan Kim.



주심 대점자

How did this book come about?

Project History

The concept for this book was borne from the author's cumulative experience in managing a national recording program for the Canadian government from 1970 to 1997 and in sharing ideas and approaches with conservation professionals in many countries. From 1984 to 1999 the author was an instructor for the Architectural Conservation Course, a program of the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). He carried out numerous missions to advise on recording practices in Haiti, Cuba, Iraq, the United States, and many other countries. His involvement with the International Council on Monuments and Sites (ICOMOS) included participating on the International Committee for Architectural Photogrammetry (CIPA) and the organization of a series of international seminars and workshops on related subjects. Together, these collective experiences have given the author a chance to test and refine the approaches he had developed in Canada in a variety of challenging contexts.

These experiences have permitted articulation of an approach to recording, documentation, and information management problems that may be applied at many levels of need and in many contrasting sets of circumstances, resources, and cultural contexts. This approach attempts to place the issue

in a management context and to put emphasis on the use of principles and processes to guide decision making, rather than providing ready-made formulas or technical solutions.

In the early 1990s, ICCROM, ICOMOS, and the United Nations Educational, Scientific and Cultural Organization (UNESCO) invited the author to present his experiences in the form of a publication. The aim of this first manuscript, which constituted the basis for the development of the present book, was to provide managers of World Heritage Sites with a quick reference guide to better understanding of the activities of heritage recording and how these activities can become an integral part of conservation management.

Another objective in developing this prototype version—which for several reasons was never published—was to provide the World Heritage Committee with a reference tool that would assist in the implementation of the World Heritage Convention Operational Guidelines by supplementing it with a series of principles and guidelines on recording, documentation, and information management, which are considered key activities in modern cultural heritage management.

In particular, the proposed publication was meant to add more specific recommendations to two parts of the Operational Guidelines: (1) the Process for the Inscription of Properties on the World Heritage List (Part III) and (2) the

Process for Monitoring the State of Conservation of World Heritage Properties (Part IV). Both of these parts provide some direction for describing graphically and photographically the sites and their condition but do not define levels of recording and how monitoring could be part of conservation practices.

The ICOMOS Principles (1996)

During an ICOMOS international meeting in Kraków, Poland, in 1995, the author, then secretary general of the Comité international de photogrammétrie architecturale—or, the CIPA-ICOMOS International Scientific Committee—was mandated to organize an ad hoc committee to review the draft of a doctrinal document on recording principles that had been proposed jointly by ICOMOS UK and ICOMOS France.

The ad hoc group met at the ICCROM center a few months later, where fifteen conservation specialists from ICOMOS, UNESCO, ICCROM, and CIPA, representing all regions of the world, discussed and contributed to a revised document titled *Principles for the Recording of Monuments, Groups of Buildings and Sites* (see appendix A). The resulting publication was proposed for adoption during the 11th ICOMOS General Assembly in Sofia, Bulgaria, in October of 1996, and ratified.

It is worth examining this document in some detail, given its acceptance within ICOMOS. The material that follows comments on the principles presented in the text and on a number of additional points deserving mention.

The ICOMOS text complements in some way Article 16 of the Venice Charter, which defines standards of practice for important monuments (or elements of monuments) and archaeological sites. Equally, the ICOMOS text complements the more recent Nara Document (1994) by attempting to define appropriate recording principles in relation to the broader contemporary contexts within which heritage is now being defined and conserved. The ICOMOS document's exploration of cultural and heritage diversity extends the potential

areas of application of recording principles well beyond the more conventional, monument-centered approaches envisioned by the Venice Charter.

In the ICOMOS document, the principles are laid out in a fairly straightforward manner. A preamble establishes the *why* of recording in general terms; the section on reasons for recording explores the *why* in greater detail. The following four sections deal, in turn, with the *who* (responsibility), the *how* (planning), the *what* (contents of records), and finally the management of the records obtained.

Why: The Recording Imperative

The preamble to the ICOMOS document explores the recording imperative: the necessity to carry out recording to standards and levels appropriate to the significance of the cultural heritage, as a continuous activity in the life of that heritage. The preamble recognizes three related points:

- The inherent value of the cultural heritage, that is, the “unique expression of human achievement”
- The risk to which that heritage is continually exposed
- The recognition of recording as one of the principal means to improve understanding of the values associated with cultural heritage

Together, these three conditions define the essential nature of recording. The preamble goes on to suggest that as responsibility for heritage is shared, recording should also involve the shared efforts of those involved with heritage places, from owners to managers, from professionals to the public.

The first section of the ICOMOS document, Reasons for Recording, amplifies and extends the broad principles stated in the preamble concerning the *why* of recording. Recording is seen as essential for the following reasons.

- Recording enhances understanding of cultural heritage.
- Recording promotes the involvement of the public.
- Recording improves the quality of management decision making affecting cultural heritage at all levels, including decisions concerning appropriate use.

- Recording helps ensure that planned interventions respect the defined qualities and characteristics of heritage places.
- Recording provides a permanent record of cultural heritage prior to change, planned or unplanned.

More specifically, certain instances—the *when* of recording—in which recording might be appropriate within two of the areas noted above (enhancing understanding and providing a permanent record of change) are also identified and discussed as follows:

- Recording is presented as an essential component of research efforts intended to gain a greater understanding of specific places of cultural heritage, and of the cultural heritage as a whole. Here recording is seen as a part of research programs helping define the significance for specific heritage places, and in the preparation of inventories of places where significance has already been defined.
- Recording is an important activity accompanying all forms of change to cultural heritage, including maintenance operations, capital repair projects, and projects involving change of use. Recording here is understood as an activity that must precede change (and therefore one that anticipates unplanned change, such as accidental or unforeseen disturbance). It must go hand in hand with changes as they are being carried out; for example, “when evidence of...history is revealed,” as when removing material from a wall and discovering an earlier artifact behind the current one. Finally, recording is an activity that must follow change. It is seen as an integral part of responsible planning and conservation processes that affect cultural heritage.

Missing from the above is any citing of the specific instances in which recording might be seen as a means to promote the involvement of the public, such as through the use of competitions among local photography clubs, the development of local exhibitions and publications, the referencing of local collections to computerized databases, the involvement of

students in school programs, and so forth. Recording can also improve management decision making, thus ensuring that recording programs respond to client needs for information in property management. Finally, it can ensure that planned interventions respect heritage qualities and values, assigning priority to recording significant, character-defining elements of heritage places.

Who: Responsibility for Recording

The ICOMOS document’s second section focuses on responsibility for recording and examines factors related to responsibility: commitment, roles, and qualifications.

The section begins by noting that a commitment to conserve implies a parallel commitment to recording. It suggests that qualifications for those involved in the recording process will reflect the skills, knowledge, and awareness appropriate to the recording operations, and focuses on the use of training programs to achieve those goals. The section also recognizes both the great range of disciplines that may be involved in recording and the interdisciplinary nature of their collaboration. Finally, the section focuses on the responsibilities of managers regarding the use, development, and conservation processes affecting places of cultural heritage value. These responsibilities include initiating recording, maintaining quality control in the process, and continuous updating of the records that result.

It is also useful to recognize the value of acquired experience when assessing the adequacy of qualifications for those entrusted with recording assignments. Given the absence of international agencies or institutions qualified to certify competency—that is, to officially recognize recording achievements and capacities—it might be useful to insist that recorders acknowledge and embrace defined principles of recording where these exist, such as citing the ICOMOS *Principles* as a document defining performance standards and expectations for recording activity.

How: Planning for Recording

The ICOMOS text looks at the two broad steps intended to define appropriate approaches for recording. The first step is the examination of existing records for their adequacy. The text suggests what types of documents might be useful, and where and through whom such records might be sought. For the second step—the selection of the appropriate scope, level, and methods of recording—the text notes the primary criteria relevant to choosing and defining approaches. In choosing appropriate recording methods, the nature of the heritage to be recorded, the purposes of the recording, and the available resources are highlighted as key criteria. A range of possible recording methods are listed, and a preference for nondestructive techniques is established. Two parallel considerations in defining approaches are also noted: the need to make explicit the reasons for choosing a particular approach, and the need to ensure that records are compiled on stable archival materials.

Although the ICOMOS text covers a full range of considerations pertinent to planning, it might have been more useful to organize these around a structure defining the relevant criteria (objectives) to be met in determining scope, level, and methods of recording. As it stands, the text does not distinguish clearly among the three and, as a result, use of these principles for decision-making guidance is only of general help.

An alternative approach would have been to begin by:

- Defining scope, level, and methods of recording and the relationship between them in determining appropriate approaches
- Defining those objectives (criteria) pertinent in analyzing available choices

The scope of a recording project is generally understood to include definition of the particular physical focus of the recording effort, the appropriate level of recording, the

recording methods to be used, and the time frame in which recording is to be carried out. Objectives relevant to defining scope include:

- The particular needs to be met (including information and presentation)
- The adequacy of existing records
- The heritage value of the particular building or site
- Available skills and experience in applying potential recording methods
- Resources available (financial and human)
- Applicable constraints (such as time and political objectives)
- The effectiveness, efficiency, “intrusiveness,” and archival suitability of available recording methods
- Opportunities for enriching public involvement and understanding of cultural heritage through the recording process

What: The Contents of Records

The ICOMOS text devotes a section to the contents of the records resulting from various recording processes. Guidance is given on defining the key identification parameters for places of cultural heritage value, including location information, data on the recording operation itself (time, team members, project context), and references to related records. The importance of noting the source of information in recording is emphasized. Considerable attention is given to defining the possible contents of records, thus providing a useful checklist of areas where it may be important to acquire data in constructing a project or site dossier. Finally, a concluding article focuses attention on the relationship between desirable levels of recording and the needs of users.

It is important, with reference to the contents checklist provided in the section, to recognize that the document is using a broad definition of *records* to define the results of all the research or investigative steps (including recording) that might contribute to a dossier. Some of these—for example, “an assessment of the current condition of the heritage”—are

obviously the result of the kinds of recording activity treated by the document. Others, such as “the nature, quality, cultural, artistic and scientific significance,” obviously result from concurrent processes accompanying recording within larger investigative processes. The checklist in the document is useful, provided that readers do not mistake the recording domain as including all of the types of records listed. The checklist’s particular value lies in its implicit endorsement of the need for an integrated effort in all aspects of research activity, including recording.

It should be noted that the contents checklist should be expanded to include the analytical basis for decisions that impact on the values of cultural heritage, for the benefit of future decision makers. Also of importance is that the contents of records identified above be seen as resulting from the steps addressed in the preceding section, and from use of the criteria in defining choices.

The Management of Records

The final section of the ICOMOS text, Management, Dissemination and Sharing of Records, focuses on management practices appropriate for safeguarding records once they have been acquired. In general, articles in this section concern the security of records (use of safe, environmentally sound archives and backup records) and the accessibility of records (identifying individuals and groups requiring access, and ensuring copies adequate for their purposes; standardization of formats to facilitate exchange; public identification and promotion of sources of consultative records; and commitment to dissemination and publication). The section also focuses on the need to support management efforts through the use of appropriate technology. Two important management concerns were not treated in depth in the ICOMOS text: accessibility and quality of data.

Accessibility should be understood to include concern for sharing the results of recording processes with present and future researchers. Although this might place recorders in conflict with clients who might consider that their investment

has given them ownership of records, it is important that recorders see their efforts as part of the long-term benefits to be passed on to future researchers, and that they work to educate their clients accordingly.

Quality in this context is in terms of value. It is important that those responsible for recording are charged with focusing their efforts in a way that is useful to future researchers. Recording reports should comment on the nature and reliability (accuracy, utility, and verifiability) of sources used, and the nature and reliability of results obtained. They should document the methods used and the reasons these methods were chosen. Any perceived limitations in use of the records should be made explicit.

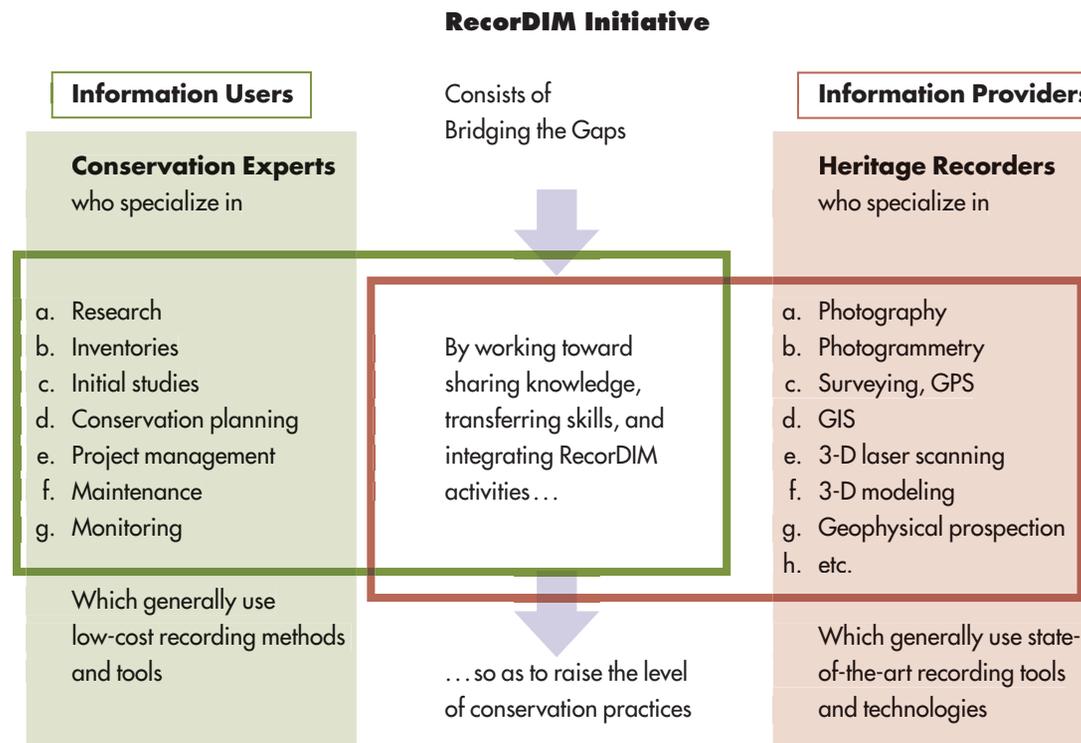
The RecorDIM Initiative

The Getty Conservation Institute (GCI) organized a two-day workshop in 2002, where twenty-three conservation professionals from diverse backgrounds, representing all regions of the world, met in Los Angeles to discuss and evaluate how well users and providers of information understand one another. Though participants recognized that everyone involved in cultural heritage research, management, or conservation is at one time or another a provider or a user of heritage information, they agreed that the concept was useful for addressing the issues at hand. The author, together with the GCI, developed a vision for this meeting, which is summarized in figure 2. The diagram illustrates how information users and providers work together toward sharing knowledge, transferring skills, and integrating ideas so as to raise the level of conservation practices worldwide.

As a result of this workshop, the group identified more than twenty-five significant gaps that needed to be addressed to ensure better communication and cooperation between users and providers of information (see appendix B). The list of gaps produced during this meeting became the basis for the GCI to begin in 2002, in partnership with ICOMOS and CIPA, the Recording, Documentation, and Information Management (RecorDIM) Initiative.

One of the major gaps discussed during the workshop was the need to develop and publish a book on guiding principles that would help conservation managers to review and improve their recording, documentation, and information management practices and to better integrate them into conservation processes. It was decided to use the author's unpublished 1990s manuscript as the basis for this publication.

Fig. 2 Organizational diagram for the RecorDIM Initiative workshop, held in 2002.



OVERVIEW



Overleaf: A heritage professional recording the condition of the Orpheus mosaic in Paphos, Cyprus. Knowledge is at the basis of understanding, and understanding is necessary for making informed decisions, identifying priorities, setting up strategies, and allocating financial resources in a cost-effective way. Photo: Neville Agnew.

This page: Example of a typical record for a moai from the Easter Island Statue Project database. The better we know heritage places, the more we value them. Illustration: Jo Anne Van Tilburg, © Easter Island Statue Project.

EISP
QUAD
SITE
QUARRY
OBJECT
VIEW MODE
CLOSE

RR-03C-007

Memo
Moai with rounded undercutting

Documents Descriptions Cross Ref IDs Location

DOCUMENTS

[View Details](#)



Date: 2002:10:25 00:08:35

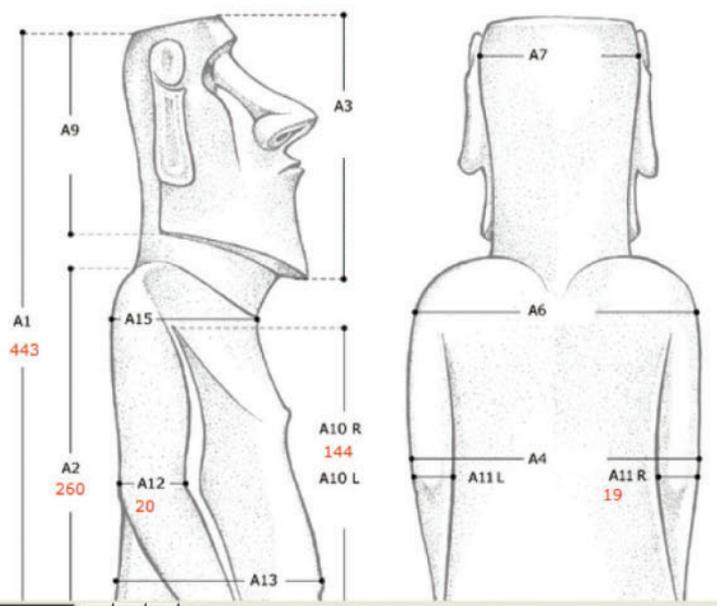
Record: ⏪ ⏩ 8 ⏴ ⏵ ⏶ ⏷ of 41

Measurements
Field Notes
Condition

STATUE MEASUREMENTS View as Spreadsheet

Date (Field Season) 2002 July-Aug.
Recorder Van Tilburg, Jo Anne

A1:	<input type="text" value="443"/>
A2:	<input type="text" value="260"/>
A3:	<input type="text"/>
A4:	<input type="text"/>
A5:	<input type="text" value="170"/>
A6:	<input type="text"/>
A7:	<input type="text"/>
A8:	<input type="text"/>
A9:	<input type="text"/>
A10:	<input type="text" value="144"/>
A10L:	<input type="text"/>
A11:	<input type="text" value="19"/>
A11L:	<input type="text"/>
A12:	<input type="text" value="20"/>
A12L:	<input type="text"/>
A13:	<input type="text"/>
A14:	<input type="text"/>
A15:	<input type="text"/>
A15L:	<input type="text"/>
A16:	<input type="text"/>



Height above Record: ⏪ ⏩ 2 ⏴ ⏵ ⏶ ⏷ of 2

Understanding is necessary for making informed decisions, identifying priorities, setting up strategies, and allocating financial resources in a cost-effective way. Recording, documentation, and information management is about increasing our understanding of **cultural heritage places** by acquiring information and making sure that it is systematically collected, evaluated, archived, and made available.

Understanding a building or site means more than understanding its history, physical configuration, and condition. It involves understanding a number of social, political, economic, and cultural issues relating to the external environment. This means that **conservation professionals** are not the only contributors to and beneficiaries of good **heritage information** practices; the much broader segment of all those who hold a stake in a heritage place is also included.

Every heritage place can be seen as a unique historical archive, a precious source of primary information from which every **research and investigation** or **conservation** activity will retrieve new data. This means that the understanding of heritage is constantly evolving and that the existing documentation will have to be regularly updated in the light of new discoveries.

The concept of cultural heritage has broadened. As a consequence, heritage conservation involves an increasing number of fields of expertise. The correlation and interpretation of multifaceted data sets is a critical point in heritage information and an important step in fully exploiting the potential of single information units that otherwise risk being scattered and isolated. New information technologies, such as electronic databases and the World Wide Web, make better management and integration of complex and highly diversified data possible. Well-designed information systems have the potential of facilitating data access and becoming powerful tools for interdisciplinary communication.

Recording, documentation, and information management are among the central activities of the decision-making process for heritage conservation management—hereafter called the conservation process—and a fully integrated part of research, investigation, and treatment. As a source of reliable information regarding the multiple aspects of a heritage, the conservation process is never an end in itself but always a service to something or someone. Conservation, being an ongoing activity, can be best described as a cyclical process, with heritage information being the knowledge base to which everyone dealing with the heritage contributes and from which everyone retrieves information. Without such a knowledge base collecting and disseminating information at all stages, the conservation process is without reference.

Fig. 5 The use and flow of heritage information.



Heritage information involves the integrated activities of recording, documentation, and information management.

Recording, documentation, and information management come with a cost outlay, which cannot be justified only by the fulfillment of ethical obligations. Its cost-effectiveness can be assessed toward a significant number of direct and indirect benefits, which include the following:

- Reliable reference data for monitoring changes
- Better preventive conservation management
- Improved priority-based project planning
- More realistic quantification and budgeting of conservation needs
- Faster retrieval of relevant data by everybody involved
- Improved interdisciplinary communication
- Less work duplication
- Fewer planning mistakes through informed decision making
- Clearer specifications to contractors
- Easier control of project achievements
- Enhanced project visibility through the availability of written and visual information for promotion and fund-raising

Why is heritage information required?

B **Because this is how managers come to understand the meaning of heritage and recognize its value and significance**

The better we know heritage places, the more we value them. In archaeology, the lack of recording is considered to be equivalent to the destruction of discovered remains, and it is evident that the significance of an excavated site depends largely on the quality of documented knowledge. The same concept can be applied to the conservation management of cultural heritage places in general. Research, investigation, and conservation activities produce large amounts of unique information that, if recorded and documented properly and made available, will make the heritage place more meaningful and enhance its historical, scientific, and cultural significance.

Because heritage information assists managers in performing routine management and maintenance

The availability of updated information describing the nature and extent of problems in a region or on a single site makes it easier to identify emergency situations, schedule investigation priorities, budget conservation needs, and develop adequate control policies. Expanded inventories that not only

provide administrative data but also include conservation-related information are increasingly used by heritage agencies worldwide.

Because access to accurate and concise information is the basis for conservation planning

A first stage in any conservation project must be the gathering and verification of existing documentation. Often, available information is insufficient: measured drawings may not be accurate enough, building technological studies and historical surveys may be incomplete, and condition assessments may not be up-to-date. Missing information must be gathered through a preliminary investigation campaign designed to respond to open questions, which are critical for defining the values to be preserved and the actions to be taken. Only when all relevant data are at hand is the project team ready to draw a global picture of the precondition, which is the basis for the development of an informed conservation plan sensitive to the significance of the asset.

GUIDING PRINCIPLE 1

Why?

Heritage information is required to acquire knowledge, understand meaning and values, promote interest and involvement, permit informed management, and ensure long-term maintenance and conservation of heritage places. It can also be considered a kind of insurance policy against loss and a **posterity record** for future generations.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Kate Clark writes: "In order to know why a building or site is valuable, we need to first understand it, and this is neither easy nor straightforward. You can understand what is important by talking to people in the local communities and experts; you can also understand what is important by looking at historical sources, maps and images, and literature. But you also need to look at the site. Historic sites, buildings, and monuments contain within them a story. It is the story of how they were constructed, used, and altered over time. It is a story that may not ever have been put down in writing."

Because our actions will become part of the heritage's history, and future generations have to know what we did to it

Conservation projects are critical moments in the lifetime of a heritage place, as they always involve major or minor changes.

The record of the as-found condition will become a precious document, preserving information that may be irreversibly lost in the course of work. However, accurate records and a concise documentation of the treatment itself are indispensable, as they describe the newly established condition of the heritage. Heritage information is the only way of transmitting not only the results of our actions (e.g., the treated and possibly radically changed heritage) but also the metadata, that is, the situation from which we started, the arguments that directed our decisions, and the description of general concepts and specific solutions.

Because heritage information provides a basis for measuring change

Monitoring has become one of the key issues in conservation management. The party in charge of a region, a site, or a single building needs to know where risks exist, what is causing the changes, whether visible problems of decay are active, how fast these problems advance, and how urgent it is to intervene. These questions can be answered by comparing the present situation with reliable records produced in the past. Monitoring intended as a process of measuring change through regular inspections and the production of sequential, repeatable records is an important management tool, as it allows us to recognize problems at an early stage and to forestall larger interventions through small-scale repair and maintenance.

Because heritage information helps to avoid duplication in work and expedites the conservation process

Information that is not properly recorded and archived is lost information. Sound heritage information practices warrant the preservation of data and facilitate access, thus assuming the function of a key reference for all those dealing with the heritage place—a common medium through which information is exchanged and shared. We all need to know what was done before, but the retrieval of existing, normally unpublished documentation, often scattered in different archives, can be heavily time consuming. To have reliable information readily available facilitates the conservation process at all stages and incurs significant savings on the project budget.

Because managers can use documented information for publication and the promotion of public interest

Information on a heritage place can be used for the production of promotional, educational, and interpretive material aimed at visitors, owners, funding agencies, and the general public. Good information makes the heritage more visible and increases public awareness, which in turn generates political and cultural support for conservation.

W

Whenever changes occur or critical decisions are made about the heritage place

Heritage places undergo continuous change. What we see today is the result of adaptations, renovations, periods of neglect, disasters, decay, repairs, and conservation. In order to understand the condition and significance of a heritage place, it is crucial to identify, locate, and document these changes.

Before starting any physical intervention

Conservation or rehabilitation interventions are the most common planned changes for which recording, documentation, and information management are an absolute must. A good project documentation is proof of what was the basis for decision making as well as a statement of account of all interventions carried out, giving conservation managers the ability to control the process and evaluate results. Moreover, accurate before-, during-, and after-treatment records will become indispensable references for the next intervention and a baseline for the monitoring of future decay. The value of reliable project documentation is evident to anybody who has dealt with heritage places for which there was nonexistent or insufficient documentation.

When there is a risk of the heritage place being lost or heavily altered

It is unrealistic to think that we will be able to effectively protect and preserve our entire heritage. Although regrettable, we have to accept that an important percentage will be destroyed, irreversibly damaged, or extensively modified in its present layout or function. In literature, the most frequently given answer to the why of recording is related to these risks, demanding the production of posterity records designed to eventually become the primary source of information about the asset. To be a sort of insurance policy against loss, such a permanent record must be as complete as possible and include detailed measured drawings and photographic documentation. New technologies such as laser scanning make it possible to create high-resolution 3-D models, which may better fulfill the requirement of documentation.

When evidence of the history of a heritage place is revealed

The implementation of a conservation treatment is a verification of our current understanding of a heritage place. New information often emerges during work on a heritage project. Hidden features may be revealed or new details seen for the first time. Sometimes such unexpected discoveries require major adaptations in project design. Conservation

When?

Acquiring information on heritage places should be undertaken when compiling inventories or creating a heritage information system; when critical decisions are made; when historical evidence is revealed before, during, and after any conservation or other type of work; where heritage places are at risk; or when use changes.



Fig. 4 Moai on Rapa Nui (Easter Island). A computerized inventory of the 887 monolithic statues was prepared to support critical decisions and for posterity. Photo: Jo Anne Van Tilburg, © Easter Island Statue Project.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Jo Anne Van Tilburg describes how the inventory of the 887 monolithic stone statues (moai) of Easter Island (Rapa Nui) became a necessity, and how important it was to create a heritage information system to preserve the archaeological record, facilitate the articulation of the cultural identity of Rapa Nui, and support sustainability in a tourist-based economy.

professionals must be aware that close and prolonged contact with a heritage place is a unique opportunity to “read” and revise it critically. The systematic compilation of a project dossier is a simple but effective way of making sure that precious additional observations are recorded and preserved.

When creating a heritage information system

All efforts to comply with recording and documentation requirements are wasted if data are not properly archived and made accessible. Heritage information systems, designed as electronic repositories, are powerful management tools with the potential to expedite conservation processes. The key word is *sharing*. Like medical charts, each heritage place has its open dossier into which each research, investigation, or conservation activity is placed, with adequate links provided to facilitate the finding of complete reports and other detailed documentation. Such systems can exist only if heritage agencies and other responsible institutions make commitments to develop national policies that recognize the essential importance of heritage information as a central reference for the conservation management of heritage places.

*Who is producing information,
and who is using it?*

Everyone involved in cultural heritage research, management, or conservation is both a provider and a user of heritage information

The recording of information is the responsibility of everyone involved in the conservation process. Depending on the type of heritage place and on specific needs arising from its makeup and condition, the production of new information will involve a multidisciplinary team of experts. As a consequence, the process of recording, documenting, and managing information must be designed in a way to accommodate a huge variety of data in terms of both content and format. It is an open and dynamic process in which there is no clear distinction between information providers and information users. Everybody is taking information out in order to acquire “pre-knowledge” before starting any direct activity on the heritage, and everybody is putting new information in when the results of the proper work become available. Heritage managers may be considered prime users due to their permanent contact with a given region or site and their daily involvement in project planning, control, monitoring, and evaluation.

Reliable heritage records are of prime importance for everyone involved in the recording process

Although recording may involve intangible issues such as social or economical factors, most aspects to be recorded are directly related to the physical configuration of the heritage, with the visual medium having a predominant role in conveying information. Along with photographs, measured drawings are key components of a heritage record. Their production, taken hand in hand with a series of dimensional, topographic, and structural analyses, is an indispensable part of the process of understanding buildings and sites. Reliable heritage records should be readily available for each heritage place, as they are a prerequisite at the start of any research, investigation, or conservation activity. Whether it is the historian who illustrates building phases, the structural engineer who produces a survey of cracks, the manager who defines the boundaries of a site, the conservator who maps decay phenomena, the conservation scientist who identifies the places where examinations were done, or architects and planners, all need to spatially refer information to the structures and surfaces, thus physically defining the heritage.

GUIDING PRINCIPLE 3

Who should carry out heritage information activities?

Heritage information activities should be carried out first and foremost by professionals, but everyone who has an interest in the heritage place and information to contribute should also participate.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Geofree Chikwanda describes the recording of a landscape that embeds the culture of those who inhabit the land. The area was occupied by the legendary national spirit medium Mbuya Nehanda, who was the mainstay of the first resistance against colonial rule during the early 1890s.

To proclaim the landscape a national monument, it was necessary to delimitate it. This involved the use of survey equipment and the active participation of the local population.



Fig. 5 A view of the cultural landscape occupied by Mbuya Nehanda. Photo: © Geofree Chikwanda.

GUIDING PRINCIPLE 4

Who is responsible?

Managers of heritage places are responsible overall for ensuring the adequate recording and cataloguing of information and the quality and updating of the records, but everyone involved in the conservation process also has specific responsibilities for recording, conserving, and sharing information.



Fig. 6 A conservator documents the condition of wall paintings in cave 85, Mogao Grottoes, China. Photo: Neville Agnew.

The increasing role of project information specialists

Archaeologists and architects, but also other heritage professionals, used to (and often still do) consider the production of measured drawings as part of their own duty and as an important moment of analysis in direct contact with the object. Over the last decades, first with the advent of stereophotogrammetry and then with the rapid development of digital **heritage recording tools**, this activity became more and more the work of specialists. Today heritage conservation teams often include **project information specialists**, who not only offer measured surveys, responding to needs indicated by conservation professionals, but also may assist in the development of a variety of computer applications, including digital information systems. At an institutional level, heritage information specialists assume the role of information managers who administrate existing documentation material and play a proactive role in making sure that new information is correctly recorded, managed, and delivered.

Integration of recording, documentation, and information management into multidisciplinary conservation processes requires effective coordination

To be successful, recording that is integrated into complex and eminently multidisciplinary research, investigation, and conservation projects requires not only careful planning but also effective coordination at the site level. As important prerequisites, a coordinator must have intimate contact with the heritage place and must be prepared to work within a multidisciplinary team. Heritage managers best meet these requirements. Being responsible for ensuring adequate recording, heritage managers are normally in a privileged position to guarantee that adequate heritage information practices are fully integrated into the conservation process from the very beginning, and that data are systematically collected, preserved, and made available.

GUIDANCE



Overleaf: Participants from the ARIS05 ICCROM-GCI advanced training course, held in Rome in 2005, working with a total station. Photo: Alejandro Alva © ICCROM.

This page: Diagram of the six phases involved in the heritage information conservation process, shown as satellites.



How does heritage information fit into the conservation process?

The fundamental purpose of **conservation** is to ensure the transmission of our cultural heritage to those who follow us, its significant messages intact and accessible to the greatest degree possible. —Sir Bernard M. Feilden, former director of ICCROM

This often-quoted definition of *conservation* focuses attention on both slowing the rate of decay and enhancing artistic and historic messages, and thus highlights the dual nature of the conservation professional's responsibilities. To fully succeed, the conservation professional must concentrate on the physical nature of a heritage place and on the values conveyed by its structure and intangible aspects.

At the most general level, conservation is best achieved by turning attention to the conditions necessary both to maintain physical condition and to reveal meaning. More specifically, the conservation management of a particular heritage asset demands the use of a **conservation process**, which can address concerns for all aspects of a site's makeup.

A management plan sensitive to conservation concerns—whether developed for single monuments, groups of buildings, historic towns, or cultural landscapes—will embody a long-term strategy for using available resources to effectively meet defined use and presentation goals. The management plan should provide a framework to ensure that all activities

This section answers the following questions:

What is the conservation process of cultural heritage places?

What records are produced at each stage of the conservation process?

How are recording, documentation, and information management effectively integrated into the conservation process?

taking place on a site respect the site's significant heritage values and the physical attributes through which these values are expressed.

The development and fine-tuning of a management plan, as well as the development of approaches for particular activities or treatments defined within the plan, requires ongoing **research and investigation** efforts to achieve the understanding necessary to guide decision making. These efforts should focus on the following:

- Values of a site (and their physical manifestations)
- The site's history (and physical change over time)
- Factors affecting site condition and use
- Pertinent factors within the site's external environment (economic, regulatory, physical, etc.)

Recording, documentation, and information management play an important role in the action taken on a heritage place, be it research, investigation, conservation planning, day-to-day management, periodic control and maintenance, major physical intervention, or provision of services for visitors. Those involved in such activities need to have access to documentation and will produce new records to add to the existing stock of information. Heritage information is a dynamic process through which the documentation of a

Conservation is concerned with the transmission of cultural heritage, with its significant values intact and accessible to the greatest degree possible.

Conservation process is the informed decision-making process, which ensures that conservation at all levels will respect the values and significance of the cultural heritage place.

Research and investigation is used to describe a variety of activities aimed at the acquisition of information pertinent to increasing knowledge of a cultural heritage place.

GUIDING PRINCIPLE 5

Where do heritage information activities fit into the conservation process?

Recording, documentation, and information management of heritage places are essential activities in all phases of the conservation process and should be fully integrated. All heritage information products should be kept in a central repository and managed as part of an integrated project dossier.



Fig. 7 Chinese conservation technicians prepare documentation at the Mogao Grottoes. Photo: Lorinda Wong.

heritage place is systematically collected, archived, and made available in order to provide a sound basis for the implementation of informed conservation strategies.

What is the conservation process of cultural heritage places?

The conservation process of cultural heritage places cannot be expressed as yet in terms of an international standard of practice. International heritage conservation organizations and institutions have not come to an agreement on such a standard. A consensus has been reached among them, however, concerning important steps, activities, and products or outputs of the conservation process.

The following explains summarily the six important steps in the conservation process of cultural heritage places, and the type of information or documents that need to be acquired or produced during each phase. Each phase has a beginning and an end. To move from one phase to the next, a decision must be made by a manager or a client whether to continue, alter, or stop the process.

In the contemporary world of new-building construction, the project management process is well understood. It has been defined to ensure that clients and professionals know at all times the current phase of the project, the decisions that need to be made, and the products or outputs that are expected. Though it may vary from one profession to the next, the life cycle of a project generally follows this pattern:

- Initiating the project
- Planning the project and studying options
- Selecting an option and preparing contractual documents for execution of the work
- Executing and controlling the work
- Closing the project
- Monitoring and evaluating the project

In the cultural heritage field, things are different. Conservation professionals have to do all of the above, but because they deal with cultural heritage places—archaeological sites,



Fig. 8 Diagram showing the phases and required outputs of the conservation process.

buildings, and city neighborhoods—they need to spend more time and resources to understand the site and to assess its physical condition.

Another important task is to understand and preserve values. This means involving many stakeholders (people, institutions, and government agencies) in the process and working with them to understand why a particular place is important and to identify what physical evidence needs to be preserved.

There are a few essential principles that apply not to any one phase exclusively but to all of the phases. Instead of listing them with each phase, each principle is described separately below.

Involve stakeholders. One of the first requirements is to define internal and external stakeholders. Internal stakeholders include the project team, local people, researchers, or whom-ever else is important to involve at this early stage. External stakeholders include international community members, gov-ernment personnel, donor agencies, and other individuals and institutions with an interest in the project. During the project, it is important at every step to involve the appropriate internal and external stakeholders in the proper manner.

Clearly define your time line. Each phase of the process requires careful planning and organization. It is thus imperative to be clear about how much time and effort a given task will take, and to communicate this to both internal and external audi-ences. Of course, these estimates may not be accurate, espe-cially at the beginning of the planning process.

Budget sufficient financial resources and human capacity. In all cases, to develop, implement, record, and monitor each phase will require some amount of financial resources.

Record your decisions. For virtually every phase, indicate in writing how each decision to proceed was made. This will quickly become repetitive, but it is of vital importance to record the reasons for decisions at each step of the way. Not only does this provide the opportunity to analyze why things worked or did not work, but it also serves as a basis for others to understand the logic of the choices made.

The Phases of the Conservation Process

The six phases of the built heritage conservation process as defined by the author and contributors are as follows:

1. Initiation
2. Assessment
3. Options
4. Project development
5. Implementation
6. Operation

Phase 1 : Initiation

Is there a good reason or opportunity to conserve this heritage place?

This phase is when a project begins. It is usually triggered by a need, a problem, or an opportunity.

This critical first phase involves understanding the situation in which the project will take place and clearly defining the problem or issue to be solved and why it is important to do so. The phase must involve your entire team and other important stakeholders to make sure that everyone has the same or a similar understanding of what needs to happen. Based on this step, the goal and objectives of the project and the activities needed to reach them will be defined. In many cases, organi-zations invest considerable time and financial resources in research that provides information necessary to carry out this step. In other cases, it is done very quickly.

The types of documents gathered during this phase include past project files, reports of previous surveys or conservation interventions, existing plans and site models, current heritage listing or designation, real estate and zoning information, and newspaper clippings. Additional records may include an overview photo survey, sketched plans that help explain the entire place or site and its context, minutes of meetings, and lists of conservation professionals and specialists.

The output, or end result, of the Initiation phase is a well-defined project, a clear concept of what is to be done and how it will be done. This is usually captured in the form of a comprehensive report.

To move to the next phase, a decision must be made to allo-cate time, money, and people to investigate and assess prob-lems or issues.



Fig. 9 Phase 1 in the conservation process.

The rationale behind decisions must be recorded, and specific decisions must be made at each step before moving on to the next one.



Fig. 10 Phase 2 in the conservation process.

The output of the Assessment phase is a solid understanding of the key issues relating to the conservation of the heritage place.

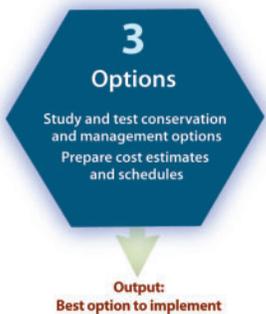


Fig. 11 Phase 3 in the conservation process.

In the Options phase, different possible conservation approaches are evaluated.

Phase 2: Assessment

What do we really have, and what condition is it in?

It is during the Assessment phase that a project manager is assigned and a team created to begin the work necessary to understand the heritage place or property and all related issues. The assessment is usually divided into three major activities:

- Assessing the significance of the place
- Assessing its physical condition
- Assessing the current management system

Critical at this stage are the availability of all existing documentation—which in most cases will require a bibliographic and archival survey—and thorough analysis, interpretation, and correlation of data from a broad range of new research and investigation activities.

The types of records produced during this phase include more accurate measured drawings and photographs, which provide complete information on significant components of the place; thematic maps, condition reports, and topography; scientific investigation data; historical and archaeological surveys; environmental conditions; analysis of samples; and reports on tests for security, safety, and conservation materials or systems.

