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RECOMMENDATIONS FOR THE CONSERVATION OF MUSICAL INSTRUMENTS: AN ANNOTATED BIBLIOGRAPHY

GOAL

At the 1986 ICOM Triennial meeting of the International Council of Museums in Buenos Aires, a need was expressed by the International Committee for Musical Instrument Collections (CIMCIM) for a document addressing conservation and restoration of musical instruments. There was concern that restorations continued to be undertaken that were unacceptable ethically; although it was agreed that museum codes of ethics and other published works already covered this ground, it was nevertheless felt that curators and restorers of musical instruments did not necessarily have access to these publications. The present document has been formulated to facilitate access to relevant material.

INTRODUCTION

This document supersedes the 1967 ICOM publication *Preservation and Restoration of Musical Instruments*, a book which was progressive at its first appearance in its respect for the original tonal and decorative qualities of historical musical instruments, and in discouraging the outright modernization of old instruments. But the reader today should recognize, as the authors acknowledged in the preface, that these were provisional recommendations subject to periodic updating. Since 1967, the science and goals of conservation have indeed progressed. The often subtle evidence of historical technologies now known to be found in antique instruments can no longer be treated as disposable. No longer can we agree to the replacement of unserviceable components without acknowledging the evidence that may remain in those parts, such as original tool marks or the accretions, erosion, or patination that may be evidence of early patterns of use. Thus, while recognising the value of this book, we also acknowledge that the time has come for a reassessment.

The reassessment we present here is a digest of works on the collection, conservation, preservation, and care of musical instruments published in the last two decades. Although much material of this kind exists in the literature, it is often of a highly specialized nature and is not readily accessible to every curator of collections containing musical instruments.

This document comprises an annotated bibliography, providing sources for and an introduction to 20 key documents on current museum practice, most of them in the field of musical instrument collections. In addition to general works on museum philosophy and practice, which are necessary preliminary reading, this publication deals with material on the museum environment, storage and display, the ethics and practices of treatment, the use of musical instruments, and the making of reproductions. Before examining the bibliography, these specific categories will be discussed in some detail.

1. The Environment

As with other museum objects, the conservation of musical instruments begins with attention to the environment. Of the huge bibliography on the museum environment, a few texts can be recommended to the non-specialist. Thompson has produced the excellent overview of the subject that is familiar to museum personnel, while Karp has written specifically on storage climates for musical instruments. In addition, the Canadian Conservation Institute produces information of a non-technical nature for the staff of small, non-specialist museums.

2. Care and Handling

After attention to the environment comes the care in handling that instruments must receive while in storage or on display. The storage requirements of musical instruments are not different from those of many other composite objects and the problems and solutions have common features. General guidelines on storage materials, conditions, and operation abound in the literature, those included below being a few of the more general and complete. The display of musical instruments has hardly been addressed at all in the literature. This is primarily because musical instruments pose no unique problems, and certainly none which have not been encountered in the preparation for display of other objects. The sensitivities of all the materials of which instruments are composed are well understood, and guidelines exist for a variety of display situations.

3. Conservation, Restoration, and Use

Restoration and conservation are by no means equivalent terms although they are popularly confused with one another; some of the confusion is the result of the terms in English and in other European languages having different emphasis. To conserve an object is to attempt to arrest its deterioration and to preserve it in its most stable state. In English the museum personnel who do this are *conservators*. Restoration, on the other hand, involves the return of an object by technical intervention to a previous condition. In earlier times, and still predominantly in private practice, this work was

carried out by a *restorer*.¹ In museums the term conservator has generally replaced restorer, implying the application of scientific principles to the treatment of museum objects, with an emphasis on documentation and research.

The practice of restoring museum instruments for the purposes of playing in concert deflects emphasis from two of the central museum functions: preservation and study. Musicians in the private sector are performing experiments with restored early instruments and reproductions, both in the concert hall and in recording and broadcast studios, but museums should be encouraged to examine their motives carefully so as not to lose sight of their central purpose. While musicians are concerned with satisfying current demands for performances of early music on 'authentic' instruments, museums can ill afford to duplicate this effort at the expense of the collections which they hold in trust. Several texts address the controlled use of musical instruments in performance and research, including the CIMCIM *Recommendations for Regulating Access...* and the paper by Watson in the Annotated Bibliography following.

It is impossible in this document to cover all references to the conservation and restoration of musical instruments. Those included here provide the reader with a brief view of philosophy and practice in this field. In this area, the review paper by Karp and the paper on keyboards by Watson are essential reading. Also included are general texts on museum ethics and practice because, although emphasis is often placed on the specific needs of musical instrument collections, it is obvious that the conservation needs of musical instruments are in no way different from those of other museum objects.

4. Reproductions and Copies

A satisfying solution museologically is for musical instrument makers (whose resources and expertise are often misused in the restoration of original instruments) to make reproductions which can be used in museum concerts. This fulfills two of the central museum functions of preservation and education, and does so by utilizing existing expertise. The argument that the 'authenticity' of such performances will be compromised is specious because the original acoustic and mechanical characteristics of extant instruments are never known with certainty. Little has been published on the reconstruction of historical techniques in the making of musical instruments, and why this is relevant to museum practice, but several publications discuss instrument making from a modern perspective.

