Studies 2

Panagiotis Poulopoulos

New Voices in Old Bodies: A Study of 'Recycled' Musical Instruments with a Focus on the Hahn Collection in the Deutsches Museum

Deutsches Museum

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Table of Contents

Summary

Due to their complex character as functioning artefacts that are made to be played rather than to be looked at, musical instruments have frequently been susceptible to various forms of 'recycling'. These 'recycling' transformations are particularly evident on historic stringed instruments, many of which have been constantly modified over the years, first to adapt to changing tastes and new demands, second to keep up with the latest technical and musical developments, or third to fulfil their role as display objects in private and public collections. This process of 'recycling', which reached a peak in the late nineteenth and early twentieth centuries, when most significant musical instrument collections were formed in Europe and North America, inevitably led to the distortion or loss of original features of numerous historic instruments, thus raising several issues of authenticity. On the other hand, such transformations are of great interest for both scholars and the wider public as they can reveal noteworthy details about the history of these instruments and how they were valued and treated by their different owners and users through time.

This book discusses this important and controversial topic by presenting and analysing indicative cases of 'recycled' instruments with a focus on the Hans Hahn collection, acquired by the Deutsches Museum in 1906 as its first major collection of musical instruments. By investigating and interpreting a variety of sources, including surviving instruments, museum records and archives, as well as pictorial evidence, the book provides new information on the provenance and acquisition history of the Hahn collection, which is strongly connected to the foundation and early days of the Deutsches Museum, but which until now had remained largely unknown. Additionally, by undertaking a critical review of the relevant literature while referring to various representative examples, this book aims to shed more light on the practices applied to the collection, preservation, and exhibition of musical instruments at the *fin de siècle* and to examine the impact they have on instrument collections to the present day.

Zusammenfassung

Aufgrund ihrer komplexen Eigenschaften als funktionale Artefakte, die eher zum Spielen, denn zum Anschauen gebaut werden, sind Musikinstrumente oftmals den verschiedensten Arten von ‚Recycling' unterworfen worden. Diese Änderungen durch ‚Recycling' sind bei historischen Saiteninstrumenten besonders augenfällig. Viele von ihnen wurden im Laufe der Jahre ständig transformiert, erstens um sie an unterschiedliche Geschmacksrichtungen und neue Anforderungen anzupassen, zweitens, damit sie mit den neuesten technischen und musikalischen Entwicklungen Schritt halten, oder, drittens, damit sie ihre Rolle als Ausstellungsstücke in privaten und öffentlichen Sammlungen erfüllen konnten. Dieser Prozess des ‚Recyclings', der einen Höhepunkt im späten neunzehnten und frühen zwanzigsten Jahrhundert erreichte, als die meisten bedeutenden Musikinstrumentensammlungen in Europa und Nordamerika gegründet wurden, führte unweigerlich zu Verzerrungen oder dem Verlust von ursprünglichen Eigenschaften zahlreicher historischer Instrumente, was wiederum vielfältige Fragen zur Authentizität nach sich zieht. Auf der anderen Seite sind solche Umwandlungen sowohl für Wissenschaftler als auch für das breite Publikum von großem Interesse, da sie bemerkenswerte Einzelheiten zur Geschichte der Instrumente offenbaren und dazu, wie diese von ihren unterschiedlichen Besitzern und Nutzern im Lauf der Zeit bewertet und behandelt wurden.

Dieses Buch diskutiert dieses wichtige und kontroverse Thema anhand der Präsentation und Analyse exemplarischer Fälle von ‚recycelten' Instrumenten, wobei ein Schwerpunkt auf der Hans-Hahn-Sammlung liegt, der ersten großen Sammlung von Musikinstrumenten, die, im Jahr 1906, vom Deutschen Museum erworben wurde. Durch die Untersuchung und Interpretation einer Vielfalt von Quellen – von erhaltenen Instrumenten über Museumsakten und andere Archivalien bis zu Bildzeugnissen – bietet der Band neue Informationen zur Provenienz und Erwerbungsgeschichte der Hahn-Sammlung, die zwar eng mit der Gründung und Frühzeit des Deutschen Museums verbunden ist, aber bisher weitgehend unbekannt war. Zusätzlich zielt dieses Buch darauf ab, durch kritische Sichtung der relevanten Literatur unter Bezug auf verschiedene repräsentative Beispiele die Praktiken von Sammlung, Bewahrung und Ausstellung von Musikinstrumenten im Fin de Siècle zu beleuchten und damit auch die Auswirkungen zu untersuchen, die diese Praktiken bis zum heutigen Tag auf Instrumentensammlungen haben.