The output, or end result, of the Assessment phase is a good understanding of the significance, the physical condition, and the management. It should be a sound knowledge base to help make informed conservation decisions. The result is usually captured in the form of a report or a site management plan. It contains a statement of significance that explains why the site is important and what is valued by the various stakeholders, as well as the important issues that need to be considered, an assessment or diagnostic of the condition of the physical assets, and an assessment of the management system in place. It makes recommendations for conservation and new development options (roads, services, etc.) that

should be considered or studied, and describes urgent or longer-term conservation measures that need to be put in place or tested.

To move to the next phase, a decision must be made to allocate time, money, and people to study and estimate the cost of the various conservation options.

Phase 3: Options

What choices do we have?

At this point, all project participants agree on what is important to conserve and why. The team also has a clear diagnostic of the physical condition of the place or property and how it is being managed. The project team is now asked to determine the fundamental choices for conserving it.

Various conservation approaches will be studied during this phase. In the case of an archaeological site, the professional team may recommend the option of reburying it completely because it would be very costly or technically difficult to conserve it. Another option could be to partially rebury it and conserve and interpret a small area. A third option could be to build shelters over parts of it. On-site and laboratory testing will be conducted to determine what conservation techniques can be used and their efficacy in protecting the resources. Visitors' management and control strategies will be suggested, as well as approaches to interpreting the heritage and its value to the visitors. Each option will be carefully examined. A cost estimate and work schedule will be prepared for each valid option. The advantages and disadvantages of each option will be argued, and recommendations will be made to meet institutional requirements and constraints.

The types of records generated during this phase may include detailed measured drawings and photographs recording the as-found condition, 3-D models, experts' reports, PowerPoint presentations, presentation boards, cost estimates, work schedules, videos, and notes from public participation sessions.

The output, or end result, of the Options phase is the recommendation and selection of the best option to implement. This decision is necessary to move to the next phase.

Phase 4: Project Development

How can we turn the best option into a final project?

The input that triggers the beginning of this phase is the decision to go ahead with one of the options studied in the previous phase. It must now be turned into a concrete and clearly defined project. During this phase, professionals such as architects, engineers, conservators, interpretation and exhibit designers, curators, landscape architects, and quantity surveyors are hired to prepare drawings, specifications, detailed budgets and work schedules, and other legal documents for the conservation project according to the selected option. These documents usually become the contract basis for tendering the work and for borrowing or committing the financial resources necessary.

Phase 5: Implementation

How can we realize this project?

The input that triggers the beginning of this phase is the decision to proceed with the conservation work. Clearly this is a critical step in the project cycle. It is the step at which the project activities are actually carried out. Until this point, the team has been researching, studying, examining, testing, consulting, and planning activities. Implementation involves putting into action all of the research and planning efforts conducted in the previous phases. During the Implementation phase, professionals, contractors, and specialized workers undertake the conservation work according to the documents prepared in the previous phase.

The types of records generated during this phase include ongoing recording, thematic maps graphically recording where different treatments were carried out (as-built records), photographs documenting different treatment stages, photos of new discoveries, project diaries, work progress reports,

as-built drawings, maintenance manuals, deficiencies lists, electronic data of all kinds, and samples of conservation materials.

The output, or end result, of the Implementation phase is a completed project. The next phase begins when the conservation work is complete and staff and resources have been allocated to operate the site.

Phase 6: Operation

How can we ensure the long-term sustainability of this cultural resource?

At this point, warranties are enforced and a life cycle maintenance program is set in place. Maintenance manuals are prepared and maintenance staff trained. The project records are archived. Management establishes a monitoring program for critical components, and the project data are routed to a database for maintenance or re-treatment purposes. An evaluation of the project is made, and the lessons learned are captured in the final project report, which is prepared and disseminated. The site is opened to the public or for its intended use, and a site or property manager is assigned the responsibility for its continued use and safeguard.

This phase generates ongoing operational, monitoring, and maintenance activities. When a new need, problem, or opportunity arises, the cycle begins anew.

How should project information be managed?

It is very important to the success of a conservation project that all the information gathered during each phase by conservation professionals, heritage recorders, and managers be kept and managed in a central, safe, and accessible place. All stakeholders should be given access to nonconfidential information concerning the project.



Fig. 12 Phase 4 in the conservation process.



Fig. 13 Phase 5 in the conservation process.

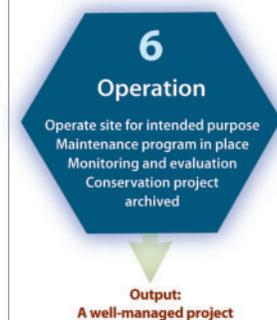


Fig. 14 Phase 6 in the conservation process.

What research and investigation activities take place within the conservation process?

A number of features characterize research or investigative processes used in a conservation context.

In developing research and investigation programs, it is useful to separate the initial phase of data capture—collected through direct observation on-site—from the analytical phase that follows it. In other words, in a condition assessment it is useful to separate inspection from diagnosis. In a significance assessment, it is useful to distinguish between information collection and evaluation, and so on.

It is important to recognize that the data-capture phase itself can never be entirely free from judgments that reflect the orientation of the research and investigation and project circumstances. Even decisions by the researcher about which data to collect and which to discard, for example, may introduce bias. Experienced researchers, aware of these limitations, will consciously, and to the greatest extent possible, strive to reduce inherent bias in their efforts.

Research and investigative processes, though often presented as linear for ease of explanation, are in fact iterative. They often require return loops to the data-capture phase in defined areas to meet research needs that have become evident as the work has progressed.

Each phase of the research process—whether data search, data capture, or data analysis—comes with its own guiding principles to ensure utility, accuracy, legibility, verifiability, and accessibility of the results obtained. One of the key commitments made by conservation professionals in adhering to these principles is the commitment to use recording procedures and practices that respect these principles. Recording is an essential part of the data-capture phase of investigative work. Less well recognized but equally important is that it is also an essential concomitant to analysis, to ensure that the rationale of judgments can be fully shared with future researchers.

Documentation is the basis for tendering work and committing financial resources. Ongoing recording is indispensable during all phases of the conservation process.

A final project report captures the lessons learned. All gathered information must be kept and managed in a central, safe, and accessible place.

The Heritage Places Conservation Process and Related Project Heritage Information Activities



Fig. 15 Diagram showing the conservation process and related project information activities.

What records are produced at each stage of the conservation process?

Figure 15 illustrates the central role of heritage information and summarizes the types of records and documents that are acquired or generated during each phase of the conservation process.

Recording must be seen as a necessary step in the initial phases of all investigative processes, providing conservation professionals with a two- or three-dimensional graphic record of the starting point for their work: clear and explicit information concerning the as-found nature and condition of a site. Recording is also an ongoing part of all research and investigative processes, capturing incremental information as it becomes evident in response to the various needs suggested by project circumstances and findings. Researchers will use the same graphic representations as base maps for graphically recording items such as building phases, areas affected by different decay phenomena, or points where scientific measurements were taken. Recording is also a critical accompaniment to all site interventions in providing an ongoing record of change. Finally, recording is a compilation of the “revelations and/or logics” behind the physical configuration of a site.

Properly recorded research and treatment activities add information to the body of documentation already acquired for a site. This documentation, compounded from the output of diverse or other research initiatives, consists of **information units**. In order for a site’s acquired documentation to provide a basis for the understanding required for conservation, the information units must be reliable, secure, and accessible. To achieve these goals requires the effective management of the acquisition, storage, and sharing of documentation.

The key points to understanding the relationship between recording, documentation, and information management may be summarized as follows:

- The recording activity is an essential part of the conservation process and a continuing part of effective site management strategies. Recording must accompany each phase of conservation activity planned for a site, from research and investigation to maintenance, from conservation treatment to monitoring.
- Adequate documentation is necessary for sound conservation decisions. The quality of the knowledge gained through research and investigation, along with the quality of the understanding gained through analysis of that knowledge, is directly linked to the quality of the decisions made about appropriate conservation or management activities for a site.
- Effective conservation decision making requires full access to pertinent documentation at each stage of the conservation process. Site documentation must be continuously updated and made available at each stage of conservation work.
- Effective management of conservation processes for cultural heritage requires a commitment to a sound information management strategy. No conservation activity—be it the acquisition of information (research and investigation), the evaluation of information (analysis and judgment), or the use of information in decision making—is complete without a strategy for managing and preserving that information.

Understanding the condition and significance of a heritage place is crucial to identifying, locating, and documenting changes.

Information units is a general term for partial information (or records) produced by individuals at different stages during the conservation process. The term refers to the output of both conservation professionals and heritage recorders.

What are the characteristics of an effective information management system?

Information Management Criteria

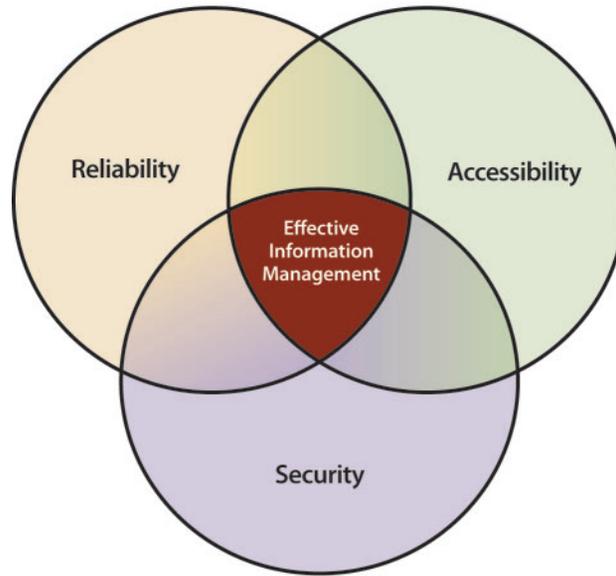
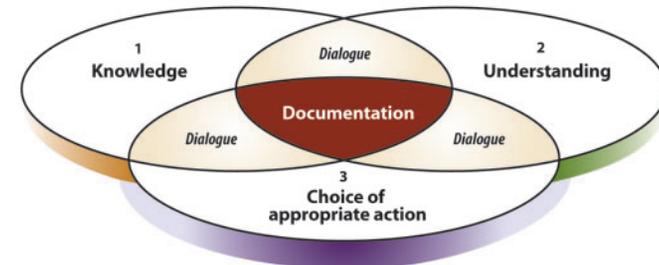


Fig. 16 Rectified images of the *Last Judgment* mosaic, St. Vitus Cathedral, Prague, showing its state before conservation (left), after treatment (center), and after gilding (right). Recording must accompany each phase of conservation activity. General and detailed photographs before, during, and after treatment are standard procedure in conservation documentation. Photo: Jaroslav Zastoupil, 2002.

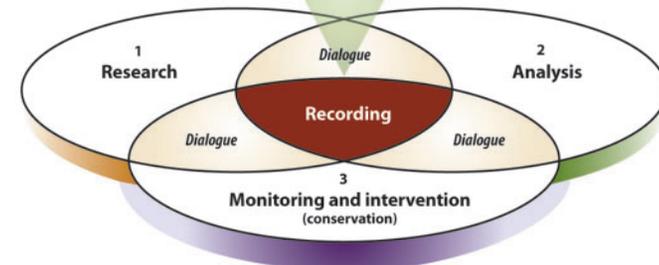
Fig. 17 Diagram of the criteria for an effective information management system. The information gathered during each phase of a conservation project must be reliable, accessible, and secure.

What are the main considerations in developing and linking recording, documentation, and information management practices?

Decision-Making Requirements



Conservation Activities



Information Management Implications

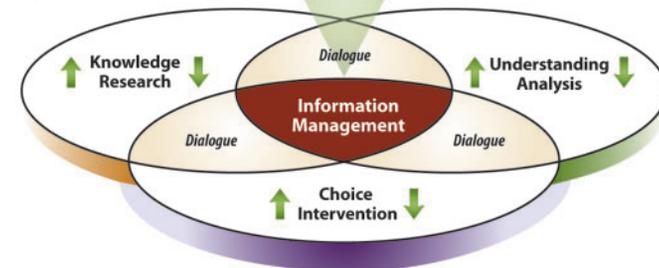


Fig. 18 Diagram of the relationships between recording, documentation, and information management practices. Well-managed heritage information is a powerful communication tool through which understanding is traded and shared.

How are recording, documentation, and information management effectively integrated within the conservation process?

Steps

1. Discuss and define specific project requirements and related recording and documentation needs.
2. Gather, assess, and communicate knowledge of existing heritage records and other documentation.
3. Define a **heritage information strategy** that is tailored to conservation needs.
4. Ensure that information is shared throughout the conservation process.

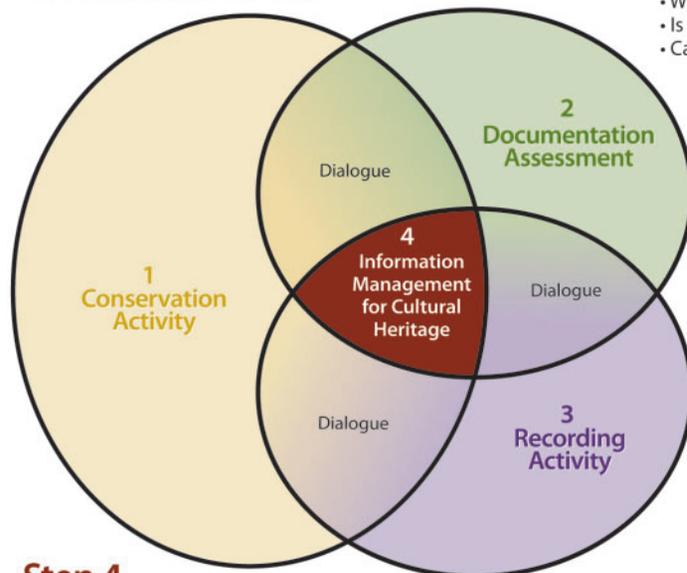
The essence of dialogue should be contained within the following questions and answers.

Step 1

- What is the site management plan?
- What are the conservation objectives?
- What are the project objectives?
- What is the purpose of recording?

Step 2

- What information/documentation exists?
- Where is it located?
- Is it reliable?
- Can it be made available?



Step 3

- What additional research and investigation is required to better understand the resource?
- How should recording be integrated within the conservation process to ensure effectiveness?
- What should/must be recorded for future reference and posterity?

Step 4

- Ensure effective communication between the conservation team members by sharing knowledge of all pertinent information.

Fig. 19 The step-by-step procedure ensuring that the most important heritage information questions are addressed before, during, and after the conservation process.

GUIDING PRINCIPLE 6

What is the first planning step?

The first planning step is research. Before new records are prepared, existing sources of heritage information should be found and examined for adequacy.



Fig. 20 The Old Teacher's College, Ottawa, Canada. The college was fully recorded three separate times by three different professional teams. Spending more time and resources on research and analysis of past records prior to beginning a new recording survey would have saved time and money. Photo: François LeBlanc.

Fig. 21 Recording the condition of the Hominid Trackway in Laetoli, Tanzania, which is 3.6 million years old. It is important to have an accurate and detailed record of the trackway not only for conservation purposes but also for posterity. Photo: Neville Agnew.



Why recording, and who produces records?

W

What are the basic concepts for recording cultural heritage places, and how do they relate to one another?

The term **recording** is used in this publication in a broad sense, referring to the acquisition of new information deriving from all activities on a heritage place. These activities, including **measured surveys, research and investigation, conservation, use and management, and maintenance and monitoring**, are carried out by a variety of specialists in pursuit of the common goal of gaining a better understanding of the **heritage place** and of the risks affecting its long-term conservation. Recording is therefore the responsibility of everyone involved in the **conservation process**.

Heritage recording is the capturing of graphic and photographic information describing the physical configuration, evolution, and condition of a heritage place. Today, due to rapid technological development in the field of measured survey techniques, this activity is mainly performed by heritage recorders. These technical experts are trained to apply a broad range of recording techniques and to choose the measured survey tool (or combination of tools) that will best match project requirements. Based on the needs defined by the project manager or the project team, heritage recorders produce precise and reliable **measured drawings** and photographs that meet heritage conservation standards.

This section answers the following questions:

What are the roles of conservation professionals and heritage recorders in recording cultural heritage places?

What are the levels of recording required to ensure that results are tailored to a specific conservation project's needs?

What framework is recommended for choosing proper recording tools and technologies?

Heritage recorders may also undertake technical analysis, which consists of providing accurate and objective visual descriptions of the design, construction, materials, and condition of heritage places. The resulting **heritage record** is a technical dossier consisting of **graphic records** that provide the necessary basic data for conservation and conservation-related activities and/or provide the public archives with **posterity records**.

Conservation professionals are scientific experts from various disciplines (historians, archaeologists, architects, engineers, landscape architects, conservators, managers, planners, and so forth) engaged singularly or as a team in the conservation of heritage places. In the process of recording all relevant information deriving from their activities, they make intensive use of measured surveys provided by heritage recorders. **Graphic records** are used as **base maps** for adding data from investigation, design, treatment, maintenance, and monitoring. The output of recording activities is a number of research, investigation, or treatment records, which include different data formats, such as text, tables, diagrams, photographs, and graphic information. Eventually, the interpretation and correlation of these individual records will form the **scientific record**.

Conservation professionals have an ethical obligation to record information deriving from their activities at a heritage place.

Recording is used in this publication in a broad sense, referring to the acquisition of new information deriving from all activities on a heritage asset, including heritage recording, research and investigation, conservation, use and management, and maintenance and monitoring.

Heritage recording is the graphic and/or photographic capturing of information describing the physical configuration, evolution, and condition of a heritage place at known points in time.

Documentation refers to the already existing stock of information. As an activity, it stands for the systematic collection and archiving of records to preserve them for future reference. It can be said that today's recording is tomorrow's documentation.

Information management refers to the process of finding, cataloguing, storing, and sharing information by making it accessible to potential users now and in the future.

The integration of the scientific record with the heritage record forms the **complete record** of a heritage place. To ensure that individual records (or **information units**) complement one another in a cost-effective way, it is essential that heritage recorders and conservation professionals work closely together by integrating their respective knowledge and skills to meet a common project objective.

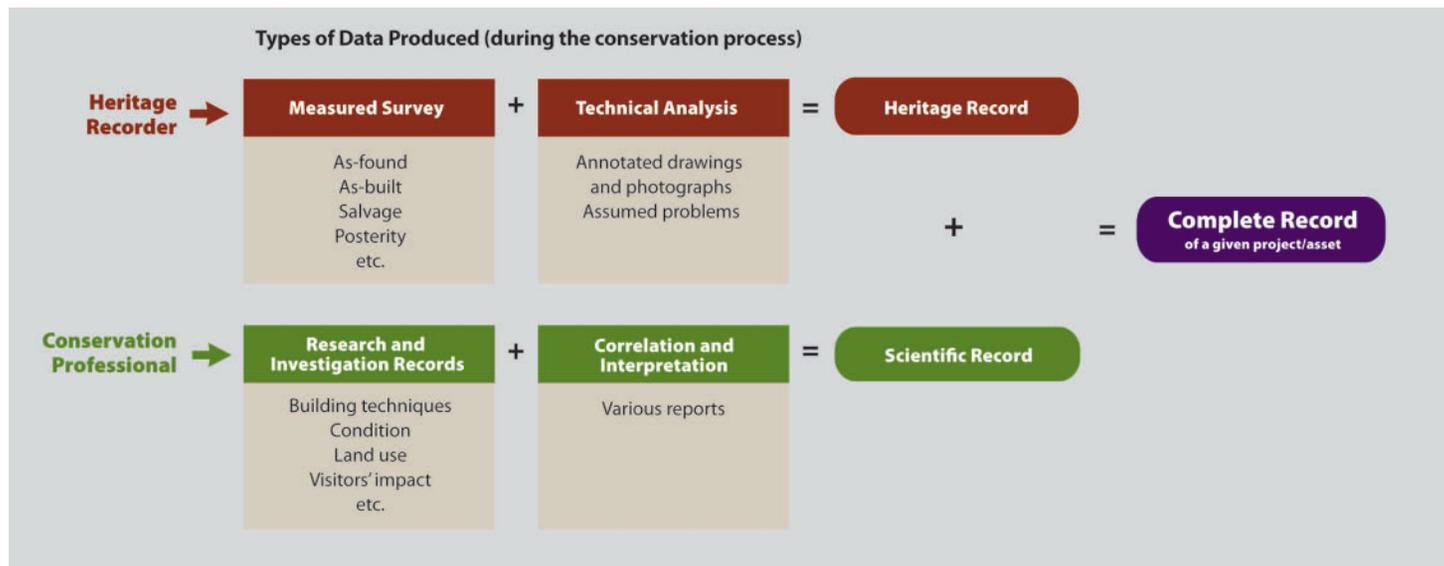
Although most of this section is dedicated to heritage recording and measured survey techniques, there is a series of guiding principles that concerns recording in the broad sense, intended as the capture of information by all involved in conservation processes.

What are the basic requirements for effective recording?

Many of the needs of site managers in the area of recording are best met through provisions established through national policies and programs. Site-specific needs most easily met at the national levels include the following:

- The need for a clear policy commitment to recording activity at all stages of the conservation process. Only with such a commitment within national policies will the budget provisions necessary to support recording be routinely made.
- The need to articulate clear guidelines and standards for defining, planning, and implementing recording projects (the intent of this publication).
- The need to provide clear how-to information for heritage recorders as they carry out measured surveys.
- The need to develop information systems to which heritage recorders and conservation professionals can easily gain access and contribute.
- The need to involve heritage recorders and conservation professionals with adequate training and experience. Although sites often provide useful settings for training activities, it is usually only at the national or regional level that sufficient economies exist to allow implementation of effective training programs.

Fig. 22 Chart showing the production and integration of data to create the complete record of a heritage place.



A number of other needs can be adequately addressed only at the site level. These include the following:

- The need for a recording, documentation, and information management strategy in the project design, and for specifications in contracts.
- The need to produce a complete as-found record of the asset when possible, ideally before the start of conservation activities, so as to provide conservation professionals with base maps to better understand the asset and its condition and to begin planning.
- The need to provide for ongoing review and definition of site-specific heritage recording and investigation needs. These will vary regularly with changes in site circumstances and conditions. Although heritage recording needs are usually only assessed prior to planned intervention, the preparation, for example, of a nomination dossier for inscription of a site on the World Heritage List provides an excellent opportunity to update understanding of recording needs on a site. This review often reveals that baseline information needed to assess change over time at such sites is not in place, and suggests the development of a recording strategy to bring the site up to expectations.
- The need to ensure that the definition of general recording needs and their execution is fully integrated within the overall conservation program. Recording needs should emerge from within conservation and management planning.
- The need to improve information management habits of all professionals involved. Conservation professionals who visit sites to carry out inspections or pursue inquiries usually prepare a record of their work. These records usually consist of photographs, sketches, or videos to accompany handwritten or audio notes. These often find a home in the conservation professional's project file and provide a record of the visit and a future reference. It is critically important to ensure that these partial records (or information units) are integrated within the overall formal documentation maintained

for a site. Moreover, professionals should recognize that “hoarding” behavior is irresponsible in that it fails to respect the rights of future decision makers to have access to the best information possible.

How are site-specific recording strategies developed?

The following guidelines permit delineation of the appropriate place and focus of recording within short- and long-term phases of the conservation process. They address the following four phases:

- Needs assessment (assessing recording needs)
- Scope assessment (determining the scope of recording activity)
- Implementation of recording activity
- Follow-up and review of recording activity

How are general recording needs assessed?

Three principal questions need to be asked in assessing recording needs.

1. What recording needs are suggested by the site itself?

A number of subsidiary questions are useful at this stage:

- Are the qualities of the site well understood and defined?
- Are the particular attributes associated with these qualities well defined?
- Are these attributes well recorded?
- What research and investigation needs are envisioned to extend understanding of the site's qualities?
- What recording would be necessary?
- What standards of recording would be necessary to reinstate significant features if the site suffered loss?

GUIDING PRINCIPLE 7

What should the records contain?

Heritage records must clearly and accurately identify and locate the heritage places and their settings, and note the sources of all related information. They must also include metric, quantitative, and qualitative information about a site's assets, values, significance, management, condition, maintenance and repairs, and threats and risks to its safekeeping.



Fig. 23 St. Louis No. 1 Cemetery, New Orleans, Louisiana, with view of the city in the background. Can documentation help site managers decide which tombs to treat first? Photo: Kyubong Song, © University of Pennsylvania Architectural Conservation Laboratory.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Frank Matero and Judy Peters write about the use of Geographic Information Systems (GIS) to document the location and condition of hundreds of tombs in the historic aboveground St. Louis No. 1 Cemetery in New Orleans, Louisiana.

GUIDING PRINCIPLE 8

What level of commitment is needed from decision makers?

The commitment to conserve heritage places requires an equal commitment to acquiring heritage information by establishing clear policies for recording, documentation, and information management activities, as well as guidelines and standards for defining, planning, and implementing recording, for archiving all records, and for information exchange and dissemination.



Fig. 24 The Dauphine Redoubt, Quebec City, is a Parks Canada National Historic Site that meets national policy requirements for recording and documentation. Photo: François LeBlanc.

Appendix G provides an example of policy statements related to heritage recording provided in Parks Canada's Cultural Resource Management Policy. This policy describes why and how Parks Canada is taking a leadership role in the management of national historical areas, sites, and landscapes and in its national heritage recording programs. Parks Canada recognizes that heritage recording is one of the most important conservation activities in addressing the principle of understanding heritage places.

2. What is the state of existing site information?

Again, a number of subsidiary questions are useful:

- What graphic records are known to exist for the site?
- Are all site records gathered together and accessible?
- What is known about the reliability of existing documentation?
- Is existing documentation capable of integrating new records?
- Does current site documentation respond to existing needs?

3. What recording needs are suggested by current plans for the site or its environment?

A number of subsidiary questions are useful at this stage:

- What uses will the site maintain or be given?
- What impact might new use have on recording needs?
- What changes of status are anticipated? (World Heritage nomination, for example, imposes certain standards of reporting on site managers.)
- What interventions are planned? What documentation needs are necessary for intervention?
- To what extent is the site threatened by natural or other processes? What is the nature of these threats?
- What are the implications for recording?
- What role can the site play in meeting broad research needs in the field?

As cultural heritage resources change and age, documentation needs may change as well. Research discoveries may prompt new questions requiring additional recording. Changes in orientation of site development plans may suggest new recording needs. Alterations to a site may need to be accompanied by recording. Verifying the state of conservation of sites at intervals may require updating of records.

An up-to-date needs assessment is a critical component of the efforts to determine the necessary scope of recording activity.

A number of significant stages in project follow-up are important to ensure full value is received for the investment made. These stages are included in the following checklist:

Checklist

1. Review of effectiveness of recording activity relative to objectives established for the work:
 - Is the client pleased with the result?
 - Are the results useful for their intended purpose?
 - Has the project achieved its goals within appreciable constraints (e.g., time and budget)?
 - Have all recording activities been successfully integrated within a single accessible database for the benefit of future researchers?
2. Determination of recommendations for follow-up recording:
 - Has recording activity permitted assessment of follow-up recording needs, whether they are linked to forthcoming interventions, newly identified research needs, or planned periodic review such as monitoring and maintenance?
 - Has future review of the site (and the measurement of physical change over time) been planned as a regular component of long-term conservation and management?
3. Verification of adequacy of provisions for site heritage information activities:
 - Does an accessible documentation database exist to which site records may be added?
 - Is the database organized in a fashion to facilitate addition and integration of incremental records?
 - How is accessibility assured? Who is allowed access, and under what circumstances?
 - Are provisions assured for long-term security of the database?
 - Can informal records be added to the data?

What are the benefits of heritage recording for cultural heritage places?

Attention to development of adequate heritage recording strategies will confer many benefits on site managers. The benefits of having accurate and reliable measured drawings and photographs describing the physical configuration of sites and their physical condition at known points in time fall into two broad areas: (1) conservation planning and management and (2) provision of a permanent archival record.

1. Benefits of conservation planning and management

The availability of heritage records is of critical importance in many of the activities associated with sound conservation planning and management. Some of these activities are focused on the long-term care of sites:

- Master plans for long-term use and conservation
- Research and investigation programs intended to aid understanding of site development and significance
- Maintenance planning, including systematic monitoring and maintenance practices

Other activities focus on short-term planning needs:

- Research and investigation activity focused on specific short-term questions
- Documentary base essential to development of conceptual and detailed design work for specific site interventions
- Support for those involved with day-to-day project management and site supervision

2. Benefits of permanent archival records

Quite apart from the benefits to conservation planning for specific sites, heritage recording activities can provide archival documentation of great value. These activities are sometimes called posterity recording. The resulting documentation, **posterity records**, can provide a permanent heritage record that can be of inestimable value for significant heritage places in the event of catastrophic loss following a

natural disaster or conflict. Equally, archival records can provide valuable guidance to scholars doing detailed comparative studies, and may constitute a useful pre-intervention record or a salvage record in situations where sites are threatened by new development or imminent peril.

Development of a national heritage record archive requires a national inventory, which indicates to some degree the importance of single sites and their condition, and therefore provides guidance in assigning heritage recording priorities. Finally, this documentation can be used to develop didactic material for visitors and the general public.

Why Heritage Recording?

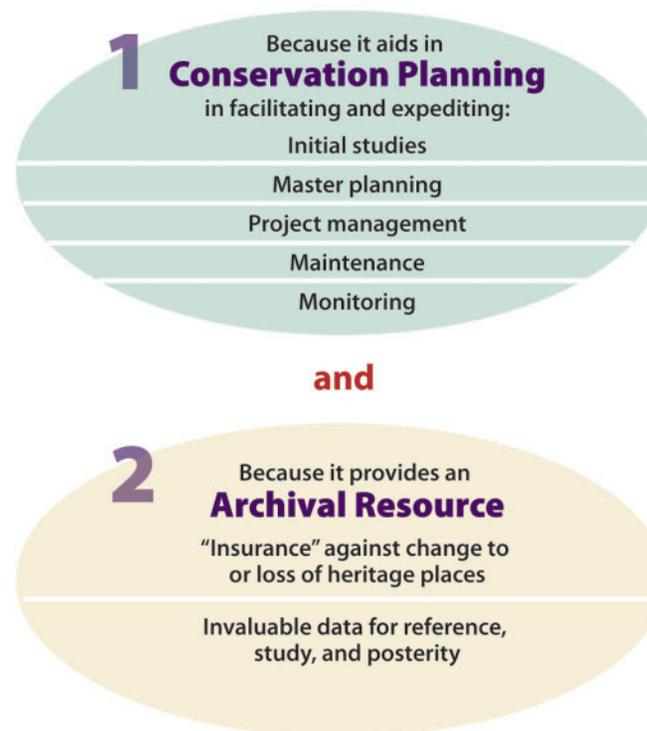


Fig. 25 The benefits of heritage recording for cultural heritage places.

Heritage recording is the graphic and/or photographic capturing of information describing the physical configuration, evolution, and condition of a heritage place at known points in time.

Heritage records are of critical importance in many of the activities associated with sound conservation planning.

Heritage recording activity can provide archival documentation of great value.

GUIDING PRINCIPLE 9

Who should have access to heritage information?

Because heritage is what the community wishes to protect and pass on to future generations, dissemination of heritage records should be as wide as possible, and the location of the records should be made public.



Fig. 26 Workers in Seyoun, Yemen, creating new mud-brick construction. Every step in this traditional building process was recorded on video and screened for the public. Photo: © Caterina Borelli.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Caterina Borelli writes about recording and disseminating knowledge concerning building techniques and traditional skills in Yemen.

Borelli produced a documentary video that proved to be an effective tool in many ways. Because it addressed a general audience, the documentary reached far more people than expected. The positive reaction it received from the local population created a climate of dialogue, trust, and respect and has paved the way for the implementation of new conservation projects.



Fig. 27 The Information Center at the GCI. Heritage records should be kept in a safe and accessible place. Photo: François LeBlanc.

Fig. 28 Patron using materials from the information center at the GCI. How is accessibility to heritage information assured? Who is allowed access, and under what circumstances? Are there provisions for long-term security of the records? Photo: François LeBlanc.



How is the scope of heritage recording defined?

The scope of a heritage recording project should be defined by the site manager, in consultation with qualified heritage recorders, following the needs assessment described above. For major conservation or research projects, all members of the expert team assembled for the work should be consulted.

The scope of a project will be determined by the needs assessment, the cultural significance of a heritage place, and the interaction between available resources and relevant constraints. Definition of the scope of a heritage recording project involves making choices in these areas:

- Choice of appropriate level of recording
- Use of available resources (equipment, skills)
- Definition of time frame
- Desired results: organization and presentation of recording information

In defining the scope of a heritage recording project, the goal is to ensure that the choice of scope reflects a balance of factors in each area listed above. How can the recording activity meet the clients' needs within applicable budget and other constraints while ensuring respect for the cultural value of the site? The answer requires that clients be able to define criteria explicitly in each of the three areas.

How is the appropriate level of heritage recording chosen?

Three levels of recording may generally be considered:

1. Reconnaissance recording
2. Preliminary recording
3. Detailed recording

Each of these recording levels may be partial; that is, each consists of a limited set of graphic records tailored to specified needs as the conservation activity evolves over time.

The recommended progression in the use of each level ensures cost-effective recovery of optimum recording data essential for use at various project stages, and aids in effec-

How is the scope of heritage recording defined?

Heritage recording projects/programs may be developed in the context of one or more of the following:

- Inventory programs
- Research programs
- Site operations
- Monitoring programs
- Archival support programs

In each case, the scope of recording activity will be a function of the following parameters:



Because the above parameters vary from project to project, the scope of recording activity will vary as well with every project. Even standards defined for specific programs in particular jurisdictions may have to adjust to the demands of the parameters.

Fig. 29 A site's cultural value, its needs and goals, and budget and other constraints are parameters in the scope of a heritage recording project.

tively defining future recording requirements as work continues. As projects progress, graphic records will complement one another and eventually form complete and detailed heritage records. The accuracy of the information obtained varies with the choice of recording level.

Recording experience, judgment, and initiative are essential requirements in ensuring effective application of appropriate recording technology to a given project or site.

Level 1: Reconnaissance Recording

Reconnaissance recording is typically an overview photo survey with sketched plans that allows conservation professionals to visualize, in entirety, a site and its related buildings and features in sufficient detail to understand the site's overall characteristics. It should permit rapid identification of significant features and problem areas. The quantity of photos taken will vary according to the size of the site and related structures and features, as well as the client's requirements. For a building, reconnaissance recording normally would include sketches of plans and elevations together with important details. More complex sites such as cultural landscapes or archaeological excavations will require general views from all compass points and at various height elevations (i.e., heights of land), supplemented, as needs dictate, by representative details.

Level 2: Preliminary Recording

Preliminary recording is more accurate than reconnaissance recording and includes measured graphic records. It is meant to complement reconnaissance recording by providing more complete information pertaining to significant components of a site. The purpose of this recording is to produce a set of graphic records of the asset's major features that are needed early in the conservation process for preliminary analysis, and to define areas for further investigation and related detailed recording. The accuracy of graphic records is ± 10 cm for plans, elevations, and cross sections, and ± 2 cm for structural and other elements.

GUIDING PRINCIPLE 10

What level of detail is required?

Recording and other heritage information activities should be undertaken to an appropriate level of detail to provide information for sensitive and cost-effective planning and development; for efficient research, conservation work, site management and maintenance; and for creating permanent records.

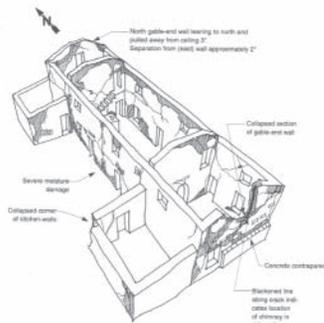


Fig. 50 Final synthesis analysis sketch of the historic Andres Pico Adobe, near Northridge, California, after the 1994 earthquake. Drawing: Anthony Crosby.

In the companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, Anthony Crosby discusses a survey by a team of professionals who assessed nineteen historic adobe buildings within a few weeks following the earthquake that struck Northridge, California, in 1994. If managed well, the level of documentation gathered with simple tools demonstrates that rapid assessment is possible and beneficial within a few days of a natural disaster.

Level 3: Detailed Recording

Detailed recording, which is generally the most accurate level of heritage recording possible, may take place prior to, during, or after a conservation activity to accurately record a site's physical configuration, condition, and significant features. Detailed recording occurs when a highly significant resource becomes the subject of directed research and analysis or of intervention planning and conceptual design. To ensure cost-effective detailed recording, completeness should be tailored to the immediate needs of a conservation team. Detailed recording may be phased over a number of years depending on planning requirements and related budget. The accuracy of a detailed record can vary between approximately ± 2 mm and 5 mm for building elements and between ± 10 mm and 25 mm for building plans, elevations, and cross sections.

One of the main differences among the three levels of recording is the accuracy of graphic data produced. The higher the accuracy, the more time needed to record, and/or the more sophisticated recording tools are needed. This translates into higher costs to produce the record.

In summary, reconnaissance recording provides quick sketches and photos to understand a heritage place and its configuration before a project begins. Preliminary recording provides additional focused information to the project dossier to better understand project needs early in the process. Detailed recording consists of accurate graphic records for detailed studies and design requirements.

The Heritage Recording Planning Form

Clear communication between heritage recorders and conservation professionals or other clients is essential and must be well established before a heritage recording project is defined. To ensure effective planning and cost-effective results, a list of specific requirements, together with an understanding of the needed accuracy of recording, is necessary.

The Heritage Recording Planning Form (fig. 52) is a management tool intended to facilitate the definition of the scope and level of recording for each project. Once completed, the form becomes a binding contract between the client and the heritage recorder. If the cost of recording exceeds the available funds, the client should use the form to adjust the requirements accordingly and defer lower-priority work to a later date.

What tools and technologies are to be used?

Examination and choice of tools is aided by an understanding of both traditional and new technologies. Although traditional technologies will always serve a useful purpose in heritage recording, it is well worth the effort to gain understanding of the new technologies and the benefits they may offer.

Traditional **recording** techniques continue to offer many benefits. Their success usually does not require large budgets, work of significant quality can be achieved with minimal training, and perhaps most important, the traditional techniques require the recorder to become intimately familiar with the heritage place through the recording process. Disadvantages lie in the areas of accuracy, verification, time, and labor requirements.

Digital heritage recording is defined as the activity of producing and storing on a computer digital information, measured drawings, photographs, photogrammetric records,

and other electronic data to form the heritage record. These digital heritage records are designed to be used by conservation professionals with personal computers.

Each of these technologies can complement one another in that for the most part, they can be applied separately and integrated digitally to produce a single heritage record tailored to site needs. For example, a photogrammetric record can be used as a base drawing onto which different layers of graphic information (or thematic maps) are added by using CAD software. The photogrammetric images can be rectified and scaled to produce a digital photographic base map.

One recent tool is the Tablet PC, a lightweight laptop computer used as a paper pad and pencil (see fig. 35) to draw and take notes without a keyboard or mouse. It allows conservation professionals with no specialized skills to upload digital photos (that become base maps) while on site, sketch over the image, and annotate the photograph using the digital pencil or voice recording. The Tablet PC, combined with low-cost photo-rectification software, can provide instant site-scaled and rectified photos of building elevations. From these, wall patterns, architectural and painting motifs, condition and crack surveys, and simple measurements of window openings can be easily and accurately described. (See appendix C for an example of these results using higher-end tools.)

What skills are needed?

The skills necessary for heritage recording are obviously linked to the choice of technologies. Indeed, availability of skills may even dictate, at least in the short term, the choice of technologies.

While the use of traditional recording techniques has remained for many researchers and conservation professionals a means of managing heritage recording in a self-sufficient way, the introduction and rapid development of digital tools and technologies increasingly require the input and active cooperation of specialized heritage recorders. Furthermore, most specialized heritage recorders have the

know-how to compile and manage information in cost-effective ways to satisfy project requirements. This knowledge and its related skills are most valuable in today's digital environment. In many cases, heritage recorders have become the information specialists responsible for data integration and management. The section that follows addresses this new potential responsibility by proposing a role and responsibility description for the new professional figure, the heritage information specialist.

Ultimately, it is important to ensure that training programs enhance skills in both traditional and digital areas. Skills required to work with digital recording technologies include the following:

- Familiarity with computer operations in order to evaluate these technologies (for survey instruments, digital cameras, digital video cameras, etc.)
- Working with basic applications software (including imaging software, CAD software, database software, communications software, etc.)
- Working with midlevel specialized applications software (image rectification, scaling and making mosaics of CAD overlay, distance meters, GPS, etc.)
- Working with high-level specialized applications software (GIS, total station, stereophotogrammetry, 3-D laser scanning, etc.)
- Troubleshooting electronic “bugs” and software integration problems
- Developing related standards, guidelines, and procedures
- Working with HTML (hypertext markup language) and XML (extensible markup language) to share results widely on the Web using hyperlinks

It is important to recognize the necessity of building on the knowledge and hands-on skills associated with traditional heritage recording in planning the use of new digital recording technologies.