1. This is necessarily a very general statement. The reader is referred to the various documents concerning ethics and practice in the Annotated Bibliography for fuller coverage.

ANNOTATED BIBLIOGRAPHY

Barclay, R., "Ethics in the Conservation and Restoration of Early Brass Instruments," *Historic Brass Society Journal*, Vol. 1, 1989, pp.75-81. English.

The intention of this paper is to discuss some aspects of the preservation of brass instruments in museum collections and to contrast these with the restoration needs of working instruments. The author discusses conservation and restoration by quoting from the Code of Ethics for Conservation. In the specific case of brass instruments, he argues that the "least possible intervention" might preclude such standard restoration treatments as polishing, soldering, straightening and dent removal. The reasons for performing any kind of treatment on a brass instrument are discussed under the headings of preservation, display, and performance.

The effects of reshaping, soldering and polishing, three of the chief techniques available to the brass instrument restorer, are discussed with examples. All three techniques are detrimental to the physical integrity of the object to which they are applied. Under strict application of the codes of ethics none of these techniques should be practised upon museum artifacts. However, he states that "the Code of Ethics does not dictate the course of action; it simply guides. The discretion of the custodians of the artifacts comes strongly into play." There is room for compromise because each instrument requires a unique treatment protocol where the degree of intervention must be weighed against such factors as the historical value and cultural significance.

The author concludes by discussing the use of reproductions *versus* restored originals. In order to produce close facsimilies the thickness of the metal, the alloy, the dimensions and particularly the working technique would all be critical and would need to show a very high order of precision. He feels that a faithful copy of an early brass instrument could perform more "authentically" than an original restored to what approximates a primary state. As a final word, the unplayability of some original instruments does provide a degree of passive conservation!

Barassi, E.F. & Laini, M. (eds.), *Per una carta europea del restauro*, Società Italiana di Musicologia, Leo S. Olschki, Florence, 1987. English, French, German, and Italian.

This book contains the proceedings of a conference held in Venice in 1985 specifically addressing the problems of use of musical instruments, restoration, and the ethical and practical limitations. Among the many papers on a wide range of musical instrument studies, including dendrochronology, classification and history, the volume contains much material of specific relevance to the conservation of museum instruments. Articles by Arnold Myers, Grant O'Brien, and Friedemann Hellwig are of particular use in providing essential philosophical background.

In "The Conservation of Wind Instruments" Myers proposes five categories of instruments -- the currently replaceable, the superceded, the truly historic instruments, the rare, and the unique -- and uses this scheme as a key in determining the extent of restoration and use an instrument might undergo. O'Brien asks a number of searching questions related to restoration of keyboard instruments in his article "To Play or to Preserve." His chief question is: why are we continuing to restore instruments in a thoroughly thoughtless fashion as if there is an endless supply? He cites what he terms the "Existentialist Philosophy of Restoration... if it exists, restore it!" and discusses

several examples of problematical restorations. Copying provides a viable alternative and, although not advocating the wholesale copying of museum instruments, O'Brien does argue that the acoustic and musical function that an instrument has to serve favours the making of copies. In "Der Praxis der Restaurierung" Hellwig outlines where the discipline of conservation fits into the scheme of things, and under four broad headings discusses the maintenance of instruments, research, practical treatment, and documentation.

Of particular interest are the discussions which occupy the last sixty or so pages of the book. Their emphasis is in the direction of a code of ethics specifically for musical instruments, and although this grand work was never achieved, the discussions go a long way towards focusing the reader's attention on the many aspects of the use of historical musical instruments.

Canadian Conservation Institute, *CCI Notes*, Canadian Conservation Institute, Ottawa. English or French.

CCI Notes provide short, easy to assimilate guidelines on many aspects of the care and preservation of museum materials. None are more than six pages and most are on one double-sided sheet. Topics include the following: care of collections; the museum environment, physical, and biological factors; archaeological and field conservation; ceramics and glass; ethnographic materials; leather; skin and fur; metals; paintings and polychrome sculptures; paper and books; textiles and fibres; photographic materials; other materials; planning for disaster management; spot tests; and conservation equipment. The Notes are punched with three holes and come in an attractive binder. Supplemental sheets or revised notes may be added as they become available. *CCI Notes* are distributed free of charge and names and addresses of requesters may be added to a mailing list.

Canadian Conservation Institute, *Technical Bulletins*, Canadian Conservation Institute, Ottawa. English and French.

A series of 14 *Technical Bulletins* give detailed information on the following topics: relative humidity; museum lighting; recommended environmental monitors; care of musical instruments (see above); environmental norms; fluorescent lamps; care of wooden objects; silica gel; surface cleaning of paper; controlling fungal problems; and controlling museum pests. Other titles are planned. The material is intended primarily for the larger museum with staff and expertise, although the bulletins which deal with care of collections are more approachable by the museum with limited resources.