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‘Πάντα χωρεῖ καὶ οὐδὲν μένει’:
Everything changes and nothing remains still

Heraclitus, 535 – 475 BC

Introduction

Among the various artefacts of cultural heritage, musical instruments form quite a distinctive group. They are both working tools and works of art, 'cold' machines and 'living' creatures, praised for their sounds as much as for their looks. Standing 'at the intersection of decorative arts and performing arts'[1] musical instruments belong to this special category of museum objects that originally 'were not designed to be looked at, but to be used'.[2]

Like any other object, musical instruments are susceptible to the natural ageing and physical alteration of their materials. However, as functioning artefacts, musical instruments change mainly due to human intervention. This is because, unlike static objects, such as paintings or sculpture, musical instruments are expected to be used, repaired and constantly maintained in playing order.[3] Additionally, unlike mechanical devices, such as clocks, scientific instruments, technical toys, printing machines or motor engines, whose function usually does not extend beyond a repetitive, automatic process, musical instruments are not only expected to be in the best possible working condition, but also to be able to express the feelings and ideas of the people who own and use them in different times.

Therefore, for various reasons musical instruments have been intentionally altered, modified and converted, reflecting the changes and developments not only in music, but also in society. Inevitably, in this continuous process of change old 'bodies' are transformed and new 'voices' are created. Such transformations are of great interest as they can reveal significant details about the history of these artefacts and how they were valued and treated by their various owners and users through time.

These transformations are particularly evident on European stringed and keyboard instruments dating from the sixteenth, seventeenth and eighteenth centuries, many of which have been repeatedly modified over the years to adapt to changing tastes and new demands, as well as to keep up with the latest technical and musical developments. Such conversions have usually aimed to improve the ergonomics, intonation and playability, or to affect the various acoustic properties and musical capabilities of an instrument, often accompanied by a drastic renovation of its visual aspects to fit with the current fashions. On the other hand, in the late nineteenth and early twentieth centuries many new 'old' instruments were built for collections using parts from older instruments, while other instruments were falsified in various ways with the intention of deception. Moreover, for

1 Watson, "Historical Musical Instruments," 77.

2 Andrew, *Standards in the Museum Curation of Musical Instruments 2005*, 2.

3 In the case of historic musical instruments this has caused numerous problems regarding their display and preservation, and much controversy concerning their use over the last decades. See, for example, Lamb, "To Play or Not to Play."

a long time the restoration of many important and rare instruments in collections was carried out using practices that have led to the distortion of their original features and to irretrievable loss of valuable evidence.

Organology, the study of musical instruments, has already been recognised as an autonomous scientific discipline that is of equal significance to musicology in helping us understand and appreciate the musical life of our ancestors. However, the investigation of the authenticity and originality of surviving musical instruments, which is so crucial for the interpretation of historical instrument-making techniques, improvements in acoustics and the development of certain composition and performance practices, has only lately been given the appropriate importance. It is only by knowing which parts of an instrument are original and which parts have been changed throughout its life, and for what reason, that we can reach relatively safe conclusions about its manufacture, ownership, use, function and purpose within society.

This book presents the first results of the author's ongoing research concerning the authenticity of historic musical instruments, which began in 2012 with the project 'New Voices in Old Bodies: A Study of "Recycled" Musical Instruments' at the Deutsches Museum, Munich.[4] The project aimed to investigate various alterations on musical instruments that can be regarded as a form of 'recycling' by studying representative case studies of instruments in the collection of the DM and by undertaking a parallel review of the relevant literature. 'Recycling' here is used in a special sense for the purposes of this project. Although the original meaning of recycling implies the reuse of old material for the creation of a new object, this term is used here in a broader sense to describe various types of material and immaterial changes observed on historic musical instruments.[5] While researching this topic it soon became clear that a number of recent publications have extensively discussed this issue in the areas of historic keyboard and bowed stringed instruments.[6] In contrast, the references to modifications of historic plucked stringed instruments are scarce, even though such instruments have been widely

4 Hereafter referred to as DM. For the reader's convenience any artefacts from the collection of objects of the DM which are mentioned in this article are referred to as DMO (Deutsches Museum Object), whereas any documents from the archives of the DM are referred to as DMA (Deutsches Museum Archive) throughout the text.

5 The term 'recycling' is now becoming common in organological circles. For example, it has been recently used to describe the conversions of Swedish lutes in Sparr, "Remarks on an Unnoticed Seventeenth-Century French Lute in Sweden," 209.

6 Some indicative sources published in the last 40 years include, in chronological order: Ripin, *The Instrument Catalogs of Leopoldo Franciolini;* Barnes, "Restoration;" Barnes and Beare, "Forgery;" Moens, "Problems of Authenticity of Sixteenth Century Stringed Instruments;" Watson, "Historical Musical Instruments;" Libin, "Major Instrument Collections;" Latcham, "Soundboards Old & New;" Harvey, *Violin Fraud;* Koster, "A Contemporary Example;" Skowroneck and Skowroneck, "'The Harpsichord of Nicholas Lefebvre 1755';" Barclay, *The Preservation and Use of Historic Musical Instruments;* Poulopoulos, "Historical Use;" Restelli, *La falsificazione di strumenti musicali,* and Barclay and Watson, "Conservation."

used in musical performance and also represent a key part of many musical instrument collections. This important but rather neglected area was thus chosen as the focus of this research project. After an initial examination of several instruments in display and in storage in order to select case studies, the decision was made to concentrate on a number of fretted plucked instruments with unusual features from the Hans Hahn collection, acquired in 1906, which was the DM's first major collection of musical instruments.