Appendix C provides an example of the Heritage Recording Planning Form prepared for the Fort Henry project. After defining the condition and recording of the stone masonry decay of the dry ditch at Fort Henry, it was decided to apply the techniques of rectified and scaled photography, along with CAD overlay.

Appendix D provides an example of the Heritage Recording Planning Form prepared when defining the preliminary recording of the ditch tower at Fort Henry. The recording project output was a set of ten measured drawings.

What framework is recommended for the development of levels of heritage recording?

Levels of Heritage Recording			
	A Reconnaissance Record Low Accuracy	B Preliminary Record Midrange Accuracy	C Detailed Record High Accuracy
Purpose of Recording	Reconnaissance Initial inventory Initial planning Reference data	Planning Initial condition Investigation Stabilization Pre-design Reference data	As-found condition Design Construction As-built record Maintenance/monitoring Posterity
Accuracy of Drawings	Not to scale	Plans and elevations ± 5.0 in. (± 10 cm) Details ± 1.0 in. (± 2 cm)	Plans and elevations ± 0.5 in. (± 1 cm) Details ± 0.1 in. (± 2 mm)
Results	Photographic report Photo-key plan Initial condition Descriptive sketches	Measured drawings Asset description/condition Observations Photographic report	Measured drawings Asset description/condition Observations Photographic report
Cost (will vary in absolute terms with scale and complexity of site)	Low (a few days on site by recording team)	Moderate (several weeks or more on site by heritage recording team and input by conservation professionals)	Moderate to high (extensive and possibly ongoing activity on site by recording team and increased input by conservation professionals)

Fig. 31 Chart showing the recommended framework for the development of heritage recording levels. The choice of different levels depends on project needs in terms of accuracy and detail, arising at different stages of the conservation process. Levels are generally defined when project team members fill out the Heritage Recording Planning Form (fig. 32).

GUIDING PRINCIPLE 11

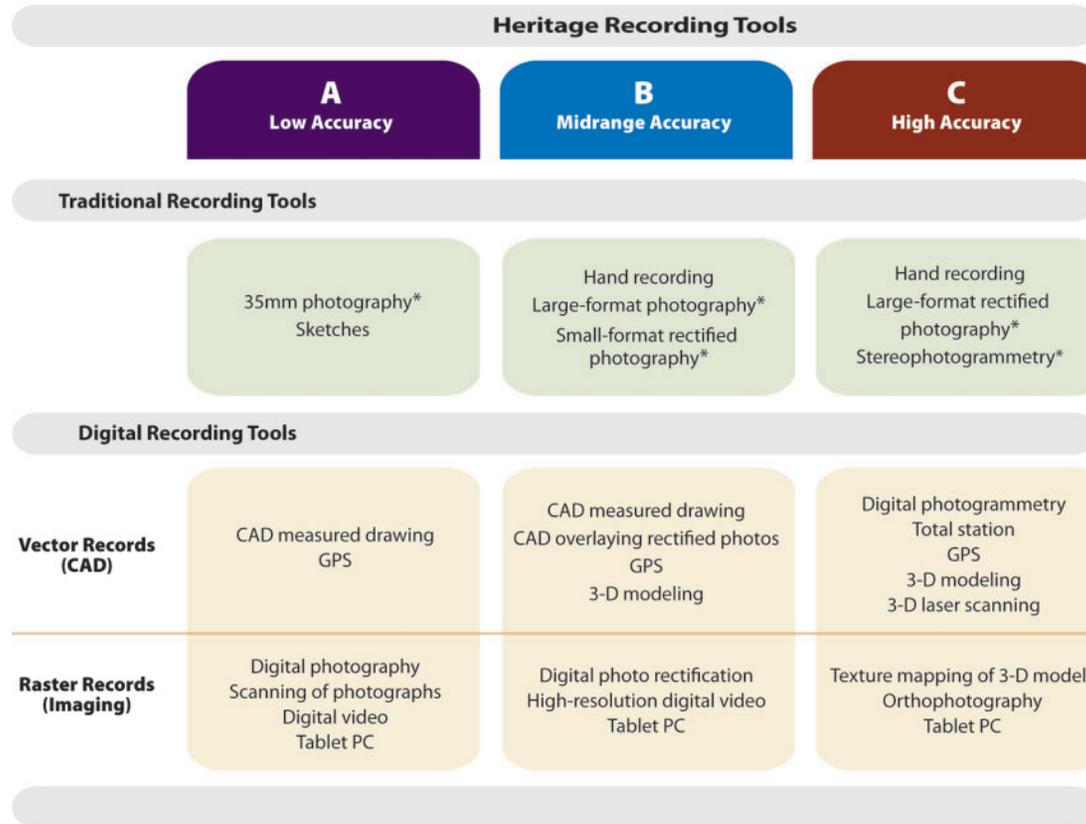
What scope, level, and methods should apply?

The selection of the appropriate scope, level, and methods of recording requires that the methods of recording and type of documentation produced should be appropriate to the nature and importance of the heritage place, the project needs, the purpose of the record, the cultural context, and the resources available. Preference should be given to nonintrusive techniques. The rationale for the intended scope and for the selection of the recording method must be clearly stated, and the tools and materials used for compiling final records must be stable.



Fig. 53 Tools for heritage recording: (a) measuring tape and plumb line, (b) electronic distance meter, (c) digital camera, (d) Tablet PC, (e) total station. Photos: Rand Eppich.

What framework is recommended for development and use of recording tools and technologies?



*Note: Film is becoming scarce, and digital photography is cost effective and constantly improving.

Digital heritage recording is complex, given the many hardware and software components available. These components are associated with both low-cost and high-cost solutions; these require evaluation prior to use to determine those that are cost effective for an organization.

Fig. 54 Chart showing the recommended framework for development and use of recording tools and technologies.

What about budget and time frame?

The appropriate choice of recording tools and technologies and associated skills for projects must also be a function of the available budget. Budgets can vary considerably from project to project and from country to country.

As mentioned earlier, three areas should be considered when defining the scope of a heritage recording project and the recording tools that are most effective to meet the project's needs. These areas are cultural value of the asset, the goals of the site and/or project, and the budget available. In defining the recording activity, the site manager should ensure that the choice reflects a balancing of the three above-mentioned parameters. This balance requires that the team define criteria explicit in each of the three areas.

Independent of where heritage recording is undertaken, the recording project's cost will depend on the dialogue that takes place between the conservation professionals and the heritage recorders involved in the project. This dialogue normally should take into account the information listed on the Heritage Recording Planning Form. The procedure can be summarized as follows:

1. The heritage recorder invites the conservation professionals to define what information the latter needs to better understand all aspects of the heritage place. This enables them to be more effective in their conservation analysis, investigation, and decision-making activities.
2. This definition of needs will allow the heritage recorder to fill out the Heritage Recording Planning Form (see fig. 32) by summarizing the conservation team's requirements under the "Scope of recording" column.
3. These requirements are then translated into costs related to the time and level of recording required for the project. The recording cost will naturally vary according to local wages, the skills available, and the time frame defined for the work.
4. Should the project budget not support the levels of recording proposed in the planning form, the conserva-

tion team must rebalance the three parameters described above so as to satisfy as many project requirements as possible (see page 38 for additional information on the Heritage Recording Planning Form).

It is important to link choice of time frame with choice of recording level and recording equipment, while defining the scope of heritage recording activity. Some recording tools and technologies are inherently more rapid than others; at the same time, they may not always be as accurate as slower methods. The time available for the work—both in absolute terms (prior to intervention or prior to desired-use date for recording data) and in relative terms (as a function of budget and the number of available person-days)—is a key determinant in the choice of appropriate technologies.

Where time or budget constraints appear to limit choices, it may be possible to phase heritage recording activity to build incrementally toward desired results over time. The desired management structure can be established by linking heritage recording to desired outputs or benefits. This suggests defining work phases in relation to the following:

- Conservation planning purposes
- Conservation management and site operation needs
- Archival benefits (e.g., for future reference and posterity)
- Desired outputs

How are heritage records organized and presented?

It is important in defining the scope of heritage recording to consider the client's expectations regarding the presentation of recording information. Expectations regarding format can influence the choice of recording tools and technologies.

For a site not previously studied in any detail, a client may wish to establish a complete as-found record: photographs, drawings, and text organized to provide base maps for future investigations. In some cases, clients may wish to integrate heritage recording information within reports of broader focus, say property studies or structural reports. In other

The companion publication, *Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples*, provides a series of cases in which one or more of the tools described in figure 33 were used to address different conservation needs or problems. The objective of this volume, *Guiding Principles*, is to examine how heritage recording contributes to the resolution of conservation problems.

Appendix E provides more details about the recording tools shown in figure 33. It summarizes the main metric survey techniques used by English Heritage for its heritage recording activities.

The Fort Henry project (see appendixes C and D) is an example of good advanced planning. For this project, conservation professionals engaged in partial recording activities and received hands-on training during site recording from the heritage recording specialists.

cases, it may be adequate to maintain heritage recording information in the form obtained in the field (raw data, field notes, photographic negatives, etc.).

What should heritage recorders and conservation professionals keep in mind while carrying out their activities?

The how-to aspects of carrying out specific types of heritage recording projects are beyond the scope of this publication. Information in this area may be found in the companion volume, *Illustrated Examples*, or in the many manuals prepared for use by heritage recorders. Nevertheless, a number of important implementation principles are worth keeping in mind.

Detailed advance planning of the recording activity is essential in order to achieve cost-effective results. Prior to arriving at the site, heritage recording teams should have consulted all available pertinent site documentation, verified the equipment necessary for the intended scope of the project, and verified site conditions to be expected.

Advance planning should include efforts to achieve the greatest degree of integration possible with other members of the site or conservation project team, particularly during early field phases of research activity. The value of recording activity carried out by heritage recorders in direct contact with the other members of the research team (historians, architects, archaeologists, etc.) will be enhanced if fully integrated with the investigative observations made by all team members. If the recording activity is being carried out without the efforts of heritage recorders, the need to link observations and findings by individual team members remains of paramount importance.

A systematic approach to the execution of the recording activity is essential to ensure accurate and complete results. An ad hoc approach to recording almost always results in return visits to a site to acquire information missed during a first visit. Only through the use of a systematic approach—

that is, an approach that attempts to cover a site in planned increments, moving carefully from point to point—can the recording/conservation team maximize the pertinent data gained in the shortest period of time.

All site (or project) recording should be integrated within a single accessible database. Too often, and with the best of intentions, recording data remain in private files for personal convenience. It is important for the long-term benefit of a project and for those involved with the project that all records collected on site be shared. The Project Information Container approach, introduced in the next section, addresses this very need and provides a project information sharing tool for conservation managers.

What approach is suggested to ensure systematic documentation and good information management?

A **At this time, what are the main documentation and information management problems and concerns?**

Creating inventories that use international standards and are widely accessible

Inventories are the initial and most basic form of documentation that lists heritage places and describes their basic attributes. Information is normally processed by means of text-based record forms, which contain pre-established entry fields in order to facilitate queries. As an indispensable information tool for precise identification and legal protection of cultural heritage places, the role of inventories has long been recognized.

Initiatives promoted by the Council of Europe to develop a minimum set of documentary data required to reasonably assess a heritage place have led to the publication of the *Core Data Standard for Archaeological Sites and Monuments* (1999) and *Guidance on Inventory and Documentation of the Cultural Heritage* (2001), which cover historic buildings and monuments as well as archaeological sites (see annotated selected bibliography at the back of this book). The mandatory sections within this data standard provide the minimum information required for indexing in structured fields and describing in free-text fields. The optional sections, subsections, and fields allow for the recording in greater detail. This

This section answers the following questions:

What are the main documentation and information management problems and concerns?

Why should documentation and information management take place at the conservation project level?

What type of specialist is required to ensure that the suggested approach is implemented and maintained?

European standard, which aims at the compatibility and exchangeability of basic information categories, has become an international reference in the field of cultural heritage inventories.

Maintaining digital inventories

Today, computer-based information technologies allow the digitizing of traditional inventories in order to make data more easily accessible and make enhanced queries possible. Moreover, digital inventories, which are able to manage large quantities of text and image data, facilitate the addition of special categories, providing detailed information on topics such as historical development, original materials and techniques, use, condition, and the inclusion of image data. However, digital inventories have to be updated periodically and thus require a long-term financial commitment. This is a prerequisite for success in providing heritage managers with the necessary information for initial interpretation, conservation planning, and monitoring of conservation projects.

Documentation centers are not proactive

“Today’s recording is tomorrow’s documentation.” This statement emphasizes the concept of documentation as the existing stock of information available for a heritage place. New research, investigation, and conservation activities

Inventories are the most basic form of documentation of cultural heritage places.

GUIDING PRINCIPLE 12

How should records be kept and identified?

Original records of heritage places must use standardized formats, must be preserved in a safe and accessible place, must be backed up, and in the case of digital records, must be regularly migrated to current versions of software and support. Although costly, archiving hard copies of digital records is also recommended. For records to be easily retrieved and managed, a unique identifier is required such as standard longitude and latitude coordinates that define the location of a heritage place on earth.



Fig. 35 Digital records are stored on a variety of supports and prepared using a variety of software that sometimes are specific to specialized hardware. Long-term preservation of digital records is a new and still strongly debated issue. Photo: François LeBlanc.

produce new records, which must be systematically collected and archived to ensure their availability for future reference and use. This responsibility lies with documentation centers, created by many agencies for the care of cultural heritage.

A problematic issue is that documentation centers, instead of playing a proactive role in collecting records, developing standards, and prescribing preferred types of data carriers and formats, rely on experts to submit their records when they become available. As a consequence, much information is lost because it simply is not delivered or delivered in an incomplete manner—for example, printouts only, without the original film material or digital image files—or in formats unsuitable for long-term preservation—for instance, archiving unstable paper or low-quality CD-ROMs.

No links between documentation centers

Often within large organizations, subgroups have established documentation centers or archives to manage records and information. The same practice occasionally occurs within smaller units or on an activity basis, such as data management for conservation projects or historic sites. In many cases, little effort is made to link these information centers electronically or otherwise.

Preserving records for the long term

The long-term preservation of electronic records is a new and still strongly debated issue (see the annotated selected bibliography). In developing and applying solutions, archivists and records managers seemingly have been unable to keep up with the increase in volume and complexity of these records. Only a policy of active maintenance, consisting of the periodical backup and migration of digital data to new software and hardware, will help prevent the risk of computer-based documentation becoming obsolete or lost because it can no longer be accessed. In terms of data security, it is moreover good practice to archive hard copies (i.e., printouts) and to keep copies of the same records in at least two different locations. Few documentation centers are

prepared to meet the new challenge of preserving electronic records, although digital files have become the main format in which heritage documentation is delivered today.

Creating effective management tools

Creating an effective information management tool is perhaps one of the most challenging activities, as needs vary significantly in scope and complexity with each conservation project and each conservation organization. In addition, computer technologies are evolving quickly, and new electronic tools and software have become increasingly user friendly, thus making new information management tools accessible to almost everyone. Consequently, the development of international documentation and information management guidelines can now be considered realistic, whereas a few years ago the technology was accessible only to a limited number of experts.

Little communication among conservation professionals

In conservation practice, conservation professionals usually accumulate large amounts of information, including photographs, drawings, and field notes for their analyses, studies, and design work. In many cases, this same information has been recorded at least twice because there is generally no mechanism in place to indicate that the information already exists or where it can be found.

Reluctance to share data and intellectual credit

Often, conservation professionals are reluctant to share their records with others. In some cases, they deliberately prevent others from gaining access to the information due to competitive situations. Also, assigning intellectual credit for existing work is often overlooked.

Few guidelines or standards for conservation project information management

Few institutions or government agencies have developed standards and guidelines for documentation. Many national and international organizations have expressed a need to develop and adopt such standards in recent years.

Lack of awareness of the cost and benefits associated with well-managed information

Much time and effort is spent locating information that is known or assumed to exist but is inaccessible because it has not been stored and catalogued properly. Estimated in terms of cost, this effort can become quite significant. Needless to say, this cost is much higher when the information cannot be found and must then be regenerated. Unfortunately in some cases, the data are lost forever when the original asset is no longer extant.

To summarize, figure 36 illustrates the tendency within organizations to be unwilling to invest in information sharing, management, and tools.

Why should information management be a central activity to conservation practices?

This section provides a framework for individuals and organizations currently involved in project-related information management. It is meant to be an open-ended guide that will permit interested parties to explore information management beyond the context of this book and participate in today's evolving world of electronic communications.

This section is experimental and must be considered an interim step toward defining information management practices accessible to all. It is experimental in that it proposes the use of an **Intranet** for conservation project activities, and use of the **Internet** to share information interactively with experts from all regions of the world.

What are the main documentation and information management problems and concerns?

- No link between existing documentation centers
- Little and sometimes no communication among conservation professionals
- Reluctance to share data
- No consistent standards for recording, documentation, and information management
- Duplication in recording and documentation activities, and in storage of data
- Lack of awareness of cost benefits of well-organized and managed documentation centers

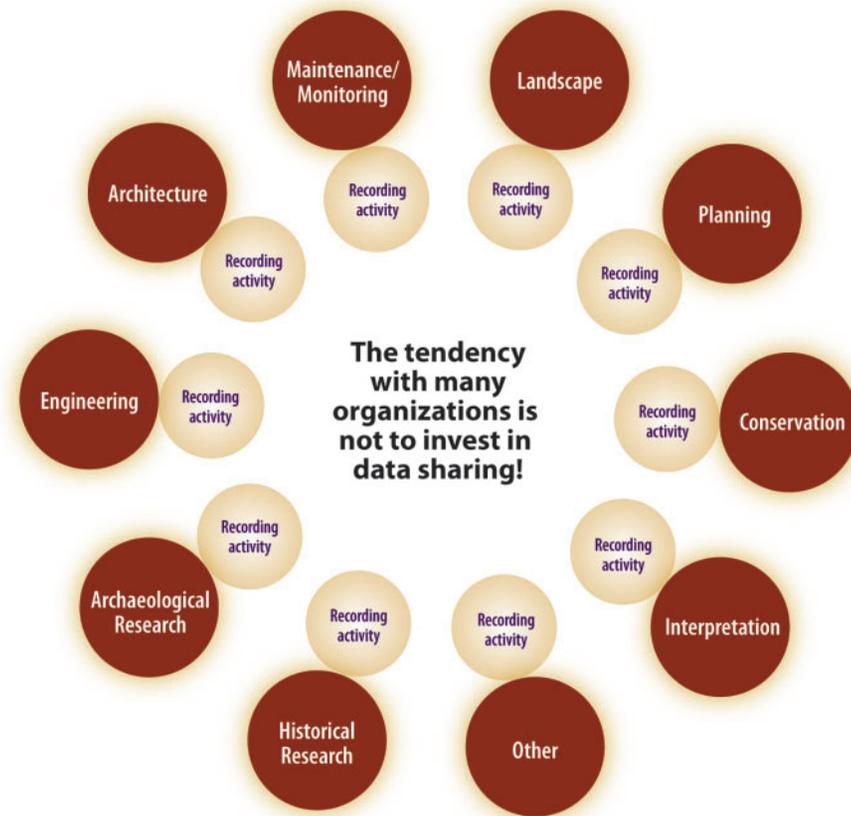


Fig. 36 Chart showing the main problems and concerns involved in documentation and information management.

The **Internet** is a large global network composed of thousands of smaller networks. The World Wide Web is one element of the Internet.

An **Intranet** uses regular Internet protocols and in general has the appearance of a private version of the Internet. Being a private network, access is limited to team members only or can include selected outsiders as needed by providing passwords. In general, an Intranet's main page provides a table of contents with hyperlinks to all data contained in it. PDF (portable documentation format) and/or HTML formatted documents ensure stability in data storage and sharing within the Intranet and on the Internet if desired.

Hyperlink is a connection between one page of a hypertext document and another, activated with a mouse click.

Finally, this section introduces Internet **hyperlinks** as a key tool for gaining access to project-related information from within a project activity almost anywhere in the world. Although the Internet may not be accessible to everybody, it is the author's opinion that most personal computers will soon be linked to the Internet in even the most remote locations of the world.

The section "How does heritage information fit into the conservation process?" (p. 21) referred to the **conservation process** and the importance of its research and documentation activities, which are necessary to meet conservation objectives. It also provided an overview of how to effectively integrate project information management activities into the conservation process. It described a procedure that makes certain all important **recording, documentation, and information management** questions are addressed before, during, and after conservation and summarizes the steps to define what information is needed, where to find it, and how it should be shared. An interdisciplinary approach to data search, capture, and management is important to provide the information necessary for all aspects of project research, investigation, design, treatment, maintenance, and monitoring activities.

To ensure that this interdisciplinary approach is effective, data produced by all disciplines involved in a conservation project should be collected, shared, and made accessible through a common information system. Various computer-based information management tools have been developed over the past decade, of which the best known are the Relational Databases (RD) and the GIS, which are used by large organizations with budgets sufficient for the purchase and operation of such tools.

The difficulty with large centralized information systems is that they can be overdesigned and therefore too complex and too costly to operate. Often, these systems try to satisfy the need for the management of generic information as well as the need for management of data from conservation project activities. The drawback is that the specific needs of users are

not met. Few project managers are willing to purchase these tools because they are expensive, complex to use, and difficult to maintain in the long term.

In short, the advantages of information management tools are:

- They can be designed to meet the needs of any project.
- They can be tailored to adjust to new situations.
- They can contain large amounts of information.
- They can be searched for specific information.
- They can provide outputs to queries.

The disadvantages of information management tools are:

- They require data structures and standards.
- They require systems analysts to design them.
- They require complex modifications once they are set up.
- They require special computer knowledge and skills to operate.
- They require expensive proprietary software.
- They require licenses for each additional site or user.
- They require trained staff to upload information.
- They require software upgrades on a regular basis (at cost).
- They require expensive system maintenance services.

Working toward project information management guidelines for conservation activities: the Project Information Container approach

As mentioned earlier, it is not the intent here to provide strict guidelines regarding information management practices. On the contrary, the intent is that anyone, from any organization, with average computing experience, should be able to apply the guidelines to any conservation project activity.

The Project Information Container (PIC) approach was designed with the understanding that individual **information units** are often more cost effective to manage when compared to the development and management of larger

institutional databases or information systems. In this case, small and interlinked may be more beneficial than large and complex.

Another critical issue is data security, or the long-term preservation of stored information. This debate has grown more complex since the advent of the digital age. Digital data need continuous maintenance to ensure compatibility with future application programs and hardware. It is important that single information units, generally produced in digital format, are treated for long-term archival storage and retrieval. Archival sustainability can be achieved by using well-established open (nonproprietary) standard formats and by periodically migrating the data to new and improved formats. This migration activity requires top-level attention, because digital data can become irrecoverable if not updated on a regular basis.

It is for this reason that the PIC approach makes use of universal languages for making Web pages such as HTML and XML, and the PDF, worldwide standard as prime digital formats for all key records assigned for future reference. These formats currently offer the best guarantees in terms of long-term sustainability and compatibility without active digital data maintenance.

To better understand why these formats were chosen, it should be mentioned that HTML is the most common computer language of the World Wide Web, while XML is a recently developed standard that will gradually replace HTML because of its higher flexibility and important additional functions. Both formats are fully compatible and read by all common Web browsers. In both XML and HTML, a word, block of text, report, photo, drawing, video clip, voice record, and so forth can be hyperlinked to any other file on the Web.

PDF is the de facto standard for the secure and reliable distribution and exchange of electronic documents and forms around the world, with a more than ten-year track record. PDF is a universal file format created by Adobe Systems in

What are the benefits of information management as a central activity to conservation practices?

- To share all records and documents that exist
- To avoid duplication in recording
- To facilitate research and analysis
- To expedite investigation, design, and maintenance
- To ensure accuracy and consistency in recording
- To satisfy monitoring requirements

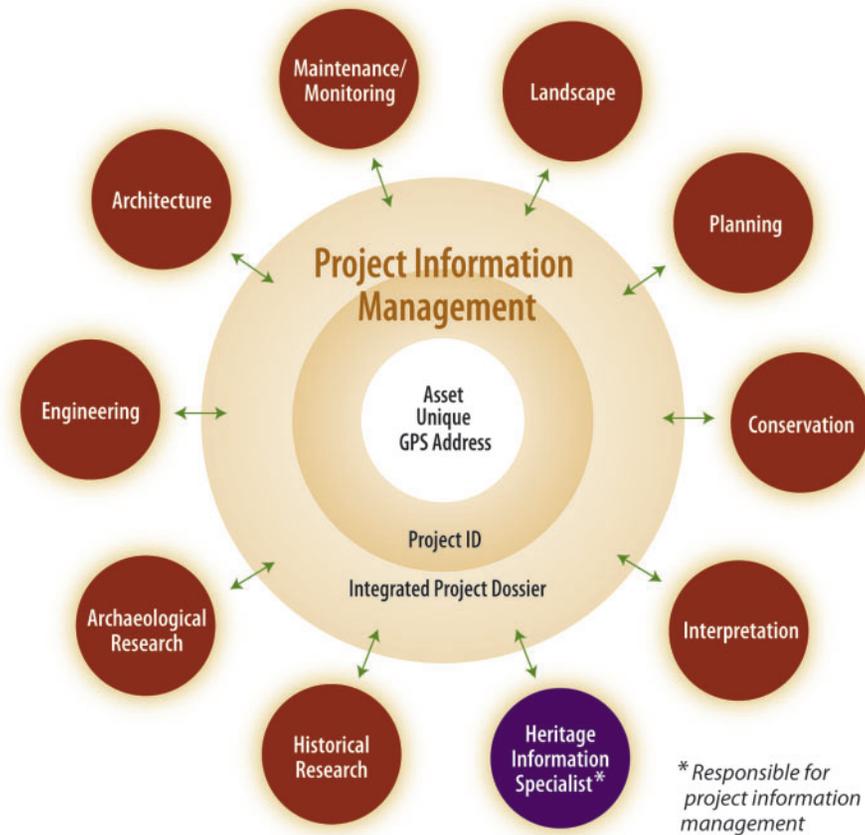


Fig. 37 Chart showing the benefits of information management to conservation practices. Appendix F provides a brief overview and evaluation of information management tools.

Tool 1: The Project ID Sheet



Tool 2: The Integrated Project Dossier

What generic information should the Project ID Sheet provide for each Project Information Container?

Asset "Unique Address"	Asset Generic Data	Links to Existing Asset Related Info
Unique Geographic Locator (coordinates obtained by GPS)	Asset Name Project or asset number Street address Postal code	List of current project team members
	Site/Project Manager E-mail address Phone number	List of institutions that have data or worked on this asset
	Custodian/Owner	List of conservation professionals who have data or worked on this asset
	Project Name Project Duration (dates)	Data for Internet Images - Maps Project Reports
		Project Chat Forum for: Researchers Conservation institutions International organizations General public

Project Team Activities - Interdisciplinary Approach

Conservation Process	Management Documents		Types of Information Produced/Acquired by Conservation Professionals					Levels of Recording Produced by Heritage Recorders		
	Administrative Correspondence File	Project Reports	Research Data	Investigation Data	Design Data	Treatment Data	Maintenance and Monitoring Data	A - Reconnaisance	B - Preliminary	C - Detailed
1 Initiation	●	○	●	○	○	○	○	●	○	○
2 Assessment	●	●	●	●	○	○	○	●	●	●
3 Options	●	●	○	●	●	○	○	○	●	●
4 Project development	●	○	○	○	●	○	○	○	○	○
5 Implementation	●	●	○	○	●	●	○	○	○	●
6 Operation	●	○	○	○	○	●	●	○	○	●

Information Management | Heritage Recording



The Project Information Container

Fig. 38 Breakdown of the PIC. The PIC consists of a simple project data sharing framework, which contains all information units produced by a project team and makes these units readily available to everyone involved in the project. This can occur at an institutional or project team level through the creation of an Intranet site, which allows restricted access, or through the Internet, which allows worldwide access to part of the data. The approach is based on the use and integration of two information management tools.

1993 that preserves the fonts, images, graphics, and layout of any source document, regardless of the application and platform used to create it. PDF files are compact and complete and can be shared, viewed, and printed by anyone who downloads the software, which is free of charge.

These secure data formats make the PIC approach a long-lasting and easy-to-use standard while remaining a no-cost, flexible, and efficient information-sharing tool. In fact, these data formats will evolve as the Internet evolves, thus ensuring long-term stability and potential for project information management.

Tool 1: The Project ID Sheet

Each Project Information Container must hold generic data so that the data can be precisely identified, managed, and shared effectively. The data can be referred to as each asset's ID card (or Project ID), which makes project information easily accessible on the Internet or an Intranet.

By posting the Project ID Sheet on the Internet, organizations and conservation specialists not involved in the project can learn about the project activity by simply using search engines such as Google or Yahoo!. This can lead to beneficial communication or dialogue concerning the asset, therefore increasing the exchange of knowledge among conservation specialists.

Consequently, the Project ID Sheet is meant to provide an interface (or snapshot) of basic information that will increase project visibility and facilitate data sharing through the Internet. The guideline outlined in the Project ID Sheet template (fig. 39) is broad, and the level of information it contains will depend on each project need. Minimal ID data should include the following:

- A unique geographic locator for the asset (GPS is recommended to obtain the coordinates)
- Asset generic data (asset name, custodian, etc.)
- Asset-related information (e.g., list of institutions and specialists that have information on the asset)

Geographic location is a very powerful unique identifier, especially for historic places. Each place occupies a unique location on earth that can be identified by a geographic locator. Geographic coordinates (a unique locator) obtained by GPS are a remarkable search tool. For example, if such a locator identified all historic assets, search engines on the Internet can be used to find who else in the world has worked on or has information about the asset.

There are many ways to find the geographic location of a particular place or building on earth. One way is to use a printed map that has latitude and longitude coordinates printed on the sides. Another is to ask a professional surveyor. Numerous free tools and sites are available on the Internet, such as Maporama and Google Earth. Once you have geographic coordinates in one system, many sites offer free converters to other coordinate systems.

The asset "unique address"

The first column in figure 39 recommends that GPS be used to provide the coordinates of a unique location address for each heritage place.

There is no international standard that can be recommended at this time for selecting coordinates of a heritage place. Should the coordinates refer to the main entrance, to its geometric center, or to the largest building on the site? Furthermore, in some instances it may be quite difficult to use GPS to find coordinates for a heritage place such as rock art caves, heritage cities, cultural routes, and archaeological sites located underneath existing buildings. Nevertheless, it is recommended that heritage managers select a unique geographic location address using GPS, and that they invite all those producing, gathering, or recording data on the heritage place to use this as the unique address or Project ID number for the data. It is also recommended that international cultural heritage conservation groups such as ICOMOS, UNESCO, and ICCROM work together toward the creation of an international standard on unique addresses for heritage places worldwide.

For long-term archiving of documents in hard copies (paper, film, etc.) as well as digital documents (word-processed text, images, drawings, illustrations, videos, etc.), it is highly recommended to comply with archival standards developed and promoted by international organizations such as the International Council on Archives (ICA) (www.ica.org) and ARMA International (www.arma.org).

For data to be easily retrieved and managed, a unique identifier is required.

Tool 1. Project ID Sheet

What generic information should the Project ID Sheet provide for each Project Information Container?

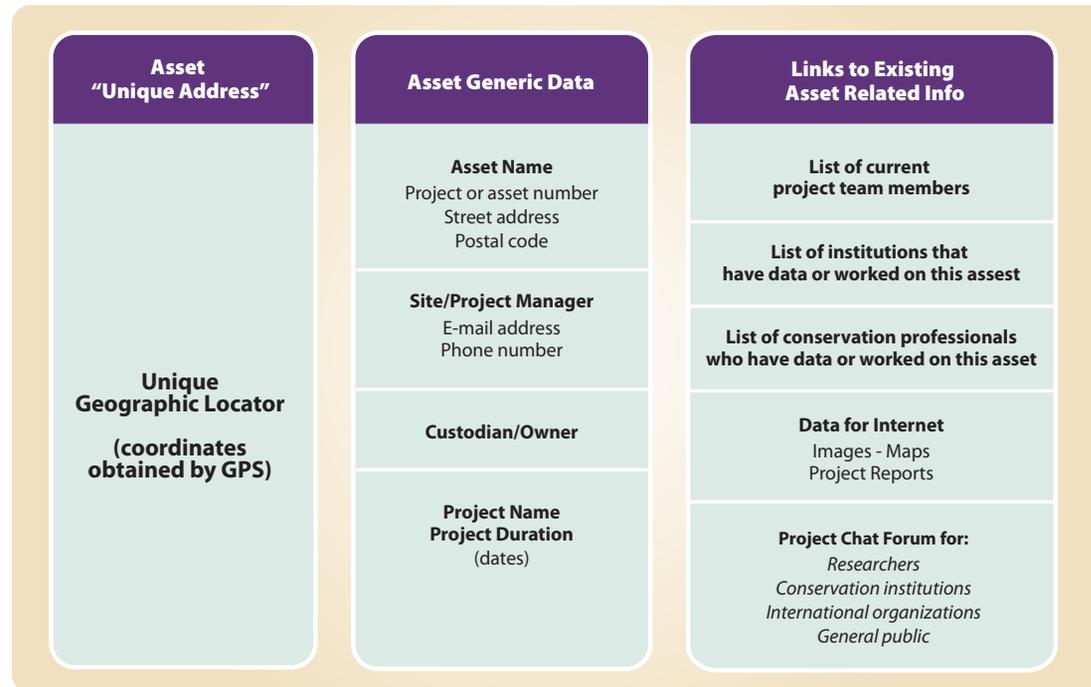


Fig. 39 The Project ID Sheet contains generic information about the project and provides the asset with a unique geographic locator.

Handheld consumer-level GPS receivers are widely available at affordable prices. These receivers normally have a 10-meter accuracy, which is the range recommended for the Project ID Sheet. GPS coordinates are expressed in degrees and minutes. It is suggested that the geographic location coordinates be converted and expressed in decimal degrees such as 41.902258, 12.458131 (the location of St. Peter's Basilica; see sidebar on p. 54) because this geographic locator does not require the use of words (*degree, degré, etc.*, or symbols) and is readily understood by computers.

Asset generic data

The second column in figure 39 outlines the minimal information required to identify an asset and its location. In asset management databases, the generic data fields generally contain the following information:

- The project or asset name (and alternative names)
- The asset number (a database asset unique identifier)
- The asset street address (with postal code, when available, to provide the location on a map)

Also of interest is the project's or asset manager's name and contact information (e-mail address, phone number, etc.) for communication purposes.

Other asset-related information

The third column in figure 39 suggests additional information of use to those interested in sharing project information widely. The information can include the following:

- The names of project team members (and their respective specialties), to raise interest and generate dialogue with other conservation professionals wishing to share specialized knowledge
- The names of other conservation institutions who have worked on the asset
- The names of experts who have worked on the asset
- A selection of images, maps, drawings, brief reports, and other generic information, to attract other groups and institutions with an interest in the asset and encourage them to share their knowledge and data

This Internet exposure could initiate collaboration among institutions and individuals. Such collaboration could begin with the Project Chat Forum suggested in the Project ID Sheet template (fig. 39).

Why provide selective data to the public?

Project information is used primarily for conservation team activities. In recent years, a growing number of conservation professionals have suggested that data from conservation activities should be shared with interested outside groups such as tourists or amateur researchers.

If carefully selected, some project information could be quite informative to the general public. As a result, this potentially growing global Internet data-sharing capability could increase knowledge and understanding of conservation works, which in turn might increase general public understanding and support of conservation activities.

Tool 2: The Integrated Project Dossier

The Integrated Project Dossier (IPD) is the main component of a PIC. It uses the conservation process diagram as a basis to link all information produced during a conservation project. Illustrated in more detail (fig. 40), it is a simple Web page portal that provides hyperlinks to team members' data. The IPD is an extremely flexible information management tool in that any team member can add **information units** to the PIC at any time. Consequently, team members can easily locate, review, and make use of any of the information units provided by other team members.

As a result, the IPD becomes the meeting place for team members to share their individual records using a computer server. The project team has the option to share all or part of the information through the Internet or to allow access only to a restricted group of users by establishing a password-protected Intranet.

Tool 2. Integrated Project Dossier

Project Team Activities - Interdisciplinary Approach

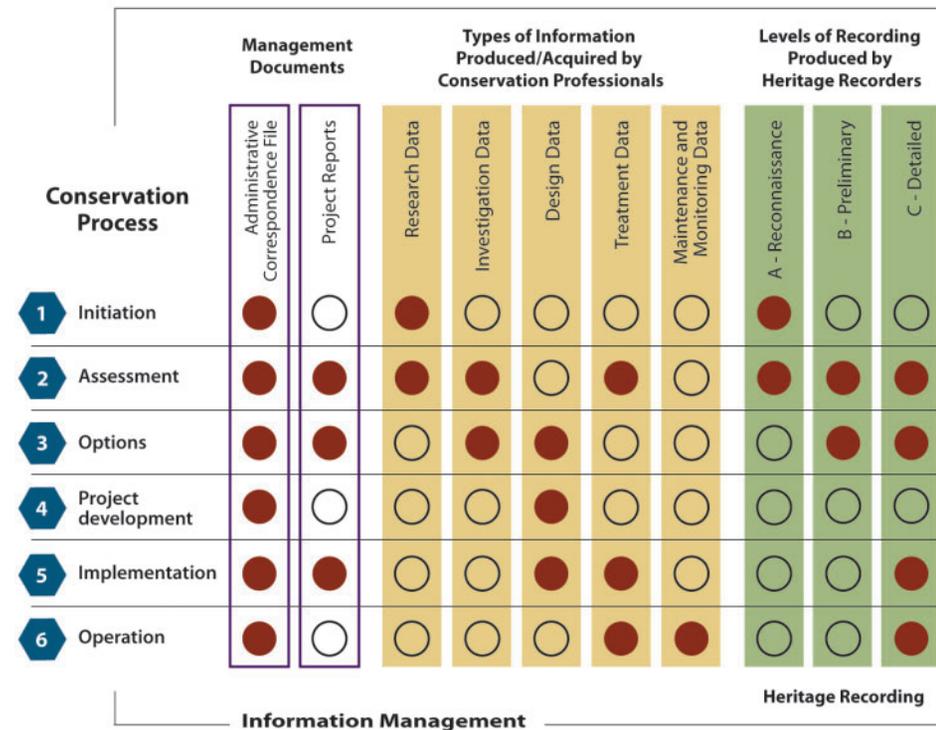


Fig. 40 Breakdown of the Integrated Project Dossier (IPD), a framework of hyperlinks to all project information units.

- Circles can be hyperlinked to a pop-up menu, which provides a list of available information units for each link.
- Brown circles indicate that the link is active and contains information units (e.g., investigation notes, photographs, CAD measured drawings, initial reports, etc.) that can be accessed by clicking on the circle.
- Brown circles in the Project Reports column indicate that team reports have been produced. Team reports summarize the information from each row of activities and are generally used for project management decision-making activities and for archival documentation for the asset.

Finding a geographic location using Google Earth

(A free copy of Google Earth can be downloaded at earth.google.com/download-earth.html)

Enter the following latitude and longitude coordinates 41.902258, 12.458131 into the search box (top left) and click Search. The program will rotate the image of Earth and zoom in to St. Peter's Basilica, in Vatican City. Once there, several layers of data can be activated on the left-hand side menu; this will reveal the location of architectural attractions as well as local restaurants and shopping areas. This example illustrates how it is possible to link all types of data to a unique geographic locator using tools available on the Internet.

Google Earth can also be used to acquire the GPS coordinates of a heritage place simply by positioning the cursor on it. The coordinates appear in the bottom left corner of the screen.

GPS is a worldwide radio-navigation system formed from a constellation of twenty-four satellites and their ground stations. The satellites are reference points to calculate positions accurate to a matter of meters. By using advanced forms of GPS, measurements have a precision that is better than a centimeter. In effect, GPS provides each square meter on the planet with a unique address.

Spatial data is information about the location, shape, and relationships among geographic features, usually stored as coordinates and topology.

