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## **Some problems in musical instrument conservation in museum collections**

### Introduction

For at least the last forty years, a heated and sometimes vicious debate has persisted in the academic music world over the restoration and musical use of historic instruments in museum collections.<sup>1</sup> At the 2002 annual conference of the Comité International des Musées et Collections d'Instruments de Musique (CIMCIM, or the Musical Instruments International Committee of the International Council of Museums) for example—the theme of which was “Musical Instruments: Do They Have to Sound?”—one session ended in a fist fight.<sup>2</sup> Beyond the clear intensity characterizing this debate, what really caught my attention was the reported dearth of conservators at this conference.<sup>3</sup> After all, isn't the question of sound production for museum instruments ultimately a question of object condition, maintenance, and most likely, a question of treatment—and as such, the explicit concern of the conservator?

An overview of the literature addressing the philosophical problems of musical instrument restoration revealed a similar situation: found articles by non-conservators far outnumbered those by conservators. This general under-representation of conservators may simply reflect, however, the very

<sup>1</sup> Published sources questioning the assumed worth of restoring instruments to playable condition were uncommon in the 1950s; in contrast, one can easily find a number of publications from the 1970s; from the 1960s we have the following quote from a review of the book *Preservation & Restoration of Musical Instruments: Provisional Recommendations* by A. Berner, J. H. van der Meer, G. Thilbault and with Norman Brommelle (London: Evelyn, Adams & Mackay, 1967): “Ten years ago we knew that much if not most so-called restoration done in the past was misinformed and had done more harm than good; looking back over the last ten years with our increased knowledge we know that the same sort of mistakes have been going on in the meantime” (Guy Oldham, “Keeping Instruments,” *Musical Times* 109 (November 1968), 1029).

<sup>2</sup> Gabriele Rossi-Rognoni (Curator of the Museo degli Strumenti Musicali, Galleria dell'Accademia, Florence, Italy), interview by the author, Florence, Italy, 16 March 2006. The program for the conference is available online at <http://www.music.ed.ac.uk/euchmi/cimcim/ixrp.html> (accessed April 2006). All URLs provided in this document were accessed in April 2006.)

<sup>3</sup> “[C]onservators were unfortunately under represented [at the conference]...” (“Report of the CIMCIM Meeting 2002 in St Petersburg, Russia,” *CIMCIM Bulletin* 50 (2002), available online at <http://homepages.ed.ac.uk/ezhm01/ibt050.html>).

few dedicated museum positions in musical instrument conservation. U.S. museums support only two—one at the Metropolitan Museum of Art in New York and one at the National Music Museum in Vermillion, South Dakota—though there are more than two dozen other sizable museum collections of instruments across the country.<sup>4</sup> Despite being outnumbered and consequently outvoiced, so to speak, by curators, music historians, music enthusiasts, instrument makers, musicians, and even diocesan advisors, musical instrument conservators have nevertheless largely contributed intelligent and cogent thoughts to this controversial subject.

Moreover, conservators seem to have reached a consensus regarding the restoration of museum instruments for musical use. In articles published over the past thirty years in a range of titles from academic journals to enthusiast magazines, conservators of musical instruments at various institutions worldwide frequently repeat four common points.<sup>5</sup>

1. That restoration always results in loss of original material and of original traces and that preservation of the material significance of artifacts is one of the primary responsibilities of museums.
2. That the production of music is an intrinsically important aesthetic quality of musical instruments and deserves consideration.
3. That carefully and skillfully made copies of instruments can largely satisfy this idea of sound and that making copies benefits tremendously from the existence of preserved, and ideally, unrestored historic models.
4. That while the foregoing points rationally promote recommending against restoration generally, compelling arguments to restore can, on occasion, nevertheless be made for instruments individually.

<sup>4</sup> Thirty institutional collections with more than 500 instruments (12 institutions with 500-1000 instruments; 18 with over 1,000) were counted from the Directory of Musical Instrument Collections jointly provided by CIMCIM and the American Musical Instrument Society, available online through the CIMCIM web site at <http://www.music.ed.ac.uk/euchmi/cimcim/id/idthus.html>.