The preliminary results of this project have been discussed by the author in the following papers: 'New Voices in Old Bodies: A Study of "Recycled" Musical Instruments' presented at the 'Arbeitskreis: Forschung im Museum', Deutsches Museum, Munich, 8 May 2012; 'Identification Marks on Historic Plucked Instruments: What Do They Reveal?', presented at the joint conference of the American Musical Instrument Society (AMIS) and the International Committee of Mueums and Collections of Instruments and Music (CIMCIM) titled 'The Arts and Artists of Musical Instruments', The Metropolitan Museum of Art, New York, 15 to 20 May 2012; '"Recycled" Guitars at the Deutsches Museum', presented at the 2nd Colloquium of the Consortium for Guitar Research, Brighton, 31 August to 2 September 2012; 'The Hans Hahn Collection in the Deutsches Museum: Pulling a Set of Dissonant Strings', presented at the 4th Biannual Lake Konstanz Guitar Research Meeting, Überlingen, 5 to 7 April 2013; 'Where Ruckers Meets Rickenbacker: The Challenges of "Opening" Musical Instrument Collections to a Wider Public', presented at the panel session 'Museums as Instigators – Museums as Educators' at the annual meeting of CIMCIM titled 'Collectors at Music Museums-Reasons & Means', co-organised by various museums in Stockholm, Turku, Copenhagen and Trondheim, 24 to 31 August 2014; 'Neither Originals, Nor Fakes: Evaluating Modern Copies of Ancient Musical Instruments', presented at the International Conference of the Leibniz Research Alliance 'Historical Authenticity' titled 'Museums – Places of Authenticity?', Mainz, 3 and 4 March 2016; 'The Harp, Lyre, Lute, Cittern, and Guitar around 1800', presented at the 4th Colloquium of the Consortium for Guitar Research, Sidney Sussex College, University of Cambridge, 9 to 12 April 2016; and 'The Various Faces of the "Authentic" in Musical Instrument Collections: A Problem or an Opportunity?', presented at the annual meeting of CIMCIM, titled 'Musical Instrument Museums: Interpreting the Present', Milan, Italy, 3 to 9 July 2016. These papers, which have been revised and updated with new information, form a major part of this book.

The book is divided in three parts. In the first part, which uses a 'recycled' guitar from the Hahn collection as a case study, the book describes in detail this guitar's uncommon design, construction and decorative features, providing a

hypothetical reconstruction of its original state and subsequent alterations in order to investigate the motives behind its transformation. Additionally, other examples of similarly 'recycled' guitars from the Hahn collection are presented and compared to each other as well as to a guitar which was acquired around the same time through private donation and which has retained its original features. In the second part the book examines the history and provenance of the instruments and the circumstances surrounding their acquisition by the DM in an attempt to explain their present state. Moreover, it briefly analyses the criteria behind the selection of specific guitars in a 'wish list' published by the DM in 1905, prior to the acquisition of the Hahn collection, and how they reflect the theories of the time on the evolution of musical instruments. In the third part the book discusses the 'recycling' transformations of musical instruments from a wider historical and sociocultural perspective, taking into account the conditions under which instruments in various degrees of authenticity entered major museums in Europe and North America around 1900, mainly as a result of museums' acquiring private collections. Using representative examples from the literature on the topic, the book illustrates why and how instruments have been subject to constant change, and also underlines the differences between historical and modern practices. Additionally, examples of 'recycled' instruments that were acquired by the DM from three other musical instrument makers and dealers, namely Karl Haake, Charles Haustont and Georg Steingräber, around the same time as the Hahn collection are briefly described. The examination of instruments originating from these owners, combined with a thorough investigation of written sources and pictorial evidence from the archives of the Deutsches Museum, shows how common it is for instruments that now survive in museums to have undergone 'recycling' processes at some point in their history. Finally, in the conclusions the book evaluates the acquisition of instruments from Hahn by summarising the findings of this study and by suggesting topics for further research, while offering a critical assessment of the practices applied to the collection, preservation, and exhibition of musical instruments at the *fin de siècle* and the impact they have on instrument collections to the present day.

Figure 1 Detail of a photograph showing a provisional exhibition of plucked instruments in the early twentieth century at the Deutsches Museum.