Normally, project managers would put the IPD on their organization's server to save costs, and make it available to project team members only. Should project managers wish to get outside input, they would post the Project ID Sheet on the Internet to make the project known to interested outsiders.

If project information is in hard copy only, a database listing these documents (and their location) must be provided through one or more of the IPD's hyperlinks. If project information exists on a graphic database (such as GIS or **CAD** layering software), a special type of hyperlink may be required for access. Often, these systems are very specialized and require GIS or CAD expertise to manage the information. In this case, the project information specialist would most likely set up a GIS or CAD system for the project team (see appendix F).

Too much information can be a problem

Experienced information managers recognize that too much and too detailed information can be bulky or complex to work with, and even counterproductive:

- It can create unnecessarily large IPDs.
- It is more time consuming to work with and to maintain.
- It can slow down the project team's search for significant data and, consequently, the related research and analysis activities.

An example of too much information is the excessive number of digital photographs taken when recording a heritage asset. Often, a selection of good photos will suffice. Therefore, sorting information prior to linking it to the IPD is essential. However, this approach should not stop individual team members from keeping separate secondary data if necessary.

Why should data compilation be done at the project team members' level?

Project team members are responsible for searching, locating, and producing the data needed for their work. Therefore, it is logical that team members be expected to compile, catalogue,

file, and upload their data to ensure its reliability and accessibility. One of the most important activities in information management is cataloguing information as soon as it is produced. This is key to effective storage and accessibility.

Why manage information at the project level?

Each project should have a project manager responsible for coordinating the project activities and to ensure that all project data are shared among team members. Conservation projects are often operated by a small number of professionals, each of whom plays a specific role in the process. Consequently, this context is the ideal size for a project manager to handle this responsibility, especially given that documentation and information management are essential to the project's effectiveness and success.

Who is responsible for data security?

Security and long-term preservation of recorded information is another responsibility that normally resides at the project level and is one of the project manager's responsibilities. Managers must also be concerned with the degree of confidentiality of acquired information and verification of the credentials of users.

Global data sharing

As mentioned earlier in this section, a unique identifier is required in order to systematically link project information belonging to the same asset. The only effective and universal unique identifier for this task is a unique geographic locator. Figure 41 illustrates how individual PICs dealing with the same asset can be linked on the Internet using a unique geographic locator.

This global data-sharing approach is based on an open system that involves gaining access to a number of PICs (shown as satellites in fig. 41) compiled by different project teams that performed activities on the same heritage place at different points in time. The costs of such a system are assessed in

terms of time spent by individuals to catalogue personal data, and time spent by the information specialist to coordinate the hyperlinking of information units.

Project information specialist: A new profession

Organizations that wish to put into place the principles and practices described in this publication need to engage project information specialists. Although this new professional responsibility was identified some time ago and has been discussed extensively over the past decade, unfortunately it is not well established or integrated in current conservation practices. Now that we are in an era of advanced information technologies and the Internet, this new profession is essential in bridging the many gaps that exist between users and providers of conservation project information.

The following describes the specialized skills required for today's project information specialist. It is for project managers who intend to implement the PIC approach described above and avail themselves of the competent assistance of a project information specialist.

What is the role of a project information specialist within the framework of conservation project activities?

This new profession developed from the trade of heritage recorders and builds on their traditional skills, as described in "Why recording, and who produces records?" on pages 31–44. In addition to heritage records, the project information specialist provides information management tools and systems responding to project needs and requirements of conservation professionals. The specialist is trained to make sure that recording, documentation, and information management is an integral part of the conservation process and that project information is correctly recorded, catalogued, stored, and shared.

The specialist reports to the project manager and is trained to ensure technical input and coordination pertaining to the following activities.

What could Project Information Management look like when planned for sharing data at Intranet and Internet levels?

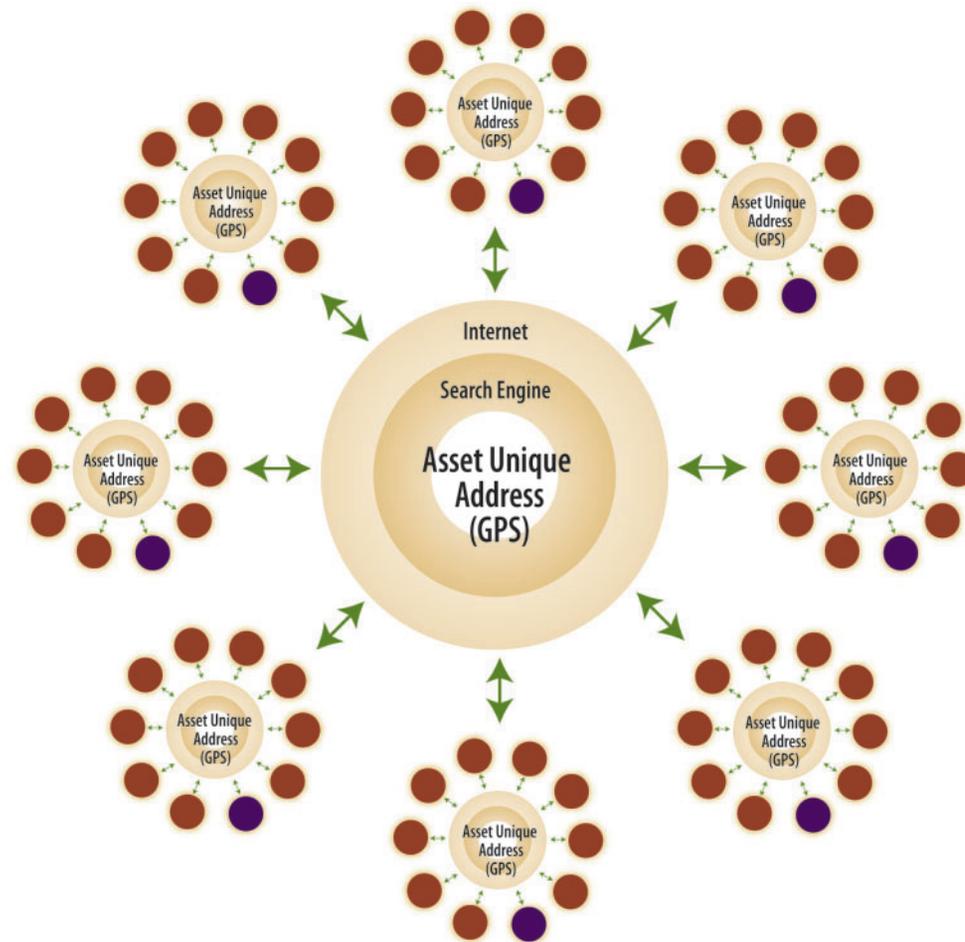


Fig. 41 Diagram showing an example of project information management when data are shared at Intranet and Internet levels. Conservation managers, using the IPD, can share their project information worldwide. Each satellite represents a PIC compiled by a different team at a different time. When these satellites are linked on the Internet using a unique geographic locator, a global PIC is created, thus introducing worldwide data sharing.

Compiling a record for posterity is often the only way of mitigating the loss of heritage assets.

Unprotected heritage assets are particularly vulnerable to pressure by new development.

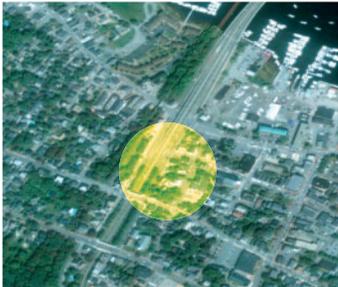
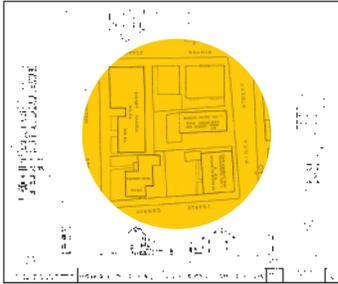


Fig. 42 (top) Historic American Buildings Survey plan of a section of Newburyport, Massachusetts, to be demolished to build a highway overpass, 1934. **(bottom)** Aerial view of Newburyport, with demolished sector highlighted. The Historic American Buildings Survey program has long emphasized the importance of producing graphic and written records of threatened structures for future generations. Drawing: Historic American Buildings Survey, Library of Congress. Survey number HABS MA-117. Photo: © Digital Globe, 2005.

The first activity involves setup of the PICs. This is carried out by:

- Understanding the specific responsibility and needs of each team member
- Creating an Intranet or Web portal for the team
- Developing an IPD framework of hyperlinks (see fig. 40)
- Ensuring that all information units produced by the team are linked to the PIC
- Troubleshooting technical problems

The next step is promoting the benefits of integrated technologies. This is done by:

- Explaining the benefits and savings obtained through the proper choice and integration of recording, documentation, and information management tools
- Tailoring recording activities to a project's specific needs

Defining the scope of recording activities follows, which involves:

- Ensuring that existing documentation is properly collected prior to initiating investigation and recording
- Defining baseline measured survey and photographic recording requirements together with project team members
- Producing graphic records of the asset for the project team
- Recommending complementary heritage recording (medium- and long-term needs as they arise)
- Assisting with the compilation of all information units into the IPD
- Ensuring long-term archival stability to digital IPD data

Project information specialists help with project data by:

- Assisting team members with the compilation of
 - Images, maps, reports, and so forth for the public
 - List of institutions that have worked or have information on the asset
 - List of professionals who have worked or have information on the asset
 - Other asset-related data (see fig. 39)

- Introducing GPS coordinates where needed
- Providing unique GPS addresses for all project assets (note that this activity requires that a GPS protocol be in place)
- Training team members in the use of GPS recording technologies

Project information is to be shared by:

- Ensuring that all information units are linked and accessible within the PIC
- Setting up and managing GIS and CAD software for the project
- Maintaining the Intranet or Internet server
- Ensuring that the Project ID Sheet allows distribution of data via the Intranet or the Internet, that is:
 - Designing it to be integrated with the project at hand
 - Ensuring that this communication tool works flawlessly for all team members
 - Ensuring its ongoing maintenance

How are national heritage information policies and related programs developed?



What are the main considerations when developing national heritage information policies and programs?

Ensure public sector commitment to heritage information

Conservation programs often neglect recording or treat it as an afterthought in the implementation of projects. **Recording** must be an integral part of each phase of conservation activity to ensure effective conservation decision making.

Clients both public and private often need to be made more aware of the potential benefits of **heritage recording** in order to make the required commitment. Improved awareness ultimately needs to be translated into substantial budget commitment in management planning and projects.

As with recording, managers are often unaware of the critical role of well-organized, complete, and accessible **documentation** in ensuring effective conservation decision making. It is important to ensure that conservation policies and programs provide both adequate conditions for encouraging managers to develop and maintain project documentation, and integrated systems for sharing and effectively storing information units within documentation databases. Responding to the latter may require the creation and maintenance of technical documentation centers.

This section answers the following questions:

What are the main considerations when developing national heritage information policies and programs?

What are the steps to create a national heritage information program activity?

What are examples of such national heritage information activities?

Improve available heritage information expertise

Conservation policies and programs often fail to specify the need for appropriate expertise to carry out heritage information activities. Lack of support may lead to requirements that are poorly defined or understood. It may also lead to the failure of recording specialists to properly present their abilities and capacities. Finally, it may also lead to a lack of qualified personnel. These needs are best addressed through the development of training programs and through working with heritage information specialists and managers to increase awareness of the benefits of heritage information.

Improve technical understanding of heritage recording activity

Effective heritage recording requires that both project managers and heritage recorders understand the technical possibilities and constraints associated with recording. Recording programs should reflect clear and conscious agreement concerning desired levels of recording, accuracy, degree of completeness, presentation format, costs, and so forth, all linked to the client's articulation of project or site needs. It is equally important to ensure that standards are in place that encourage conservation professionals carrying out recording work, whether formally or informally, to integrate their records—sketches, photos, videos, or notes—within an accessible, integrated central database for heritage places.

Effective heritage recording requires that both project managers and heritage recorders understand the technical possibilities and constraints.

Both public and private information users need to be made more aware of the potential benefits of heritage recording.

New information technologies offer great benefits to those concerned with improving systems for incorporating and retrieving data within existing databases.

A *national conservation program policy* is a document that clearly identifies the broad purpose and need for heritage conservation and heritage recording activities for designated heritage places in a country.

Parks Canada's *Guiding Principles and Operational Guidelines* is an example of such a policy (see appendix G, step 3).

A *national heritage information policy* is a statement in a national conservation program policy that identifies the need for heritage information within the conservation activities of heritage places in a country. This policy statement ensures long-term sustainability of heritage information activities.

National heritage recording programs are well-defined heritage recording activities that are funded to support specific conservation program needs or operations, or to address recording requirements for posterity.

Recording policies and programs can help ensure that significant heritage places are recorded to regional or national standards.

There is little reason to invest in recording if the resulting documentation is not catalogued, stored, and shared.

The cost of recording within a conservation activity should be seen as relative to the benefits gained.

The most useful way to begin building the necessary technical capacity for recording activities is to develop recording guidelines and standards. It is also useful to develop or use appropriate recording manuals focused on the how-to aspects of the subject.

Increase familiarity with characteristics of emerging information management technologies

The new computer-based information management technologies offer great potential benefits to those concerned with improving available systems for incorporating and retrieving data within existing data stores. At the same time, development of these technologies can be expensive and beyond the expertise of untrained staff. A bewildering variety of complex systems make effective implementation of the right system a difficult task for heritage program managers.

There is a strong need to ensure understanding of how these technologies and their benefits may be applied to meet carefully defined user needs at the highest decision-making levels within conservation programs. It is equally important to ensure that users are aware of the advantages and technical requirements of these new technologies.

Increase coordination among agencies with information management systems

Those with experience in the development of information management systems at the international level understand the need to consider basic compatibility requirements among systems at the outset, when systems are being designed and chosen. Technical requirements affect choices of both hardware and software. At present, for example, the databases maintained by UNESCO, ICCROM, ICOMOS, the International Council of Museums (ICOM), and the Canadian Heritage Information Network (CHIN) are not fully compatible. Initial decisions—made, in some cases, more than twenty-five years ago—continue to dictate the course of policy for these databases. Such difficulties can also be found at the

national, regional, and local levels if care is not taken to integrate system needs and operating characteristics at the systems planning stage.

Improve policy guidance for recording activities

Frequently, many of the individual needs encountered at various levels reflect the need for a broad policy in this area. These levels include a lack of understanding of the role of recording and documentation, a lack of understanding of information management technologies, a lack of training, a lack of qualified personnel, a lack of coordination among conservation agencies, a lack of shared standards in the field, and a lack of how-to information.

It is important for countries to ensure that their national conservation policies clearly identify the place of heritage information within these policies, and provide specific frameworks devoted to recording and information management issues.

Measures necessary at the national level may also need to be applied at lower levels of government (regional, municipal, etc.). In countries such as Canada, Germany, and Australia, whose constitutions give control over property rights to provincial or state jurisdictions, it may be most useful to address these needs at the provincial or state level. In such countries, a national policy devoted to increasing coordination among approaches developed at all provincial or regional levels may be useful (see sidebar on p. 59 for Canadian examples where recording policy guidance has been established and is being shared by different levels of government).

Apply shared standards to the recording of significant heritage places

Heritage information policies and programs can help ensure that significant heritage resources are recorded to shared standards of accuracy, quality, and utility. Programs developed at one level can provide models for other jurisdictions and help guide development and application of appropriate recording standards.

Integrate heritage information within existing conservation processes

Efforts to introduce heritage information policies and heritage recording programs within conservation processes can help ensure the integration of heritage information activities within each phase of the conservation process.

Provide effective means to share heritage information

Information management systems should be put in place to ensure that heritage information is readily shared with those who would benefit from it. Too often, without the aid of national, regional, or local policies, heritage information is lost or virtually inaccessible, and those who need it must repeat the work of others.

What are the steps in developing heritage information policies and heritage recording programs?

The guidelines described below are meant to assist managers at the national level to develop effective policies and programs for recording at national, regional, and local levels. The steps are summarized in figure 43. For Canadian examples, see appendix G.

The twelve recommended steps are as follows:

1. Review and analyze the problem and requirements

It is important that analysis of needs and requirements be systematic and complete. All sectors of the conservation world should be questioned about their perceptions of needs:

specialists (**heritage recorders** and **conservation professionals**), administrators (managers and officers charged with achieving conservation goals at all levels), and clients (owners and project managers with site-specific and project-specific mandates).

2. Promote benefits and encourage participation

Needs analysis alone may not provide managers with a clear and complete picture. Prior to the questioning process, it may be necessary to conduct an education or orientation program, which can give concerned individuals an understanding of the recording process and related benefits.

3. Define a heritage information policy

In defining a heritage information policy, the policy must clearly distinguish between the objectives (measurable targets against which policy success ultimately may be measured) and the strategic means (mechanisms and methods) to achieve these objectives. The articulation of means may include long-term programs, short-term projects, or other initiatives.

The policy should also acknowledge the extent and nature of significant cultural heritage in the jurisdiction for which the policy is being designed. Such analysis can help to define priorities for heritage recording.

The policy developed may focus on the need to encourage an in-house program of heritage information services. In strong private-sector contexts where these services are readily and reliably available, however, the policy may limit itself to providing an appropriate framework for heritage information activities through standard setting, training, and education, or efforts to improve awareness and capacity through education.

Policy statements will usually address the following points:

- Definition of objectives
- Definition of general strategic means to be used in obtaining objectives
- Definition of available resources within which the

To learn more about national conservation programs that have integrated heritage recording practices, consult the following examples from Canada:

The National Historic Sites component of Parks Canada, responsible for Canada's program of historical commemoration, recognizes nationally significant places, persons, and events.

www.pc.gc.ca/progs/lhn-nhs/index_E.asp

The Heritage Railway Stations Protection Act uses heritage recording for posterity.

www.pc.gc.ca/clmhc-hsmbc/gfp-hrs/index_e.asp

The Designated Cultural Resources Recording Program is a long-term recording activity ensuring that the most significant Canadian architecture is documented according to the highest standards.

www.pc.gc.ca/clmhc-hsmbc/designation/designation1_E.asp

The National Program for the Grave Sites of Canadian Prime Ministers ensures that grave sites are conserved and recognized in a respectful and dignified manner, and provides Canadians with information on the lives and accomplishments of each prime minister, as well as the locations of their final resting place.

www.pc.gc.ca/clmhc-hsmbc/pm/index_e.asp

Some of these heritage recording programs are supported by long-term funding to ensure long-term heritage conservation. For more information, see appendix G.

What are the steps in developing a national heritage information policy and program?

- 1 Review and analyze the problem and requirements
- 2 Promote benefits and encourage participation
- 3 Define a heritage information policy
- 4 Undertake an inventory of significant cultural heritage
- 5 Design relevant heritage recording programs
- 6 Secure adequate funding
- 7 Train coordination and management staff
- 8 Define heritage recording guidelines and standards
- 9 Purchase proper recording tools for in-house programs
- 10 Train heritage recording staff
- 11 Implement the heritage information policy or program
- 12 Share the results

Fig. 45 The twelve steps in developing a national heritage information policy and program.

- policy is meant to achieve objectives
- Definition of roles and responsibilities for attaining objectives and monitoring attainment
- Definition of appropriate principles, standards, or guidelines to be applied in achieving objectives
- Definition of targets or indicators by which policy success is to be measured

Whatever the strength of the private sector capacity or the expertise in heritage information, the means to provide basic coordination in the field—developing and testing ideas, maintaining a central documentation center, serving nationally significant sites, or developing standards—should be seen as a minimum part of public sector commitment to conservation.

4. Undertake an inventory of significant cultural heritage

An important part in the design of a heritage recording program is the determination of the heritage value of sites and elements within an authority's jurisdiction. This permits clarification of recording priorities on the basis of perceived heritage significance. It also aids in ensuring that recording efforts will focus on the particular attributes through which the site's significant heritage values are expressed.

Consequently, it is suggested that all new inventories being developed take into account values pertaining to heritage places. This will facilitate the identification of heritage recording priorities within conservation organizations. When such capability is built into the sorting mechanisms of inventories, the understanding and definition of short- and long-term **heritage recording** activities should be made easier. The result is better decision making and increased savings in overall time and cost. However, inventories can become ambitious and demanding, and therefore should be kept small. Large inventories are generally costly to develop and manage and can be expensive to maintain in the long term.

To offset some of these costs, some countries have overlapped, linked, and integrated existing municipal, provincial, and federal registers with those of local and regional conservation programs. This type of integration takes advantage of existing databases funded and operated at the governmental levels mentioned above, and adds value to all databases by including conservation-related knowledge and by ensuring information sharing at all levels of government.

5. Design relevant heritage recording programs

Articulation of programs (or similar mechanisms) to fulfill policy objectives requires examination of a range of alternative means to achieve those objectives, based on the resources analysis carried out, the nature and degree of existing capacity demonstrated in the needs analysis, and the cost benefits associated with available mechanisms. Programs developed usually include one or more of the following components:

- Establishing in-house heritage recording capacity, focusing on developing support infrastructure and providing necessary training and resources
- Developing training opportunities, focusing on improving awareness and technical capacity
- Developing appropriate guidelines, focusing on clarifying relevant principles and standards

Definition of short-term and long-term plans within heritage recording programs can provide considerable organizational benefits.

A short-term program will provide recording teams with a one- to two-year recording work plan that effectively manages human resources and works in harmony with other projects. A multiyear planning cycle helps ensure that the funds needed for recording are identified at least one to two years before operations begin. Lead time will permit recorders to capture information that otherwise might be lost during interventions.

A long-term program will assist managers in ensuring that funds are available for recording to take place during all phases of a site or project development. Managers should base long-term planning on the need for recording before, during, and after intervention. A site's long-term development plan and budget should specify the skills, tools, and equipment necessary to meet the project's recording objectives.

There is little reason to invest in good heritage recording practices if the resulting documentation is not catalogued, stored, and shared effectively. It is important that recording programs identify standards for managing information while developing and maintaining documentation centers for that purpose. This information should be linked to existing publicly accessible collections.

6. Secure adequate funding

Heritage recording is often overlooked—or its role diminished—in a conservation plan, given the perceived high cost of the activity. As noted, the cost of recording, as with any conservation activity, should be seen relative to the benefits gained. In addition, it is important to recognize the degree to which careful planning can reduce costs. The recording component of a conservation project should be organized with attention to skill and equipment requirements over the entire span of a project, in order to spread these requirements over the life of a project.

There are many important issues to address in securing funds adequate for heritage recording:

- The high cost of investing in high-tech recording tools such as **CAD** or photogrammetry often deters their use. A full appraisal of the cost effectiveness of such tools, given the greater time and records management efficiencies they allow, will often demonstrate their long-term advantages. This is particularly true for CAD records and GIS systems. In these systems, layers of data can be accumulated and overlaid by heritage recorders and conservation professionals, at every stage of a project's life, thus avoiding subsequent



Fig. 44 Technicians conducting a measured site survey at an ancient Roman mosaic site in Tunisia. A survey can be carried out by a team of archaeologists, architects, or technicians using simple recording tools, such as a water level, plumb line, and measuring tape. An advantage of producing measured drawings by hand recording is prolonged direct contact with the object, which allows for thorough analysis. Photo: Bettina Lucherini.

The methods of recording and type of documentation produced should be appropriate to the nature of the heritage, the purpose of the record, the cultural context, and the funding or other resources available.

Well-defined standards significantly simplify and expedite the contracting of recording work.

Buying expensive recording tools must be planned carefully with expert recorders to ensure the long-term usefulness of the hardware and software.

- reference time (see appendix F, fig. F.2).
- An in-house approach to the development of heritage recording programs offers many economies of scale. The high cost of training may be difficult to justify for single sites or projects. However, if these costs can be shared among many projects managed from a central base, then economies of scale can be achieved. This approach provides a firm skills base that may be supplemented as required for specific projects.
 - In some countries, nevertheless, heritage recording costs may appear unrealistically high and recording programs ill affordable, given limited resources within the national conservation organization.
 - It is important to recognize that there is no inherent link between low tech and low quality. The goal of recording is to help provide understanding for sound decision making. The most cost-effective recording tool will provide required levels of understanding at the lowest cost; often, fully adequate results can be obtained with low-tech approaches. The trade-off may be the need to manage labor-intensive approaches characteristic of low-tech recording methods, and accept longer completion times and lower accuracy levels.
 - The benefits of high-tech approaches to heritage recording (such as CAD) include long-term cost savings. While upfront costs for investment in hardware and software may appear to exceed available budgets, if these purchases can be spread over time, the long-term savings will eventually provide conservation authorities with tangible overall net savings.
 - It is worthwhile to explore the potential for sharing tools, programs, and expertise with other governmental departments responsible for mapping, civil engineering, and/or architecture (e.g., Departments of Natural Resources, Ministries of Public Works, borough surveyors). Universities and technical colleges may also be interested in sharing surveying equipment, photogrammetric expertise and equipment, and computer imaging know-how, possibly in exchange for student

field experience on a regional basis.

- Cost sharing among countries is worth exploring. Because of scarce resources, most agencies are seeking ways to better manage their resources by encouraging partnerships with other agencies of similar needs and interests. This approach can be relevant to heritage recording in that two or three levels of government may be able to share aspects of conservation management. Cost sharing may include equipment and recording expertise and recording projects, including travel costs. Cost-sharing initiatives and partnerships also encourage the establishment of common documentation centers to facilitate transfer of relevant data. Such documentation centers can reduce costs to individual governments as well as avoid unnecessary duplication.

7. Train coordination and management staff

Among the means proposed in step 5 is the envisioning of a training component for existing staff. It is important that training and sensitization programs begin with senior managers working to ensure that an adequate understanding of recording needs and benefits is in place from the beginning.

Knowledge of the utility of heritage recording projects is best acquired through experience and participation in all steps of the conservation process. Training for senior managers should emphasize the benefits of approaches that integrate recording appropriately within the conservation process. This understanding is usually gained over time in working with conservation professionals from different backgrounds (e.g., archaeologists, historians, curators, landscape architects, marine engineers). These experiences permit the heritage recording manager to define recording programs that effectively combine recording tools and methods in relation to client needs.

Heritage recording activity that is undertaken without reference to these guiding management skills is often misdirected and wasteful. Records obtained will often contain inaccurate

or unnecessary information or, in other cases, will not provide the accuracy or detailed data required for a particular site's developmental needs.

8. Define heritage recording guidelines and standards

Both guidelines and standards are necessary components of effective recording programs. *Guidelines* are meant to provide broad direction to those who manage a program or project. In addition to complying with what policy dictates and with the field's accepted principles, guidelines for recording should encourage flexibility and creativity during the management process. Recording activity ultimately can respond only to goals and objectives established within an overall site management and development plan. Consequently, ongoing needs assessment must be an important part of guidelines development. The ICCROM/UNESCO/ICOMOS *Management Guidelines for World Cultural Heritage Sites* (Feilden and Jokilehto) provides useful general advice on the development of broad management recording guidelines for cultural heritage sites.

Standards, in turn, are meant to provide heritage recording teams with clear definitions of the expected quality and quantity of recording results to be obtained in their work. The standards should ensure that the end results are similar in format and quality and contain the essential information required by the client, whether the activity is undertaken by government professionals or private sector consultants.

If standards are well defined, the contracting of heritage recording work is significantly simplified and expedited, as these standards can be used to constitute the terms of reference for project work.

Development of appropriate guidelines and standards may take place through in-house applications (providing leadership by example), or simply by promoting standards and guidelines that others will adopt. In either case, the guidelines and standards proposed must be clearly linked to shared and explicit principles for recording activity.

9. Purchase proper recording tools for in-house programs

Development of an in-house heritage recording capacity will require significant start-up investment. It is important that this initial investment is planned carefully with experts in the field to ensure the greatest long-term utility of both hardware and software, as well as field recording equipment. Program managers and senior administrators must work together to make adequate annual budget appropriations available to maintain and upgrade hardware and software and the skills of in-house recorders.

Equipment budgeting should take into account the following:

- Field and office equipment
- Professional advice (for selecting the proper equipment)
- Installation and training (if required)
- Operations and maintenance
- Cost of upgrading and recapitalization for equipment

In the case of new digital equipment, the above requirements should include costs of evaluating the new technologies and software products that are entering the marketplace. Informed decision making will lengthen the life of the tools purchased and defer their obsolescence in the wake of new trends and developments.

There is an understandable tendency to defer equipment purchases to gain the cost and quality advantages offered by the next generation of tools. This approach is often counter-productive. It is preferable to begin with the purchase of low-cost, low-end tools to build experience, and then to upgrade equipment and software as skills are acquired.

Equipment purchases should be approached using the following process:

- Investigate existing low-cost applications prior to investing in digital recording tools and technologies
- Evaluate off-the-shelf products before developing one's own
- Ensure that the software is user friendly

To be effective, heritage recorders must be knowledgeable in many conservation-related issues.

Recorders should be experts in choosing recording tools that provide the desired results.

The Canadian Historic Places Initiative engages in the sharing of conservation standards and guidelines where common recording standards are recommended for different conservation applications described in the guidelines (see the table of contents at www.historicplaces.ca/acc-hom_e.aspx).

- Ensure that products meet anticipated client needs
- Ensure that the client is equipped to use the products supplied
- Ensure compatibility of software with the leading software on the market

10. Train heritage recording staff

If the heritage recording program developed has placed an emphasis on in-house skills, it will be necessary to enhance the abilities of existing or new staff. Such training should not begin until it is clear what the expected performance output of the recording program should be.

Although heritage recording may appear to be a simple, straightforward activity, it is technically demanding. Recording frequently deals with large and complex sites—for example, industrial sites with intricate objects, artifacts, and details, including clock mechanisms, ship or bridge construction details, and mechanical equipment—and with issues of conservation monitoring, such as masonry decay, structural movement, and concealed humidity. To be effective, heritage recorders should be knowledgeable in a great many conservation-related issues, including definition of heritage values, architectural styles, condition assessment, conservation techniques, and the various types and characteristics of cultural heritage sites and objects.

The heritage recorder should also have expertise in ensuring that chosen recording methods and tools will provide the desired results. The recorder should be able to apply these without appreciable error; given the likelihood of interventions immediately after the recording activity, there often is no second chance to record. Recording skills are developed through years of experience in working with conservation professionals on-site. This suggests the value of an apprenticeship component in recording training programs. Training in the use of recently developed digital heritage recording technologies requires a strong base of computer skills so that recorders develop the degree of creativity and innovation necessary to integrate various available technologies.

Open-source software refers to any computer program whose source code may be used, modified, or altered by others. In general, developers of proprietary software do not allow modification by others. Open-source software is developed as a public collaboration and made freely available.

11. Implement the heritage information policy or program

Prior to implementation, managers must evaluate the success of the various review mechanisms chosen to fulfill policy or program objectives. Effective evaluation usually involves obtaining the views of those external to a program and those involved in it.

In planning program assessment, it is important to draw from the appropriate international principles of conservation as well as the more conventional in-house indicators (cost, performance), which may change over time.

With a planned review program in place prior to program initiation, full advantage of the lessons gained through implementation may be obtained.

12. Share the results

As indicated in the heritage information principles and guidelines, information management and sharing is essential to all conservation practices. All conservation organizations should include a data-sharing policy in their operational framework.

Well-developed information systems are often expensive to operate and maintain. Proprietary software can also be expensive when many licenses are required for networking a large organization, and upgrades are needed on a regular basis. Some groups and institutions are looking at options such as open-source software to reduce information systems and management costs.

The PIC open-source approach described in the section “What approach is suggested to ensure systematic documentation and good information management?” on pages 45–56 provides project managers with information management tools that allow data to be catalogued and shared at no cost other than ensuring that the required heritage information knowledge and skills are integrated into the project activity. This flexible and adaptable approach requires no training on the

part of project team members, as it is based on HTML universal language that will change as the Internet changes, without license requirements.

Checklist for the Development of Recording Policies and Programs

The following questions may prove useful in analyzing the effectiveness of existing efforts to establish or manage national recording policies and programs:

- ✓ Is there a national policy for conservation in the country (or in specific regions) that clearly describes the place of recording and documentation in the conservation process?
- ✓ Do recording standards exist in the field, and are they readily recognized by a wide variety of professional groups and conservation agencies?
- ✓ Are recording and documentation management issues regularly discussed in conservation forums?
- ✓ Are the working groups in the country made up of individuals with an affinity for the subject?
- ✓ Are there adequate training opportunities for individuals interested in improving their skills?
- ✓ Can knowledgeable clients in private or public sector agencies readily tap into the recording expertise required for projects?
- ✓ Do professionals readily seek to integrate their personal records within centralized and accessible documentation data banks?
- ✓ Do programs exist at the national, regional, or local level to collect, integrate, and share site-specific conservation information?
- ✓ Is knowledge of pertinent policy or program models at other international or national levels available for review at local, regional, and national levels?



APPENDIXES

Overleaf: A technician recording a vernacular structure in Grosse Île, Quebec, Canada. Compiling a record for posterity is often the only way to mitigate the loss of heritage assets. The record probably will outlive the structure. Photo: Jean-Pierre Jérôme, © Heritage Conservation Directorate, Canada / Direction de la conservation du patrimoine, Canada.

This page: A plastic-and-paper model of cave 85, Mogao Grottoes, China, highlights the areas of deterioration of the wall paintings and was used to help managers understand the conservation issues. The activity and products of recording, documenting, and managing the information of cultural heritage places facilitate the transmission of knowledge about heritage places. Model: Rick Miller. Photo: Lorinda Wong.



*Text ratified by the 11th ICOMOS General Assembly,
held in Sofia, Bulgaria, 5–9 October 1996*

As the cultural heritage is a unique expression of human achievement; and as this cultural heritage is continuously at risk; and as recording is one of the principal ways available to give meaning, understanding, definition and recognition of the values of the cultural heritage; and as the responsibility for conserving and maintaining the cultural heritage rests not only with the owners but also with conservation specialists and the professionals, managers, politicians and administrators working at all levels of government, and with the public; and as article 16 of the Charter of Venice requires, it is essential that responsible organizations and individuals record the nature of the cultural heritage.

The purpose of this document is therefore to set out the principal reasons, responsibilities, planning measures, contents, management and sharing considerations for the recording of the cultural heritage.

Definitions of words used in this document:

Cultural heritage refers to monuments, groups of buildings and sites of heritage value, constituting the historic or built environment.

Recording is the capture of information which describes the physical configuration, condition and use of monuments, groups of buildings and sites, at points in time, and it is an essential part of the conservation process.

Records of monuments, groups of buildings and sites may include tangible as well as intangible evidence, and constitute a part of the documentation that can contribute to an understanding of the heritage and its related values.

The Reasons for Recording

1. The recording of the cultural heritage is essential:
 - a) to acquire knowledge in order to advance the understanding of cultural heritage, its values and its evolution;
 - b) to promote the interest and involvement of the people in the preservation of the heritage through the dissemination of recorded information;
 - c) to permit informed management and control of construction works and of all change to the cultural heritage;
 - d) to ensure that the maintenance and conservation of the heritage is sensitive to its physical form, its materials, construction, and its historical and cultural significance.
2. Recording should be undertaken to an appropriate level of detail in order to:
 - a) provide information for the process of identification, understanding, interpretation and presentation of the heritage, and to promote the involvement of the public;
 - b) provide a permanent record of all monuments, groups

- of buildings and sites that are to be destroyed or altered in any way, or where at risk from natural events or human activities;
- c) provide information for administrators and planners at national, regional or local levels to make sensitive planning and development control policies and decisions;
 - d) provide information upon which appropriate and sustainable use may be identified, and the effective research, management, maintenance programs and construction works may be planned.
3. Recording of the cultural heritage should be seen as a priority, and should be undertaken especially:
- a) when compiling a national, regional, or local inventory;
 - b) as a fully integrated part of research and conservation activity;
 - c) before, during and after any works of repair, alteration, or other intervention, and when evidence of its history is revealed during such works;
 - d) when total or partial demolition, destruction, abandonment or relocation is contemplated, or where the heritage is at risk of damage from human or natural external forces;
 - e) during or following accidental or unforeseen disturbance which damages the cultural heritage;
 - f) when change of use or responsibility for management or control occurs.

Responsibility for Recording

1. The commitment at the national level to conserve the heritage requires an equal commitment towards the recording process.
2. The complexity of the recording and interpretation processes requires the deployment of individuals with adequate skill, knowledge and awareness for the associated tasks. It may be necessary to initiate training programs to achieve this.

3. Typically the recording process may involve skilled individuals working in collaboration, such as specialist heritage recorders, surveyors, conservators, architects, engineers, researchers, architectural historians, archaeologists above and below ground, and other specialist advisors.
4. All managers of cultural heritage are responsible for ensuring the adequate recording, quality and updating of the records.

Planning for Recording

1. Before new records are prepared, existing sources of information should be found and examined for their adequacy.
 - a) The type of records containing such information should be searched for in surveys, drawings, photographs, published and unpublished accounts and descriptions, and related documents pertaining to the origins and history of the building, group of buildings or site. It is important to search out recent as well as old records;
 - b) Existing records should be searched for in locations such as national and local public archives, in professional, institutional or private archives, inventories and collections, in libraries or museums;
 - c) Records should be searched for through consultation with individuals and organizations who have owned, occupied, recorded, constructed, conserved, or carried out research into or who have knowledge of the building, group of buildings or site.
2. Arising out of the analysis above, selection of the appropriate scope, level and methods of recording requires that:
 - a) The methods of recording and type of documentation produced should be appropriate to the nature of the heritage, the purposes of the record, the cultural context, and the funding or other resources available. Limitations of such resources may require a phased approach to recording. Such methods might include

written descriptions and analyses, photographs (aerial or terrestrial), rectified photography, photo-grammetry, geophysical survey, maps, measured plans, drawings and sketches, replicas or other traditional and modern technologies;

- b) Recording methodologies should, wherever possible, use non-intrusive techniques, and should not cause damage to the object being recorded;
- c) The rationale for the intended scope and the recording method should be clearly stated;
- d) The materials used for compiling the finished record must be archivally stable.

Content of Records

1. Any record should be identified by:
 - a) the name of the building, group of buildings or site;
 - b) a unique reference number;
 - c) the date of compilation of the record;
 - d) the name of the recording organization;
 - e) cross-references to related building records and reports, photographic, graphic, textual or bibliographic documentation, archaeological and environmental records.
2. The location and extent of the monument, group of buildings or site must be given accurately; this may be achieved by description, maps, plans or aerial photographs. In rural areas a map reference or triangulation to known points may be the only methods available. In urban areas an address or street reference may be sufficient.
3. New records should note the sources of all information not obtained directly from the monument, group of buildings or site itself.
4. Records should include some or all of the following information:
 - a) the type, form and dimensions of the building, monument or site;
 - b) the interior and exterior characteristics, as appropriate, of the monument, group of buildings or site;

- c) the nature, quality, cultural, artistic and scientific significance of the heritage and its components and the cultural, artistic and scientific significance of:
 - the materials, constituent parts and construction, decoration, ornament or inscriptions,
 - services, fittings and machinery,
 - ancillary structures, the gardens, landscape and the cultural, topographical and natural features of the site;
 - d) the traditional and modern technology and skills used in construction and maintenance;
 - e) evidence to establish the date of origin, authorship, ownership, the original design, extent, use and decoration;
 - f) evidence to establish the subsequent history of its uses, associated events, structural or decorative alterations, and the impact of human or natural external forces;
 - g) the history of management, maintenance and repairs;
 - h) representative elements or samples of construction or site materials;
 - i) an assessment of the current condition of the heritage;
 - j) an assessment of the visual and functional relationship between the heritage and its setting;
 - k) an assessment of the conflicts and risks from human or natural causes, and from environmental pollution or adjacent land uses.
5. In considering the different reasons for recording [see page 69] different levels of detail will be required. All the above information, even if briefly stated, provides important data for local planning and building control and management. Information in greater detail is generally required for the site or building owner's, manager's or user's purposes for conservation, maintenance and use.

Management, Dissemination and Sharing of Records

1. The original records should be preserved in a safe archive, and the archive's environment must ensure permanence of the information and freedom from decay to recognized international standards.
2. A complete back-up copy of such records should be stored in a separate safe location.
3. Copies of such records should be accessible to the statutory authorities, to concerned professionals and to the public, where appropriate, for the purposes of research, development controls and other administrative and legal processes.
4. Up-dated records should be readily available, if possible on the site, for the purposes of research on the heritage, management, maintenance and disaster relief.
5. The format of the records should be standardized, and records should be indexed wherever possible to facilitate the exchange and retrieval of information at a local, national or international level.
6. The effective assembly, management and distribution of recorded information requires, wherever possible, the understanding and the appropriate use of up-to-date information technology.
7. The location of the records should be made public.
8. A report of the main results of any recording should be disseminated and published, when appropriate.