<sup>5</sup> For example, see John Barnes (Russell Collection, Edinburgh), "Does Restoration Destroy Evidence?" *Early Music* 8 (1980): 213-218; Christopher Challen (Fenton House, Hampstead), "The Unverdorben lute at Fenton House," *Early Music* 7 (1979): 166-173; Friedemann Hellwig (Rheinisches Museumsamt, Brauweiler), "Die Praxis der Restaurierung," *Per una Carta Europea del Restauro: Conservazione, Restauro e Riuso degli Strumenti Musicali Antichi* (Firenze: Leo S. Olschki Editore, 1987), 305-311; Stewart Pollens (Metropolitan Museum of Art, New York), "The Restoration of Musical Instruments: To Play or Preserve?" *Art & Antiques* 6 (1983): 40-122; John R. Watson (Colonial Williamsburg, Williamsburg), "Historical Musical Instruments: A Claim to Use, an Obligation to Preserve," *Journal of the American Musical Instrument Society* 17 (1991): 69-82.

We all can immediately recognize and appreciate the sensitivity and sensibility of these observations. Less apparent, perhaps, is how complicated and relentless the issues presented by musical instruments in the confines of a museum can be. Which instruments fall under the caveat in point 4, which do not, and why? How and by whom are such decisions made? Not surprisingly, the debate remains very much alive and concerns much more than just the instruments. At stake are not only different ideas about what constitutes the preservation of musical instruments and what instruments and the music they can make mean to us, but different ideas about the care and significance of museum artifacts in general, and ultimately, about the purpose and responsibilities of museums.

#### Compelling arguments against restoration

Today, most curators and conservators advocate not restoring musical instruments to playability. No one denies that musical expression is an intrinsic quality of instruments; rather, the decision to allow an instrument to remain non-functional in the essential capacity for which it was made follows from two key arguments: that much can be deduced about an instrument's musical expression even if it cannot be played, and that an instrument's musical sound is not its only value.

For example, although the double virginal by Hans Ruckers (ca. 1533/35-1598) at the Metropolitan Museum of Art (1929.29.90<sup>6</sup>) has lost its strings and most of its sound-producing components are mechanically precarious, it can nevertheless still give us an idea of "how [it] was intended to sound and be played."<sup>7</sup> We can construct some idea of the instrument's tone, timbre, and pitch simply from its materials, including the "original...quill[s], keycloths, action cloths, [and] dampers"—the so-called "ephemeral parts" of plucked keyboard instruments that by definition almost always need to be replaced during restoration to playability.<sup>8</sup>

Besides its materials, the design and construction of the instrument also help us to imagine its quality of sound. In the case of this specific instrument, the presence of a mechanical device known as

<sup>6</sup> Image and description available online at [http://www.metmuseum.org/Works\\_of\\_Art/collection.asp](http://www.metmuseum.org/Works_of_Art/collection.asp) under "Musical Instruments."

<sup>7</sup> Stewart Pollens, "Flemish Harpsichords and Virginals in The Metropolitan Museum of Art: An Analysis of Early Alterations and Restorations," *Metropolitan Museum Journal* 32 (1997), 88.

<sup>8</sup> Pollens, "Flemish Harpsichords," 87.

an *arpichordium* stop demonstrates that buzzing in the strings was sometimes a desired musical quality in the Renaissance.<sup>9</sup> When engaged, the stop brought a series of hooks in light contact with the instrument's vibrating strings, resulting in a buzzing sound (*Fig. 1*). Since today's musical tastes predispose us to consider buzzing noises an irritating symptom of a mechanical problem, our understanding of this instrument's sound would be quite misguided if for some reason the apparent function of the *arpichordium* stop had been obscured by restoration.