A Study of 'Recycled' Guitars

It is a common phenomenon that museum artefacts which are not associated with famous inventors, makers or owners receive less respect and attention than other, more valued objects. Such artefacts have typically ended up in dark storerooms, away from the museum galleries and the eyes of the public. Yet such artefacts have the power to tell stories as captivating as those of their more celebrated counterparts, while their study can illuminate less known aspects of history, thus helping us to obtain a better understanding of the past.

An old photograph is the start of this journey in time. This photograph shows three guitars hanging vertically in a row on the wall (the fourth, fifth and sixth instruments on the top row starting from the left) on display in a provisional exhibition of plucked instruments at the DM during the early twentieth century (figure 1).

Although at present none of the three guitars is on display, they are historically significant as they were among the first musical instruments to have been acquired by the DM (for more details see Part II). Two of them look fairly ordinary, having a normal figure-of-eight shape, while the third has an unusual body shape in the form of a pear, with several shiny, round ornaments on the soundboard and a head decorated with a figure on its top (the sixth instrument from the left). As will be shown below, this instrument shows traces of heavy modification, having been altered to an extent which makes its attribution to a particular maker, workshop or school of instrument-making quite problematic. In addition, the 'recycling' modification of this guitar does not correspond to any documented practices in the repair or restoration of historic plucked stringed instruments, thus raising several questions concerning its previous ownership and use. Thorough technical description and documentation, as well as the investigation of its provenance and later acquisition by the DM are, therefore, crucial for the interpretation of this extraordinary instrument.

The 'Jux-Guitarre': An Example of Transforming 'Recycling'

The guitar (inventory number 5429)[7] is of a relatively small size compared to a normal guitar and bears no signature or inscriptions. A brief description of this instrument has been included in the museum catalogue by Bettina Wackernagel,[8] where it has been listed as guitar of unknown provenance, with the original part of the body dating approximately from the second quarter of the nineteenth century.[9]

7 Hereafter referred to as DMO 5429. The instrument is currently in storage and accessible only upon request.

8 See Wackernagel, *Europäische Zupf- und Streichinstrumente,* 89. Although the catalogue contains photographs of many of the presented instruments, it includes no photographs of this guitar.

9 'Inv. Nr. 5429. Gitarre. Provenienz unbestimmt. Originaler Teil des Corpus ca. 2. Viertel 19. Jahrhundert'. Wackernagel, *Europäische Zupf- und Streichinstrumente, 89.*

In this catalogue the only information regarding the instrument's acquisition history is that it was purchased from Hans Hahn in Munich in 1906.[10] This is further confirmed by the museum acquisition records according to which the instrument arrived at the DM on 22 June 1906 described as 'joke guitar with old coins' ('Jux-Guitarre m. alten Münzen').

The quite unusual design, construction and decorative features of DMO 5429 are immediately noticeable (figure 2).[11] The first striking feature concerns the unusual pear-shaped body, which is the result of drastic transformation, as will be described later. The second arresting feature is the decoration of the guitar's soundboard with old coins, while a third element of note is the presence of a metal plate and a carved wooden figure attached on the head of the guitar.

The present body outline of DMO 5429 is not original. The upper bout of the guitar, which originally had a figure-of-eight body shape, has been cut on the front, the sides and the back from the body-neck join to the bottom of the soundhole,

Figure 2 Front, side and back views of the 'joke guitar' DMO 5429 purchased in 1906 from Hahn.

creating the distinctive pear-shaped body. The guitar's original body shape and size are confirmed by the interrupted purfling on the bass and treble sides of the soundboard at the bottom of the soundhole, as well as by a small part of the soundboard purfling still evident on the bass side near the fingerboard (figure 3).

The soundboard, made of a single piece of spruce of fine grain and coated in a dark orange-brown varnish, has playing marks from fingernails, especially on the treble side, and has been lifted off the bass side towards the bottom of the body, revealing the interior bracing. The bulky trapezoidal bridge, furnished with six iron nails on the top, is crudely made and not original. The position and design of the original bridge, which had a 'mustachio' shape with pointed ends, are still visible on the soundboard (figure 4).

Figure 3 Detail of the body of DMO 5429. The original upper bout of the guitar has been cut, creating the distinctive pear-shaped outline.

Figure 4 The bridge of DMO 5429. Note the traces of the original 'mustachio' bridge.

10 'Ankauf Johann Hahn, München, 1906', Wackernagel, *Europäische Zupf- und Streichinstrumente,* 89.

11 The main construction features and dimensions of the guitar as examined and measured by the author in February and March 2012 as well as in March 2015, are presented in a table included in the Appendix. All described materials have been identified only by macroscopic examination.

Additionally, the examination of the guitar interior using a small dental mirror, as well as an endoscope, revealed six pin holes under the present bridge, confirming that the original 'mustachio' bridge had six endpins on which the strings were attached, a distinguishing characteristic of many nineteenth-century guitars. The purfling on the soundhole and soundboard edges consists of ten alternating strips of dark and light wood in a style found on many extant nineteenth-century guitars of German or Austrian manufacture.