B

RecorDIM is a five-year (2002–2007) international partnership between heritage conservation organizations working together to bridge the gaps that currently exist between information users (including researchers, conservation specialists of all trades, project managers, and planners) and information providers (including photographers, heritage recorders, photogrammetrists, and surveyors). Further information on the RecorDIM Initiative is available at www.getty.edu/conservation/field_projects/recordim/index.html.

The following list summarizes the main gaps and needs identified during RecorDIM Roundtable-1, at the Getty Conservation Institute in Los Angeles in 2002. These are organized into five prime areas that need to be addressed and resolved to ensure better communication between information users and providers.

1. To improve perception and communication in heritage recording, documentation, and information management**a) By information dissemination**

Very little information specific to the purpose and benefits of heritage recording, documentation, and information management is currently being distributed to and shared between information users and providers. Partners need to better understand one another's roles

and responsibilities. (Users believe providers are rooted in the future; providers believe users are rooted in the past.) More needs to be done to educate users about available tools and providers about the goals of conservation management.

b) By creating bibliographies, thesauruses, and definitions

There is an urgent need for the compilation of a complete bibliography of recent publications on heritage recording, documentation, and information management tools, technologies, and applications. (Information is often published as conference or symposium proceedings but is not easily accessible.)

c) By creating focused newsletters

Currently, there is no international periodical in the field that allows experts in recording, documentation, and information management to share their knowledge and experience. A communication tool would be an effective way to bridge the gap between information users and providers.

d) By establishing integrated professional networks

Although specialized professional networks already exist and provide forums for exchange on specialized topics, they need to be strengthened. Multidisciplinary exchanges are growing in many areas, bringing

together varied expertise for complex projects. Heritage conservation is a complex activity that requires the exchange of ideas and information and the integration of diverse skills and knowledge.

- e) **By encouraging joint symposia, seminars, and trade shows**
A growing number of specialized groups already meet to exchange on specific technical subjects. CIPA is an example of a very specialized international scientific committee that is supportive of inviting experts outside the discipline to CIPA meetings. There is a need for more scientific committees from ICOMOS and other organizations to join the RecordIM Initiative and be part of the symposia and seminars that build bridges between heritage recorders and conservation specialists.
- f) **By involving the private sector and outside organizations**
It is critical to involve the private sector in RecordIM activities. The private sector needs to be exposed to governmental conservation practices, since government often is responsible for managing projects. Education and dissemination of knowledge should reach beyond the traditional conservation community. It is particularly important to communicate the benefits of documentation to owners, interpreters, and marketers, among others, by showcasing model projects and best practices.

2. To integrate recording, documentation, and information management activities into the conservation process

- a) **By developing and implementing recording and documentation processes**
One of the important gaps named during the roundtable was the fact that few organizations have developed a recording and documentation process that is integrated into their conservation activities. Furthermore, few information users work within a well-defined conservation process. The group expressed an urgent need for

promoting the integration of these activities to increase effectiveness in conservation practices.

- b) **By including recording, documentation, and information management practices in conservation management guidelines**
Conservation management guidelines exist, but few refer to the importance of recording and documentation to conservation practices. Guidelines are needed to provide heritage conservation managers and practitioners with proper guidance and direction. Such guidelines must be developed jointly by users and providers of information.

3. To increase resources for documentation

- a) **By promoting its benefits**
Decision makers are often unaware of the purpose and benefits of recording, documentation, and information management activities. It was suggested that the benefits of these activities can be demonstrated through case studies and best practices. Another major benefit is that RecordIM activities also provide posterity records for future generations. As investments in recording and documentation improve quality and cost effectiveness, larger budgets should be allocated to recording activities.
- b) **By writing related policies**
To ensure sustainable resources for documentation activities, policies must clearly state that heritage recording, documentation, and information management are integral parts of the conservation process. Such policies are essential to sustaining the discipline in the long term. Archiving with concurrent cost implications is another area where policy guidance is required to make better informed decisions.

4. To define, develop, and promote documentation tools

a) By writing the following:

- Standards
- Guidelines
- Handbooks
- Best practices

There must be well-defined standards and guidelines to ensure a high level of understanding and knowledge of documentation and recording principles and practices. Handbooks generally complement standards and guidelines, and case studies help link theory to reality. Few publications exist on these subjects.

b) By encouraging the development of software

Some general commercial software is used for documentation activities, but in many cases without the level of effectiveness and accuracy that can be achieved with specialized software. Better software will facilitate and expedite conservation work by helping to produce more efficient records, research, analysis, design, maintenance, and monitoring. Information users can encourage the production of better, more specialized software by promoting its benefits, sharing customer feedback with producers, and investing in technology (e.g., low-cost rectified-photography and 3-D modeling software).

c) By encouraging the development of hardware

Hardware can be cost effective if it is well designed for specific applications. Through outreach to the private sector, universities, and research centers, heritage recorders can encourage dialogue and knowledge transfer. The RecorDIM Initiative partners represent users and providers interested in adapting existing hardware and software to the needs of conservation practices (e.g., low-cost, user-friendly photogrammetric systems, portable 3-D laser scanners).

d) Other tools required

- Tools to enable cost-benefit analysis
- Case studies
- Economic models
- Tools for estimating, procuring, and tendering

5. To make available training and learning programs in recording and documentation

a) By offering courses, seminars, workshops, and so forth through:

- CIPA
- ICOMOS
- ICCROM
- National conservation organizations
- Universities
- Other groups and organizations

Although a growing number of information users are requesting training in heritage recording, documentation, and information management, few courses offer such training. This keeps many users from benefiting from the many available tools.

b) By establishing certification and accreditation

Proper heritage recording and documentation certification or accreditation currently does not exist. Some type of accreditation would certainly create greater interest in this type of training and would give more credibility to the activities of heritage recording, documentation, and information management. This could occur at both graduate and midcareer levels.

c) By educating providers

Consideration should be given to extending the education of heritage information providers beyond the technical requirements to provide a better understanding of the nonquantitative value of cultural heritage: the sense of place, people, landscapes, quality.

Fact Sheet

This appendix provides an example of a Heritage Recording Planning Form prepared by recording professionals from Public Works and Government Services Canada. Its purpose was to estimate the cost of a recording project commissioned by Parks Canada, the client agency responsible for Fort Henry, a nineteenth-century British military fortress in Kingston, Ontario, Canada. It illustrates the type of contract format generally established prior to recording work to define and clarify the outputs expected and their related costs. The following project summary outlines the discussion and definition of the needs concerning the masonry restoration project at Fort Henry.

What were the conservation team's specific heritage recording needs?

- To produce baseline information for discussing the masonry problems
- To get a preliminary understanding of the current condition of all dry ditch masonry walls at Fort Henry
- To estimate costs for long-term masonry repairs and conservation planning activities

What recording tools were considered?

- Stereophotogrammetry
- Scaled-rectified photography (complemented by condition assessment from conservation professionals)

- Total station survey of wall surfaces
- Condition photography
- Hand measurements with supplementary photography

What tools were chosen, and why?

- Scaled-rectified photography (complemented by condition assessment) and condition photography were chosen.
- The combination of these two tools provided the specific information needed by the client at the lowest cost possible.
- This type of recording could also be undertaken by site staff with minimum training (without the presence of heritage recording specialists at the site).

What tools were rejected, and why?

- Stereophotogrammetry was rejected. The high accuracy of the technique was not needed, and the complexity and skills involved would have required that recording specialists return to the site every time recording was needed.
- Total station survey of wall surfaces was rejected. This technique would be more time consuming and result in nonphotographic data. The results would be less effective.
- Hand measurements with supplementary photography was rejected as too time consuming and less accurate than rectified photography.

What are the Fort Henry recording activity outputs and results?

- A set of six drawings containing scaled-rectified photo-mosaics of 0.42 km of masonry walls
- With accompanying standard graphic symbols that provide good initial understanding of masonry areas and stones that need repair
- Supplemented with condition and close-up photos to better illustrate problems that cannot easily be described by graphic symbols
- All results compiled into a condition assessment report



Fig. C.1 Fort Henry, in Kingston, Ontario, Canada, today. The original Fort Henry was built during the War of 1812 (1812–1814), between Great Britain (Canada, at that time, was a British colony) and the United States, and bears no resemblance to the existing fort. During the war, the British anticipated an attack on Point Henry due to its proximity to the Royal Navy dockyards and the mouth of the St. Lawrence River. The loss of this vital trading route would have cut off communication between Kingston and everything to the east. Between 1832 and 1837, the present fort was built on the site of the first. Photo: © Fort Henry National Historic Site of Canada–Archives.

Masonry deterioration analysis at Fort Henry

The following pages contain:

1. An example of a rectified and scaled photo-mosaic of a section of Fort Henry’s dry ditch wall that integrates the requirements of heritage recorders and conservation specialists (fig. C.2)
2. A Heritage Recording Planning Form illustrating a typical contract form filled out by heritage recorders (from one government agency) and conservation team members (from another agency) prior to undertaking a project. This form outlines the work to be done by heritage recorders in providing base maps (or scaled and rectified photo-mosaics of wall elevations) to assess the condition of the masonry. (*Note:* This form was simplified for the purpose of this publication.)
3. The costs for the condition assessment work undertaken by conservation engineers to evaluate 0.42 km of masonry wall surface (figs. C.3, C.4)

Heritage Recording Planning Form (or contract between the User and the Provider)

Fort Henry National Historic Site of Canada
 Redoubt Dry Ditch Walls Condition Assessment
 Conservation Engineering activity

Scope of Work Clients' requirements		Levels of recording rate / day / expertise 100 \$ 300 \$ 500 \$			Work (person-days)			Team of 2 RecordM Specialists			Delivery dates	
		levels of accuracy			Field	Office	total	Rate	Fees	Travel		
		Low A	Med. B	High C								
Site work	Using 'rectified photo elevations' base maps for field 'condition assessment' work											
Condition Assessment					10		10	Engineer	400 \$	4 000 \$	2 000 \$	Oct. 2002
					10		10	Arch. Technologist	300 \$	3 000 \$	2 000 \$	Oct. 2002
Office work	Transfer Condition Assessment results to drawing format		6									
Condition Assessment drawings					3		3	Engineer	400 \$	1 200 \$	- \$	Nov. 2002
						15	15	Arch. Technologist	300 \$	4 500 \$	- \$	Nov. 2002
						5	5	Student	150 \$	750 \$	- \$	Nov. 2002
Report	Present results of Condition Assessment											
						10	10	Engineer	400 \$	4 000 \$	- \$	Nov. 2002
						5	5	Arch. Technologist	300 \$	1 500 \$	- \$	Nov. 2002
						5	5	Student	150 \$	750 \$	- \$	Nov. 2002
Final Report and project closeout	Compilation		1									
						2	2	Engineer	400 \$	800 \$	- \$	Nov. 2002
						3	3	Arch. Technologist	300 \$	900 \$	- \$	Nov. 2002
						3	3	Student	150 \$	450 \$	- \$	Nov. 2002
		Totals:	0	7	0	20	51	71		21 850 \$	4 000 \$	2 person team
			Total: 7 (outputs)								1 000 \$	travel cost
									Totals:	21 850 \$	5 000 \$	
									Grand Total		26 850 \$	

Fig. C.4 Spreadsheet showing how the condition recording work on the masonry at Fort Henry was defined and cost estimated. This form was used to determine the amount of time, money (in Canadian dollars), and people required to perform the condition assessment of the 0.42-km stone masonry walls along the dry ditch. Illustration: © Heritage Conservation Directorate, Canada / Direction de la conservation du patrimoine, Canada.

The Heritage Recording Planning Form was used to determine the amount of time, money, and people required to provide the conservation team with a preliminary record of the ditch tower at Fort Henry (see appendix C).

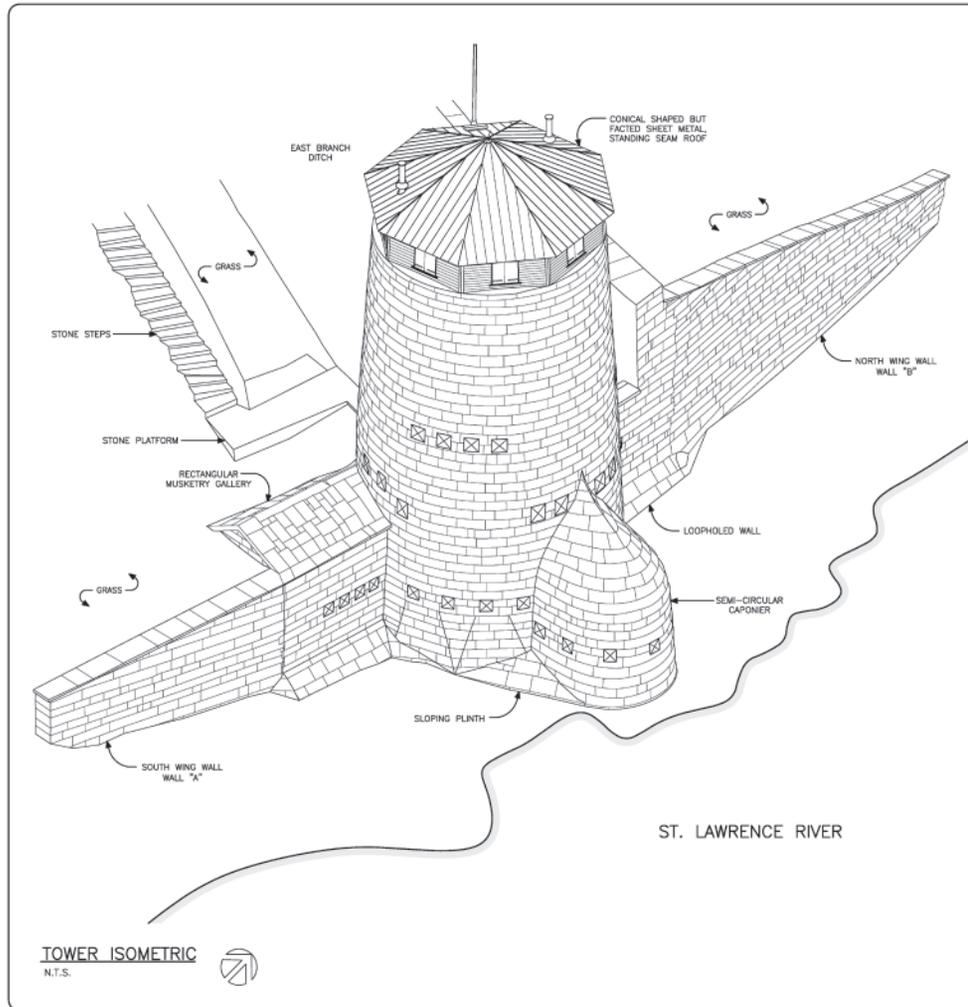
The output was: one cover page, four elevations, four floor plans, one cross section, architectural details, a site plan, and a photo-key plan. The resulting product is shown in figures D.3 and D.4. The estimate included approximately three weeks of work in the field by a team of professionals to record the data, and four to five weeks of work in the office to prepare the drawings and report.



Fig. D.1 The East Branch ditch tower at Fort Henry, overlooking Lake Ontario and the mouth of the St. Lawrence River. Photo: Christian Ouimet © Heritage Conservation Directorate, Canada / Direction de la conservation du patrimoine, Canada.

EAST BRANCH DITCH TOWER. FORT HENRY N.H.S.C

HERITAGE RECORD 2004



TOWER ISOMETRIC
N.T.S.

INDEX

- 1 - TOWER ISOMETRIC, INDEX AND LEGEND
- 2 - SITE PLAN
- 3 - FIRST, SECOND, THIRD AND FOURTH LEVEL FLOOR PLANS AND REFLECTED CEILING PLAN
- 4 - EAST AND NORTH ELEVATIONS
- 5 - WEST AND SOUTH ELEVATIONS
- 6 - SECTION, AMMUNITION RECESS AND FLOOR DETAILS
- 7 - DOOR DETAILS
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- *9 - SITE PHOTO KEY PLAN
- *10 - FIRST, SECOND, THIRD AND FOURTH LEVEL PHOTO KEY PLANS

LEGEND

- | | | | |
|--------|---|--|-----------------------------|
| | - CONCRETE | | - STEEL |
| | - BRICK | | - FINISH WOOD |
| | - STONE | | - FRAMING MEMBER IN SECTION |
| | - AREA IN SECTION (MATERIAL UNKNOWN) | | - EARTH |
| | - SECTION SYMBOL | | - WATER |
| | - NOTE SYMBOL | | - LOOPHOLE |
| X96.47 | - SPOT HEIGHT | | |
| ---- | - AREA IN WHICH EDGE IS HIDDEN OR RESIDES ABOVE SECTION CUT | | |

RECORD PHOTOGRAPHY 35mm

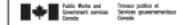
REFERENCE TO FILM ROLL (A) AND NEGATIVE No. (30) → CAMERA LOOKING HORIZONTAL
HERITAGE RECORDING REPORT PAGE No.

MONOPHOTOGRAMMETRIC RECORD

FILE No. → CAMERA LOOKING UP
HERITAGE RECORDING REPORT PAGE No.

STEREOPHOTOGRAMMETRIC RECORD

FILE No. → CAMERA LOOKING DOWN
HERITAGE RECORDING REPORT PAGE No.



Sue Hum-Hartley
Director General
Public Works and Government Services Canada
Real Property Branch
Professional and Technical Programs

Directeur général
Travaux publics et Services gouvernementaux Canada
Direction générale des biens immobiliers
Programmes professionnels et techniques

Heritage Conservation Directorate
Public Works and Government Services Canada
Real Property Branch
Professional and Technical Programs

Direction de la conservation du patrimoine
Travaux publics et Services gouvernementaux Canada
Direction générale des biens immobiliers
Programmes professionnels et techniques

NOTES:
-THIS RECORD WAS PRODUCED USING THE INTERNATIONAL SYSTEM OF MEASUREMENT.
-THE INFORMATION IN THIS RECORD HAS NOT BEEN FIELD VERIFIED.

*REDUCTION SIZE PHOTO KEY DRAWINGS CAN BE FOUND IN THE EAST BRANCH DITCH TOWER HERITAGE RECORDING REPORT. THEY ARE PART OF THE ORIGINAL FULL SIZE DRAWING SET ONLY.

D6		
D5		
D4		
D3		
D2		
D1		
revision		date

	A north arrow		B key location
	C sheet location		D sheet location

project EAST BRANCH DITCH TOWER
FORT HENRY NATIONAL HISTORIC SITE OF CANADA
HERITAGE RECORD 2004

TOWER ISOMETRIC, INDEX AND LEGEND

designed	comp.
drawn	checked
by B. MARTIN, A. WHITE, C. OUMET	FEB 2005
revised	examined
by J. BELL	FEB 2005
approved	approved
date	signature
Project Manager	Administrateur de projets
project no. 472876	no. du projet
drawing no. 1	no. de dessin



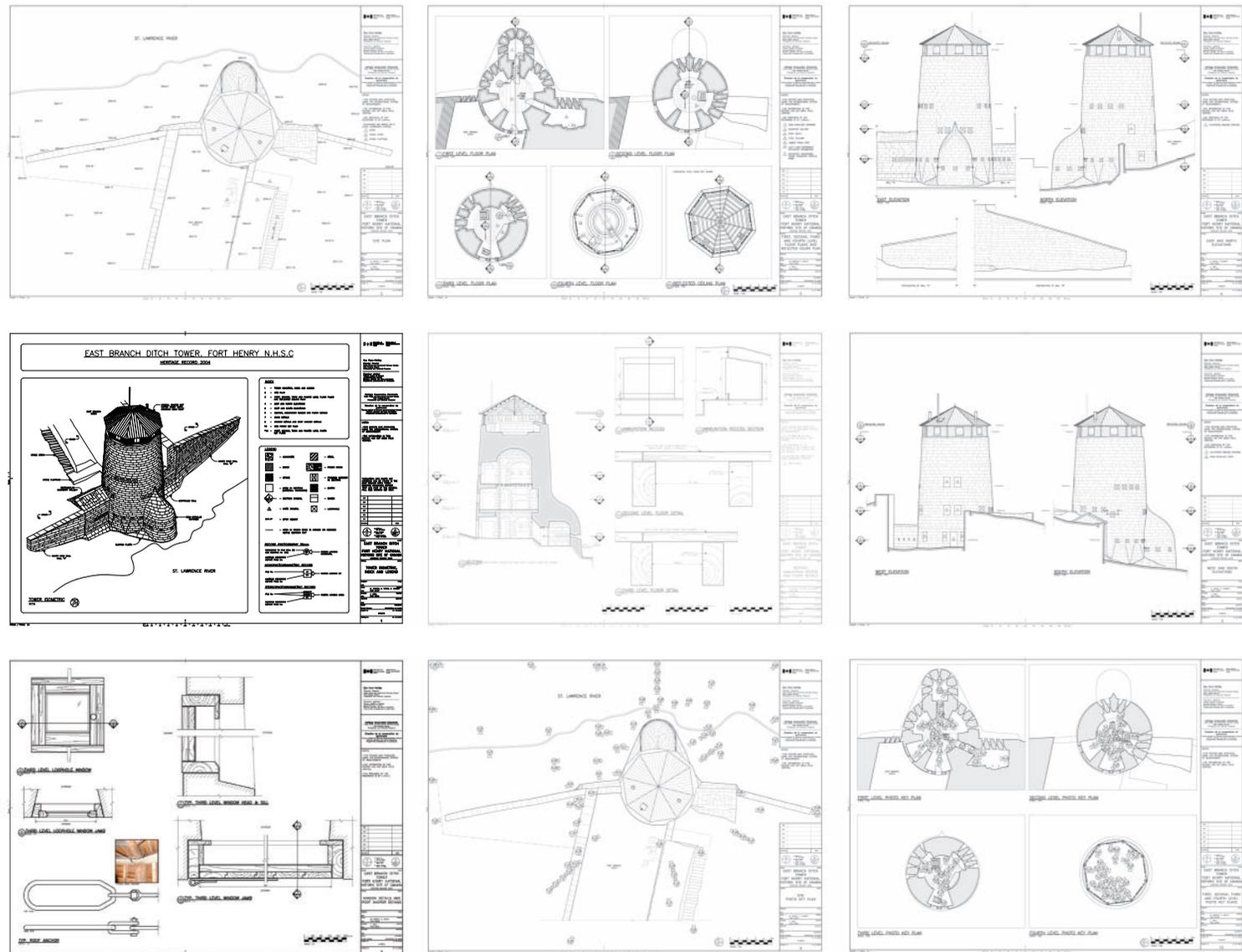


Fig. D.4 These nine measured drawings contain the information drawn from the Heritage Recording Planning Form requirements (see fig. D.2).

Drawings: Christian Ouimet © Heritage Conservation Directorate, Canada / Direction de la conservation du patrimoine, Canada.

SUMMARY OF METRIC SURVEY TECHNIQUES FOR HERITAGE DOCUMENTATION

	PRODUCT	CAN BE USED FOR	TYPICAL OUTPUT SCALE	TYPICAL RANGE	REQUIRES THE USE OF	
INDIRECT:						
PHOTOGRAMMETRY	2D	Satellite imagery	remote sensing	1:5000	post-processing and 3D modelling software + specialist 3D CAD /GIS skills	
	3D	Stereo pairs	Condition recording and ante- disaster records.		Calibrated camera, precise control data	
		Wire-frame CAD drawings	'Stone by stone' drawings, landscape survey, condition recording, works scheduling	1:20 – 1:200		
	2D	Orthophotographs	Condition monitoring, modelling and reverse engineering, visualisations		5 -50m	Photogrammetric plotting system – experienced operator + image interpretation skills, Image processing, CAD and 3D modelling software + CAD skills
LASER SCANNING AIRBORNE LIDAR TERRESTRIAL SCANNER ARTEFACT SCANNER	3D	Digital Elevation Models (DEM)		1:5 – 1:50		
	3D	Point clouds	Prospecting landforms 3D Surface modelling Replica components and castings	1:50 - 1:100 actual size – 1:10	5-200m 0.5-2m	Scanner, post-processing and 3D modelling software reverse engineering software + specialist 3D CAD skills
RECTIFIED PHOTOGRAPHY	2D	Scaled images	Condition recording and assessments, works scheduling	1:20 – 1:50	5 - 50m	Metric or non-metric camera, precise control data or scaling information, rectification software
DIRECT:						
DRAWING		Sketches	Diagnostics, support to 3D modelling			
LEVELLING	2D	Measured Drawings	Plans, sections etc	1:20-1:50	0-30m	Trained draughts-person + CAD skills
		Precise levelling	Monitoring structures	1:20-1:50	1-30m	Trained survey personnel +monitoring regime
EDM		Point data	Terrain models			
	3D	Wire-frame CAD drawings	Plans, sections etc	1:50	5-100m	EDM set + field CAD unit +CAD skills
GPS		Control data	Monitoring and metric data integration	1:20 - 1:500		EDM set + specialist survey skills
	3D	Point data Wire-frame CAD drawings	Terrain models Control data, Site plans, landscape survey	1:100	20-500m	GPS set + specialist survey skills

The procurement of metric survey requires the identification of the technique or the performance required to meet the documentation need. The provision of a given of metric data-set must be governed by a brief, specification and a project design that considers metric survey requirements at an early stage to avoid duplication and the errors concomitant with repeated localised provision.

Fig. E.1 Summary of metric survey techniques for heritage documentation. Table: Bill Blake, English Heritage Metric Survey Team.

F

Information management can be defined as the handling of information acquired by one or many disparate sources in a way that optimizes access by all who have a share in or a right to that information.

In heritage conservation practices through the 1970s, information management was largely limited to files, file maintenance, and life-cycle management of paper and a small number of other media such as photographs and drawings. With the proliferation of information technology starting in the 1970s, the job of information management was cast in a new light. Information management was no longer a simple job that could be performed by almost anyone. An understanding of the technology and the theory behind it became necessary as information was increasingly stored using electronic means. By the late 1990s, when information was regularly disseminated across computers and other electronic devices, information managers found themselves tasked with increasingly complex devices. With the latest tools available, information management has become a powerful resource for organizations.

Some of the best-known information management tools for conservation practices generally fall under two categories of software.



Fig. F.1 Example of a relational database. The relationship between the “Suppliers” and “Products” tables is the SupplierID, a unique number that is identical in both tables. The relationship between the “Products” and “Order Details” tables is the ProductID number.

The Relational Database

The relational database can be described as a database structured in accordance with a relational model. Strictly speaking, the term refers to a specific collection of data but is also used for the software employed to manage that collection of data. This software is more correctly called a relational database management system (RDBMS). RDBMSs incorporate many features from the relational model, but commercial RDBMSs also can provide solutions tailored to clients’ needs. These solutions, however, tend to diverge from the relational model in significant ways, such as adding capacity but also complexity to the database structure.

The Geographic Information System

The GIS can be described as a computer system capable of integrating, storing, editing, analyzing, displaying, and sharing geographically referenced information. As the name indicates, the system was initially developed for geographic

What does a GIS Graphic Database look like?

Well-defined CAD (Computer-Aided Design and Drafting) or GIS (Geographic Information System) layering standards will allow the progressive compilation, electronically, on separate layers, of subsequent graphic information over time. It also permits working with any desired combination of layers as required. High-level CAD/GIS software allows inclusion of subfiles of text, images, and existing drawings. Heritage recording provides the baseline data onto which supplementary information can be added to constitute an accurate, systematic, and long-term project database that should be linked to the Integrated Project Dossier described in figure 40, p. 53.

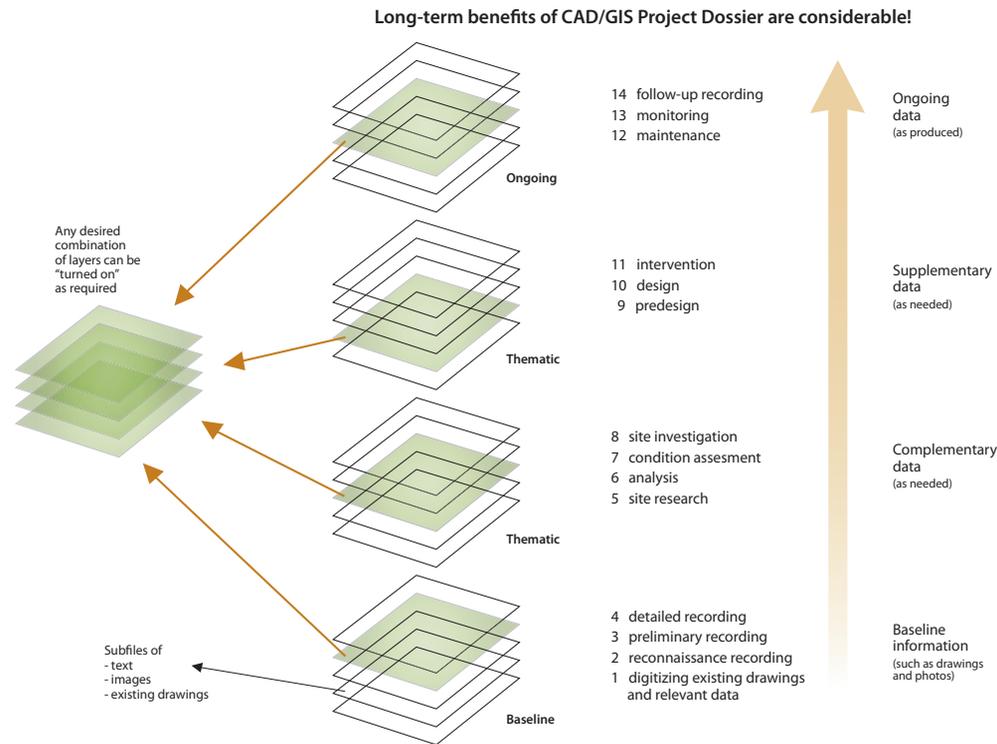


Fig. F.2 Example of a GIS graphic database.

applications. Thematic maps showing specific features in a territory can be layered over the geographic base map and visualized separately or in combination. The tool also allows generation of statistics of the recorded features and the linking of text or other information to points or areas on the map. Increasingly, GIS has been applied in field archaeology and conservation of immovable heritage. In the case of single monuments, a set of measured drawings or a 3-D model of the building is used as a base map to which layers of information can be added or hyperlinks established.

In a more generic sense, GIS allows users to create interactive queries (user-created searches), analyze spatial information, and edit data. GIS can be a very useful and powerful tool in managing graphic data generated during all phases of the conservation process and integrating them with other information formats. Some advanced CAD software can also be used as low-level GIS tools to effectively manage graphic attributes at lower cost (see fig. F.2 for an example of what such a graphic database might look like).

(*Note: Geographic information science is the science underlying the applications and systems. It is taught as a degree program by several universities.*)

What are the advantages and disadvantages of using the above-mentioned systems or tools?

The main advantages:

- They can be designed to meet the needs of any project.
- They can be tailored to adjust to new situations.
- They can contain very large amounts of information.
- They can be searched for specific information and provide output to queries.

The main disadvantages:

- They require systems analysts to create and design them.
- They require special computer knowledge and skills to operate.
- They are difficult to modify once set up.

- They require in many cases expensive proprietary software.
- They require licenses for each additional site or user.
- They are expensive to maintain, as information must be updated on a regular basis and over the long term.
- They generally require that project team staff be trained to upload their respective information to the system.
- The software must be upgraded on a regular basis (and at a significant cost in some cases).

Some lessons have been learned in the process. Few project managers can afford or justify the following:

- The short-term purchase, design, and implementation of such software
- The midterm upgrades and data management of such systems
- The long-term operational and maintenance costs related to the above systems or tools

If a large organization can financially sustain such systems or tools in the long term, the tools should be considered, but only after the analysis of long-term needs and cost is defined and recommendations come with cost options. This analysis is meant to ensure that managers understand, from the start, the exact need behind such a choice of tool, the true cost of operation, and the long-term return on their investment.

In cases where cost analysis is not undertaken, the result can be information systems disappointment, which requires expensive adjustments that still may not satisfy the mid- and long-term needs of a project. Ill-designed systems can become very expensive and demanding to operate, resulting in an information management system that does not meet the project needs and therefore must be redesigned entirely or abandoned.

Why is the PIC approach suggested in these guidelines?

The PIC approach places emphasis on managing the information at the project level. Project information is normally focused on the work being undertaken by the conservation team (compared to large information management systems operated at the institutional level), and the PIC data are:

- Limited to the project's activities
- Manageable in size
- Easy to coordinate
- Realistic to catalogue and compile or upload
- Simple to share among team members (using hyperlinks and standard PDF formats)

In addition, the advantages of the PIC are as follows:

- It is an economical and open-source tool, that is, no special software is required. There is no cost for special hardware (other than a PC and access to an Intranet or the Internet using commonly available software), and it can be redesigned at any time by the project team without database programming expertise.
- It is a tool for which little training is needed, and operates using everyday software.
- It is extremely flexible and easy to adjust to project needs (note that the currently proposed PIC template is based on the generic conservation process described in this publication, and therefore should be familiar to many as is) (see fig. 38).
- It can be used immediately by any project manager and team member, in any region of the world where an Intranet or the Internet is available.
- There is no need for a special information management systems analyst to assist with the equipment.
- It is based on worldwide standard formats such as HTML and PDF, which are used for cataloguing, storing, hyperlinking, and sharing information. These formats offer long-term sustainability and compatibility without active data maintenance.

Finally, the most important feature of this approach is that each PIC becomes a macro information unit with a unique geographic locator, which makes it traceable and sharable worldwide using the Web. In other words, the PIC can be referred to as a universal project information sharing tool.

Figure F.3 shows a table or PIC portal from the Heritage Places Unique GPS Addresses pilot Web site. It introduces a simplified Project ID spreadsheet that can be used to share PICs on the Internet or an Intranet. This portal is available in the short term on the ICOMOS Canada Web site to organizations and individuals wishing to test the PIC approach using their conservation project activities.

Heritage Places Unique Geographic Locator
Preliminary portal to share or find conservation Project Information Containers on an Intranet or the Internet

<i>Unique GPS Address</i>	<i>Name of Project or Heritage Place</i>	<i>Project Duration</i>	<i>Manager of Project Information Container (PIC)</i>
39.945694,-75.203656	Mansion—Woodlands Cemetery (Preliminary Record report)	Jan. to April 2006	Jennie Groves
39.945694,-75.203656	Mansion—Woodlands Cemetery (Preliminary Record report)	Jan. to April 2006	Sarah Vulkovich
39.946633,-75.204245	Carriage House—Woodlands Cemetery (Preliminary Record report)	Jan. to April 2006	Nick Kraus
39.949051,-75.203246	Gate Houses—Woodlands Cemetery (Preliminary Record report)	Jan. to April 2006	Alexis Stevens
39.968364,-75.172552	Eastern State Penitentiary (Preliminary Record report)	Jan. to April 2006	Patrice Frey

Fig. F.3 Example of a table or PIC portal from the Heritage Places Unique GPS Addresses pilot Web site.

The PIC portal provides only the information contained in the first two columns of the Project ID Sheet (fig. 39). It has been purposefully reduced here to four columns to keep PIC portal search information to a minimum, that is:

- Unique GPS address
- Name of project or heritage place
- Project duration
- Manager of the PIC

Subsequently, the PIC portal allows any conservation professional or other interested individual to do the following:

- Copy the unique GPS address into Google Earth to find the location of this heritage place (this requires a high-speed connection and a good graphics card)
- Click on the heritage place's name and get additional generic data about the place
- Understand when the information/PIC was produced
- Contact the project manager should one wish to share additional information on the heritage place in question

(*Note:* The PIC in fig. F.3 was produced by students as part of a course exercise; therefore, the information should not be considered final data for conservation work.)

It is important to mention that to have access to the IPD part of the PIC, one must have a password, which usually is restricted to the project manager, the project team members, and some stakeholders. The project manager normally is the custodian of the information provided or stored in a PIC.

What is step 1?

- A description of a functional review commissioned by a national agency responsible for National Historic Sites

Who is it for?

- Managers responsible for integration of activities and high standards in the delivery of conservation programs
- Senior management and decision makers who allocate budgets for new technologies

Why is it needed?

- To provide an example of a large government conservation organization dealing with significant operational changes
- To share recommendations on how to improve the integration of heritage recording activities into the conservation process

What are the benefits?

- Identifying new trends
- Updating national heritage information policy, standards, and guidelines
- Defining training needs
- Ensuring strong functional leadership

Where can additional information be obtained?

- Public Works and Government Services Canada (PWGSC) (www.pwgsc.gc.ca/text/index-e.html)

Step 1: Review and Analyze Requirements**Example: Parks Canada**

The functional review of Parks Canada's heritage recording activities

Parks Canada is the national agency responsible for the care and operation of Canada's national historic sites, a \$2 billion annual program. During 2002–2003 the agency undertook a functional review of its recording activities. This was a first step in reviewing its national policy for national parks and historic sites. The goal was to improve the quality and integration of heritage recording activities in the agency's conservation operations and practices.

The functional review revealed many problems and issues. These were clearly identified and various options were developed to address them.

One outcome of this functional review was that Parks Canada reaffirmed in its national policy the value and importance of heritage recording in understanding cultural heritage. The *Standards and Guidelines for the Conservation of Historic Places in Canada* now states that recording and documentary research are the "essential first step to good conservation practice."



Fig. G.1 Fort Lennox, Quebec, one of Parks Canada's 900 National Historic Sites. Photo: © François LeBlanc.

Another outcome was the identification of the need for Parks Canada to develop a renewed model to deliver heritage recording services across the country. The review supported the agency's request for new funding to protect, present, and communicate its cultural heritage places to the public. This involved the development of a national approach for a simple, sustainable, values-based recording program for every existing and new National Historic Site. The program also addressed the challenges of productivity and changing and evolving technologies. There are more than nine hundred National Historic Sites in Canada, to which ten more are added each year by the National Historic Sites and Monuments Board of Canada. Only 269 sites had been recorded as of 2006.

What is step 2?

- A description of an example of promotional material produced by the heritage recording unit of PWGSC

Who is it for?

- Managers seeking to promote within a government bureaucracy the unique and specialized heritage recording services their agencies provide, and to inform conservation practitioners about these services

Why is it needed?

- To provide other departments or agencies with an understanding of how they can benefit from such specialized services

What are the benefits?

- For conservation practitioners, better appreciation of these specialized resources; improved use of heritage recording services; better understanding of heritage places, their values, and their condition; and increased ability to make decisions about these heritage places

Where can additional information be obtained?

- PWGSC (www.pwgsc.gc.ca/text/index-e.html)

Consult the PWGSC heritage recording promotional pamphlet (see fig. G.2).

Step 2: Promote Benefits and Encourage Participation

Example: Public Works and Government Services Canada

Promoting the benefits of heritage recording activities within the Canadian government

The Heritage Conservation Directorate (HCD) of PWGSC is a national agency composed of engineers, architects, landscape architects, land surveyors, and technologists specializing in heritage conservation. The primary mission of this agency is to provide quality and cost-effective conservation services to the federal government for the conservation of built heritage and historic landscapes.

HCD is a unique multidisciplinary organization that offers various services across Canada, including heritage recording, investigation, design, construction, and restoration project management, as well as policy development, research, and training.

HCD promotes its services and disseminates information on new, innovative approaches in the world of conservation throughout the large federal government family of departments and agencies. To do so, HCD maintains the national directory of heritage conservation staff and list of services. This directory contains a detailed description of heritage conservation services as well as professional staff profiles. The directory is used to promote and assist clients in contacting the appropriate persons in the organization who can help them. Furthermore, HCD promotes its services by organizing open-house events on a regular basis. These activities are part of the overall HCD goal to educate and inform the federal government family of conservation techniques and approaches, including recording, documentation, and information management practices.

To ensure that other government agencies realize and understand they are getting top-quality professional services, HCD implemented an internal quality management system that meets the requirements of the International Organization for Standardization (ISO) standard ISO 9001:2000 and is

Fig. G.2 Sample page from a leaflet distributed by the HCD during an open-house event on specialized conservation services. The event was attended by representatives from many Canadian government departments and by private sector conservation practitioners. © Heritage Conservation Directorate, Canada / Direction de la conservation du patrimoine, Canada.

accredited by it. This demonstrates the agency's ability to achieve excellence in providing professional and technical services for the conservation of built heritage and historic landscapes.