Of particular interest is *The Care of Musical Instruments in Canadian Collections*, (*Technical Bulletin* No.4). This publication describes in some detail the general care and maintenance of a musical instrument collection. This information is intended not only for the museum which may have large holdings of musical instruments but also for the smaller establishment which may have only one or two items. The care of the collection from the acquisition of the items right through to their cleaning, care, and maintenance is described and attention is given to complete and thorough documentation, and to the problems of display and storage. Lists of suppliers and references are also included. This little book is essential reading for both

specialist and generalist. *Technical Bulletins* are available from the publisher free of charge.

Comité international des musées et collections d'instruments de musique, *Recommendations for Regulating the Access to Musical Instruments in Public Collections*, Comité international des musées et collections d'instruments de musique, 1983. English, French, Spanish, and German.

This document was written by musical instrument conservators and curators, modified and approved by CIMCIM in 1983, and published in its final form of 1985 in *ICOM News*, Vol. 39 (1986), no. 3, pp. 5-8. It is intended to establish conditions and to demonstrate current approaches for allowing museum visitors (instrument makers, historians, musicologists, players, etc.) to physically handle museum musical instruments. The document deals with the conditions of access, general protection from damage, measuring tools and techniques, and the conditions for playing, and also touches upon the question of copyright. A proposed agreement form between the owner and the client for access to instruments in collections is appended.

The CIMCIM *Recommendations*... have proven to be a valuable guide to both public institutions and to individuals seeking access to historic instruments for study purposes. The publication is available on request from CIMCIM in the form of a brochure.

Eliason, Robert E. and Hellwig, Friedemann (eds.), "Musical Instrument Exhibitions in Scandinavia," *CIMCIM Newsletter* (special issue), 1986. English.

This is a ninety-page illustrated report from the work of a touring conference taking place in June 1982, evaluating the then recently installed exhibitions at Ringve Museum, Trondheim; Musikhistorisk Museum og Carl Claudius' Samling, Copenhagen; and Musikmuseet, Stockholm. The evaluations of the exhibitions were done by three working groups under the following headings: Basic Concepts, Pedagogical Approach, and Conservation and Security. The report includes general statements on each museum followed by three chapters including more detailed descriptions, comments and suggestions according to the headings of the working groups. Chapter 1, "Basic Concepts of Musical Instrument Presentation," begins with an introductory article by this working group's coordinator, F. Hellwig, touching upon two main types of museum presentation: one which focuses on the object's material and appearance, and the other exploiting the visitors' association and bringing out their own experience when faced with the objects. The various components of a complex museum presentation are listed and a number of major questions relevant to the investigation of the three museums are raised. Comments and answers to these questions are given for each museum. Chapter 2, "The Pedagogical Approach", headed by F. van Lamsweerde, gives descriptions, comments and suggestions in one section for each of the three museums. These include the various exhibitions and their techniques, audio-visual equipment, additional activities for schools, guided tours, concerts, publications, etc. Chapter 3, "Conservation and Security" was coordinated by R. Barclay and it includes general comments, and suggestions based upon investigation of the three museums under the headings: Condition of the Instruments,

Safety of the Instruments, Stability of the Materials Used, and Maintenance of the Instruments. References are provided at the end of each report.

An important feature of this publication is its applicability to musical instrument museums in general. The three museums surveyed are active, modern establishments with diverse and interesting collections and the observations made by the various working groups are therefore of wide general interest. This issue of the CIMCIM *Newsletter* provides a good starting point for any person contemplating the upgrading of an existing exhibition or even starting from the beginning. Of particular relevance to this bibliography is the section dealing with conservation.

International Council of Museums, *ICOM Code of Professional Ethics*, International Council of Museums, Paris, 1987. English and French.

The Code defines ICOM, the concept of museum, the museum profession and the governing body. In the second part the following topics are covered: minimum standards for museums, constitution, finances, premises, personnel, education and community role, public access, display, exhibitions and special activities, commercial support and sponsorship, museum shops and commercial activities, and legal obligations. Of particular interest to this publication are the sections concerned with the responsibility of museum staff to their collections and to questions of restoration of cultural property. As this is obviously the key document for the museum profession, the passages relevant to care of collections (Sections 6.2 and 6.3) are extracted and discussed below in some detail:

Members of the museum profession should not delegate important curatorial, conservation, or other professional responsibilities to persons who lack the appropriate knowledge and skill, or who are inadequately supervised....

The key issue for musical instrument collections is the practise of employing private restorers or instrument makers who may not have professional conservation qualifications or accreditation.

There is also a clear duty to consult professional colleagues within or outside the museum if at any time the expertise available in a particular museum or department is insufficient to ensure the welfare of items in the collection under its care.

Few musical instrument collections have access to specialist conservators and it is therefore important to seek advice within the wider museum profession.

One of the essential ethical obligations of each member of the museum profession is to ensure the proper care and conservation of both existing and newly-acquired collections and individual items... and to ensure that as far as is reasonable the collections are passed on to future generations in as good and safe a condition as practicable having regard to current knowledge and resources.