The original parts of the guitar's sides on the lower bout are made of figured maple and are joined at the bottom with a wedge-shaped piece of dark wood. In contrast, the new parts of the sides on the upper bout are made of inexpensive pine, and have been glued on the inside of the original side parts and painted black (figure 5).

The back of the guitar, which is made of figured maple, has been removed in the past and reglued, as evidenced by several scratches and glue remains on its edges. There are presently six iron endpins fixed on the bottom of the instrument for the attachment of the strings, arranged in two rows. The upper row has four endpins, with four additional holes located above the wooden tailbutton, while the bottom row has two, on the left and right of the tailbutton (figure 6).

As pointed out earlier, at some point five old coins had been fixed on the soundboard, four around the soundhole and one on the bottom below the bridge; three of them are presently missing (figure 7). One coin that was attached on the top of back close to the neck heel is also missing. The coins are not glued directly on the soundboard but secured in place with a small piece of wood inserted through a ring in the back of each coin, visible under the soundboard; this is also evident from the holes on the soundboard where the coins are missing. This suggests that the coins must have been added while the back of the guitar was removed for repair. It should also be pointed out that in the exhibition photograph shown earlier DMO 5429 seems to have all of the five coins fixed on its soundboard, so it is possible that three of the six coins were removed or lost before or during World War II.

The interior construction was also changed when the upper parts of the body were cut and removed. The back and soundboard were originally supported by three horizontal bars each; at present there are three bars on the soundboard but only one on the back. The bar on the back is not original and has been misplaced; traces of the original bar positions are still visible through the soundhole. The side lining on the back, consisting of a thin non-kerfed strip of wood, stops where the original parts on the sides join the new parts on the back; the soundboard has no side lining. The neck block is made of a square piece of pine and is not original.

Figure 5 Detail of the sides of DMO 5429. Note the new parts glued on the inside of the original side parts and painted black.

Figure 6 The bottom part of DMO 5429. Note the six iron endpins for the attachment of the strings.

Figure 7 Detail of the upper part of the body of DMO 5429, showing one of the coins added on the soundboard.

There are heavy scratches on the neck end, and on the soundboard, sides and back, indicating that this work was carried out by an unskilled person rather than by a trained instrument maker.

The neck and fingerboard seem to have been part of the original construction, although the possibility that they may have belonged to a different instrument cannot be entirely excluded. The neck has been fixed to the body with a large iron screw on the neck heel, which comprises two parts, upper and lower (figure 8).

The fingerboard, which consists of two long pieces of wood joined in the middle,[12] has been cut off after the eleventh fret and filed at its end. The eleven brass frets are not original; the fingerboard must have been originally equipped with ivory or bone frets. The fingerboard wood has deep grooves on the first few frets, suggesting that the instrument was heavily used; however, the frets have minimal string marks, providing further evidence that they were added later. The nut, which is probably not original, has unusually large grooves and may have been altered to receive thicker strings or to lower the string action.

The figure-of-eight head has been fixed to the neck with a shallow 'v'-shaped join of asymmetrical shape.[13] All six pegs are missing; none of the original pegs is shown in the photograph of the provisional exhibition presented earlier, suggesting they had already been lost at the time of the acquisition. As mentioned earlier, a thick nickel-silver plate has been fixed with six iron screws on the head and a carved figure has been attached though a hole on its top. This hole may have originally been used to tie a strap on the guitar, its role being replaced by the hook-shaped carved figure. The smiling face of the figure, with a long curved pointed nose and wearing a similarly shaped hat, is evocative of Kasper, a well-known puppet show character in Germany (figure 9).[14]

The carved figure may have belonged to another object, presumably a toy puppet or a piece of furniture, and had been originally painted in various colours, since traces of red, yellow, blue and green are still visible in areas where the present glossy black coating has flaked. A similar black coating has been applied on the fingerboard, neck and sides of the guitar.

12 The fingerboard of an unsigned guitar in the Musical Instrument Museums Edinburgh (MIMEd), Edinburgh (inventory number 298), shown later, is constructed in a similar way. This method of using two pieces of wood instead of a single one was probably employed by makers in order to save wood. The author is thankful to Darryl Martin, Principal Curator at MIMEd, for sending him details of this instrument.

13 James Westbrook, who has examined numerous nineteenth-century guitars by various makers, has maintained (personal communication via email, 25 January 2012) that on this guitar 'the head to neck 'v' join is not German or Viennese (their 'v' tends not to be raised, but flush). Italians are much smaller 'v's' and French (which is the closest) tend to be slimmer and more to a point'.