Figure G.2 shows a sample page from a promotional leaflet prepared by the HCD.

Public Works and Government Services Canada / Travaux publics et Services gouvernementaux Canada

Heritage Conservation Directorate

You are invited to the 10th Annual Open House of Heritage Conservation Directorate

Tuesday, May 9th 2006
14h00 – 17h00

25 Eddy Street, 5th floor,
Gatineau (Québec)

Conservation specialists will be showcasing a wide variety of past and on-going conservation projects.

Canada

A Word About Heritage Conservation Directorate (HCD)

HCD is a unit within the Professional and Technical Programs of the Real Property Branch in Public Works and Government Services Canada (PWGSC) which provides specialized conservation services for Heritage properties. HCD serves all custodians of heritage buildings and properties. Professional disciplines represented include architecture, landscape architecture, structural engineering, surveying, recording and documentation.

We Have the Expertise

HCD operates out of the National Capital Region, with five regional offices across the country. The staff, who have up to 30 years of experience, consists largely of graduates from recognized schools in heritage conservation. The HCD team has experience in the analysis of historic building assemblies, materials and their deterioration and performance. HCD is also experienced in the application of policies, building codes and development of contract documents.

Comprehensive and Integrated Service

The HCD team is highly qualified, multi-disciplinary and well-experienced. We can provide the best combination of skills for any specific conservation project. The following conservation services can be used independently or as required to enhance your team:

- Master planning
- Co-ordination of multi-disciplinary teams
- Heritage studies
- Investigation and condition assessment studies
- Site review and quality control
- Recording and documentation



Heritage Recording

Record What?

- Buildings
- Landscapes
- Monuments
- Artefacts
- Engineering works

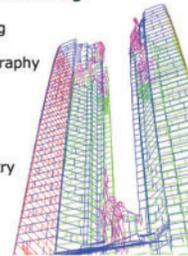


Why?

- A master planning tool
- A project management tool
- An insurance against change or loss of resources
- Invaluable data for reference, study and posterity

Techniques for Recording

- Hand recording
- Surveying
- Record Photography
- Large format photography
- Rectified photography
- Stereo Photogrammetry
- 3D Recording
- Laserscanning
- Monitoring



What is step 5?

- An example of a heritage recording policy statement from a national government agency

Who is it for?

- Middle managers with the responsibility of developing and managing national heritage recording programs
- Policymakers who wish to integrate the recording activity into their broader conservation policy
- Managers having a stronger leadership role in protecting and presenting historic heritage places
- Senior managers and decision makers who believe in working collaboratively to protect and present heritage

Why is it needed?

- To show how a large government conservation organization operates with such a policy
- To ensure the long-term conservation of historic places
- To let all involved know why the government believes it is important to document the nation's heritage and how it intends to meet its mandate in this area

What are the benefits?

- Support for developing strong conservation programs
- Efficient management
- Better public understanding and education
- Long-term conservation of heritage places

Where can additional information be obtained?

- Parks Canada (www.pc.gc.ca/docs/pc/poli/princip/sec1/index_e.asp)

Step 5: Define the Policy

Example: Parks Canada Guiding Principles and Operational Guidelines

The following text is from the Cultural Resource Management Policy of the *Parks Canada Guiding Principles and Operational Guidelines* document.

POLICY CONTEXT

Parks Canada's purpose is:

To fulfill national and international responsibilities in mandated areas of heritage recognition and conservation; and to commemorate, protect and present, both directly and indirectly, places which are significant examples of Canada's cultural and natural heritage in ways that encourage public understanding, appreciation and enjoyment of this heritage, while ensuring long-term ecological and commemorative integrity.

Introduction

Parks Canada operates within a broad and varied context, consistent with national and international commitments, to protect and present places that represent the world's natural and cultural heritage. These commitments recognize that people and the environment are inseparable and that survival is fundamentally linked to a healthy environment and respect for human heritage. It is important, therefore, to ensure that these policies anticipate and respond to challenges and opportunities as they arise.

Issues of international, national and regional scope affect heritage places. Canada must continue to respond positively to increasing international emphasis on the commemoration, protection and presentation of places representing the world's natural and cultural heritage. The goal of sustainable development must include the goal of maintaining the integrity of Canada's natural and cultural heritage. The global economy is changing, and the contribution of the tourism sector in the North American economy, including Canada, is expected to

continue to increase. While Parks Canada does not have a direct mandate for tourism, it does have a part to play in recognizing and supporting tourism's place in presenting an image of Canada to visitors, in helping to maintain a sound and prosperous economy, and in fostering sustainable development that benefits local communities.

Parks, national historic sites and canals provide demonstration and communication opportunities for environmental and heritage citizenship initiatives, and various other departmental activities. In addition, the federal environmental assessment legislation is meticulously applied in heritage places administered by Parks Canada.

The following text is from pages 104-105 of the policy document, and relates to Section 1.3, 'Principles of Understanding'. In this Section, Parks Canada acknowledges that heritage recording is one of the most important conservation activities for understanding heritage places.

1.3 Principles of Understanding

1.3.1 The care and presentation of cultural resources require knowledge and understanding of those resources, of the history they represent, and of the most effective means to communicate that history to the public for whom the resources are held in trust.

- Cultural resource management activities will be based on knowledge, and professional and technical skills and expertise.
- Parks Canada will integrate the contributions of relevant disciplines in planning and implementing cultural resource management, and will place a particular importance on interdisciplinary teamwork.
- Adequate research, recording and investigation will precede any action that might affect cultural resources and their presentation.

1.3.2 The importance of genuine public understanding, appreciation and enjoyment of cultural resources will be recognized. The understanding of cultural resources requires knowledge that goes beyond a simple knowledge of the physical properties of the resources.

- Genuine public understanding may require the recording and use of traditional and other knowledge that previously did not exist in written form.
- Parks Canada will proceed on the basis that the meaning of cultural resources may exist in a continuum ranging from national significance to local or special significance for particular people, and that the two orders of significance can be communicated.
- Parks Canada will identify the nature and various interests of the public to develop effective means of communication.

1.3.3 Information about cultural resources will be recorded and those records will be maintained for the future.

- Parks Canada will maintain up-to-date inventories and records on its cultural resources. *Dossiers will contain basic data and related documentation, including the results of research and evaluation, records of decision and actions taken. Heritage recording will be carried out on cultural resources of national historic significance.*
- When faced with loss due to human or natural forces and when long-term stabilization or salvage is not possible, cultural resources will be recorded and documented to preserve a public record.

1.3.4 Parks Canada will avoid actions that reduce the potential for long-term conservation and for future understanding and appreciation of a cultural resource and the legacy that it represents.

Note: Part 1.3.3 above is one of Parks Canada's Cultural Resource Management Policy statements that endorses and puts into practice the recommendations outlined in Article 16 of the Venice Charter, one of the most widely used international doctrinal documents in conservation. This is one of the policy statements that commits the Canadian Government to define, implement and manage heritage recording programs, and sustain them over time. Without this Cultural Resource Management Policy, there would be no guarantee of heritage recording activities in the long term.

What is step 4?

- A statement that articulates the importance of inventories and how they can be useful to heritage managers and decision makers

Who is it for?

- Heritage managers and decision makers

Why is it needed?

- To offer arguments for investing in national inventories
- To explain how inventories contribute to the knowledge of cultural heritage places
- To explain that it is not only a question of technology but also a question of process that involves the participation of the population

What are the benefits?

- Support and understanding for undertaking inventories
- Better understanding of cultural heritage places
- Better support for the conservation of cultural heritage places

Where can additional information be obtained?

- Section B of the annotated selected bibliography at the back of this book

Step 4: Undertake Inventories

Example: Statement of importance of inventories for vernacular architecture

According to Marc de Caraffe, president of the ICOMOS International Committee on Vernacular Architecture:

Because they can include surveys, recording, assessment and monitoring, inventories provide strategic information to managers of Heritage Conservation Programs. As they allow them to research, analyze, compare and assess information, inventories represent one of the most important tools at their disposal. In fact, inventories respond to several needs since they amount to a comprehensive and comparative understanding of the nature and complexity of inventoried areas. Because built environments are the results of modifications brought through the ages by their inhabitants, frequently in answer to practical needs, they reflect the values, traditions and other cultural traits of the local population. This is why there is a basic need to know as much as possible about the results of these actions (the environment) in order to understand the process (the cultural values). And so, it has been prescribed that research and investigation at the inventory stage should focus on the values and physical manifestations of a resource, on the factors affecting its condition and use, and on the pertinent factors affecting its environment. Inventories need to follow such a global approach, as this serves to remove the anonymity of builders, craftsmen and occupants and put a human face on human products. It is not enough to know how people influence their environment, but also it is important to know how this environment influences them.

Another important reason for taking stock of the built environment is public awareness. A built environment, either urban or rural, can be better protected when its values are clearly identified for everyone involved in its conservation. At the basic level, an inventory can serve to highlight the interesting features of a site to its occupants and to ensure their conservation. In sum, an efficient approach to planning requires an inventory component. Equipped with such tools, decision makers, official planners, local authorities or occupants, know where significant resources are located.

An assessment of the values of these resources can then be conducted and priorities can be established for conservation works, which normally is preceded by heritage recording activities.

In a culture of compliance to technology, there is a tendency to view inventories as computerized tools for managing the built environment on a hierarchical basis. Armed with their computerized records, experts can identify significant structures; issue zoning by-laws, building codes and conservation standards and guidelines. Such an approach neglects the fact that the promotion of conservation can take two forms. It can either be normative, regulatory and judicial, or it can rely on the capacities of local populations to identify applicable preservation standards and to implement them themselves. Instead of complex computerized records that become quickly obsolete, inventories should be seen as means to bring to the attention of occupants the values of their sites, and to let them decide how to take care of these values by relying on their common sense. Inventories are means to establish a dialogue between all parties involved in the preservation of sites. Each party has a vested interest, a specialized knowledge and particular means to protect sites.

One of the first reasons for preparing an inventory resides in the identification of significant places in a given area. When significance is attributed to the most outstanding examples, such a listing does not always serve the purpose of conserving the built environment. It can only assist in preserving selected sites, particularly those found to be representative examples. There are some disadvantages to such an approach as it can lead to the loss of entire districts when sites are not deemed to be important enough to be retained.

Inventories are thus needed to establish the cohesion and value of significant places in order that their elements are recognized, recorded, and managed in an appropriate manner. They are also required to assess the accountability of responsible authorities at the local, regional or national levels in safeguarding heritage. Inventories can enhance knowledge when they provide information on building processes, construction material selections and long-term performance of structures. Finally, because threats to

the built environment, both in terms of natural disasters and human interventions, are increasing on a global scale, it is vital that records of cultural resources be taken for present and future generations. (Marc de Caraffe, e-mail message to François LeBlanc, 14 May 2007)

What is this example?

- An introduction to the U.S. National Park Service’s National Register of Historic Places, a searchable database accessible via the Internet

Who is it for?

- Managers who wish to develop a national register to share heritage places information widely

Why is it needed?

- To avoid duplication in heritage information by consolidating listings of heritage places under a common register, accessible to all using the Internet

What are the benefits?

- To provide a wealth of information through the registers, increasing awareness and appreciation for a country’s historic places and encouraging their conservation

Where can additional information be obtained?

- Go to www.cr.nps.gov/nr/about.htm

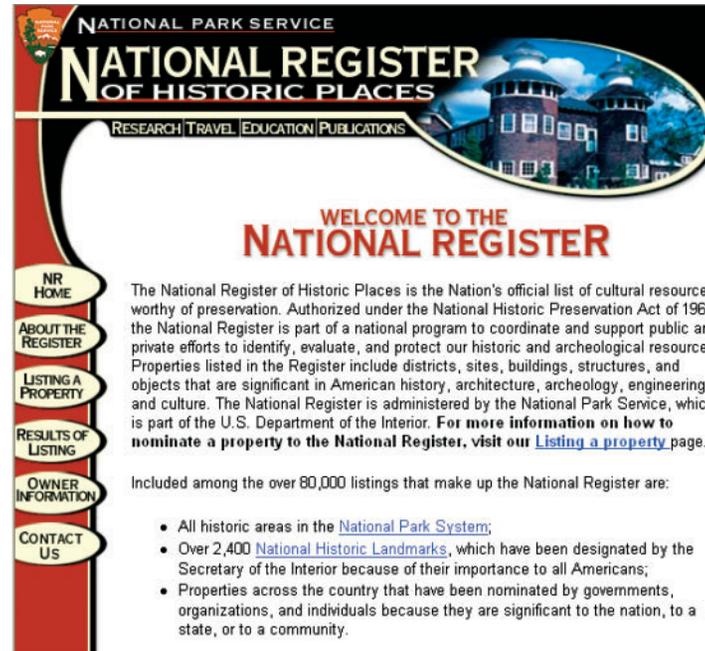


Fig. G.5 An example of a national inventory is the U.S. National Park Service’s National Register of Historic Places. Detail of the “About the Register” page from the Web site of the U.S. National Park Service’s National Register of Historic Places. Image: National Register of Historic Places, National Park Service.

H

This overview provides the recording, documentation, and information management-related content of the main international, regional, and national doctrinal texts referring to immovable cultural heritage. These documents, arranged in chronological order, confirm the essential nature of heritage information activities within conservation processes and highlight key areas of concern in planning for and carrying out recording work.

Very few guiding instruments give a more detailed account of what should be recorded. Good examples for such detailed recommendations or prescriptions are *Principles for the Conservation of Heritage Sites in China* (2000) and *Standards and Guidelines for the Conservation of Historic Places in Canada* (2003). The revised Burra Charter of 1999 clearly indicates that recording must be a fully integrated part of the conservation process, an aspect extended through many practical examples in the new Illustrated Burra Charter of 2004. Among professional codes of ethics, the code from the American Institute for Conservation of Historic and Artistic Works (1994) describes in detail the RecordIM responsibilities of conservators.

Importance is also given to investigation and recording skills in the 1993 ICOMOS *Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites*. Documentation as a basis for site interpretation is a key issue in the 1999 International Cultural Tourism Charter.

Of particular value as a reference for this publication is the 1996 ICOMOS *Principles for the Recording of Monuments, Groups of Buildings and Sites*, which is the only document to deal specifically with RecordIM issues. This document was instrumental for the development of this publication and is reproduced here in its entirety. As most of the quoted documents can be found on the Internet, where available, the URL address providing their full text is given. The authors are aware that this overview might be far from complete, especially at the regional and national level.

1931. The Athens Charter for the Restoration of Historic Monuments (The Athens Charter)

Athens Conference, 21–30 October 1931

(...) *c) Value of international documentation.*

The Conference expresses the wish that:

1. Each country, or the institutions created or recognized competent for this purpose, publish an inventory of ancient monuments, with photographs and explanatory notes;
2. Each country constitute official records which shall contain all documents relating to its historic monuments;

3. Each country deposit copies of its publications on artistic and historic monuments with the International Museums Office;
 4. The Office devote a portion of its publications to articles on the general processes and methods employed in the preservation of historic monuments;
 5. The Office study the best means of utilizing the information so centralized.
- www.icomos.org/docs/athens_charter.html

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

Second International Congress of Architects and Technicians of Historic Monuments, Venice, 25–31 May 1964

(...) Article 16.

In all works of preservation, restoration or excavation, there should always be precise documentation in the form of analytical and critical reports, illustrated with drawings and photographs. Every stage of the work of clearing, consolidation, rearrangement and integration, as well as technical and formal features identified during the course of the work, should be included. This record should be placed in the archives of a public institution and made available to research workers. It is recommended that the report should be published.

www.international.icomos.org/charters/venice_e.htm

1975. The Declaration of Amsterdam

Congress on the European Architectural Heritage, 21–25 October 1975

(...) To make the necessary integration possible, an inventory of buildings, architectural complexes and sites demarcating protected zones around them is required. It should be widely circulated, particularly among regional and local authorities and officials in charge of town and country planning, in order to draw their attention to the buildings and areas worthy of

protection. Such an inventory will furnish a realistic basis for conservation as a fundamental qualitative factor in the management of space. (...)

(...) Every rehabilitation scheme should be studied thoroughly before it is carried out. Comprehensive documentation should be assembled about materials and techniques and an analysis of costs should be made. This documentation should be collected and housed in appropriate centers.

(...) Research should be undertaken to compile a catalogue of methods and techniques used for conservation and for this purpose scientific institutions should be created and should co-operate closely with each other. This catalogue should be made readily available and distributed to everyone concerned, thus stimulating the reform of restoration and rehabilitation practices.

www.icomos.org/docs/amsterdam.html

1981. Historic Gardens (The Florence Charter)

ICOMOS-IFLA International Committee for Historic Gardens, Florence, 21 May 1981

(...) Article 15. No restoration work and, above all, no reconstruction work on a historic garden shall be undertaken without thorough prior research to ensure that such work is scientifically executed and which will involve everything from excavation to the assembling of records relating to the garden in question and to similar gardens. Before any practical work starts, a project must be prepared on the basis of said research and must be submitted to a group of experts for joint examination and approval.

www.international.icomos.org/charters/gardens_e.htm

1985. Appleton Charter for the Protection and Enhancement of the Built Environment (Appleton Charter)

ICOMOS-Canada

(...) D. Practice Documentation:

The better a resource is understood and interpreted, the better it will be protected and enhanced.

In order to properly understand and interpret a site, there must be a comprehensive investigation of all those qualities which invest a structure with significance. This activity must precede activity at the site. Work on site must itself be documented and recorded.
www.icomos.org/docs/appleton.html

1984. The Code of Ethics

ICOM-CC Triennial Meeting, Copenhagen, September 1984
(...) 3.4. The conservator-restorer must be aware of the documentary nature of an object. Each object contains—singly or combined—historic, stylistic, iconographic, technological, intellectual, aesthetic and/or spiritual messages and data. Encountering these during research and work on the object, the conservator-restorer should be sensitive to them, be able to recognize their nature, and be guided by them in the performance of his task.
3.5. Therefore, all interventions must be [preceded] by a methodical and scientific examination aimed at understanding the object in all its aspects, and the consequences of each manipulation must be fully considered. (...)
3.6. An intervention on an historic or artistic object must follow the sequence common to all scientific methodology: investigation of source, analysis, interpretation and synthesis. Only then can the completed treatment preserve the physical integrity of the object, and make its significance accessible. Most importantly, this approach enhances our ability to decipher the object's scientific message and thereby contribute new knowledge.
www.icom-cc.org/About/DefinitionOfProfession

1987. Charter for the Conservation of Historic Towns and Urban Areas (Washington Charter)

ICOMOS General Assembly, Washington, DC, October 1987
(...) Methods and Instruments
5. (...) Before any intervention, existing condition in the area should be thoroughly documented.
www.international.icomos.org/charters/towns_e.htm

1989. Charter of Lahore

(...) Article 5.10 Efforts must be made to fully document all cultural property. All interventions must be scientifically documented before, during and after carrying out the work and should aim at preserving historical and archeological evidence.
Electronic edition not available.

1990. Charter for the Protection and Management of the Archaeological Heritage

ICAHM (International Committee on Archaeological Heritage Management) 9th General Assembly, Lausanne, Switzerland, 1990
(...) Legislation and Economy
Article 3. (...) Legislation should in principle require full archaeological investigation and documentation in cases where the destruction of the archaeological heritage is authorized. (...)
(...) Survey
Article 4. (...) At the same time, inventories constitute primary resource databases for scientific study and research. The compilation of inventories should therefore be regarded as a continuous, dynamic process. It follows that inventories should comprise information at various levels of significance and reliability, since even superficial knowledge can form the starting point for protectional measures.
Investigation
Article 5. (...) As excavation always implies the necessity of making a selection of evidence to be documented and preserved at the cost of losing other information and possibly even the total destruction of the monument, a decision to excavate should only be taken after thorough consideration.
(...) A report conforming to an agreed standard should be made available to the scientific community and should be incorporated in the relevant inventory within a reasonable period after the conclusion of the excavation. (...)
(...) Maintenance and Conservation

Article 6. The overall objective of archaeological heritage management should be the preservation of monuments and sites in situ, including proper long-term conservation and curation of all related records and collections etc. (...)

(...) Presentation, Information, Reconstruction

Article 7. (...) Presentation and information should be conceived as a popular interpretation of the current state of knowledge, and it must therefore be revised frequently. It should take account of the multifaceted approaches to an understanding of the past.

www.international.icomos.org/charters/arch_e.htm

1993. Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites

ICOMOS 10th General Assembly, Colombo, Sri Lanka, 30 July–7 August 1993

(...) 5. Conservation works should only be entrusted to persons competent in these specialist activities. Education and training for conservation should produce from a range of professionals, conservationists who are able to:

- a. read a monument, ensemble or site and identify its emotional, cultural and use significance;
- b. understand the history and technology of monuments, ensembles or sites in order to define their identity, plan for their conservation, and interpret the results of this research;
- c. understand the setting of a monument, ensemble or site, their contents and surroundings, in relation to other buildings, gardens or landscapes;
- d. find and absorb all available sources of information relevant to the monument, ensemble or site being studied;
- e. understand and analyze the behavior of monuments, ensembles and sites as complex systems;
- f. diagnose intrinsic and extrinsic causes of decay as a basis for appropriate action;
- g. inspect and make reports intelligible to non-specialist readers of monuments, ensembles or sites, illustrated by graphic means such as sketches and photographs;

(...) l. document works executed and make same accessible;
(...) 17. Conservation depends upon documentation adequate for understanding of monuments, ensembles or sites and their respective settings. Each country should have an institute for research and archive for recording its cultural heritage and all conservation works related thereto. The course should work within the archive responsibilities identified at the national level.

www.icomos.org/docs/guidelines_for_education.html

1995. Charter for the Conservation of Places of Cultural Heritage Value

ICOMOS New Zealand

(...) 5. Conservation Practice

(...) Conservation projects should include the following:

i. definition of the cultural heritage value of the place, which requires prior researching of any documentary and oral history, a detailed examination of the place, and the recording of its physical condition;

(...) v. the documentation of any research, recording and conservation work, as it proceeds.

(...) 4. Conservation Method

Conservation should:

(...) v. be fully documented and recorded.

5. Respect for Existing Evidence

The evidence of time and the contributions of all periods should be respected in conservation. The material of a particular period may be obscured or removed if assessment shows that this would not diminish the cultural heritage value of the place. In these circumstances such material should be documented before it is obscured or removed.

(...) 12. Records

Records of the research and conservation of places of cultural heritage value should be placed in an appropriate archive.

Some knowledge of places of indigenous heritage value is not a matter of public record, but is entrusted to guardians within the indigenous community.

www.icomos.org/docs/nz_92charter.html

1994. The Nara Document on Authenticity

Appendix I

(...) 2. [5rd bullet] efforts to document clearly the particular nature of authenticity for monuments and sites as a practical guide to future treatment and monitoring[.]

www.international.icomos.org/charters/nara_e.htm

1994. AIC Code of Ethics and Guidelines for Practice

The American Institute for Conservation of Historic and Artistic Works

(...) 24. Documentation: The conservation professional has an obligation to produce and maintain accurate, complete, and permanent records of examination, sampling, scientific investigation and treatment. When appropriate, the records should be both written and pictorial. The kind and extent of documentation may vary according to the circumstances, the nature of the object, or whether an individual object or a collection is to be documented. The purposes of such documentation are:

- to establish the condition of cultural property;
- to aid the care of cultural property by providing information helpful to future treatment and by adding to the profession's body of knowledge;
- to aid the owner, custodian, or authorized agent and society as a whole in the appreciation and use of cultural property by increasing understanding of an object's aesthetic, conceptual, and physical characteristics; and
- to aid the conservation professional by providing a reference that can assist in the continued development of knowledge and by supplying records that can help avoid misunderstanding and unnecessary litigation.

25. Documentation of Examination: Before any intervention, the conservation professional should make a thorough examination of the cultural property and create appropriate records. These records and the reports derived from them must identify the cultural property and include the date of examination and the name of the examiner. They also should

include, as appropriate, a description of structure, materials, condition, and pertinent history.

26. Treatment Plan: Following examination and before treatment, the conservation professional should prepare a plan describing the course of treatment. This plan should also include the justification for and the objectives of treatment, alternative approaches, if feasible, and the potential risks. When appropriate, this plan should be submitted as a proposal to the owner, custodian, or authorized agent.

27. Documentation of Treatment: During treatment, the conservation professional should maintain dated documentation that includes a record or description of techniques or procedures involved, materials used and their composition, the nature and extent of all alterations, and any additional information revealed or otherwise ascertained. A report prepared from these records should summarize this information and provide, as necessary, recommendations for subsequent care.

28. Preservation of Documentation: Documentation is an invaluable part of the history of cultural property and should be produced and maintained in as permanent a manner as practicable. Copies of reports of examination and treatment must be given to the owner, custodian, or authorized agent, who should be advised of the importance of maintaining these materials with the cultural property. Documentation is also an important part of the profession's body of knowledge. The conservation professional should strive to preserve these records and give other professionals appropriate access to them, when access does not contravene agreements regarding confidentiality. (...)

aic.stanford.edu/pubs/ethics.html#seven

1995. Code of Ethics

Dutch Association of Professional Restorers

(...) 2.7 Reporting

The restorer must document his activities and the materials used in order to be able to consult the documentation in the future. At the request of the person commissioning the restoration the restorer shall make a detailed report recording

methods and materials; the making of this report will be charged on the normal hourly tariff. The treatment report should contain the following matters:

1. A description of the manner of treatment with precise details of the materials and methods used, including:
 - a) the manner in which materials and parts were removed;
 - b) the manner in which and the materials (specifying manufacturer and supplier) with which activities on the form and composition of the object were carried out, such as reinforcements, stabilizers and protection of the surface and structure.
2. Photographic documentation, with accompanying text, of:
 - a) the condition of the object before treatment;
 - b) the condition of the object during treatment, including, where appropriate, details;
 - c) condition after treatment and visual aids which are necessary to provide insight into the structure and construction of the object which, in the course of treatment, were revealed to be different than had previously been thought, or which confirmed existing hypotheses.

palimpsest.stanford.edu/byorg/veres/vereseth.html

1996. Principles for the Recording of Monuments, Groups of Buildings and Sites

ICOMOS 11th General Assembly, Sofia, Bulgaria, 5–9 October 1996

(These important guidelines, which were a key reference for the development of this book, are given in full length in appendix A.)

www.international.icomos.org/charters/recording_e.htm

1996. Charter on the Protection and Management of Underwater Cultural Heritage

ICOMOS 11th General Assembly, Sofia, Bulgaria, 5–9 October 1996

(...) Article 1 - Fundamental Principles

(...) Investigation must be accompanied by adequate documentation.

(...) Article 3 - Funding

Adequate funds must be assured in advance of investigation to complete all stages of the project design including conservation, report preparation and dissemination. The project design should include contingency plans that will ensure conservation of underwater cultural heritage and supporting documentation in the event of any interruption in anticipated funding.

Project funding must not require the sale of underwater cultural heritage or the use of any strategy that will cause underwater cultural heritage and supporting documentation to be irretrievably dispersed.

Article 4 - Time-table

Adequate time must be assured in advance of investigation to complete all stages of the project design including conservation, report preparation and dissemination. The project design should include contingency plans that will ensure conservation of underwater cultural heritage and supporting documentation in the event of any interruption in anticipated timings.

Article 5 - Research objectives, methodology and techniques

(...) Post-fieldwork analysis of artifacts and documentation is integral to all investigation; adequate provision for this analysis must be made in the project design.

(...) Article 8 - Documentation

All investigation must be thoroughly documented in accordance with current professional standards of archaeological documentation.

Documentation must provide a comprehensive record of the site, which includes the provenance of underwater cultural heritage moved or removed in the course of investigation, field notes, plans and drawings, photographs and records in other media.

(...) Article 12 - Reporting

Interim reports should be made available according to a timetable set out in the project design, and deposited in relevant public records.

Reports should include:

- an account of the objectives;
- an account of the methodology and techniques employed;
- an account of the results achieved;
- recommendations concerning future research, site management and curation of underwater cultural heritage removed during the investigation.

Article 13 - Curation

The project archive, which includes underwater cultural heritage removed during investigation and a copy of all supporting documentation, must be deposited in an institution that can provide for public access and permanent curation of the archive. Arrangements for deposition of the archive should be agreed [on] before investigation commences, and should be set out in the project design. The archive should be prepared in accordance with current professional standards. The scientific integrity of the project archive must be assured; deposition in a number of institutions must not preclude reassembly to allow further research. Underwater cultural heritage is not to be traded as items of commercial value.

Article 14 - Dissemination

(...) Collaboration with museums and other institutions is to be encouraged. Provision for visits, research and reports by collaborating institutions should be made in advance of investigation.

A final synthesis of the investigation must be made available as soon as possible, having regard to the complexity of the research, and deposited in relevant public records.

www.international.icomos.org/charters/underwater_e.htm

1999. International Cultural Tourism Charter (Managing Tourism at Places of Heritage Significance)

ICOMOS 12th General Assembly, Mexico, October 1999

(...) Principle 1

Since domestic and international tourism is among the foremost vehicles for cultural exchange, conservation should provide responsible and well managed opportunities for

members of the host community and visitors to experience and understand that community's heritage and culture at first hand.

1.1 The natural and cultural heritage is a material and spiritual resource, providing a narrative of historical development. It has an important role in modern life and should be made physically, intellectually and/or emotively accessible to the general public. Programs for the protection and conservation of the physical attributes, intangible aspects, contemporary cultural expressions and broad context, should facilitate an understanding and appreciation of the heritage significance by the host community and the visitor, in an equitable and affordable manner.

1.2 Individual aspects of natural and cultural heritage have differing levels of significance, some with universal values, others of national, regional or local importance. Interpretation programs should present that significance in a relevant and accessible manner to the host community and the visitor, with appropriate, stimulating and contemporary forms of education, media, technology and personal explanation of historical, environmental and cultural information.

1.3 Interpretation and presentation programs should facilitate and encourage the high level of public awareness and support necessary for the long term survival of the natural and cultural heritage.

1.4 Interpretation programs should present the significance of heritage places, traditions and cultural practices within the past experience and present diversities of the area and the host community, including that of minority cultural or linguistic groups. The visitor should always be informed of the differing cultural values that may be ascribed to a particular heritage resource.

www.international.icomos.org/charters/tourism_e.htm

1999. Charter on the Built Vernacular Heritage

ICOMOS 12th General Assembly, Mexico, October 1999

(...) Guidelines in Practice

1. Research and documentation

Any physical work on a vernacular structure should be cautious and should be preceded by a full analysis of its form and structure. This document should be lodged in a publicly accessible archive.

www.international.icomos.org/charters/vernacular_e.htm

1999. Principles for the Preservation of Historic Timber Structures

ICOMOS 12th General Assembly, Mexico, October 1999

(...) Inspection, Recording and Documentation

1. The condition of the structure and its components should be carefully recorded before any intervention, as well as all materials used in treatments, in accordance with Article 16 of the Venice Charter and the ICOMOS Principles for the Recording of Monuments, Groups of Buildings and Sites. All pertinent documentation, including characteristic samples of redundant materials or members removed from the structure, and information about relevant traditional skills and technologies, should be collected, catalogued, securely stored and made accessible as appropriate. The documentation should also include the specific reasons given for choice of materials and methods in the preservation work.

(...) Interventions

(...) 8. The aim of restoration is to conserve the historic structure and its loadbearing function and to reveal its cultural values by improving the legibility of its historical integrity, its earlier state and design within the limits of existing historic material evidence, as indicated in articles 9–13 of the Venice Charter. Removed members and other components of the historic structure should be catalogued, and characteristic samples kept in permanent storage as part of the documentation.

www.international.icomos.org/charters/wood_e.htm

1999. The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (revised version)

Australia ICOMOS

(...) Article 6. Burra Charter Process

6.1 The *cultural significance* of a *place* and other issues affecting its future are best understood by a sequence of collecting and analyzing information before making decisions. Understanding cultural significance comes first, then development of policy and finally management of the place in accordance with the policy.

(...) Article 26. Applying the Burra Charter process

26.1 Work on a *place* should be preceded by studies to understand the place which should include analysis of physical, documentary, oral and other evidence, drawing on appropriate knowledge, skills and disciplines.

(...) Article 27. Managing change

(...) 27.2 Existing *fabric, use, associations* and *meanings* should be adequately recorded before any changes are made to the *place*.

(...) Article 31. Documenting evidence and decisions

A log of new evidence and additional decisions should be kept.

Article 32. Records

32.1 The records associated with the *conservation* of a *place* should be placed in a permanent archive and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

32.2 Records about the history of a *place* should be protected and made publicly available, subject to requirements of security and privacy, and where this is culturally appropriate.

www.icomos.org/australia/burra.html

2000. Principles for the Conservation of Heritage Sites in China

The Getty Conservation Institute

(...) Article 6. Research is fundamental to every aspect of conservation. Each step in the conservation process should be based on the results of research.

Article 7. Verifiable records should be maintained and preserved. These comprise all forms of historic and contemporary documentation, including detailed records for each step of the conservation process.

(...) Article 10. The process of identification and investigation of heritage sites involves a large-scale general survey and inventory; an investigation of selected sites in greater depth; and a detailed investigation of the most significant sites. These investigations must examine all historic vestiges and traces and relevant documentation, as well as the immediate setting.

Article 11. The assessment process consists of determining the values of a site, its state of preservation, and its management context. Assessment includes analysis of historical records and on-site inspection of the existing condition. (...)

(...) Article 12. (...) All sites that have been proclaimed as protected entities are subject to four legal prerequisites: demarcation of the boundaries of the site; erection of a plaque declaring the site's status as an officially protected entity; creation of an archive for records; and designation of an organization or person dedicated to the management of the site. (...)

(...) Article 17. (...) Management is also responsible for continuing to improve the quality of exhibition and interpretation and for collecting and archiving relevant documents. (...)

(...) Article 21. (...) Detailed archival records of all restoration should be kept and there should be permanent signage indicating the date of intervention.

(...) Article 28. (...) All technical measures should be documented and archived.

(...) Article 29. (...) An appropriate maintenance program, which includes continuous monitoring of potential problems and archiving of records, must be established and carried out in accordance with the relevant standards.

(...) Article 31. (...) Detailed records should be kept of elements that were removed or added.

www.getty.edu/conservation/field_projects/china/china_publications.html

2000. Commentary on the Principles for the Conservation of Heritage Sites in China

The Getty Conservation Institute

(...) 2. On Heritage Sites

(...) 2.4.2 Heritage sites should be recorded in a register. (...)

5. On the Conservation Process

(...) 5.2.5 On completion of a conservation procedure an archive of files documenting the work should be established.

(...) 5.3.1 Identification and investigation of historic places is the most basic work of the conservation process. This is divided into a general survey and inventory of all historic sites, an in-depth investigation of selected sites, a detailed investigation of specific sites, and a thematic investigation. The extent of investigation, standardized recording formats to be employed, and the topographical and cross-sectional drawings to be collected or made will all depend on the requirements of each stage. (...)

(...) 6. On Archival Records

6.1 Archival records are an important bearer of the values of sites. As a medium for passing on historical information, authentic and detailed records and documents have importance equal to that of the physical remains of a site. Archival records have the following uses in conservation work.

6.1.1 When carrying out an assessment of values, archival records are important for dating changes to a site and determining the period of its physical remains.

6.1.2 When drawing up a conservation master plan, records are important reference material for understanding the site's historic condition, its archaeological remains, changes to its setting, and its management context.

6.1.3 When designing plans for conservation intervention, archival material provides a basis for understanding the reasons for the existing condition of the fabric. Relevant archival material should be submitted with the final conservation plan.

6.1.4 In the context of management, archives may provide the necessary evidence to resolve disputes over boundaries, ownership rights, economic matters, and appropriate use. At the same time, they can assist in resolving debate over development versus conservation priorities.

6.2 Archival records should be collected, collated, and stored in accordance with the relevant national laws on archives.

However, for heritage sites, there must be at least five categories of records, namely:

- i. Compilations of historical documents.
- ii. Survey reports on the existing condition of the site.
- iii. Files on conservation interventions.
- iv. Records on monitoring and inspection of the site.
- v. Records on the management of public access to the site.

6.2.1 Requirements for the collection of historical documents are as follows:

- i. Historical texts provide evidence and therefore should be collected; duplication of content is not undesirable, but abridgment of documents is not permitted.
- ii. Historical records should not be judged solely on the basis of present criteria of authenticity, nor should current understanding alone be used to distinguish between what is genuine and what is false.
- iii. Great care should be taken in the interpretation and annotation of historical texts. Only technical annotations should be made and not value judgments about what is correct or wrong.

6.2.2 Survey reports on the existing condition of a site should include:

- i. A report on the environment, including meteorological, hydrological, geological, and topographical information as well as material on pollution sources, the state of the ecology, distribution of vegetation cover, and any animal activity in the area.
- ii. All records of investigation into the site, no matter how brief.
- iii. All evidence and deliberative material used to authenticate the site's historic and existing condition.
- iv. Results of examination of the condition before each conservation intervention, with focus on analysis of the stability of the structure and materials, and conclusions drawn from surveys of major damage to the site.
- v. Registers of associated contents.
- vi. Precise scaled topographical maps of the setting, plans of the overall site, and elevation and cross-sectional drawings.
- vii. Photographs, video recordings, and other audiovisual materials.

6.2.3 Documentation of major conservation interventions should primarily satisfy the requirements of the central government regarding construction and engineering projects. At the same time, in accordance with the special requirements of heritage conservation, the following relevant material should be added:

- i. A survey report of the existing condition.
- ii. A research and assessment report.
- iii. An evaluation report on the proposed plan.
- iv. Records of repairs, replacements, additions, and removals.
- v. Records of special artisan skills or construction methods.
- vi. Reports of experiments conducted on-site or in laboratories.
- vii. Photographs, video recordings, and other audiovisual materials.

6.2.4 Inspection and monitoring records should include:

- i. Instrumental monitoring records and routine records of visual inspection of parts of a site that are liable to move, be damaged, or become deformed or cracked.
- ii. Records of regular inspections of safety equipment such as fire-fighting equipment, lightning rods, flood prevention facilities, and of techniques used to stabilize slopes.
- iii. Observation records on the effects of visitors and other social factors on a site and its setting.
- iv. Monitoring records on environmental quality.

6.2.5 Records on visitor management include:

- i. Statistics on the composition of visitors (age, level of education, and profession) and visitor frequency.
- ii. Compilations and analyses, by each visitor category, of visitor comments and reactions to the site.
- iii. Records of discussions and research undertaken by scholars at the site, as well as relevant literature that pertains to the site.
- iv. Investigative analyses of the social factors influencing conservation.
- v. Analyses of economic benefits.

7. On the System of Management

(...) 7.1.2 Site-level management organizations are the direct managers of sites and must undertake the basic functions of conservation such as routine maintenance, monitoring and recording, and disaster prevention. (...)

(...) 7.2 Every step of the conservation process must be documented for future reference and, if required, for purposes of approval by the relevant government department.

7.2.1 The report on conservation matters at a heritage site should be kept for future reference and, if required, reviewed and approved by the relevant government department.

(...) 7.4.3 The committee of experts should draw up standardized rules of procedure. Appraisal meetings should be recorded in detail, and, as far as possible, the final decision should be arrived at through consensus. It is permissible to hold differing opinions and to record these in the proceedings, and in general, simple majority opinion should not necessarily prevail in approving items.

(...) 8. On Assessment

(...) 8.1.2 Assessment is concerned with the physical remains of a site and its associated setting. When the historic condition no longer exists, archival research should focus on any surviving physical remains.

8.1.3 Assessment must draw clear conclusions. Conclusions must not be reached prior to obtaining sufficient documentation and the results of thorough research and investigation. Under circumstances where alternative hypotheses can be put forward, these should become the focus of further investigation. The final conclusion must be qualitatively accurate and expressed in a standardized format. In quantitative terms there must be a commonly accepted framework of reference that allows a relative degree of comparability.

(...) 9. On the Conservation Master Plan

(...) 9.1.3 Documentation of the conservation master plan should conform to official standards. The main topics and conclusions should be clear and concise. The content should be ordered clearly, and there should be ample supplementary material. Diagrams and drawings should be properly scaled. Photographs should be dated. Documentation that consists

only of a written description, rough sketches, or artistic renderings is not considered sufficient. All source texts should be accurately referenced.