The exact definition of "good and safe" in this passage is elusive, but the main emphasis, that of passing on collections to future generations, is clear. The key element for the preservation of musical instrument collections concerns "current knowledge." It is thus incumbent upon custodians of musical instrument collections to examine closely any process applied to an object under their care which might either endanger or compromise it in the short or long term.

There are often difficult decisions to be made in relation to the degree of replacement or restoration of lost or damaged parts of a specimen or work of art that may be ethically acceptable in particular circumstances. Such decisions call for proper co-operation between all with a specialized responsibility for the object, including both the curator and the conservator or restorer, and should not be decided unilaterally by one or other acting alone.

This section is the focus of any discussion on conservation versus restoration and it is clear that full consultation with qualified professionals is necessary before any decision to restore is made.

The ethical issues involved in conservation and restoration work...are a major study in themselves, and those with special responsibilities in this area, whether as director, curator, conservator or restorer, have an important responsibility to ensure that they are familiar with these ethical issues, and with appropriate professional opinion, as expressed in some detailed ethical statements and codes produced by the conservator/restorer professional bodies.

These ethical issues may be studied in greater detail in *The Code of Ethics for Conservation* further in this Bibliography.

International Institute for Conservation and Getty Conservation Institute, *Art and Archaeology Technical Abstracts*, International Institute for Conservation and Getty Conservation Institute, 1956 and following. English.

The AATA series is one of the most useful publications for conservators, historians, curators, and other museum personnel. It is a world-wide bibliography of literature on all subjects related to the conservation of cultural heritage. The series started in 1956, with each volume consisting of four numbers and covering a period of two years. Since 1975 each volume has consisted of two numbers covering a single year.

The heart of AATA is the section that provides references to well over two thousand articles, monographs, dissertations, and informal papers dealing with aspects of conservation or with other subjects of interest to the professional conservator. The bibliography is arranged by subjects (methods used in conservation) and materials (of which objects are made). The titles are translated into English where necessary. Bibliographic references are given in the original language so as to help trace copies of the publications. The subsequent abstract of each publication offers a brief introduction to its contents with hints to techniques, materials, special problems,

history, etc. The professional quality of the abstracts is very high. Each number contains an author index as well as an extensive list of publishers and distributors of journals, monographs, etc., giving full addresses and reference to the abstracts. Each volume carries a subject index.

Of most importance to the specialist in musical instruments is Volume 28, No. 3, 1992. This volume is a bibliographic supplement to AATA entitled *The Conservation and Technology of Musical Instruments*. It was edited by Cary Karp and contains 955 references to all aspects of the preservation and conservation of musical instruments from all cultures. It is prepared the same style as all other recent AATA volumes. This volume is the musical instrument specialist's unique link to the greater world of conservation. It is indispensable as a key to knowledge and experience gathered from the whole world.

International Institute for Conservation -- Canadian Group and Canadian Association of Professional Conservators, *Code of Ethics and Guidance for Practice*, International Institute for Conservation -- Canadian Group and Canadian Association of Professional Conservators, Ottawa, 1986. English or French.

Several national conservation bodies have produced codes of ethics and documents on guidance for practice addressed primarily to their own members. The publication referred to here is one of these, and is cited because of its similarity to the earlier codes upon which it is based (most notably the *Code of Ethics and Standards of Practice* of the American Institute for Conservation, first published in 1964 and most recently revised in 1985) and because it is relatively brief, clear, and current.

The Code of Ethics is simplicity itself, occupying one page under six headings dealing with responsibility to the cultural property, respect for it, standards of treatment, understanding of limitations, contributions to growth of knowledge, and respect for the integrity of others. The Guidance for Conservation Practice is more lengthy and is divided into two broad categories: The Conservator and Cultural Property, and The Conservator and the Profession. The first category deals with the conservator's general obligations, preventive conservation, examination, conservation treatment, subsequent care, emergency situations, and relationship with the owner.

Although the document states that "Preventive conservation is a primary objective" it also makes clear that "restoration and reconstruction are means of re-establishing the cultural value of a cultural property." However, it cautions that this shall be done "to the minimum extent necessary," "using techniques which affect the cultural property least," and using "materials which can be most easily and completely removed without hazard to any original part."²

In *The Conservator and the Profession* the issues of relationships with other practitioners are spelled out, including such factors as false information, referrals, references, and conflicts of interest. Throughout, the guidelines are clear, precise and

2. The Code of Ethics of the American Institute for Conservation adds the following statement: "In compensating for loss or damage, a conservator may supply much or little restoration according to a firm prior understanding with the owner or client..." But it is equally clear that the conservator cannot ethically carry compensation to the point of modifying the known character of the original.

unequivocal. In these two sections the conservator's obligations to both the cultural property and to the profession are codified in very simple and straightforward terms. The document concludes with a glossary of terms and a bibliography. Although this book is intended primarily for the practising professional conservator, the custodian of collections can use it to gain valuable insight into the *modus operandi* of conservators, and the strictures and limitations placed upon them by their profession. This may, in turn, help musical instrument custodians in reconciling their demands upon the profession with what is ethically and practically feasible.