*Figure 1. Hans Ruckers the Elder, Double virginal, signed and dated, 1581, Metropolitan Museum of Art, New York, 1929.29.90. Detail of soundboard showing the curved arpichordium stop.*

Such a thing could occur in a modern restoration aimed at returning an instrument to its original configuration. Not unlike saints' faces that were painted over in icons or dresses that were recut and sewn into new styles as fashions came and went, so too were musical instruments sometimes radically altered or changed to keep them playable as musical tastes and instrument technologies evolved.<sup>10</sup> Updating a virginal or harpsichord almost certainly involved considerable modifications to the stops;<sup>11</sup> a typical *ravalement* expanded the instrument's compass and/or enabled a greater variety of timbres or sound effects (such as the buzzing created by the *arpichordium* stop)—and this required the refashioning, replacing, removal or the addition of stops.<sup>12</sup> On one instrument by François-Étienne Blanchet (1695-1761) at the Civico Museo degli Strumenti Musicali in Milan, the mechanism by which

<sup>9</sup> Pollens, "Flemish Harpsichords," 87.

<sup>10</sup> *Alter*—"to make different without changing into something else" (MerriamWebster OnLine, available online at <http://www.m-w.com/>). For a very brief, but effective overview of the evolution of musical demands from the Baroque through the 19<sup>th</sup> century, see "Stanley Ritchie, "Authentic Reconstruction of Musical Performance: History and Influence," *Drama Review* 28:3 (1984): 67-73 (68-69 in particular).

<sup>11</sup> Indeed, John Koster (formerly at the Museum of Fine Arts, Boston; now at the National Music Museum) writes that only two Flemish *muselar* virginals retain their *arpichordium* stop (John Koster, *Keyboard Instruments in the Museum of Fine Arts, Boston* (Boston: Museum of Fine Arts, 1994)).

<sup>12</sup> See Pollens, "Flemish Harpsichords."

the stops were dis/engaged were also converted from pull-knobs into knee-operated levers. Hypothetically, if someone today sought to undo this work and to rebuild the instrument as it had been, the *ravalement* and the knee levers might be reversed, if consistency with Blanchet's design was considered to outweigh the cost of such a restoration to the material fabric of the harpsichord.<sup>13</sup>

Such a project is not necessarily deplorable, for there are relatively few Renaissance or Baroque instruments that have not been updated or otherwise modernized with the changing times.<sup>14</sup> To give an idea of how many instruments were destroyed in this process: the *Harvard Dictionary of Music* defines the lute as "the dominant musical instrument in Europe and England" during the Renaissance. In 1979, one conservator lamented the estimate that there were only about "340 lutes...still in existence."<sup>15</sup> Though the lute's notoriously delicate construction, as well as its overall abandonment by musicians during the 18<sup>th</sup> century, no doubt contributed to this extremely low survival rate, later instruments we all know and that are still widely played today did not escape this treatment either.<sup>16</sup> For example, about 630 Stradivari (Antonio Stradivari, ca. 1644/49–1737) violins survive; six have their original necks and even these have been reshaped and angled back.<sup>17</sup>

Thus, four-octave harpsichords routinely had their compasses expanded to five octaves or were even converted into pianos; Baroque violins had their shorter, chubbier necks cut off and replaced with longer, thinner ones; lutes were reconfigured as guitars; wind instruments were rebored.

<sup>13</sup> The single-manual harpsichord (HS3-IC1645.7) built by the Flemish maker Johannes Couchet (1615-1655)—the grandson of Hans Ruckers—in 1645 and now in the Russell Collection of Early Keyboard Instruments at the University of Edinburgh is just one example of a reversed *ravalement* (more information available online at <http://www.music.ed.ac.uk/russell/instruments/hs3ic16457/datasheet.html>). In general, the idea of returning an instrument to an earlier form is not an uncommon consideration, especially for instruments built by a highly esteemed maker whose surviving work is rare. See, for example, Challen, "The Unverdorben lute," 168: "As regards the major alterations, there was only one possibility: to leave the instrument [a 16<sup>th</sup>-century lute by Marx Unverdorben, theorboed in 1747] as a theorbo. To restore it to its original specifications was impossible because Unverdorben's neck block was missing, so one could not be certain of the lute's original compass."

<sup>14</sup> See n. 10, above.

<sup>15</sup> Don Michael Randel, ed., *The Harvard Dictionary of Music*, 4<sup>th</sup> ed., s.v., "lute," 474; Challen, 170.