14 The figure of Kasper, which probably originates from the Italian *commedia dell'arte,* was popular in puppet street theatre in German-speaking regions from the end of the eighteenth century. In England the equivalent of Kasper was 'Punch and Judy'. McCormick and Pratasik, *Popular Puppet Theatre in Europe,* 113–17.

Figure 8 The neck-heel join of DMO 5429. Note the large iron screw on the neck heel.

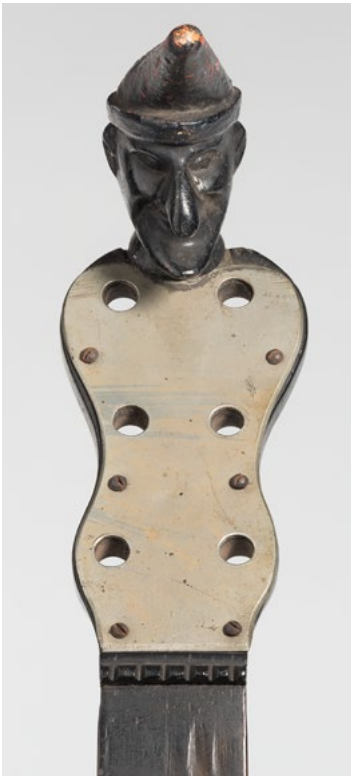


Figure 9 The head of DMO 5429. Note the carved 'Kasper' figure attached on the top.

Hypothetical Reconstruction

Considering the details presented so far we can attempt a hypothetical reconstruction of the original state of the instrument and its subsequent alterations (figure 10).

The style of the original parts indicates that the guitar was built during the early nineteenth century in Germany or Austria, where similar small-sized guitars, commonly known as terz guitars, were quite fashionable. Having a shorter scale length of about 530–560 mm and smaller overall dimensions, the terz guitar was tuned a minor third (three semitones) higher than the standard guitar. Also called the *chitarrino,* the instrument was mainly used in duets with guitar or piano as well as an ensemble instrument, and enjoyed a considerable popularity during the first decades of the nineteenth century, particularly in Vienna,[15] but also in other places in Europe and America. For instance, terz guitars were advertised in the USA until the end of the nineteenth century, mostly for playing the leading parts in guitar duets or in larger ensembles.[16] An 1823 review in the *Wiener Zeitschrift für Kunst, Literatur, Theater und Mode* reporting the guitar performance of the child prodigy Leonard Schulz (1814–1860) mentioned that 'a normal or so-called large guitar which, due to its low tessitura, is not as penetrating as the higher-pitched terz guitar'.[17] A great quantity of music was written for the terz guitar, including works by composers such as Johann Kaspar Mertz (1806–1856) and Mauro Giuliani (1781–1829).[18]

Despite its uncommon body shape and decoration, it is obvious that the heavily modified DMO 5429 started life as a typical terz guitar with a figure-of-eight body shape, a 'mustachio' bridge with six endpins, a fingerboard of 16 to 20 ivory or bone frets and a figure-of-eight head.[19] Then, at one or more later stages the fingerboard was shortened, the body shape, interior bracing and neck-to-body joint were radically changed, several original parts, such as the bridge, endpins, frets and tuning pegs, were removed and replaced by similar parts, and new components, such as the iron endpins, coins, metal plate, and carved figure were added to the instrument.

15 For more details on the terz guitar see Buckland, *The Nineteenth-Century Terz-Guitar.* James Buckland, a maker, player and researcher of terz guitars, has argued that the terz guitar can produce a louder and higher pitched sound compared to the standard six-string guitar, thus enabling it to project through orchestral accompaniment through its brilliant tone and fast response. The development of the terz guitar has been briefly discussed also in Kinsky, *Musikhistorisches Museum von Wilhelm Heyer in Cöln,* 154–55; in Westbrook, *The Century That Shaped the Guitar,* 67–68; and in Hofmann, Mougin and Hackl, *Stauffer & Co.,* 46.

16 The author is grateful to Richard Savino for this information.

17 'Eine gewöhnliche oder sogenannte große Guitarre, die wegen ihrer Tiefe nie so durchgreift, als die im Ganzen höher stehende Terz-Guitarre.' Quoted in Stenstadvold, "'The Worst Drunkard in London'," 10.

18 For details on the repertoire of the terz guitar see Carreira, "Considerações sobre o repertório para Terz-Guitare," 22–40. See also Stenstadvold, *Guitar Methods,* 85 and 90.

19 Such features can be observed on several extant terz guitars by various makers, like those included in Restle and Li, *Faszination Gitarre,* 132, 135 and 137; in Hofmann, Mougin and Hackl, *Stauffer & Co.,* 122–23, 126–27, 134–35, and 142–43; and in Wedemeier, *Gitarre-Zister-Laute,* 40–43 and 48–49.