International Institute for Conservation - Canadian Group and Canadian Association of Professional Conservators, *Selecting and Employing a Conservator in Canada* (brochure), International Institute for Conservation - Canadian Group and Canadian Association of Professional Conservators, Ottawa, undated. English and French.

Sturman, Shelley, *et al.*, *Guidelines for Selecting a Conservator*, American Institute for Conservation, Washington, 1991, 2nd ed. English.

Although both these brochures are directed at conservators in Canada and the United States, the greater part of their content is universally applicable. Both documents begin with the question "What is a conservator?" and describe the few individuals who fly under this flag of convenience while being neither qualified nor abiding by professional standards. The first message, therefore, is to be cautious in selection. Criteria for selection follow including such factors as abiding by the Code of Ethics for Conservation, providing references, being open in discussions of methods, techniques and training, and having membership in a professional conservation organization. Once selection of a conservator is made, the brochures give guidelines on what to expect of a conservator, and what not to expect. Dissatisfaction at any stage in the employment of a conservator may be referred to the professional body of which the employee is a member. The American Institute for Conservation brochure also describes the organization's computerized Conservation Services Referral System, available free of charge to the general public. There is a great deal of basic and very useful information in both of these small brochures, and they document very well the expectations a custodian of cultural property should have when contemplating its treatment.

Johnson, E.V. and Horgan, J.C., *Museum Collection Storage*, ICOM/UNESCO, 1979. English.

Planning for collections storage involves consideration of the mission of the museum, appropriate physical relationships between storage areas and other museum facilities, and the amount of space needed both initially and with attention to collections growth. Storage systems may be designed to facilitate access to the objects by researchers and public, or they may favor the safeguarding of objects from overexposure to handling. Allowances should be made for accessing and retrieving objects for exhibition, loan, conservation, or research. Storage should be planned with adequate security from theft, fire, natural disasters, and other hazards.

Environmental factors are critical to the safe storage of collections. Heating, ventilation, and air conditioning should maintain a stable environment including, most

importantly, relative humidity levels appropriate to the particular types of materials in each storage space. Other environmental factors include dust and other pollutants, light, biological pests, vibration, and exposure to accidents.

Storage systems may be selected to achieve a careful balance between protection and accessibility. The particular vulnerabilities of various types of objects suggest the best choice of boxes, trays, drawers, racks, and open or closed shelves. Storage structures may be fixed, where space allows, or high-density mobile systems for use when space is minimal. A high-density mobile storage system for keyboard musical instruments is illustrated. Other variables for storage fixtures include metal or wood construction, commercially made or made by museum staff.

This book raises most of the important questions pertaining to museum storage and provides excellent practical guidelines. Some of the questions posed have been addressed by ongoing progress in conservation science.

Karp, C., "Restoration, Conservation, Repair and Maintenance," in *Early Music* (Oxford University Press), Vol.7, No.1, Jan 1979, pp. 79-84. English.

In this article the author deals with the wide difference that exists between the repair and refurbishing of modern instruments and the treatments required of museum material. The philosophical and ethical foundations of conservation are explored first, followed by practical sections on what to do or not do. The article begins by contrasting two viewpoints expressed as follows: "Old instruments are of no use unless they are played. If in doing so they are damaged one simply fixes them; should they be destroyed -- it will have been worth it" and "We have an obligation to see that old musical instruments survive totally unchanged into the undefinedly distant future. Usability in performance is an entirely secondary consideration." From this comes the argument that we are not the licensed exhausters of the cultural heritage, but its custodians.

The author describes five ways in which old instruments can be used, ranging between performance of the music for which they were intended to "a source of non-specified personal gratification." In discussing these extremes and all points between, the author arrives at the conclusion that until we are able truly to experience early music in its own terms our major concern should be the survival intact of both the instruments and the traditions they represent.

In the practical sections, the author provides basic guidelines on the care and treatment of ancient instruments. He points out specifically the common fallacy of makers and repairers calling themselves restorers. He therefore counsels consultation with competent professionals, good documentation, and searches of the literature. In particular, one should not do, or allow to be done, anything which will not be removable later.

The article concludes with notes on restoration, repair and maintenance, defining in each case the extent of the terms and providing examples. This article was published over twenty years ago but is still regarded as a key document in the definition of musical instrument conservation. Everything described here encompasses practical common sense, and nothing has so far been superseded.

Karp, C., "Storage Climates for Musical Instruments," *Early Music* (Oxford University Press), Vol.10, No.4, 1982, pp.469-476. English.

Storage is defined in this article as any state in which an instrument is kept when not in use. The author states at the beginning that storage climates are not an entertaining subject, but that the topic does require understanding by anyone concerned with the long-term preservation of museum objects. The evidence of damage due to the environment is widespread in musical instrument collections, and modern artificial climates and intense lighting make understanding and control of conditions even more essential than before.