<sup>16</sup> Lute ribs—the narrow strips of wood that are gently shaped and jointed together to form the pear-shaped back of the instrument—may be as thin as 1.5 mm.

<sup>17</sup> National Music Museum, "Violin, The Harrison, by Antonio Stradivari, Cremona, 1693," available online at <http://www.usd.edu/smm/Violins/Stradivari3598/3598StradViolin.html>.



*Figure 2. Detail of a viola d'amore at the Civico Museo degli Strumenti Musicali, Castello Sforzesco, Milan, which shows evidence of having once been a descant viol: the upper bulbs of the viol's C-holes have been closed and the sound holes have been recut in the characteristic viola d'amore flame shape.*

Though these invasive physical transformations resulted in significant loss of original material and information, the historical practice of updating, in and of itself, can in fact reveal something about an instrument's previous sound—even if the instrument now minimally resembles what it was when it was first made. Instruments were usually updated because the original design was insufficient or incapable of delivering newly desired sound qualities. The necks on Baroque violins, for example, had to be reformatted in part to withstand the increased string tension necessary to heighten the instrument's projecting power and brilliance. In this way, a modernized Baroque violin can still tell us something about its former life; judging from the neck adjustment alone, we know it was not so high-pitched nor as loud as it is today.<sup>18</sup>

In addition to these various details about an instrument's sound and musical expression, the physical evidence preserved on a non-playable instrument can also reveal technical and art historical information—including insights into the maker's life, his activity and development as an instrument builder, his working methods and materials, and his creativity and technical skills. To return to the example of the Ruckers virginal at the Metropolitan Museum of Art, surviving vulnerable parts may even provide clues about the location of his workshop in Antwerp. Ruckers' workshop is known to have been located on Jodenstraat by 1584, but this instrument, made in 1581, suggests he may have been established there earlier.<sup>19</sup> On the fronts of the natural (white) keys, the parchment scraps used to line

<sup>18</sup> For an excellent collection of examples of similar technical-investigative work—and from the perspective of the performer—see Jaap Schroder, Christopher Hogwood, and Clare Almond, "The Developing Violin," *Early Music* 7 (1979): 155-165.

<sup>19</sup> Pollens, "Flemish Harpsichords," 87.

the embossed leather appliqué bears Hebrew letters, suggesting that offcuts from Hebrew manuscripts were readily on hand (Fig. 3).



Figure 3. Hans Ruckers the Elder, *Double virginal, signed and dated, 1581, Metropolitan Museum of Art, New York, 1929.29.90. Detail of key fronts.* [Image: Stewart Pollens]

All of these examples give force to the idea that the documentary evidence contained in a non-functioning historic instrument is just as, if not more, significant musically than the music the instrument could make if it were restored to playability.<sup>20</sup> Proponents of this idea have created a compelling metaphor—they consider the instrument a primary document, a “treatise,” the surviving text of which should remain as uncompromised as possible.<sup>21</sup> From this perspective, a non-functioning, non-restored (or minimally restored) instrument may be what one conservator has called “a musical derelict, but a pristine...document.”<sup>22</sup> Both conservators and curators find value in such an admittedly fragmented condition not only for the quality of the legible information that has remained undisturbed by restoration, but also for offering a model that is, to quote another vociferous advocate, “as copyable as possible.”<sup>23</sup>

Indeed, curators at various collections have promoted this idea of commissioning copies as a most satisfactory way to address the issue of sound for non-functioning museum instruments.<sup>24</sup> Six

<sup>20</sup> “[O]ur first objective should be to protect the physical integrity of historical instruments. ... 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*” (Watson, 80, emphasis added).

<sup>21</sup> Watson, 70, 71, 79; Barnes, 215.

<sup>22</sup> Watson, 73.

<sup>23</sup> Cary Karp, “Musical Instruments in Museums,” *International Journal of Museum Management and Curatorship* 4 (1985), 180.