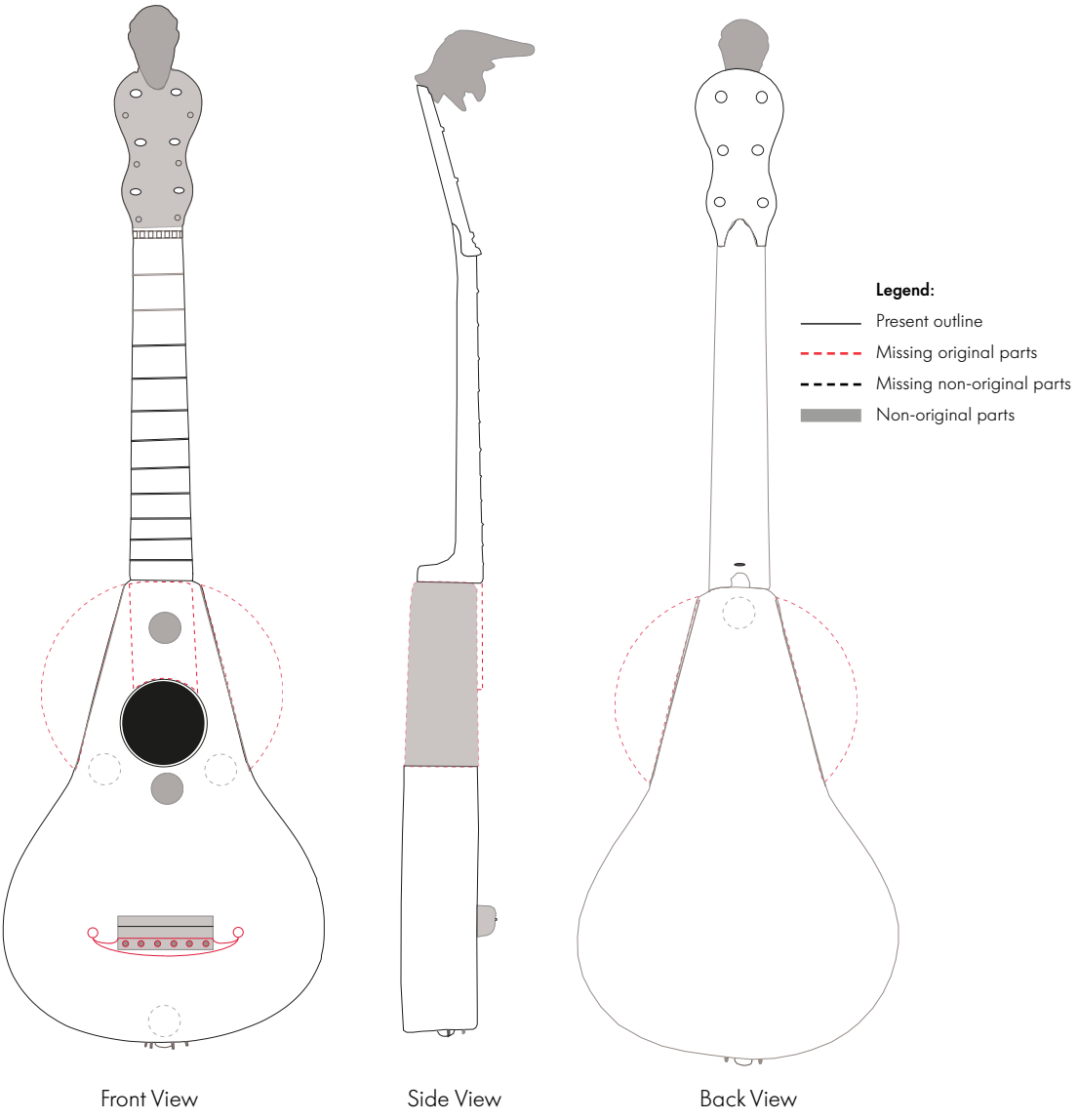


Figure 10 Technical drawing of DMO 5429 showing the original state and subsequent alterations.

The Effects of Modifications

At this stage it is essential to evaluate the effects of the modifications on the musical, technical and visual characteristics of the instrument, as this will help clarifying the motives behind these actions. The changes on DMO 5429 are quite dramatic, having undoubtedly affected its value as a musical instrument. Especially after the modification or replacement of such vital and sound-determining parts as the soundboard, bridge, interior bracing, nut and frets, the acoustic properties of the instrument, such as its intonation, volume, timbre, resonance and sustain, are expected to be quite different from the original.

It can be argued that the musical qualities of DMO 5429 have been severely impaired by the procedures described above. The volume and tone of the instrument have been altered to a significant degree by the cutting of the sides on the upper bout, which has reduced the resonating space of the instrument. Moreover, the coins on the soundboard most certainly dampen the vibrations and shorten the resonance and sustain of the guitar, probably also causing a buzzing sound when the soundboard vibrates. Furthermore, the metal plate on the head may have been added to prevent the tuning pegs from slipping, thus keeping the tuning more stable; however, it adds considerable weight on the guitar and probably also dampens its resonance.