The storage climate as it affects museum objects relates basically to control over light and air. Recommended norms for lighting are dealt with first, followed by practical advice for measuring illumination and for reducing it to acceptable levels. The control of atmospheric conditions is a great deal more complicated and occupies the lion's share of the article. The author begins by discussing relative humidity and its effects on organic materials, describing the properties of wood and the effects of too dry and too wet conditions. "Comfort" levels for all the components of composite objects like musical instruments are discussed, including such factors as their original environment at time of manufacture, mechanical stresses within their structures, and levels to which they may have accommodated themselves. The author admits the difficulty of defining ideals. However, the larger goal of humidity control is the minimisation of fluctuations, and for this many practical suggestions are made both for control and monitoring. Humidification and dehumidification requirements are dealt with and the necessary equipment discussed. The use of silica gel for controlling humidity in display cases is also introduced. Reference charts of relative humidity and absolute humidity are included.

The article concludes with a useful section of further information, including readings, and sources of monitoring and control equipment. The subject of climate control and measurement is extremely large and this article can only provide an introduction, but for the person in daily charge of a musical instrument collection it gives plenty to work on.

Odell, J. Scott, "Musical Instruments," *Caring for Your Collections*, The National Committee to Save America's Cultural Collections, Arthur W. Schultz, Chairman. New York, Harry N. Abrams, 1992, pp 128-137. English.

This book is aimed at private collectors and small museums without "in-house" access to laboratory facilities and professional conservators. It gives guidelines and practical suggestions for the responsible care of most types of collections, and most of the materials of which artifacts are made. The chapter by Odell on musical instruments deals with the storage and routine care of a variety of instrumental types, and warns of the risks which always accompany restoration of instruments for use in performance. Specifically mentioned are increased exposure to accidental damage, loss of original material and lost evidence of how an instrument was made and used during its historical life.

The author suggests that use of a copy will usually be preferable to the restoration of an irreplaceable original -- particularly so for many ethnographic instruments and for instruments which still retain ephemeral original features. "A local

musical-instrument maker or technician may be trained and highly competent to deal with modern pianos, band instruments, or orchestral bowed strings, but to possess the experience and skills needed to properly treat unique or historical instruments is quite another matter... most are predisposed to make an instrument function well by modern standards and look as good as possible, an approach that is dangerous and inappropriate when dealing with historical instruments." Thus, it "may be wisest to pair the craft skills and specialized knowledge of a musical-instrument maker with those of an experienced object conservator to come up with a well-justified proposal...." Musical instruments have physical requirements identical in most respects with those of other artifacts made of similar materials, so there is much that is directly relevant to their conservation in the book's other eighteen chapters, especially those on environmental control, furniture, textiles, decorative arts, metal objects, paintings, and ethnographic materials. An initial essay by Joyce Hill Stoner, "The Mortality of Things," gives a brief overview of the history of conservation, and makes an excellent case for basic care and maintenance as a way of avoiding the need for more intrusive technical treatments, an approach as valid for musical instruments as for other historical artifacts. She urges getting more than one opinion when a major treatment is contemplated; a chapter on "Obtaining Professional Conservation Services," and appendices listing institutional and commercial resources (restricted to North America and England) are helpful guides to finding a competent conservator.

Skowronek, M., "Zu welchem Zweck und Ziel, mit welcher Absicht werden historische Musikinstrumente restauriert?" *Colloquium: Restauratieproblemen van Antwerpse Klavecimbels*, ed. J. Lambrechts-Douillez, Ruckers Genootschap, Antwerp, 1970. German.

This paper addresses the aim, purpose, and meaning of restoring historical musical instruments. According to the author, in the case of private collectors, it is obvious that instruments are generally required to be in playing condition. For public collections which may never have the means or facilities to restore all their instruments, every case should be considered individually. One must always bear in mind that it is better to have an authentic ruin than a falsely restored musical instrument. Not every instrument should be restored; there are many cases where far better alternatives like non-interventive conservation present themselves. In this work criteria are discussed assessing the condition of soundboards, ribs, cases, strings, and keyboards before any decision is taken.

The better alternative to restoration is conservation. This should start with an adequate museum storage with enough space and stable climatic conditions. In many cases it would be better to spend money upgrading storage than in the acquisition of more instruments which will further limit space and the care which can be given. With conservation comes an understanding of the objects which are our professional responsibility.

Good and bad examples of restoration are given, and the author argues that while we know more than we did twenty years ago, we do not know everything. We learn most about history, technology, and performance practice from unrestored instruments. The book in which this paper appears represents the proceedings of one of the first close examinations of the ethics and practices of musical instrument restoration.

Thompson, J., *Manual of Curatorship: A Guide to Museum Practice*, Butterworths, London, 1992. English.

The *Manual of Curatorship*, originally published in 1984, has appeared in a substantially revised and enlarged second edition. It now runs to over 750 pages by some 70 distinguished authors and "is for the practical use of all concerned with the management and administration of museums. It is a comprehensive reference work for museum professionals...." The book is divided into five sections: The Museum Context, Management and Administration, Conservation, Collections Research, and User Services.

Of these, Conservation (pp. 211-490) has 26 chapters, with bibliographies, on documentation, environmental control and buildings, the conservation and storage of archival paper, prints, drawings, watercolours, easel paintings, photographic materials, textiles, leather, wood, ceramics, stone, metals, machinery, archaeological, geological and zoological materials, herbarium practice, object handling, storage systems, conservation aspects of storage and display, pest control, scientific examination of artifacts, and disaster planning. Security, ethics, code of conduct for curators, and the planning of new buildings are treated in other sections of the book.