(...) 10. On Routine Management, Maintenance, and Interpretation

(...) 10.1.3 The third duty is to collect material, to record all conservation-related matters, to organize archival records, and to conduct research on any conservation questions that may emerge.

(...) 11. On Physical Protection and Strengthening

(...) 11.2.3 All testing and applications of protective substances must be subject to appropriate scientific evaluation and periodic monitoring reports written.

(...) 12. On Minor and Major Restoration

(...) 12.3.4 In principle, remaining vestiges and traces of fabric or components from different periods should be retained. If these cannot be retained in total, those of most significance should be preserved. Samples should be kept of elements that are removed, and their removal should be recorded in the site archives.

(...) 13. On Relocation and Reconstruction

(...) 13.1.3 All documentation on historic condition must be collected and retained, and detailed records must be made of the entire relocation or reconstruction process.

www.getty.edu/conservation/field_projects/china/china_publications.html

2002. Professional Guidelines

E.C.C.O. (European Confederation of Conservators' Organizations)

(...) 1. Definition of the conservator-restorer

Documentation consists of the accurate pictorial and written record of all procedures carried out, and the rationale behind them. A copy of the report must be submitted to the owner or custodian of the cultural heritage and must remain accessible. Any further requirements for the storage, maintenance, display or access to the cultural property should be specified in this document.

www.ecco-eu.org/about-e.c.c.o./professional-guidelines.html

2003. Standards and Guidelines for the Conservation of Historic Places in Canada

[In the Introduction, the following general statement is made:]

How to Use the Standards and Guidelines

(...) 4. Follow the Guidelines for the Appropriate Resource Type and Treatment

A thorough understanding of a historic place and its components is essential to good conservation practice. The better the understanding, the more likely heritage value will be respected. The Guidelines therefore always recommend documenting, identifying, surveying and analyzing the form, materials and condition (and function and interrelationships, where applicable) of the historic place and its components before the project work begins.

[In Standards and Guidelines for the Conservation of Historic Places in Canada, structured according to different heritage types, detailed recommendations are given. In this document, only one example of *buildings* is given. In the case of buildings, the following details should be documented/surveyed prior to beginning project work:]

Exterior Wood

(...) the form, type and color of coatings such as paint; and the condition of exterior wood features (...)

Exterior Masonry

(...) the form, materials and condition of masonry elements (...)

Architectural Metals

(...) the form, materials and condition of architectural metal elements (...). It is critical to differentiate between metals prior to project work, since each metal has unique properties and thus requires a different treatment.

www.pc.gc.ca/docs/pc/guide/nldclpc-sgchpc/index_E.asp

2003. Principles for the Analysis, Conservation and Structural Restoration of Architectural Heritage

ICOMOS 14th General Assembly, Victoria Falls, Zimbabwe, October 2003

(...) 1. General criteria

(...) 1.6 The peculiarity of heritage structures, with their complex history, requires the organization of studies and proposals in precise steps that are similar to those used in medicine. Anamnesis, diagnosis, therapy and controls, corresponding respectively to the searches for significant data and information, individuation of the causes of damage and decay, choice of the remedial measures and control of the efficiency of the interventions. In order to achieve cost effectiveness and minimal impact on architectural heritage using funds available in a rational way; it is usually necessary that the study repeats these steps in an iterative process.

(...) 2. Researches and diagnosis

(...) 2.2 Data and information should first be processed approximately, to establish a more comprehensive plan of activities in proportion to the real problems of the structures.

2.3 A full understanding of the structural and material characteristics is required in conservation practice. Information is essential on the structure in its original and earlier states, on the techniques that were used in the construction, on the alterations and their effects, on the phenomena that have occurred, and, finally, on its present state.

(...) 3. Remedial measures and controls

(...) 3.22 All the activities of checking and monitoring should be documented and kept as part of the history of the structure. www.international.icomos.org/charters/structures_e.htm

2003. Principles for the Preservation and Conservation/Restoration of Wall Paintings

ICOMOS 14th General Assembly, Victoria Falls, Zimbabwe, October 2003

(...) Article 1: Protection Policy

A necessary approach to the protection of wall paintings of every culture and religion is to list and make inventories of monuments and sites including wall paintings, even in cases when they are not presently visible. (...)

(...) Article 3: Documentation

In agreement with the Venice Charter, the conservation-restoration of wall paintings must be accompanied by a precise program of documentation in the form of an analytical

and critical report, illustrated with drawings, copies, photographs, mapping, etc. The condition of the paintings, the technical and formal features pertaining to the process of the creation and the history of the object must be recorded. Furthermore, every stage of the conservation-restoration, materials and methodology used should be documented. This report should be placed in the archives of a public institution and made available to the interested public. Copies of such documentation should also be kept in situ, or in the possession of those responsible for the monument. It is also recommended that the results of the work should be published. This documentation should consider definable units of area in terms of such investigations, diagnosis and treatment. Traditional methods of written and graphic documentation can be supplemented by digital methods. However, regardless of the technique, the permanence of the records and the future availability of the documentation is of utmost importance.
www.international.icomos.org/charters/wallpaintings_e.htm

2005. Operational Guidelines for the Implementation of the World Heritage Convention

UNESCO Intergovernmental Committee for the Protection of the World Cultural and Natural Heritage (World Heritage Committee), 2 February 2005

III.B Format and content of nominations

129. Nominations of properties for inscription on the World Heritage List should be prepared in accordance with the format set out in Annex 5.

130. The format includes the following sections:

1. Identification of the Property
2. Description of the Property
3. Justification for Inscription
4. State of conservation and factors affecting the property
5. Protection and Management
6. Monitoring
7. Documentation
8. Contact Information of responsible authorities
9. Signature on behalf of the State Party(ies)

whc.unesco.org/en/guidelines/

Part 1: General Terms

Note: Except as otherwise stated, the definitions are those of the authors.

Analysis The interpretation of research and investigation results to improve understanding of cultural heritage places. *See also:* assessment

Assessment The formulation of general results through the correlation and interpretation of existing and newly collected information. *See also:* analysis

Conservation A discipline concerned with the transmission of cultural heritage, with its significant values intact and accessible to the greatest degree possible. *See also:* conservation process, conservation professionals

Conservation process The informed decision-making process, which ensures that conservation at all levels will respect the values and significance of the cultural heritage place. *See also:* conservation, conservation professionals

Conservation professionals Those who, whatever their profession, trade, or discipline of origin (art historians, architects, archaeologists, conservators, planners), engage in the practice of conservation and are committed to the application of the highest principles and standards of the field.

Cultural heritage place (or heritage place, heritage asset) Used in this book to refer to immovable cultural heritage, such as archaeological sites, single monuments, groups of buildings, historic towns, or cultural landscapes.

Documentation The already existing stock of information. As an activity, it stands for the systematic collection and archiving of records in order to preserve them for future reference. *See also:* heritage information, heritage recording, information management, recording

Heritage information The integrated activities of recording, documentation, and information management. *See also:* documentation, heritage recording, information management, recording

Heritage recorder An expert in measured survey and photographic techniques who provides heritage records of heritage places. *See also:* project information specialist

Heritage recording The graphic and/or photographic capturing of information describing the physical configuration, evolution, and condition of a heritage place at known points in time. *See also:* digital heritage recording, graphic record, measured drawing, measured survey, recording

Information management The process of finding, cataloguing, storing, and sharing information by making it accessible to potential users now and in the future. *See also:* documentation, heritage information, heritage recording, recording

Information units Partial information (or records) produced by individuals at different stages during a conservation process. It refers to the output of both conservation professionals and heritage recorders. *See also:* complete record, graphic record, heritage record, heritage recording, scientific record

Project information specialist An expert in all aspects of heritage information (recording, documentation, and information management). This new profession developed from the trade and computer skills of heritage recorders. Project information specialists produce heritage records and provide information management assistance, responding to project needs and requirements as defined by conservation professionals. They are trained to make sure that heritage information is an integral part of the conservation process and that information is correctly recorded, catalogued, stored, and shared. *See also:* heritage record, heritage recording, heritage recorder

Record The product of recording. *See also:* as-built record, as-found record, complete record, graphic record, heritage record, information units, research/investigation record, scientific record

Recording Used in this publication in a broad sense to refer to the acquisition of new information deriving from all activities on a heritage asset, including heritage recording, research and investigation, conservation, use and management, and maintenance and monitoring. *See also:* complete record, heritage record, heritage recording, information units, record, scientific record

Research and investigation A variety of activities aimed at the acquisition of information of all kinds pertinent to increasing knowledge of a cultural heritage place. While research relates to off-site surveys (e.g., archival research), investigation relates to the direct acquisition of information from the heritage place as a primary source. Recording is an essential component of research and investigation at each step and at each level of the conservation process.

Part 2: Technical Terms

Accuracy The degree to which the results of heritage recording conforms to the metric value of an object. Accuracy relates to the topographic quality of the graphic record, and the scale and precision of the recording technique used. *See also:* scale

As-built record A record consisting of updated conservation design drawings and related reports that include modifications made during the conservation activity. *See also:* as-found record, complete record, heritage record, record, scientific record

As-found record A detailed record of the as-found nature and condition of a cultural heritage place, that is, before any planned change is implemented. *See also:* as-built record, complete record, heritage record, record, scientific record

Base map (or base drawing) A scaled graphic (or photographic) record of the physical configuration of the heritage asset. Used by conservation professionals to graphically record (or map) investigation and treatment data. *See also:* graphic record

Complete record The correlation and integration of the heritage record and the scientific record, which should facilitate a full understanding of all relevant issues pertaining to a cultural heritage place. *See also:* graphic record, heritage record, heritage recording, information units, scientific record

Digital heritage recording As opposed to hand (or traditional) heritage recording, this type of recording includes all forms of digital data capture, ranging from photographs to rectified images, CAD to photogrammetry, total stations to 3-D laser scanning, and voice to video. *See also:* heritage recording, recording

Graphic record A measured drawing, rectified photograph, ortho-photo-mosaic or 3-D model that graphically or photographically describes the physical configuration of a heritage place, along with its dimensional and architectural characteristics. *See also:* complete record, heritage record, heritage recording, information units, scientific record

Heritage record A technical dossier of a cultural heritage place, prepared by heritage recorders and consisting of measured drawings, photographs, and technical analysis. It provides necessary basic data for conservation and monitoring activities, as well as posterity records for public archives. *See also:* complete record, graphic record, project information specialist, heritage recorder, heritage recording, scientific record, technical analysis

Heritage recording tools Measured survey tools used by heritage recorders to carry out the heritage recording of a heritage place.

Measured drawing A drawing produced by using direct or indirect measurements on the object. *See also:* heritage recording, graphic record, measured survey

Measured survey The activity of producing measured drawings on site by hand measurement and/or by using various heritage recording tools (total stations, photogrammetry, 3-D laser scanners). *See also:* heritage recording, graphic record, measured drawing

Monitoring The repeated measurement of changes based on defined standards, which allow the evaluation of changes occurring on a heritage asset.

Photogrammetric survey A survey that produces heritage records by means of photogrammetry.

Photo report A report that primarily contains photos of a cultural heritage place, together with a photo-key plan that shows where and in what direction each photo was taken. These reports complement the understanding of the information provided on a set of measured drawings.

Posterity record A complete record of a heritage place, it becomes of inestimable value in the event of catastrophic loss, demolition, or heavy alteration of the asset. *See also:* complete record, heritage record, scientific record

Project dossier A tool that contains all information pertinent to a project. In conservation practice, a project dossier would contain any or all of the following documents: decision-making correspondence, field notes and sketches, photographs and negatives (with annotations), drawings and maps (historic or new), and project reports. An Integrated Project Dossier is one of the tools of the Project Information Container proposed in this publication. *See also:* Project Information Container, Project ID Sheet

Project ID Sheet Generic information about a heritage place, including asset name, number, address, name of the project manager, e-mail and/or Web site address, and lists of institutions and conservation specialists who have worked on and can provide information about the asset. *See also:* project dossier, Project Information Container

Project Information Container (PIC) An information management approach described in this book. A hypertext database or Web page provides the project manager and team members with a framework template (or table of contents) for the production and management of information units produced during the activities of a project. The PIC is composed of two parts: the Project ID Sheet and the Integrated Project Dossier. *See also:* information units, project dossier, Project ID Sheet

Research/investigation record A record produced or compiled by conservation professionals at different stages of the conservation process. Eventually, the correlation and interpretation of these information units will form the scientific record of a conservation project or a cultural heritage place. *See also:* complete record, heritage record, scientific record

Scale A ratio of the size of a drawing, photograph, or recorded image to the actual physical size of the subject. A large scale yields higher accuracy and finer detail. *See also:* accuracy

Scientific record The output of research, investigation, and conservation activities consisting of research/investigation records provided by different conservation professionals. After going through the process of interpretation and selection, the correlation of all relevant research/investigation records provides a complete picture of the current scientific knowledge about a cultural heritage place. *See also:* complete record, heritage record, information units, research/investigation record

Spatial data Information on the location, shape, and relationships among geographic features, usually stored as coordinates and topology.

Technical analysis Activity undertaken by heritage recorders to provide conservation professionals with accurate and objective descriptions of the design, construction, materials, and condition of cultural heritage places. *See also:* complete record, heritage record, scientific record

Part 3: Tool-Related Terms

Many of the terms in this section are taken from examples in the companion volume, Recording, Documentation, and Information Management for the Conservation of Heritage Places: Illustrated Examples. Specific examples are noted where applicable.

Aerial photography An efficient and effective means of quickly documenting the condition of a large site or a number of sites. Aerial photographs cover many relevant matters and, if sufficiently detailed, can serve as a substitute for conventional mapping and monitoring purposes. There are two general sources of aerial photography: archival research and commissioning flights. Archival research is a cost-effective means of acquiring images of a site, as these images were taken for other reasons, such as road engineering or national topographic mapping programs. Flights may be commissioned for obtaining aerial images, which can be vertical (straight down) or oblique (at an angle). Professional companies usually take vertical images by using expensive, extra-large-format film or digital cameras mounted in the belly of medium-size airplanes. *(In “Inspecting Sites,” by Kevin L. Jones)*

Automated monitoring systems These systems contain a large number of different sensors and devices that collect various data measurements. They include, but are not limited to, inclinometers to measure the degree of inclination; levelometers to measure differential settlement; weather stations to measure wind speed and direction as well as ambient temperature; and strain gauges to measure crack propagation. Usually these devices are connected to computers to provide continuous data to engineers. *(In “Monitoring Movement,” by Giorgio Croci)*

Computer-Aided Design and Drafting (CAD) A software by which measurements, data, and images from multiple tools and methods can be combined. CAD is flexible enough to allow the user to produce quick, basic sketches as well as drawings of great precision and detail. Serving as a common

platform for printing and sharing data among specialists, CAD images can be imported and data added manually or input directly from survey instruments. Data can be displayed in different ways, including two-dimensional orthographic projections or three-dimensional isometric, or perspective, views. Information can be divided using multiple layers, or views, which can then be recombined in various ways. *(In “Building Survey,” by Christian Ouimet)*

Computer modeling A software that processes XYZ coordinate points and builds up meshes that can be formed into different shapes to represent building or site elements. Images of the actual physical elements are then “draped,” or projected, over the surface of these meshes. The finished images can be displayed and rotated on the computer to be viewed from different perspectives. *(In “Virtual Solutions,” by José Luis Lerma and Carmen Pérez)*

Database A collection of various types of data, including photographic images, sketches and measurements, condition assessments, and other pieces of information, stored in a systematic way for security and easy retrieval. Individual records or data are separated into sets, themes, and fields, with unique identifiers to allow data to be linked together and queried. Databases can connect separate “pieces” of information together, allowing new information to be derived. *(In “Ancestral Art,” by Cliff Ogleby)*

Extranet A controlled-access network of computers shared among different organizations, external to any one organization. The networks can be completely private or built on the Internet, and are used for information sharing. *See also:* Internet, Intranet

Geographic Information System (GIS) An effective descriptive, analytical, and communication tool to map and assess sites and prioritize necessary work. A GIS is a geographic database that combines spatial information in graphic form with tabular data. *(In “Planning Interventions,” by Frank Matero and Judy Peters)*

Global Positioning System (GPS) A navigation and mapping tool that uses special equipment to receive radio signals transmitted from a network of twenty-four satellites that circle the earth twice a day in precise orbits. GPS allows the rapid acquisition of detailed and comprehensive data with pinpoint accuracy. There are two general categories of GPS radio receivers ranging in accuracy. For these two categories, accuracy can be improved to several centimeters with a differential signal, which is a ground-based radio station or transmitter. This base station transmits signals that supplement the signals from the satellites. Non-survey grade or handheld GPS devices, in contrast, usually are not corrected by a ground-based station and range between 5 and 15 meters in accuracy. (In “Mapping Features,” by Jo Anne Van Tilburg, Cristián Arévalo Pakarati, and Alice Hom)

Ground-penetrating radar (GPR) A nondestructive technique that uses electromagnetic waves to investigate the underground or internal structures of natural or man-made objects. The technique has been used successfully in investigating the characteristics of and damage to walls and masonry structures, including voids, detachments, cracks, leaks, and deteriorated mortar joints. GPR has good accuracy and is easily handled and transported. The basic system consists of a data acquisition unit and two (transmitting and receiving) antennae. The transmitter sends pulses of high-frequency radio waves. When a wave hits the boundary of an object with different electrical properties, the receiving antenna records these variations—known as anomalies—that are reflected in the return signal. (In “Subsurface Conditions,” by Marco Tallini)

HTML (hypertext markup language) A computer language used to communicate and create documents on the World Wide Web.

Hyperlink A connection between one page of a hypertext document and another, activated with a mouse click.

Infrared reflectography (IRR) A nondestructive digital or photographic imaging technique that uses a specialized digital detector or heat-sensitive film to capture absorption and emission characteristics of reflected infrared radiation between 750 and 2000 nanometers. IRR is simple, quick, and effective in investigating surface conditions by detecting original faded or hidden drawings, and in penetrating through the upper layers of overpainted surfaces. (In “Reading Interventions,” by Soon-Kwan Kim)

Internet A worldwide open public network of computers. Access is usually available to anyone with a computer and telecommunication equipment. It makes use of a set of protocols called TCP/IP (transmission-control protocol/Internet protocol). *See also:* Extranet, Intranet

Intranet A closed private network of computers, usually within one organization. It differs from the Internet, which is open to the public, and an Extranet, which is a closed private portion of the Internet. *See also:* Extranet, Internet

Laser scanning technologies These technologies are generally based on one of three methods: (1) time of flight—a laser pulse is emitted, and the time of light travel is measured; (2) phase comparison—light is emitted at a known frequency, and the shift between sending and returning phases is compared; and (3) triangulation—with a known width between a laser emitter and detector, the angles of sent and returned light provide the distance, using the Pythagorean theorem.

Using these technologies, XYZ coordinates are recorded as millions of individual points. At high densities, these individual measures form a “point cloud,” from which a mesh can be generated to create a 3-D model. (In “A Record for Posterity,” by Alonzo Addison)

Manual recording techniques Although often labor intensive, these techniques use tools that are readily available and allow the study of buildings or sites in great detail. Usually this method of recording provides sufficient information and accuracy to begin conservation. Manual recording

techniques incorporate tools such as plumb bobs, measuring tapes, and paper and pencil. (In *“Wall Deformation,”* by Sandeep Sikka)

Open-source software A computer program whose source code may be used, modified, or altered. Developers of proprietary software usually do not allow modification by others. Open-source software is developed as a public collaboration and made freely available.

Photogrammetry A survey technique in which a two-dimensional or three-dimensional object may be measured from photographs taken from two or more slightly different positions. These are called stereographs, and they provide the viewer with two different perspectives of the same object that mimic the perspective of human binocular vision. Measurements are extracted from the stereographs, and 3-D information is reconstructed using computer software and hardware. (In *“Structural Assessment,”* by Gorun Arun)

Rectified photography A technique based on the concept of bringing the surface of an object—a building facade, for example—and the plane of the image (photograph) into a parallel condition. Rectification removes perspective angle and camera lens distortion and creates a measurable image that is geometrically in proportion with the surface of the facade. It is quick and inexpensive, requires minimal training, and demands no high-tech equipment. Image rectification can be carried out with or without measurement control points on the object, with slight variations in accuracy and reliability. Control points can be measured using a tape measure or, preferably, survey instruments (total station). (In *“Recording Streetscapes,”* by Salim Elwazani and José Luis Lerma)

Remote sensing A method that broadly refers to capturing imagery from a distance, usually from satellites, but can also refer to aerial photography. *See also:* aerial photography

Sketch diagrams Investigative and interpretive drawing tools that combine various methods of recording to understand a site, building, or object. A sketch diagram represents the relationships between elements in order to understand

how they interact. It also facilitates communication with others about these key elements. (In *“Rapid Assessment,”* by Anthony Crosby)

Total station theodolite A standard survey device that consists of a powerful telescope mounted on a base that rotates both horizontally and vertically. An operator can locate points by measuring distances through an electronic distance measurement (EDM) device as well as horizontal and vertical angles. Trigonometric calculations are performed by the onboard computer, combining the horizontal and vertical angles with the distance measurement to determine an XYZ coordinate. A series of points can be combined to form lines and planes, thus representing the object being recorded. (In *“Defining Cultural Landscapes,”* by Geofree Chikwanda)

URL (uniform resource locator) The address of a document or Web site on the Internet. A URL contains the protocol, domain name, subdirectory, and file names.

Video technology An electronic tool used to capture and process a large number of images and sounds in sequence, making it the ideal tool for recording motion and detailed processes. Video is also referred to as the technology used to edit and transmit images and sound. (In *“Traditional Techniques,”* by Caterina Borelli)

This bibliography presents a number of theme-related books and articles published internationally over the past twenty years. These publications, together with the main doctrinal texts applying to the recording, documentation, and information management of cultural heritage places (see appendix H), were instrumental to the development of this book. The research was mainly into the English, German, and Italian literature, and the authors are aware that some important references, especially in languages other than those of the literature, may have been left out.

The main criterion for selection was that the issue of recording, documentation, and information management of cultural heritage places is approached in a more general, methodological, and conceptual manner. This involved the exclusion of primarily technical and tools-related literature, which appears to be the principal focus of most publications in the field.

In addition to bibliographic information, all selected entries include an abstract in English to provide a “feel” for the contents, especially those relating to the topic of this book, without presuming to provide a concise summary. Where available and considered to be adequate, an existing abstract is used.

This annotated bibliography is divided into five sections. The first three are (A) Recording and Documentation, (B) Information Systems and Inventories, and (C) Preservation of Records and Archiving. Section D lists important international meetings, the proceedings of which contain a wealth of additional information on different methodological, technical, and case-specific topics. For this section, no abstracts are provided for single contributions. The final section, section E, is a list of ICOMOS-CIPA symposia.

This annotated bibliography is included in a searchable database located on the Getty Web site at gcibibs.getty.edu/asp/.

Section A: Recording and Documentation

Aims and Techniques of Recording Instead of Conservation

1978, 5 pages

Author: Keith A. Falconer

In: The Industrial Heritage. The Third International Conference on the Conservation of Industrial Monuments. Sweden, 30 May–5 June 1978. Transactions 3, pp. 47–52

Publisher: Nordiska museet, Stockholm

Language: English

This paper draws the attention to the need of recording the rapidly disappearing industrial heritage, through written description, oral recording, photography, and surveying and drawing, particularly when conservation will not occur and the building itself will be lost. It gives examples of survey methods in use in several countries, with evaluations and suggestions for improved surveys.

(Abstract reprinted courtesy of Keith Falconer)

Building Archaeology

2002, 91 pages

Author: Manfred Schuller

In: ICOMOS Monuments and Sites, 7

Publisher: Lipp, Munich

Language: English

ISBN: 3-87490-677-9

A historical background and definition of building archaeology is given in this publication. The work that is in direct contact with the object is crucial. In this regard, manual measured drawings have a clear advantage compared to mechanized methods such as photogrammetry or laser scanning. An essential first step is the creation of accurate and reliable plans. The correlation of measured drawings with stratigraphic survey data clarifies most questions.

Dating relies on stylistic elements, datable construction techniques, and written sources. Dendrochronology is a precise method for the dating of wooden parts. Carbon 14 and thermoluminescence have only limited applications. Facts that do not fit and issues that were not understood must be documented as well. A building archaeological survey is a prerequisite for any conservation intervention. It absorbs about 2.5 percent of the total conservation costs. Building archaeologists should also participate in the implementation phase. Publication of results is compulsory.

Computers in Conservation

1996, 62 pages

Editors: Diana S. Waite; Robin Letellier (guest ed.)

In: APT Bulletin, Special Issue, vol. 26, no. 1

Publisher: Association for Preservation Technology

Language: English

ISSN: 00449466

This special issue of the APT Bulletin introduces a regular column that explores the possibilities of computer-based technology in the field of building technology and historic preservation, called computer forum. The issue presents twelve contributions, evaluating computer-aided applications in recording, surveying, and managing historic structures and sites.

Damage Index for Stone Monuments

2002, 11 pages

Authors: Bernd Fitzner, Kurt Heinrichs, and Dennis La Bouchardiere

In: Protection and Conservation of the Cultural Heritage of the Mediterranean Cities: Proceedings of the 5th International Symposium, Seville, Spain, 5–8 April 2000 / Galán, Emilio (ed.); Zezza, Fulvio (ed.); pp. 315–26

Publisher: A.A. Balkema, Lisse

Language: English

ISBN: 90-5809-253-4

Precise diagnosis is required for characterization, interpretation, rating, and prediction of the weathering damages on stone monuments and is vital for remedy of stone damages and sustainable monument preservation. Quantitative rating of damages represents an important scientific contribution to reliable damage diagnosis at stone monuments. Damage indices, derived from the graphic recording of decay phenomena, are introduced as a new tool for scientific quantification and rating of stone decay.

Application of damage indices improves stone damage diagnosis and is suitable for evaluation and certification of preservation measures and for long-term survey and maintenance of stone monuments. Importance and use of damage indices are presented for monuments in Germany, Malta, Jordan, Egypt, and Brazil.

Denkmalpflege und Bauforschung: Aufgaben, Ziele, Methoden

2000, 223 pages

Authors: Hannes Eckert, Joachim Kleinmanns, and Holger Reimers

Publisher: Universität Karlsruhe. Sonderforschungsbereich 315. Karlsruhe, Germany

Language: German

ISBN: 3-934540-03-1

This comprehensive manual for the study and conservation of built heritage is the result of a research program carried out by the University of Karlsruhe. The first part is dedicated to heritage philosophy, historical development of concepts, and legal aspects of monuments care. The scope and principles of inventories is discussed. A distinction is made between “lists” that contain only a short description of the exterior and “scientific inventories” that involve archival research and intense building archaeology. Lost monuments should be listed if reliable information exists.

The second part gives a detailed step-by-step methodology for building archaeology. It discusses in detail the evaluation of existing written and visual information, visual analysis and

graphic representation, manual and mechanized measuring systems, stratigraphic survey and scientific examination, interpretation of investigation results, and the communication of the building as a historical testimony.

The purposes of architectural drawings are to fix the as-found condition, to describe spatial-constructive relationships, and to provide plans and maps for further investigation and building works. The last part discusses a number of guiding principles and concepts for the definition of conservation approaches.

La Dichiarazione sul Rilevamento Architettonico

2002, 2 pages

Editor: Cesare Cundari

In: *Quaestio: Studi e Ricerche per il Disegno e la Documentazione dei Beni Culturali*, Anno 3, N. 3-4, 2002, pp. 21-22 (Italian), 83-84 (Spanish)

Language: Italian and Spanish

This framework document, developed by a research group of documentation specialists, conservation architects, and other heritage professionals from Italy, Spain, and France, was approved during the Architectural Survey in Heritage Conservation, a conference held in Rome on 16-18 November 2000. The declaration gives a broad definition of architectural survey, including all research and other activities concerning the identification of significant morphological, dimensional, figurative, and technological qualities of a building or an urban ensemble.

Architectural survey provides a better understanding of the examined heritage in terms of values, condition, and relationship to the urban context. The aim is the creation of a simplified 3-D model that enables the analysis of the heritage and facilitates the interpretation of transformation phases and other findings. Like all research activities, architectural survey needs careful project design. The outputs are not only graphic representations and related elaborates but also photographs, archival documentation, and so forth. In order

to be verifiable, all recording operations must be documented as well. The choice of methodologies depends on case-specific factors.

Often, an integration of different techniques is necessary. Information technology permits dialogue between data produced by using different methodologies and the creation of management information systems. Architectural survey operations are visualized by means of a graphically represented, simplified spatial model consisting of one or more representation planes and with an adequate scale.

To structure huge quantities of information, different scales and a hierarchic procedure are necessary. Quality control and the development of contract specifications regarding methodology, scales, graphic conventions, and acceptable tolerance are required. The publication also contains the preliminary document of 1999, which gives a more detailed definition of aims, expected outcomes, contents, and technical requirements of architectural survey and is considered complementary to the declaration.

Documentation as a Management Tool: Planning for Conservation

1996, 8 pages

Author: Scott Cunliffe

In: *Vestiges archéologiques: La conservation in situ. Actes du deuxième colloque international de l'ICAHM, Montréal (Québec), Canada, 11-15 octobre 1994 / ICOMOS, Comité international de gestion du patrimoine archéologique (ICAHM), ICOMOS. International Committee on Archaeological Heritage Management (ICAHM).*

Publisher: ICAHM, Ottawa

Language: English

ISBN: 0-9698971-2-X

A comprehensive documentation strategy is crucial to the conservation and management process. Such a strategy should be prepared as part of the project planning and clearly stipulated in the work contract. The article shows the integration and phasing of documentation strategies in the

conservation management planning process. The author divides documentation into three types: (1) preparatory documentation: the collection of descriptive information, (2) analytical documentation: the synthesis, analysis and interpolation of descriptive data and their translation into statements of significance and conservation policy, and (3) archival documentation: the storage of the results of conservation planning actions for future use. Two case studies are included.

Documenting the Cultural Heritage

1998

Editors: Robin Thornes and John Bold

Publisher: The J. Paul Getty Trust

Language: English

LAN: www.object-id.com/heritage/index.html

This publication describes the importance of documentation and argues for the need for documentation standards. It describes the core data necessary to document archaeological sites, historic buildings, and monuments and presents several sample records for each type of property. It also describes Object ID, an international standard for describing art, antiques, and antiquities.

Dossier: Un Rilievo per il Restauro?

1996, 101 pages

Authors: Various

In: *TeMa – Tempo Materia Architettura – Rivista Trimestrale di Restauro*, N. 3–4

Publisher: Dipartimento di Storia dell'Architettura del Politecnico di Milano

Language: Italian

A special dossier dedicated to the question of how architectural survey integrates with and contributes to the conservation process. Architectural survey is a major analytical method that allows a deeper knowledge of the heritage and anticipates project design. It can take various forms according

to the thematic purpose of the survey. Seventeen authors contributed methodological considerations and case studies to the discussion of the topic.

Erfassen und Dokumentieren im Denkmalschutz, Dokumentation des Colloquiums des DND in Zusammenarbeit mit dem Landesdenkmalamt Baden-Württemberg, 4.–5. März 1982

1991, 103 pages

Authors: Various

In: *Schriftenreihen des Deutschen Nationalkomitees für Denkmalschutz* (Herausgeber), Band 16, Nachdruck

Publisher: Deutschen Nationalkomitees für Denkmalschutz

Eight articles cover the issue of survey and documentation applied to architectural surfaces, urban conservation, architectural conservation, building archaeology, measured survey, archaeology, and legislation. Most contributions discuss historical developments, principles, state of the art, and case studies. Reports of discussions that followed the presentation of papers are given.

Grundlagen wissenschaftlicher Konservierungs- und Restaurierungskonzepte—Hinweise für die Praxis / Helmut F. Reichwald, pp. 17–36.

This publication emphasizes the importance of thorough condition assessments and stratigraphic surveys prior to restoration interventions on historic buildings. It illustrates several examples of bad practice, as well as the changing attitude of the Office of Care of Monuments (Landesdenkmalamt) toward preliminary investigation and documentation. The author laments the fact that still only very few interventions on monuments are sufficiently documented, which has led to planning mistakes made in the past. A newly developed, detailed guideline for the recording of data from preliminary surveys on historic buildings is introduced. Examples of form sheets and graphic records for the documentation of stratigraphic investigations on building surfaces are illustrated.

Integration der Denkmalpflege in die öffentliche Planung: Chancen und Forderungen / Manfred Mosel, pp. 62–71.

Urban planners of historic towns and villages must take into account cultural values. A process is described on how planners should interact with heritage specialists to guarantee the availability of cultural and historic records and the compatibility of public planning goals with heritage conservation requirements.

Guide to Recording Historic Buildings

1990, 80 pages

Author: Nicholas Cooper

Publisher: Butterworth Architecture, London and Boston

Language: English

Recording enhances the understanding of a building's use and history; shows why it is the way it is, what has been done to it, and its historical significance; and indicates decorative features and elements to preserve. Recording must be done before any work is undertaken or even specified. A comprehensive logbook should be built up over the years. Records are important to administrators, planners, owners, and historians and are needed as a management tool. Reasons for recording are possible total or partial destruction, temporary exposure of normally concealed historical evidence, remedial treatments that call for monitoring overtime, work of stone cleaning, and severe masonry deterioration with the risk of losing detail. Items to be recorded are: form and dimension (original and modifications), materials and construction techniques, decorations and ornaments, plant and fittings, former and present use, absolute or relative dating evidence, ancillary buildings, items that are clearly not in their right place, everything that is revealed during works, and elements that cannot be understood.

Guidelines for the Recording of Heritage Buildings

1990, 8 pages

Authors: John Blumenson and Jill Taylor

In: APT Bulletin, vol. 22, nos. 1–2, pp. 109–16

Publisher: Association for Preservation Technology

ISSN: 0044-9466

These draft guidelines summarize discussions that took place during a series of workshops conducted by the Recording and Documentation Committee of ICOMOS Canada between 1985 and 1988. The guidelines are addressed to architectural conservationists and heritage recorders. Heritage records consist of measured drawings and photographs, providing a lasting and objective image of the heritage building.

The importance of producing permanent records is stressed. They are used for conservation and for restoration following disastrous events. The need for permanent records of all significant historic resources is stressed. The guidelines include issues such as objectives, principles, procedures for recording in the conservation process, selection of qualified recorders, production of heritage record and project report, and transmitting and storing. The appendix contains a heritage recording matrix designed to assist in defining what should be recorded and at what level of accuracy.

Historic Structures Reports

1997, 61 pages

Editors: Deborah Slaton and Alan W. O'Bright

In: APT Bulletin, Special Issue, vol. 28, no. 1

Publisher: Association for Preservation Technology

Language: English

ISSN: 00449466

A historic structures report (HSR) is a document prepared for a building, structure, or group of buildings and structures of recognized significance. It is used to record and analyze the property's initial construction and subsequent alterations through historical, physical, and pictorial evidence, to document the performance and condition of the building's architectural materials and overall structural stability, to identify an appropriate course of treatment, and to document alterations made through this treatment.

The concept of such reports originated in France in the early nineteenth century and spread over the following century to Canada, Australia, and the United States, where it was further developed. This special issue of the APT Bulletin presents ten case studies of HSRs applied to different built heritage typologies, including a critical evaluation of the content and an analysis of the usefulness of such reports.

Managing Change: The Role of Documentation and Condition Survey at Mesa Verde National Park

2003, 28 pages

Author: Frank G. Matero

In: Journal of the American Institute for Conservation, vol. 42, no. 1, 2003, pp. 59–67

Language: English

ISSN: 0197-1360

A phased conservation program to develop coordinated methods for the survey, analysis stabilization, and interpretation of the masonry and prehistoric surface finishes in the alcovate (cliff-dwelling) sites of Mesa Verde National Park has been in progress since 1994 by the Architectural Conservation Laboratory of the University of Pennsylvania. The program has included a comprehensive method of study, including archival research, technical analysis, and characterization of the architectural materials; detailed field and digital recording of existing conditions, including environmental monitoring and the design, testing, and execution of a treatment and protection program specifically focused on the in situ stabilization of plain and painted architectural surface finishes. Though case-study oriented, this article addresses in detail the theoretical and technical aspects of condition survey and recording as an important vehicle for material and site diagnostics, which must precede remedial and preventive interventions. Detailed information is provided on the use of current digital technology for condition survey.

(Abstract courtesy of Frank G. Matero)

Orientierungshilfe zur Untersuchung und Dokumentation in der Restaurierung

2004, 6 pages

In: Arbeitsblätter zur Denkmalpflege, Arbeitsblatt 14, pp. 45–50

Publisher: Vereinigung der Landesdenkmalpfleger in der Bundesrepublik Deutschland, Berlin

Language: German

LAN: www.denkmalpflege-forum.de

This methodological guideline presents three different levels of research/investigation, which require increasing levels of recording. A prerequisite is the collection and assessment of existing documentation. Documentation is divided into data identifying the object, along with written, graphic, and photographic documentation. Detailed technical requirements are specified for each component.

Praktische Denkmalpflege

1995, 340 pages

Authors: Michael Petzet and Gert Mader

Publisher: Kohlhammer, Stuttgart

Language: German

ISBN: 3-17-009007-0

A comprehensive guide to the history and principles of Denkmalpflege (the care of monuments) in Germany and an important reference manual for everyone involved in protection and conservation of the built heritage. In the main part, indispensable survey and planning methods for the analysis of historical phases, technical and constructive characteristics, and condition of buildings, as well as preventive and curative conservation interventions, are discussed and illustrated by case studies.

Chapter IV, dedicated to preliminary investigations, explains standards with regard to contents and processes. This chapter also provides detailed information on measured survey techniques and levels of accuracy matching different purposes: inventories, monographic, scientific representation of a monument, salvage records, and records to be used for

planning and project design. Working principles for heritage recorders and basic information on different recording tools and techniques are also included.

The Production of Wall Painting Conservation Documents

2002, 14 pages

Authors: Adrian Heritage and Robert Gowing

In: Practical information leaflet, 1

Publisher: English Heritage, London

Language: English

There is an increasing awareness and demand within the conservation field for the production of conservation proposals and reports as essential components of any project. Beyond their primary roles as defined by the client, these documents may also be required for application for Faculties or Listed Building Consent, for grant applications, for tenders for conservation work, as records for long-term conservation management and maintenance, and as historical archives.

This practical information leaflet is intended as a guide for the organization and production of proposals and reports required for wall painting conservation. Within this leaflet, English Heritage aims both to simplify and to clarify the contents and structure of wall painting conservation documents.

The material presented is deliberately intended to encourage substance over style or glass, and should aid in the generation of clear and consistent reports that can be effective and useful to conservators, owners, clients, regulatory authorities, and funding bodies.

(Abstract courtesy of English Heritage)

Recording Historic Structures

2003 (2nd ed.), 306 pages

Editor: John A. Burns

Publisher: Historic American Buildings Survey (HABS), Historic American Engineering Record (HAER), Historic

American Landscapes Survey (HALS), American Institute of Architects (AIA), National Park Service, John Wiley & Sons, Hoboken, N.J.

Language: English

ISBN: 0-471-27380-5

Provides a description of standards used by HABS, HAER, and HALS, including detailed instructions on how to produce and archive architectural records. HABS/HAER/HALS are repositories for historical information using a standardized methodology and a controlled vocabulary. Goals are archival durability, reliability, quality, research capability, and public accessibility. The main purpose of documentation is the creation of permanent records to warrant against loss or substantial alteration and the facilitation of academic studies. Primary data directly derived from the resource are distinguished from secondary source data (legal records, newspaper articles, public consultation), which need verification. To define significance is the main purpose of written documentation.

Recording the Historic Urban Environment: A New Challenge

1990, 15 pages

Author: Walter Jamieson

In: APT Bulletin, vol. 22, nos. 1–2, pp. 109–16

Publisher: Association for Preservation Technology

ISSN: 0044-9466

Considers the modern challenge of recording and documenting historic urban environments. The article defines the nature of urban heritage that must be recorded and some of the problems in doing so, and proposes approaches to help further the practice of recording. The emphasis is on approaches to, not techniques of, recording. The author argues that a comprehensive and systematic approach to recording urban settings is necessary owing to their complex and multidisciplinary nature.

(Abstract courtesy of the Association for Preservation Technology)

Storie Dalla Terra: Manuale di Scavo Archeologico

1991, 296 pages

Author: Andrea Carandini

Publisher: Giulio Einaudi, Torino

Language: Italian

ISBN: 88-06-12411-0

Excavation implies destruction to uncover subsequent layers. This can be compensated only through the analytical documentation of single layers and their recombination by means of ideal reconstructions. Part III of the manual is fully dedicated to documentation, discussing in detail the production of thematic form sheets, graphic and photographic tools, and the use of computers. Part IV deals with the interpretation, presentation, and publication of data.