<sup>24</sup> “Rather than rendering these [musical instrument] collections as playable as possible, thereby compromising both their material and documentary integrity, it would be far wiser to make them as

years ago the now oldest-known surviving instrument by the inventor of the piano, Bartolomeo Cristofori (1655-1731), was discovered in the Palazzo Bardini in Florence. Only eleven of Cristofori's instruments are known to survive.<sup>25</sup> The instrument—an oval spinet made for Prince Ferdinando de Medici in 1690—was moved to the Museo degli Strumenti Musicali (Collezione Cherubini) in the Galleria dell'Accademia. Two years later, in October 2002, the museum held a conference to discuss the conservation of the oval spinet; *the same conference* included the celebratory unveiling of and inaugural concert performance on the copy commissioned by the museum. (*Images of the oval spinet and its copy are available online at [http://www.tony-chinnery.com/oval\\_spinnet\\_English.htm](http://www.tony-chinnery.com/oval_spinnet_English.htm).*) Following the conference, the decision to leave the original instrument un-restored remained unchanged.

Today, a visitor to the museum comes to see both the original and the copy—which are on display side by side—and may find that the copy satisfies many understandable and reasonable desires that formerly might have lent support to an argument for restoration. For those who feel that the dilapidated original instrument still begs a more complete aesthetic presentation than visual display alone, recital performances and recordings with the copy provide this. For scholars interested in historic performance and sound, some argue that the copy may in fact better represent the sound of the spinet as it was used in Cristofori's time, than the 300-year old original could, had it been restored.<sup>26</sup> Finally, for the curator of the collection, the copy represents a very happy compromise,

copyable as possible," (Cary Karp (Musikmuseet, Stockholm), "Musical Instruments in Museums," *International Journal of Museum Management and Curatorship* 4 (1985): 180). "[C]ertain instruments defy restoration and it is preferable to have copies made..." (Alfred Berner (Musikinstrumenten Museum, Berlin), John Henry van der Meer (Germanisches Nationalmuseum, Nürnberg), and Geneviève Thibault (Musée de la Musique, Paris) with Norman Brommelle (Victoria and Albert Museum, London), *Preservation and Restoration of Musical Instruments*, 8. Note that of the four authors Brommelle is the only conservator.).

<sup>25</sup> Gabriele Rossi-Rognoni, "Bartolomeo Cristofori's 1690 Oval Spinet," *Bartolomeo Cristofori, La Spinetta Ovale del 1690*, Gabriele Rossi-Rognoni, ed., *Il Luogo di David: Restauri* 3 (Livorno: Sillabe and Galleria dell'Accademia, 2002), 13, 15.

<sup>26</sup> E.g., "[A]n exact copy of an old instrument is probably more 'authentic' in sound than the revamped original" (Challen, 172); "[B]uild[ing a duplicate... will presumably give us an instrument with more nearly the original musical properties of the prototype than the prototype itself currently possesses" (Cary Karp, "Restoration, conservation, repair and maintenance," *Early Music* 7 (1979): 81); "In the long term, the unrestored instrument (or document) has the capacity to spawn much more authentic reproductions than does a playable antique.... [I]t is generally agreed that the aging of musical instruments for two or three hundred years certainly effects [sic] their sound," (Watson, 73, 75-76). A similar argument from the field of textile conservation: "The use of reproductions has become



especially because the visiting public does not view it as a compromise at all. Indeed, visitors are so enthused over the concerts the museum has presented with the copy, as well as pleased with the computer listening terminals in the galleries, that they often inquire after the possibility of purchasing the recordings.

In this way, the copy manages to give back to the spinet something of its musical voice and makes possible the preservation of what remains of the original as an historical and technical document.

#### Questions raised by the above, as good as the arguments are

So exactly what are some of the problems in the conservation of museum instruments? All of the points presented above seem to represent some of the best that we can hope for in conservation, such as sympathetic and informed approaches that satisfactorily balance the museum mission to educate and the duty to preserve, as well as compelling and concordant recommendations from conservators with which curators largely agree.

Yet the debate over whether to restore instruments to playability continues. At worst, the disagreements devolve into empty personal quarrels and absolutist reprimands. But at best, the debate persists, I think, because copies, recordings, interactive computer programs in the galleries, audio guides, and precise technical drawings are somehow insufficient, and this sense is unsettling.