This is a valuable source for any curator and the publishers claim, quite rightly, that it is the single most important reference work within the profession. Certainly one would like to see it in every museum library. There is much that is directly relevant to the care of musical instruments, although no section devoted specifically to them. The Preface states that "...the Board will plan for further revisions at regular intervals by commissioning new material" and it is to be hoped that the next edition will include a chapter on the specific conservation, storage, and access problems presented by musical instruments. In the meantime, this book is an essential purchase for the custodians of any collection of cultural material.

Thomson, G., *The Museum Environment*, Butterworths, London, 2nd edition, 1986. English.

Most injury that befalls historical objects in museums can be avoided by maintaining safe and stable display and storage environments. This book describes the effects of environment on the materials found in museum objects nearly all of which can be found in musical instruments, and suggests methods of monitoring and controlling environmental conditions. Discussion of the interaction of materials with their environment is necessarily dependent upon science. The first half of the book approaches the subject on a level which assumes minimal science background, leaving more complex scientific explanations to the second half.

Both sections of the book divide environment into categories of light, humidity and air pollution. Light causes surface damage and colour changes due to visible and ultra-violet radiation. Radiation levels can be measured in order to prescribe lighting and exhibition arrangements appropriate for both preservation and display requirements. Variables include natural or artificial light, colour, angle, diffusion, exposure time, and heat.

Incorrect humidity levels cause damage by provoking changes in size and shape, chemical reactions and biodeterioration. Each class of materials requires its own optimum relative humidity level and fluctuation limits in order to control these effects. Humidity can be accurately measured in several ways. Air conditioning, humidifiers,

dehumidifiers, and humidity buffers like silica gel are among the means by which humidity can be controlled.

Pollution comes primarily in the form of particulates and gases. Various filtration systems are used to remove particulates like smoke and dust. Gaseous pollutants such as sulphur dioxide are more concentrated in urban areas, coming primarily from the burning of fossil fuels. They cause damage to most museum materials. Gaseous pollutants can be removed by water spray air conditioning and activated carbon filters.

The article in *Early Music* by Karp, "Storage Climates for Musical Instruments" provides an introduction to the museum environment with a slant towards musical instruments. For those who need to study the subject in more detail, Thompson's book is definitive.

Watson, J.R., "Historical Musical Instruments: A Claim to Use, An Obligation to Preserve," *Journal of the American Musical Instrument Society*, Vol. XVII 1991, pp. 69-82. English.

There exist two often opposing views about the use and preservation of antique musical instruments. According to the first view, it is the destiny of all musical instruments to play music. Old instruments are often among the best instruments for playing. According to this point of view, preservation is accomplished most effectively through playing. Leaving an instrument permanently silent is thus absurd.

The other view holds that our obligation to preserve old instruments is served only by protecting them from intrusive restorations and physical deterioration from use. Historical instruments are, in effect, primary documents detailing historical instrument making techniques and technologies. This carries implications about the usefulness of non-playing antique instruments, and the destructive effects of restoration and use. Supporting evidence is offered from the example of keyboard instruments. In a solo keyboard work, a key near the middle of the range is likely to be struck over two thousand times in every hour of playing, and with each strike of the key, a chain reaction of abrasive forces is unleashed.

The point of this article is first to elaborate on the compelling insights as well as the oversights in each of these views, and to form a responsible synthesis from them. The article proposes:

...a rationale by which a minority of representative musical instruments may receive minimally intrusive restoration and judicious musical use in order to preserve and exhibit the aesthetic integrity unique to this class of historic artifacts, and that such restoration and use must be undertaken without significant compromise to the instrument's physical or historical integrity as mandated in accepted codes of museum and conservation ethics.

The article concludes:

Are the claims to use and the obligation to preserve old musical instruments mutually exclusive objectives? Antique musical instruments, especially those retaining substantial historical integrity, are a non-renewable and diminishing cultural resource -- an endangered species. If

we allow preservation to be secondary to musical performance, the legacy will be spent, the species extinct. Based upon the accepted codes of museum and conservation ethics, our first objective should be to protect the physical integrity of historical instruments. That is the more long-term of our dual objectives. To the extent that we can without significant compromise of physical integrity, we may also act upon a respect for the acoustical function or 'voice' of musical instruments. This is to say that these two sometimes conflicting objectives are hierarchical and not coequal.

Witteborg, L. P., *Good Show: A Practical Guide for Temporary Exhibitions*, Smithsonian Institution, Washington, 2nd edition, 1991. English.

This is one of the best and most practical publications for exhibit design and presentation. Although aimed primarily at temporary exhibitions, most of the material is equally applicable to permanent displays. Every aspect of staging a display, from the early planning through preparation, fabrication, illumination, and installation is minutely detailed. Other issues deal with titles and labels, security, evaluations, and visitors with disabilities. Of especial interest to anyone familiar with workshop practice are the extensive lists of tools and materials, and sources of supplies. The bibliography, like the supplies lists, is made easily accessible by following the general scheme of the chapters. Of especial interest to this bibliography, it also includes solid sections on conservation and environment and the handling of museum objects. A further appendix on conservation provides basic guidelines for lighting, environment, and mounting together with notes on display case design and some materials considered safe and unsafe to use with museum displays.