Trattato di Restauro Architettonico

1996, 4 volumes (approx. 600 pages each)

Editor: Giovanni Carbonara

Authors: Giovanni Carbonara et al.

Publisher: UTET, Torino

Language: Italian

ISBN: 88-02-04669-7

This comprehensive manual, written by various authors, covers all aspects relating to architectural conservation. All sections are extensively illustrated with examples of architectural drawings and photographs. Only the theme-related sections in volumes 2 and 3 are included in the present annotated bibliography and, given their broad content, are abstracted separately. This publication builds on the contents of a vast number of earlier publications by Carbonara.

Analisi degli Antichi Edifici / Giovanni Carbonara, vol. 2, Sezione G, pp. 419–517.

The section is divided into four chapters: introduction (principles and methodology), graphic recording, photographic recording, and historical survey. It provides a concise methodology and detailed technical instructions for the historical and technological survey

and analysis of ancient monuments. Prior understanding is indispensable. Data directly derived from the monument must then be systematically compared with indirect data obtained through literature and/or archival research. The product must be a list of objective facts regarding the heritage in which uncertain or contradictory data, gaps, and unsolved problems should also be included and clearly labeled.

Measured surveys are considered an essential tool for gaining knowledge and critically analyzing the heritage. Thematic maps are used to illustrate different building phases, and in some cases reconstruction drawings may be done for didactic purpose. A good architectural drawing is like a historical-critical text, which uses graphics as a language. Traditional, manual methods have a much greater analytical dimension than instrumental methods such as photogrammetry, because they require more time on site. Good architectural drawings enhance structural details relating to the building history, evaluate structural condition through the mapping of cracks, provide graphic basis for superimposed analytical and thematic maps, constitute a document of the as-found condition before conservation interventions take place, and are a good basis for interdisciplinary cooperation in diagnostic activities, management, and project design.

A good survey allows minimizing the need for destructive investigations such as stratigraphic trials. Also, measured drawings for inventories and the compilation of inventory forms are discussed.

Rilievo del Degrado e Diagnostica / Donatella Fiorani, vol. 2, Sezione H, pp. 522–84.

Condition survey starts from a graphic recording of decay phenomena, which provides indications for further analysis and assessment. Different material decay morphologies are discussed and illustrated with reference to the Italian standard glossary NORMAL

1/80 and 1/88. Decay morphologies relating to moisture, structural failures, abandonment, and improper use are also presented. Preliminary surveys are normally limited to an identification of the typology, morphology, and distribution of phenomena by means of sketches and form sheets.

A comprehensive list of elements to be analyzed is given. The link between architectural surfaces and building structures, as well as the potential of graphic records in conveying condition information, is illustrated by numerous examples.

Il Progetto di Restauro / Giancarlo Palmerio, vol. 5, Sezione G, pp. 499–726.

This section is divided into eight chapters: guiding principles, conservation and environmental context, conservation of historic gardens, the building in its context, reuse, conservation project, consolidation project, and architectural design and restoration. The importance of documentation and its integration into project planning and design is emphasized throughout and illustrated by numerous examples.

Section B: Information Systems and Inventories

I Beni Culturali e la Loro Catalogazione

1999, 325 pages

Author: Laura Corti

Publisher: Paravia, Torino

Language: Italian

ISBN: 88-395-8306-8

This manual provides a complete picture of the historical development and the state of the art regarding cultural heritage inventories in Italy. In antiquities, heritage items were already registered. First, legal policies for the protection of cultural heritage, including the production of registers, were introduced by the popes in the sixteenth century. Further

improvements were made in the eighteenth century, which saw the production of a first inventory (*catalogo*) corresponding to modern concepts.

The creation in 1969 of the Istituto Centrale per il Catalogo e la Documentazione (Central Institute for Inventory and Documentation) was the basis for the development of recording standards and the centralized collection of heritage data. Present classification and recording systems, as well as criteria for inclusion of visual information, are explained in detail, and references to other European countries and to international standards are made.

The advantages and challenges of digital databases, their international development, standard requirements, thesauri, geo-referenced systems, different software, and the Internet are the subjects of the last part of the book. All topics are well illustrated by examples, and appendices provide a complete set of relevant Italian laws, regulations, and norms; the full version of international data standards; and a selected international bibliography.

La Carta del Rischio del Patrimonio Culturale

1997, 95 pages

Editor: Giovanna Castelli

Publisher: Istituto Centrale per il Restauro, Rome

Languages: Italian and English

This is an extensive database system for the identification and monitoring of environmental, structural, and man-made risks affecting immovable heritage across the national territory of Italy, with the aim of facilitating decision making in conservation management with particular emphasis on prevention. The basis is standardized condition assessments carried out with a series of conservation data sheets that are compatible with the National Heritage Inventory. Scientific measurements are made through mobile stations equipped with the necessary instruments.

The information is rendered using geo-referenced thematic maps. On the basis of three risk parameters, it is possible to establish risk levels, to evaluate trends, and to make statistical projections. In its present version, the system gives only a response at a broad territorial level. The intention is to include more detailed information down to the level of single sites. This is probably the most complete publication on this unique computer-based information management system.

I Contenuti del Progetto Preliminare negli Interventi sul Costruito Esistente

1998, 9 pages

Authors: Maria Rita Pinto, Stefania De Medici, and Gabriela Caterina

In: *Progettare i Restauri: Orientamenti e Metodi, Indagini e Materiali. Atti del Convegno di Studi, Bressanone, 30 giugno–3 luglio 1998* / Guido Biscontin (ed.); Guido Driussi (ed.)

Publisher: Edizioni Arcadia Ricerche, Marghera

Language: Italian

A critical review of the new Public Works Law (Legge Merlini, 1995), which introduces a preliminary stage in the project design that is indispensable in obtaining public funding for conservation of immovable heritage. The preliminary project must be based on condition survey and analysis and include a justification of planned measures, alternative approaches, a cost/benefit and feasibility analysis, and graphic illustrations.

The review aims at defining different options necessary for the programming of conservation interventions and provides base data for further project development. It is followed by a second stage—the definitive project—which aims at improving the administrative feasibility, and finally by the executive project, which aims at guaranteeing the quality of implementation and management.

Core Data Standard for Archaeological Sites and Monuments

1999, 54 pages

Author: Council of Europe

Publisher: Council of Europe Publishing

Languages: English and French

ISBN: 92-871-3816-8

This core data standard for archaeological sites and monuments was prepared by two organizations working in close cooperation: CIDOC, the documentation committee of the International Council of Museums (ICOM), and the Council of Europe.

The aims of this standard are threefold:

1. To facilitate communication between national and international bodies responsible for the recording and protection of the archaeological heritage
2. To assist countries at an early stage in developing record systems for the recording and protection of the archaeological heritage
3. To facilitate research utilizing archaeological core data where this has an international dimension

The various sections into which the data standard is divided represent the minimum categories of information required to make a reasonable assessment of a monument or site, whether for planning, management, academic, or other purposes. In addition, reference can be provided to further information held in databases, document centers, and elsewhere, which may be necessary for the detailed understanding and care of individual monuments or sites, or categories of monument or site.

Cultural Resources Management and National Inventory of Archaeological and Historic Sites: The Jordanian Experiences

1995, 8 pages

Authors: Gaetano Palumbo, Abu Dayyeh, Abdul Sami, Khawla Qussous, and Mohammad Waheeb

In: *Studies in the History and Archaeology of Jordan V: Art and Technology throughout the Ages*, no. 5, pp. 83–90

Publisher: Department of Antiquities, Amman, Jordan

Language: English

The main purpose of the Cultural Resources Management Program, jointly organized by the American Center of Oriental Research, in Amman, and the Department of Antiquities of Jordan (DAJ), is to develop a coordination system with governmental agencies responsible for development projects, which allows recognizing heritage values in the earliest phase of a new construction design.

A main program component is the JADIS (Jordan Antiquities Database and Information System) database, the ultimate goal of which is to enter coded information about all known archaeological sites in Jordan into a computerized database, allowing quick and effective monitoring of sites under threat of destruction and minimizing the necessity for rescue or salvage excavation.

The use of JADIS is described through real cases, and examples of inventory entry forms are given. The system is going to be further developed by integrating the database with a GIS and by attributing GPS coordinates to catalogued sites.

Database Generation of Heritage Buildings and Monuments: A Strategy

2001, 5 pages

Authors: N. K. Garg and A. K. Gupta

In: Conservation of Cultural Property in India, vol. 34, 2001, pp. 56–60

Publisher: Indian Association for the Study of Conservation of Cultural Property

Language: English

ISSN: 0971-619-X

This paper describes a nationwide historic buildings and monuments database project intended to provide initial information to facilitate conservation work. It describes the roles and responsibilities of various institutions involved in database collection and information dissemination.

Erfassen und Dokumentieren, Inventar und Denkmaltopographie

2005, 4 pages

Author: Christoph Mohr

In: Zeitschichten: Erkennen und Erhalten - Denkmalpflege in Deutschland; 100 Jahre Handbuch der Deutschen Kunstdenkmäler von Georg Dehio, Katalogbuch zur gleichnamigen Ausstellung im Residenzschloss Dresden, pp. 248–51

Publisher: Deutsche Stiftung Denkmalschutz; Scheurmann, Ingrid (ed.); Deutscher Kunstverlag, Berlin

Language: German

This publication gives a short history of the development of concepts and techniques for cultural heritage inventories in Germany from the early nineteenth century on. In the 1950s, due to a new responsibility of the Offices for Monuments Protection (Denkmalämter) in advising other public offices on the values of single monuments and larger ensembles, a shorter, more popular inventory format was needed. In 1980 the first volumes of the so-called Denkmaltopographie, a nationwide illustrated monument register addressed to the broad public, were published. The advantages deriving from the digitization of this inventory are stressed.

Guidance on Inventory and Documentation of the Cultural Heritage

Document prepared by the ad hoc group for inventory and documentation within the Technical Co-operation and Consultancy Program

2001, 130 pages

Authors: Corporate

Publisher: Council of Europe Publishing, Strasbourg

Language: English (also published in French)

ISBN: 92.871-4709-4

A complete overview on principles and the state of the art in the field of inventory of built heritage. The volume is a compilation and an update of work carried under programs of the Council of Europe since the 1990s. It is based on the Core Data Index adopted by the Committee of Ministers of the Council of Europe in 1995 (the document is published as an appendix).

Three international standards for the documentation of the cultural heritage are presented as guidelines: the Core Data Index to Historic Buildings and Monuments, the International Core Data Standard for Archaeological Sites and Monuments, and the Core Data Standard for Identifying Cultural Objects – Object ID. Topics covered include the importance of documentation and the need for standards, the documentation of the built heritage, the role of the inventory, uses and types of inventory, the inventory as a means of protective legislation, the edifice and the ensemble, the implementation of new structure for inventorization and heritage management, the inventory as a continuous process, responsibility for information, information and data standards, training, introduction to standards, and the standards and examples. [Several earlier Council of Europe publications on this subject are not included in this bibliography.]

**Handbuch Denkmalschutz und Denkmalpflege
(einschliesslich Archäologie) – Recht – Fachliche
Grundsätze – Verfahren – Finanzierung**

2004, 671 pages

Authors: Dieter J. Martin and Michael Krautzberger

Publisher: Verlag C.H. Beck, Munich

Language: German

In Part C of this work, dedicated to the definition of historic monuments, are two chapters on inventorying. It defines theme-related terminology and explains in detail different types of cultural heritage inventories used historically and at present in Germany. An important aim of inventory surveys is to make monuments “conscious” in order to allow their preservation. The Monuments Topography (Denkmaltopographie) of the Federal Republic of Germany is an attempt to create a unified, nationwide inventory based on already existing documentation. The policy guidelines for this project are given as well.

Inventory and Documentation Methods in Europe

Document prepared by the ad hoc group for inventory and documentation within the Technical Co-operation and Consultancy Program

European colloquy, Nantes, 28–31 October 1992

1993, 183 pages

Authors: Corporate

Publisher: Council of Europe Publishing, Cultural Heritage, no. 28

Language: English (also published in French)

ISBN: 92.871-2342-X

The proceedings of this colloquy on inventories, jointly organized by the Council of Europe and the French Ministry for Culture and Education, collects a huge number of case studies from various European countries divided by heritage typologies, including rural architecture, urban architecture, and industrial heritage. Two sessions reflect the discussion on general approaches, namely methodological problems and a proposal for a European minimum set of documentary data.

**Kulturlandschaft Digital – Forschung und Anwendung/
15. Fachtagung, 2.–5. März 2005 in Aachen**

2005, 85 pages

In: Beiträge zur Landesentwicklung 58

Authors: Various

Publisher: Landschaftsverband Rheinland – Umweltamt, Rheinisches Amt für Bodendenkmalpflege

Language: German

The proceedings of a conference aimed at the improvement of interdisciplinary cooperation between archaeology, historic geography, and the protection of cultural landscapes. Different recently developed GIS-based information systems are presented, such as the one for the Landscape and Cultural Heritage in the Wadden Sea Region (LANCEWAD); the archaeological database ADABweb; the digital cultural landscape information system KuLaDigNW, developed in the region of Nordrhein-Westfalen; and the digital geographic monuments register DEGIS, developed in Schleswig-Holstein

and based on data from the nationwide inventory Monuments Topography (Denkmaltopographie). Application potentials for heritage management, tourism, education, and economic development are critically evaluated.

MIDAS: A Manual and Data Standard for Monument Inventories

2000 (2nd ed.), 133 pages

Editor: Edmund Lee

Publisher: English Heritage, National Monuments Record Centre, Swindon

Language: English

ISBN: 873592-33-7

Monuments have been a focus of popular and scholarly interest for more than a century. In that time, a prodigious amount of information has been gathered. To interpret what is known, to communicate it to society, and to identify and protect and manage what remains, consistent records are needed, as well as inventories that are accessible, useful, and adaptable. The objectives of MIDAS (Monument Inventory Data Standard) are to enhance retrieval, provide a common format, promote consistency, facilitate exchange of information, assist in migrating inventories to new information systems, and increase the opportunities for the evolution of inventories, ensuring their survival and relevance as technologies change. The manual and data standard is recommended to all those involved in the creation, curation, or use of monument inventories.

Monitoring World Heritage

2004, 132 pages

Authors: Various

World Heritage Papers 10; Proceedings of the International Congress, World Heritage 2002: Shared Legacy, Common Responsibility Associated Workshops, Vicenza, Italy, 11–12 November 2002

Publisher: World Heritage Centre, Paris, and ICCROM, Rome

Language: English

The principal purpose of the meeting was to strengthen appreciation and appropriate use of monitoring in the effective management of heritage properties of cultural and natural value, particularly in the context of sites inscribed on the World Heritage List. The workshop consisted of working sessions on the following themes: advisory body and committee views, World Heritage monitoring and periodic reporting experiences, monitoring frameworks/design of monitoring systems, practical experience in monitoring, monitoring technologies and tools, and monitoring issues and principles.

A Multimedia System for Organizing Architectural Documentation of Historic Buildings

1996, 6 pages

Author: Anat Geva

In: APT Bulletin, vol. 27, no. 4, pp. 18–23

Publisher: Association for Preservation Technology

Language: English

ISSN: 0044-9466

This paper illustrates the Historical Architectural Documentation System (HADS), a multimedia system that provides a framework for organizing, analyzing, and retrieving information relevant to historic buildings and their preservation. HADS explores and utilizes low-end computerized multimedia and hypertext technologies to convert existing architectural information (such as images, drawings, text, animation, and sound) into electronic media. Its conceptual structure ranges from general project information through the building's identity to the building's details. The working assumptions were familiarity, flexibility, multimedia applications, and accessibility. A prototype was developed for churches in south-central Texas.

The National Register of Historic Places Today

2002, 49 pages

Authors: Various

Editor: Ronald M. Greenberg

In: CRM: Cultural Resource Management, vol. 25, no. 1, 2002, pp. 2–51

Publisher: U.S. Department of the Interior, National Park Service
Language: English

An update on how the National Register is used to identify and preserve historic places in the United States. The register holds about 74,000 listings, including some 1.2 million significant sites, buildings, structures, objects, and increasingly historic contexts such as cultural landscapes. Digitization of the entire register is under way, and information is already available to the public through the institute's Web site, with an average of 50,000 visitors per week. More than thirty articles discuss the relevance of the register for various purposes, such as preservation planning, heritage tourism, education, economical growth, and management of different heritage categories.

La Rappresentazione nell'era Digitale – Nuove Tecnologie per Disegnare e Comunicare

2004, 142 pages
Author: Manuela Piscitelli
Publisher: Vivarium, Napoli
Language: Italian
ISBN: 88-85238-95-1

This book gives an overview of the use of new technologies to improve practice in the field of recording of historic buildings, condition survey, and communication. It is a good introduction for students and nonspecialists in recording and information technology. Technical aspects are explained in general terms, and new developments are set into a historical context. Topics include drawing as a language; knowing the architecture; virtual reality and simulation; from paper sheet to the infinite vector space; models for understanding architecture, virtuality for restoration; digital reconstruction in archaeology; models for representing territories; hypertext, hypermedia, and multimedia; multimedia systems for cultural heritage; virtual museums; and tools and techniques.

Review of the National Monuments Record: Unlocking Heritage Information. Part I: Conclusions and Recommendations

2004, 36 pages
Publisher: English Heritage, London
Language: English

The National Monuments Record (NMR) is one of the largest accessible archives in the United Kingdom and the largest dedicated to the historic environment. In autumn 2003, English Heritage (EH) launched a review of the NMR based on a major public consultation in accordance with government guidelines, which received 898 responses. In addition, surveys of users of NMR services and of services of heritage professionals were analyzed. The review was overseen by a steering committee that considered the results of the consultation and a series of option papers. The NMR needs to modernize by transforming business processes, creating delivery mechanisms (online services), being more proactive in the development of a national historic environment information network, and providing support to the full range of EH's corporate aims and business.

Section C: Preservation of Records and Archiving

Appraisal and Retention of Digital Records

2002, 4 pages
Author: Gregory S. Hunter
In: History News, vol. 57, no. 4, 2002, pp. 17–20
Publisher: American Association for State and Local History
Language: English
ISSN: 0363-7492

A good overview of the current discussion on selecting digital records for long-term preservation, archiving, and identifying the main archiving options: that is, retaining them in digital or analog form. Different digital attributes must be considered, such as their ability to be copied perfectly, to be disseminated at no incremental cost, to remain machine readable, and to be dynamic, hyperlinked, or interactive.

The ultimate goal is to maintain the integrity of the digital record, defined by five criteria: content, fixity, reference, provenance, and context, all of which are explained. For records with intrinsic value, both the medium and the message are to be preserved. A disadvantage of retaining records in digital form is the cost of migrating them as software and hardware change.

The appraisal criteria are then briefly discussed in relation to specific types of digital records: databases, e-mail messages, word-processing documents, PowerPoint presentations, Web pages, GIS, and CAD systems.

**Digital Archives from Excavation and Fieldwork:
A Guide to Good Practice**

2000 (2nd ed.), 68 pages

Authors: Various

Editors: Julian Richards and Damian Robinson

Publisher: ADS (Archaeological Data Service); Oxbow Books, Oxford

Language: English

ISBN: 1-900188-73-2

Although related to archaeological documentation, these guidelines are an excellent reference for good practice in archiving digital records. It covers a broad range of relevant issues, such as digital archiving, secure backup, data refreshment, data migration, different types of digital archives, documenting and depositing the digital archive, copyright, and reuse. Also included are recommendations for the implementation of these guidelines, an extensive glossary of abbreviations relating to new information technologies, and a specialized bibliography.

**Guide pour la gestion archivistique des documents
électroniques**

1997, 63 pages

Authors: Corporate

In: ICA – Etudes, 8

Language: French (also published in English)

Publisher: Conseil international des archives. Comité sur les documents électroniques

This publication gives detailed information on all aspects regarding archival requirements for digital documentation. The guide is intended to aid institutions in finding solutions to the problem of managing electronic data. The first part is an overview of technological, organizational, and legal aspects, which may have an impact on the capacity of archives to effectively preserve and manage electronic documents. Part II is a first attempt by the International Council on Archives to formulate a strategic approach and standards. This part deals mainly with the conservation of different electronic documents and databases, including the following headings: conservation of availability, conservation of accessibility, conservation of the technology on which the document depends, elimination of the dependence of a document from a given technology and of nonessential dependences, conservation of the operational logics, conservation of visual presentations, conservation of the intelligibility, and conservation all along the life cycle.

**A Guide to the Archival Care of Architectural Records,
19th–20th Centuries**

2000, 72 pages

Authors: Corporate

Editors: Maygene Daniels and David Peyceré

Publisher: International Council on Archives. Architectural Records Section (ICA), Paris

Language: English

Although it refers mainly to modern and contemporary architectural records, this manual, resulting from international discussions and developed with the contribution of many archivists, gives detailed information about all aspects of archiving different types of architectural drawings and records. The manual deals mainly with hard copies. Only one short paragraph is dedicated to computer records; it states

that the conversion of AutoCAD drawings into DXF (drawing exchange file) format is becoming a standard for archival preservation.

Managing Historical Records Programs: A Guide for Historical Agencies

2000, 271 pages

Author: Bruce W. Dearstyne

Publisher: Altamira Press, Walnut Creek, Calif.

Language: English

ISBN: 0-7425-0283-X

A concise guide for historical agencies in charge of caring for historical or archival records, defined as those of enduring value. The more relevant sections are the chapters on services to users, preservation of historical records, and electronic archives. The author states that archivists and records managers have relatively well-developed strategies for dealing with records in traditional formats, but that the growth in volume and complexity of electronic records has outdistanced the ability of records professionals to develop and apply solutions.

A checklist for an electronic archives program includes the following questions: If the program has made the determination to accept electronic records, has it also developed the technical and other expertise needed to service and maintain them? Has the program considered the new roles that historical records experts need to play to encourage the systematic creation, identification, and preservation of electronic records?

Storage Standard: S-2 Standard for the Storage of Public Records and Archives

2000, 23 pages

Publisher: Archives of New Zealand. Government Record-keeping Group, Wellington

Language: English

ISSN: 1176-1172

ISBN: 0-478-18202-3

The development of the S-2 Standard refers to principles from international best practice. In particular, the standard draws on Australian Standard AS 4390.6-1996, Records Management—Storage; British Standard BS 5454-1989, Storage and Exhibition of Archival Documents (under revision in 2000); and International Standard Draft ISO/DIS 11799-1998, Information and Documentation—Document Storage Requirements.

The standard introduces a set of seven principles that should be taken into account when storing public records and archives: identified and controlled, appropriately located, appropriately housed, secure, environmentally controlled, shelved and packaged, and protected against disasters. Specific requirements for digital records are not addressed.

Section D: Important International Meetings

Actes du colloque sur les inventaires des biens culturels en Europe. Akten des Kolloquiums über Inventarisierung des Kulturgüter in Europa

Cahiers de l'inventaire – Numéro spécial; Centre d'études du Bischoffenberg, Obernai-Bischoffenheim (Bas-Rhin) 1984, 560 pages

Authors: Various

Publisher: Ministère de la Culture, Direction du Patrimoine, Inventaire général des monuments et des richesses artistiques de la France

Languages: French, English, German

ISBN: 2-7233-0243-1

A collection of papers from a colloquium organized by the French government and held in 1980 at the Bischoffenberg Center of Studies, near Bischoffenheim, near Strasbourg, in France. The papers cover three main themes: scientific problems, technical problems, and problems of general policy. The first section is composed of descriptions of inventory systems in the German Democratic Republic, the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Great Britain and Northern Ireland, Hungary,

Italy, Luxembourg, Norway, the Netherlands, Poland, Portugal, Switzerland, and Yugoslavia. The second section focuses on specific topics presented by national and international experts in the field of inventories. Also included are the texts of four resolutions.

Computer Technology for Conservators: The 2nd Wave

Based on the 19th Annual IIC-CG Conference Workshop,
25–27 May 1993, Halifax, Nova Scotia, Canada

1994, 57 pages

Editor: Rob Stevenson

Publisher: Atlantic Regional Group of the International
Institute for Conservation of Historic and Artistic Works (IIC) –
Canadian Group

Language: English

ISBN: 0-9691347-5-4

A very specialized conference with contributions on topics such as computer imaging for art conservators, infrared cameras, digital techniques for IR reflectography, computer image enhancement, range sensing for the monitoring of 3-D images, and end-user programming.

Dokumentation in der Restaurierung

November 1989 – Vorträge der Tagung in Bregenz

1994, 202 pages

Authors: Various

Publisher: Österreichischer Restauratorenverband (ÖRV),
Schweizerischer Verband für Konservierung und Restaurierung
(SKR/SCR), Deutscher Restauratorenverband (DRV)

Language: German

This meeting, organized by the Austrian, Swiss, and German conservators' associations, aimed at discussing the principles behind conservation documentation. Contributions refer to examples of both movable and immovable heritage, stressing methodological aspects. A broad range of issues are covered: meaning and scope of documentation, various forms of documentation including written and graphic documentation, the use of form sheets, methods of photographic documenta-

tion, specialized terminology in documentation, technical drawings, the durability of paper and writing material for documentation, the professional obligations of the conservator, and public involvement. A comprehensive and well-structured bibliography of mainly German references is included.

The Future of Our Past 93–95: International Conference of Informatics

1996, 150 pages

Authors: Various

Editor: Erzsebet Marton

Publisher: Hungarian National Museum, Budapest

Language: English

ISBN: 963-9046-01 9

The proceedings of an international conference on informatics applied to archaeology. Contributions include diagnostic methods, recording techniques, and the establishment of information systems.

GraDoc–Graphic Documentation Systems in Mural Painting Conservation

Research seminar, ICCROM, Rome, 16–20 November 1999
2000, 345 pages

Authors: Various

Editor: Werner Schmid

Publisher: ICCROM, Rome

Language: English

ISBN: 92-9077-171-2

This research seminar, which saw the participation of a multidisciplinary international group of experts, addressed the discussion of aims, methods, and standards as well as the use of new technologies. The book collects a set of twenty-four papers addressing general issues, technical aspects and case studies, and the record of discussions that followed single presentations.

The results of working groups on the following issues are published: (1) functions of documentation in mural painting conservation and specific functions of graphic documentation, (2) analysis of the graphic documentation process, and (3) digital graphic documentation and databases: critical evaluation and comparison with conventional methods. A glossary and an overview of existing guidelines are also included.

New Techniques for Old Times, CAA 98: Computer Applications and Quantitative Methods in Archaeology

Proceedings of the 26th conference, Barcelona, Spain, March 1998

1999, 588 pages, 1 CD-ROM

Authors: Various

Editors: Juan A. Barceló, Ivan Briz, and Assumpcio Vila

Publisher: Archaeopress, Oxford

Language: English

ISBN: 0-86054-961-5

More than sixty contributions address all aspects of using computer technology for archaeology. The conference was structured around three theme areas. The first area, "Using computers in archaeological fieldwork," is divided into the subthemes "Storing and retrieving image data" and "Storing and retrieving spatial data." The second main area, "Using computers for archaeological explanation," groups papers under the subthemes "Statistical analysis" and "Modeling." The third theme area, "Using computers for archaeological heritage," has the subthemes "Management," "Diffusion," and "Learning." This last section is mainly on databases and information systems, including GIS.

Preparatory Architectural Investigation in the Restoration of Historical Buildings

Papers of the international updating course held at the Raymond Lemaire International Centre for Conservation, Leuven, 25 May–1 June 1996

2002, 219 pages

Authors: Various

Editors: Krista De Jonge and Koen Van Balen

Publisher: Leuven University Press: ills., figs.; 30 cm

Language: English

ISBN: 90 5867 250 6

The proceedings of one of a series of colloquia on building archaeology (Bauforschung) organized by a European working group that included members from Belgium, France, Germany, Italy, Spain, and the United Kingdom. Contributions focus on the history of the discipline in various countries, as well as on aims, methodology, techniques, and the relevance of building archaeology for conservation.

Surveying and Documentation of Historic Buildings – Monuments – Sites: Traditional and Modern Methods

Proceedings of the XVIII International Symposium, CIPA 2001, Potsdam (Germany), 18–21 September 2001

2002, 755 pages

Authors: Various

Editor: Jörg Albertz

Publisher: CIPA-Heritage Documentation. The ICOMOS/ISPRS Committee for Documentation of Cultural Heritage

Language: English

ISSN: 1682-1750

A collection of more than eighty contributions that cover, mainly through case studies, a broad range of different heritage recording techniques applied to a large variety of immovable heritage typologies and purposes. Papers are presented by archaeologists, conservation professionals, heritage recorders, and experts from other disciplines, which increases the variety of information. The publication is an important reference for the state of the art in cultural heritage recording, documentation, and information management.

Workshop on Novel Technologies for Digital Preservation, Information Processing, and Access to Cultural Heritage Collections

Information booklet and book of abstracts, Ormylia, Greece, 21–22 May 2004

2004, 48 pages

Authors: Various

Publisher: European Commission. Community Research. Labs TECH European Infrastructure Cooperation Network
Language: English

This workshop on high-tech digital technology applied to cultural heritage was organized in the framework of the multiyear European project LabsTECH, which is investigating this issue. Contributions, published only as extensive abstracts, present a broad range of case studies of computer-based information systems applied to both the built heritage and the museums field. The three main theme areas are database technologies for the documentation of artworks, knowledge-based database systems for artworks documentation, and an integrated European-scale cultural digital library.

Section E: ICOMOS-CIPA Symposia

The proceedings of numerous other ICOMOS-CIPA symposia held on a biannual basis since 1968 constitute a wealth of theme-specific information. Although the meetings held before 2001 focused mainly on measured survey techniques and were attended primarily by heritage recorders and photogrammetrists, the topic has broadened since the Potsdam symposium to include information technology and related issues and involve conservation professionals and other users.

(I) 28 June–2 July 1971 in Brno, Czech Republic [former Czechoslovakia]. Organized by the scientific-technical Society of Czechoslovakia (Miloslav Jirinec, Alois Jelinek). About 70 participants from 20 countries. Miloslav Jirinec (ed.): “Symposium international sur le mesurage des monuments.” Institut d’Etat pour la protection des monuments historiques, Prague, 1971, 155 pages.

(II) 23–26 September 1973 in Lucca, Italy. Organized by the Italian Society of Photogrammetry and Topography (SIFET) (Gino Parenti). 160 participants from 12 countries. Giulio Schmidt (ed.): “Fotogrammetria dei Monumenti.” Libreria Editrice Fiorentina, Florence, 1976. 261 pages.

(III) 12–16 May 1974 in Athens, Greece. Organized by the Technical Chamber of Greece and the National Technical University of Athens (J. Badekas). 90 participants from 19 countries. John Badekas (ed.): “Photogrammetric Surveys of Monuments and Sites.” North-Holland Publishing Co., Amsterdam, 1975, 176 pages (also published in *Photogrammetria*, 30 (3-6)).

(IV) 10–13 May 1976 in Bonn, Germany. Organized by Landes-konservator Rheinland im Landschaftsverband Rheinland (Carl-Wilhelm Clasen, Wilfried Wester-Ebbinghaus). 117 participants from 14 countries. Günther Borchers and Carl-Wilhelm Clasen (eds.): “Architekturphotogrammetrie III.” Landeskonservator Rheinland, Bonn, 1976-1977, 3 vols., 70 + 175 + 196 pages.

(V) 9–14 October 1978 in Sibenik, Croatia [former Yugoslavia]. Organized by the Union of Geodetic Engineers and Surveyors of Yugoslavia and the Geodetic Faculty of Zagreb (Franjo Braum). 130 participants from 16 countries. Franjo Braum (ed.): “Fifth International Symposium for Photogrammetry in Architecture and Conservation of Monuments.” Union of Geodetic Engineers and Surveyors, Belgrade, 1980, 512 pages.

(VI) 20–22 June 1979 in Kraków, Poland. Organized by the Polish Academy of Science and the Stanislaw Staszic University, in Kraków (Zbigniew Sitek, Josef Jachimski). About 125 participants from about 15 countries. Josef Jachimski (ed.): “Papers for the VI CIPA International Symposium on the Contribution of Photogrammetry and Geodesy to the Revalorization of Historic Sites.” Kraków Geodetic Enterprise, Kraków, 1979, 398 pages.

(VII) 16–19 September 1981 in Vienna, Austria. Organized by Bundesdenkmalamt (Hans Foramitti), University of Technology, Vienna (Institute for Photogrammetry, Karl Kraus, Peter Waldhäusl), Academy of Fine Arts, Vienna (Franz Mairinger). 153 participants from 20 countries. Gottfried Boehm (ed.): “Photogrammetrie in der Architektur und Denkmalpflege.” Bundesdenkmalamt, Vienna, 1983, 450 pages.

(VIII) 8–20 October 1982 in Siena, Italy. Organized by the University of Siena and the City Council of Siena. 134 participants from 10 countries. Mario Fondelli (ed.): “Symposium Internazionale sul Contributo della Fotogrammetria alla Documentazione dei Centri Storici e dei Monumenti Atti.” Università degli Studi di Firenze, Florence, 1989, 259 pages.

(IX) 22–24 October 1984 in Tunis, Tunisia. Organized by Association Sauvegarde de la Medina, ICOMOS Tunisia (Abdelaziz Daoulatli). About 60 participants from 10 countries. Maurice Carbonnell (ed.): “Relevés Photogrammétriques d’Architecture Islamique” [Photogrammetric Surveys of Islamic Architecture]. MTE, ICOMOS, Tunis, 1988, 324 pages.

(X) 27–29 October 1987 in Granada, Spain. Organized by the Spanish National Committee of ICOMOS (Antonio Almagro). 122 participants from 13 countries. Antonio Almagro (ed.): “Fotogrametría y Representación de la Arquitectura.” ICOMOS, CIPA, Granada, 1987, 334 pages.

(XI) 4–7 October 1988 in Sofia, Bulgaria. Organized by the Bulgarian National Committee of ICOMOS (Georgi Hadjiev). 117 participants from 19 countries. 29 papers. Georgi Hadjiev (ed.): “Contributions of Modern Photogrammetry, Remote Sensing and Image Processing Methods to the Architectural and Urban Heritage.” Sofia, 1989, 301 pages.

(XII) 24–26 October 1989 in Rome, Italy. Organized by the faculty of engineering of the University of Florence (Mario Fondelli), with the aid of the National Council of Research, the Ministry of Cultural Property, and the University “La Sapienza” in Rome. Proceedings not published.

(XIII) 23–26 October 1990 in Kraków, Poland. Organized by ICOMOS National Committee of Poland, Polish Society for Photogrammetry and Remote Sensing at the AGH (University of Mining and Metallurgy, Institute of Photogrammetry and Remote Sensing, Jozef Jachimski). 92 participants from 17 countries. Jozef Jachimski (ed.): “Numerical Photogrammetry, Remote Sensing and Spatial Information Systems Applied to Restoration of Architectural and Urban Heritage and to Archeology.” Kraków, 1992, 344 pages.

(XIV) 2–5 October 1991 in Delphi, Greece. Organized by the Laboratory of Photogrammetry of the National Technical University, Athens (John Badekas), in cooperation with the Hellenistic Society for Photogrammetry and Remote Sensing, the ICOMOS National Committee of Greece, and the Technical Chamber of Greece. 99 participants from 16 countries. John Badekas, Andreas Georgopoulos (eds.): “Architectural Photogrammetry and Information Systems.” Technical Chamber of Greece, Athens, 1993, 366 pages.

(XV) 22–25 September 1993 in Bucharest and Sinaia, Romania. Organized by the Romanian Society for Photogrammetry and Remote Sensing (SRFT) and the Institute of Geodesy, Photogrammetry, Cartography and Land Management (IGFCOT, Nicolae Zegheru), in cooperation with the ICOMOS National Committee of Romania. 67 participants from 13 countries. Ion Gr. Sion (ed.): “Architectural and Archaeological Photogrammetry.” IGFCOT, Bucharest, 1995, 314 pages.

(XVI) 1–5 October 1997 in Göteborg, Sweden. Organized by the Swedish Society for Photogrammetry and Remote Sensing (SSFF), the Royal Institute of Technology (Division of Photogrammetry) and the Institute of Conservation of the Göteborg University (Anders Boberg and Bosse Lagerqvist). 41 papers. Anders Boberg and Bosse Lagerqvist (eds.): “Photogrammetry in Architecture, Archaeology and Urban Conservation.” International Archives for Photogrammetry and Remote Sensing, vol. XXXI, part 5C1B, Stockholm, 1997, 273 pages.

(XVII) 3–6 October 1999 in Olinda, Brazil. “Mapping and Preservation for the New Millennium.” Organized by the Brazilian Society of Cartography, Geodesy, Photogrammetry, and Remote Sensing (SBC).

(XVIII) 18–21 September 2001 in Potsdam, Germany. “Surveying and Documentation of Historic Buildings–Monuments–Sites: Traditional and Modern Methods.” Organized by the German Society for Photogrammetry and Remote Sensing (Prof. Dr. Joerg Albertz, University of Technology, Berlin), in cooperation with ICOMOS Germany (Prof. Dr. Michael Petzet,

Munich, and Dr. Joerg Haspel, Berlin) under the auspices of UNESCO. 241 participants from 51 countries. 49 oral and 92 poster presentations. 12 excursions.

(XIX) 30 September–4 October 2005 in Antalya, Turkey. “New Perspectives to Save Cultural Heritage.” Symposium director: Prof. Dr. M. Orhan Altan, Technical University of Istanbul.

(XX) 26 September–1 October 2005 in Torino, Italy. “International Cooperation to Save the World’s Cultural Heritage.” Conference director: Sergio Dequal, Politecnico di Torino.

The CIPA 2007 search engine provides access to hundreds of papers presented at CIPA symposia:

cipa.icomos.org/?id=20



Robin Letellier (1944–2007) received a BA in architecture from Laval University, Quebec, Canada. He was chief of heritage recording services, Heritage Conservation Program, for Parks Canada between 1973 and 1997. From 1974 to 1999 he was the Canadian delegate to CIPA Heritage Documentation, the ICOMOS and ISPRS International Scientific Committee. He was a founding member of ICOMOS Canada’s Recording and Documentation Committee. Between 1984 and 1999 he lectured annually at ICCROM on heritage recording, documentation, and information management. As a management consultant, he assisted national and international conservation organizations in improving their operations. He was international coordinator for the RecorDIM Initiative.

Werner Schmid is a freelance conservator of mural paintings and related architectural surfaces, and a graduate of the Istituto Centrale per il Restauro (Central Institute for Conservation), Rome. From 1990 to 2000 he worked as a project manager at ICCROM, supervising a variety of efforts, including training courses and technical meetings. At ICCROM he coordinated the research seminar GraDoc – Graphic Documentation Systems in Mural Painting Conservation, and was editor of the proceedings, which were published in 2001.

François LeBlanc is a specialist in conservation and rehabilitation of heritage places. He is currently head of field projects at the Getty Conservation Institute in Los Angeles. A graduate of Montreal University with a degree in architecture, he is a registered architect with the Quebec Order of Architects, in Canada. He is former chief architect of the National Capital Commission, Ottawa, and was vice president of the Heritage Canada Foundation; director of the ICOMOS Secretariat, in Paris; and chief architect of the French Period at Parks Canada, in Ottawa and Quebec City. In addition, he has served on the executive boards of ICOMOS and the Association for Preservation Technology International (APT), and is a past president of ICOMOS Canada.

Recording, Documentation, and Information Management for the Conservation of Heritage Places

GUIDING PRINCIPLES



A Tunisian technician recording the condition of a Roman mosaic. Photo: François LeBlanc.

This book explains why heritage managers must make sure that heritage information is fully integrated into all research, investigation, and conservation activities. Through the discussion of basic principles, benefits, and new approaches, it assists those in charge of preserving immovable cultural heritage by bringing current heritage information practices to a new level.

- By **recording**, we create a reference for evaluating change and add to the understanding of a site.
- By **documenting**, we guarantee that information is systematically collected and preserved for future use.
- By **managing** this information, we make it available and provide a basis for sharing our knowledge and understanding.

Heritage information is the effective integration of recording, documentation, and information management, which is indispensable for informed decision making, facilitates project planning, and expedites conservation processes.

www.getty.edu/conservation