A closer consideration of the values that guided all of the compelling reasons to desist from restoring to playability may begin to reveal why this is. For while I find the basic conservation premises, the logic of the arguments, and the sensitive and reasonable recommendations that follow commendable and sound, I also find them to be somewhat one-sided. To me, as agreeable as they are from a material preservation standpoint, they all seem to indicate a very specific and limited

increasingly necessary in the re-creation of historically accurate interiors. Reproduction items are used when original material is no longer extant, *has deteriorated to a point where it can no longer be used as intended*, or would be put at risk by further use" (Deborah Lee Trupin et al., "Dilemma of Interpreting and Conserving the Past at New York State's Historic Sites," *Journal of the American Institute for Conservation* 33 (1994), 218, emphasis added).

approach—an almost *archaeological* approach.<sup>27</sup> What I mean by this is to highlight the insistence on the instrument's value as an historic document, almost to the point where it seems that this document status overtakes the aesthetic one. Such a focus creates an investigative mood that reminds me of crime-scene forensics: we dig for clues among the surviving material evidence and from this we try to reconstruct the idea of sound, the historic context, the musical use, and the performance practice of the instrument's former musical life. But what is missing is exactly that, the instrument's musical life, the very "art for which it was built."<sup>28</sup>

This uneasy feeling was what prompted me to research the conservation of musical instruments and is what inspires the whole of this present discussion. When I visit museum instrument collections, I sometimes find myself thinking about the instruments more from a musician's, rather than from a conservator's, point of view—and the musician in me wonders what exactly it is that we are conserving when only the physical object is conserved.<sup>29</sup> This question is especially problematic for musical instruments, because the essential aesthetic quality of music is beyond the material world.

As conscientious conservators committed to making decisions "that [are] judged suitable to the preservation of the aesthetic, conceptual, and physical characteristics of the cultural property" and that respect its "its unique character and significance, and the people or person who created it," the problem presented by musical instruments is particularly difficult.<sup>30</sup> How does a musical instrument without its music retain its essential aesthetic character? How does a copy of Cristofori's 1690 oval spinet follow from an informed respect of its unique character and significance? I think it's clear that

<sup>27</sup> Indeed, Grant O'Brien has used this same term: See Grant O'Brien, "The conservation of the 1690 'spinetta ovale' by Cristofori - an archaeological analogy," English version of the text delivered in Italian at the Accademia delle Belle Arte, Florence, 20 October 2002, available online at <http://dionysos.music.ed.ac.uk/russell/academicpapers/conservation1690spinettaovale.html> or at [http://www.claviantica.com/Publications\\_files/Cristofori\\_conservation.htm](http://www.claviantica.com/Publications_files/Cristofori_conservation.htm).

<sup>28</sup> J. H. van de Meer, "Discussions arising from the St Petersburg Meeting," *CIMCIM Bulletin* No. 52: June 2003, available online at <http://homepages.ed.ac.uk/ezhm01/ibt052.html>.

<sup>29</sup> Miriam Clavir, "Reflections on Changes in Museums and the Conservation of Collections from Indigenous Peoples," *Journal of the American Institute of Conservation* 35 (1996), 101.

<sup>30</sup> American Institute of Conservation, *Core Documents*, "Code of Ethics" and "Guidelines for Practice," available online at <http://aic.stanford.edu/about/coredocs/coe/index.html>.

these options do fall somewhat short. And so we must at least *consider* restoration, despite every other compelling conservation argument against it.<sup>31</sup>

How to deal with this? One conservator who works with ethnographic collections of living peoples believes that broadening the idea of the object to include conceptual characteristics removes the ethical contradiction from the decision to “put objects at physical risk in order to facilitate the preservation of...cultural significance.”<sup>32</sup> In the case of many musical instruments, this includes the desirability of preserving a living tradition of music making.<sup>33</sup>

Because restoration to playability was the near-universal approach to historic instruments until about 1970, many museums in fact already have restored, functioning instruments—and indeed, these have been used in performances and for recordings.<sup>34</sup> Thanks to the growing interest in historic performances on period instruments and also in copies, we have the opportunity to pair recordings of restored instruments with those of the various copies they have “spawned.”<sup>35</sup> Following are recording excerpts of one of the three surviving Cristofori pianos and of three different copies made after it.<sup>36</sup>

<sup>31</sup> The philosophical challenge as presented by a book conservator: “A binding is expected to function..., which frequently presents the binder with a difficult dilemma, for in order to make the binding functional and in a durable way much original material must be replaced with new material...” (Anthony Cains, “Techniques of Preservation Based on Early Binding Methods and Materials,” *Paper Conservator* 1 (1976), 4).