Perhaps the most appealing aspects of this book are the many line drawings by Steven D. Schindler illustrating everything from the use of tools to the heights and angles of display stands. The more detailed of these illustrations are essential to the comprehension of the ideas expressed, but the more whimsical of them provide a very necessary relief from what would otherwise be a very heavy text. No matter what the scope of the planned exhibition, or what specialized field it deals with, no curator or museum designer should be without this book. Although not dealing with either musical instruments or conservation, this book is included here because so many aspects of preparing and mounting an exhibition have a bearing on the care and security of the objects.

CONCLUSION

Guidelines for the collection, use, and conservation of cultural properties have been in place for some time, but it is a mistake to assume that the publication of codes of ethics, standards of practice, and similar documents results in an immediate correction of abuses. A brief review of recent publications on the restoration of musical instruments will show that unsound practices continue. Indeed, the appearance in print of an otherwise dubious or unethical technique gives it an undeserved credibility, especially among those who do not regularly review the conservation literature. The first principle of ethical conduct in the treatment of museum objects is best expressed by a quotation from the Conservation Code of Ethics referred to above:

It is the responsibility of the conservator, acting alone or with others, to strive constantly to maintain a balance between the need of society to use a cultural property, and the preservation of that property."

To a great extent, destruction of the intrinsic value of musical instruments by over-restoration results from an inability or an unwillingness of individuals to share responsibility and expertise. Preservative or restorative treatment of any object is the province of a wide range of specialists, from curators and conservators to historians and instrument makers. Decisions concerning large and complex treatments which may significantly alter historical objects should be taken only after extensive consultation with appropriate specialists.

ADDRESSES OF PUBLISHERS

American Musical Instrument
Society,
c/o Shrine to Music Museum,
414 East Clark Street,
Vermillion,
South Dakota 57069-2390,
U.S.A.

Butterworth and Co.
(Publishers) Ltd.,
Borough Green,
Sevenoaks TN15 8PH,
U.K.

Butterworth/Heinemann,
80 Montvale Avenue,
Stoneham,
Massachusetts 02180,
U.S.A.

Canadian Conservation
Institute,
1030 Innes Road,
Ottawa,
Ontario K1A 0C8,
Canada

CIMCIM Publications,
Collection of Historic Musical
Instruments,
Reid Concert Hall, University
of Edinburgh,
Bristo Square,
Edinburgh EH8 9AG,
Scotland

Early Music,
Oxford University Press,
Walton Street,
Oxford OX2 6DP,
U.K.

Getty Conservation Institute,
4503 Glencoe Avenue,
Marina del Rey,
CA 90292,
U.S.A.

Historic Brass Society,
148 W. 23rd. Street, #2a,
New York,
NY 10011,
U.S.A.

International Council of
Museums,
Maison de l'UNESCO,
1, rue Miollis,
75732 Paris,
France

International Institute for
Conservation - Canadian Group,
P.O. Box 9195,
Ottawa,
Ontario K1G 3G9,
Canada

Olschki, Leo S.,
Viuzzo del Pozzetto
(Viale Europa),
I-50126 Firenze,
Italy

Ruckers Genootschap,
Vleeshouwersstraat 40,
B-2000 Antwerpen,
Belgium

Smithsonian Institution Press,
L'Enfant Plaza,
Suite 2100,
Washington D.C. 20560,
U.S.A.

Note: these addresses were accurate at the time this publication went to press.

This document was compiled by the following members of the Conservation Working Group of CIMCIM:

Robert Barclay, (Coordinator) Canadian Conservation Institute,
Ottawa, Canada

Friedemann Hellwig, Fachhochschule Köln,
Köln, Germany

Peter Andreas Kjeldsberg, Ringve Museum,
Trondheim, Norway

Jeannine Lambrechts-Douillez, formerly Museum Vleeshuis,
Antwerp, Belgium

Hélène La Rue, Pitt Rivers Museum,
Oxford, United Kingdom

Scott Odell, Smithsonian Institution,
Washington D.C., U.S.A.

John Watson, Colonial Williamsburg Foundation,
Williamsburg, U.S.A.

Elizabeth Wells, Royal College of Music,
London, United Kingdom

Any questions relating to conservation or restoration of musical instruments may be referred to the Coordinator of the Conservation Working Group of CIMCIM.

CIMCIM publications may be ordered from the address on the previous page

CIMCIM is the International Committee of Musical Instrument Museums and Collections of ICOM, the International Council of Museums

CIMCIM encourages, promotes, and organizes professional activities relating to collections and museums of musical instruments of all kinds from all countries. Members receive the *CIMCIM Bulletin*, participate in regular meetings, and contribute to the discussions and publications of the Working Groups, which currently deal with Conservation, Training, Documentation, Education and Presentation, and the *International Directory of Musical Instrument Collections*.