<sup>32</sup> Clavir, 101.

<sup>33</sup> Arnold Myers, “The Conservation of Wind Instruments,” *Per Una Carta Europea del Restauro*, 221-233.

<sup>34</sup> Actually, although articles questioning the assumed value of restoring all instruments to playability appeared by the late 1960s, the practice continued for a longer time: “[I]n the sixties, the Smithsonian, with more money, new buildings, and an expanded outlook, has become one of the most energetic museums in the country. An example of this new purpose is the Division of Musical Instruments, which has transformed itself in the last ten years into an active resource for practicing musicians and music educators. Basic to the new Smithsonian policy is the conviction that preserving musical instruments makes optimum sense when they can be heard” (John T. Fesperman, “You can’t hang a harpsichord by its strings and call it history,” *Music Educator’s Journal* 56 (April 1970), 45).

<sup>35</sup> Watson, 73; see n. 26.

<sup>36</sup> The three known surviving Cristofori pianofortes are: 1720, Metropolitan Museum of Art, New York; 1722, Museo Nazionale degli Strumenti Musicali, Rome; 1726, Musikinstrumenten-Museum der Universität Leipzig, Leipzig. For more information on and images of these instruments, see [http://www.metmuseum.org/Works\\_of\\_Art/collection.asp](http://www.metmuseum.org/Works_of_Art/collection.asp) (see n. 6), <http://www.museostrumentimusicali.it/strumento1.asp?id=604> and <http://www.uni-leipzig.de/museum/musik/galerie/170e.html>. These sound clips were compiled by Denzil Wraight and are available online at <http://www.denzilwraight.com/crisdisc.htm>.



Instrument: Bartolomeo Cristofori, 1726  
(Musikinstrumenten-Museum, Leipzig)  
Recording date: 2000  
Performer: Christine Schornsheim  
Composer: Ludovico Giustini



Instrument: Kerstin Schwarz, 1997, after  
Cristofori, 1726  
Recording date: 1999  
Performer: Laura Alvini  
Composer: Domenico Scarlatti



Instrument: Bartolomeo Cristofori, 1726  
(Musikinstrumenten-Museum, Leipzig)  
Recording date: 1979  
Performer: Walter Bernstein  
Composer: Giuseppe Paladini



Instrument: Reiner Thiemann, after  
Cristofori, 1726  
Recording date: 1996/97  
Performer: Wolfgang Brunner  
Composer: Ludovico Giustini



Instrument: David Sutherland, 1997, after  
Cristofori, 1726  
Recording date: 1999  
Performer: Elaine Funaro  
Composer: Giovanni Benedetto Platti

While the many uncontrolled variables in these recordings offer only an imperfect comparison, there remains a distinct quality to each instrument's voice that lives beyond the differences created by the mismatches in the performers, composers, pieces, recording equipment, and so forth. Our natural response to the unique musical life of each instrument thus raises the question: why should the musical aesthetic value of instruments be subordinate to the material and informational value?

In this way, the problems in musical instrument conservation highlight some of the philosophical and practical challenges we all face as conservators, regardless of our specialties. Do we believe that the values we bring to our work are not subjective and in some sense not ordered arbitrarily? Perhaps these questions have no answers.

As conservators, we train ourselves to be experts in balancing conflicting forces—we strive to balance the needs of objects with the requests of curators and the interests of visitors, we strive to balance the various optimal conditions one object alone may require. But tensions—some of which will not have resolutions—can be a productive force, in that they help to frame such questions in a very stark manner, and these questions are worth no small amount of reflection.

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