Additionally, cutting the fingerboard after the eleventh fret has significantly reduced the compass of the instrument. Originally, this guitar had certainly more than twelve frets, possibly up to 20, as would be normal for guitars of the time. In addition, the separation of the neck from the body and the later join with a screw have affected the neck and fingerboard alignment and height, and thus the action of the strings, and have most likely reduced the sustain of the guitar. Although these changes may have been the result of acoustic experimentation, the overall low quality of the work indicates otherwise.

The ergonomics of the instrument have also changed significantly. The guitar cannot be played comfortably in seating position as the absence of a waist makes it prone to slipping; the instrument has also become heavier due to the added decoration with coins, metal plate and carved head. The addition of these parts, along with the alteration of the body shape, has also changed the visual aspects of the instrument to a great extent. It should be pointed out that although the majority of surviving nineteenth-century guitars have the standard figure-of-eight body shape, guitars with a pear-shaped body were not uncommon. For instance, a guitar with a pear-shaped body similar to DMO 5429 (figure 11) was purchased by the DM in 1908 from Hugo Diem (inventory number 15253),[20] while an identical

20 Hereafter referred to as DMO 15253. A description of this instrument is included in Wackernagel, *Europäische Zupf- und Streichinstrumente,* 91. According to Wackernagel the guitar bears an inauthentic label, which is most likely a later addition, but has no traces of modifications.

Figure 11 Front, side and back views of the pear-shaped guitar DMO 15253 purchased in 1908 from Diem.

guitar is shown on a wall relief in the Musiksaal of the DM dating from c. 1920 (figure 12). Moreover, a similar guitar is depicted in the painting 'Eine reichliche Gage' ('A generous payment') by Friedrich von Keller (1840–1914), signed and dated 'München 1889'.[21]

Even though there are no obvious marks from wire strings on the fingerboard or frets of DMO 5429, the pear-shaped body, the iron endpins on the bottom of the instrument and the carved figure, features atypical for nineteenth-century guitars, are reminiscent of earlier wire-strung instruments of the cittern family.[22]

Coincidentally, an extant pear-shaped cittern by Gérard Deleplanque of Lille dated 1776 (figure 13),[23] has been transformed in the opposite way to DMO 5429. In this case the original bridge, neck, fingerboard and head of the wire-strung cittern have been replaced with similar parts used on nineteenth-century gut-strung guitars.

21 The author is thankful to Andreas Michel for information on this painting, which belongs to a private collection.

22 In his comments on DMO 5429 Buckland, who has inspected photographs of the guitars in the DM provided by the author (personal communication via email, 29 February 2012) remarked: 'That's an odd one! Everything is very unusual. The fingerboard extension over the body is obviously missing. Closer examination would reveal whether it was attached to the soundboard, or "floating" like Stauffer. […] The metal plate screwed into the face of the head […] is very possibly a modification. […] The carved head is, of course, something that is seen on many earlier stringed instruments and folk instruments. The bridge seems quite tall and heavy, another reason I mentioned the possibility of it having had a floating fingerboard. […] The body shape is the strangest thing that would immediately get most people's attention. I have never seen this before, but is loosely reminiscent of the "Wappenguitarre" which had a medallion shaped body.' Regarding DMO 5429 Buckland (personal communication via email, 3 April 2016) further commented that: 'This guitar is clearly modified from its original form, which was most likely in keeping with the body style of a conventional guitar. From the front view photo it is readily apparent that the binding/purfling around the lower bout terminates on both sides where it would be expected to extend into the upper bout area. From the side view, it is also apparent that some type of black varnished wood panels have been added to close the area of the body exposed by sawing off both the right and left hand upper bouts. Perhaps this was an expedient type of repair to remove a damaged section of the body. Another possibility is that the modification may have been some type of experiment or modification to adapt the instrument to some unique application.'

23 The cittern was auctioned in 2012 by Charles Leski Auctions Pty Ltd in Melbourne and its present whereabouts is unfortunately unknown (see http://www.antiquesreporter.com.au/index.cfm/lot/566926-gerard-j-deleplanque-guitar-cistre-cittern-1776-lille-france-ori/, accessed 1 March 2016). The author is thankful to James Westbrook for bringing this instrument to his attention and to Mark Eisenhut at Charles Leski Auctions Pty Ltd for granting permission to publish a photograph of the instrument in this book.

Figure 12 A pear-shaped guitar shown among other instruments on the left side of a wall relief in the Musiksaal of the DM.

Figure 13 A pear-shaped cittern by Gerard Deleplanque, Lille, dated 1776, which has been modified into a guitar, possibly during the early nineteenth century.

During such 'recycling' transformations, instruments like DMO 5429 change not only in terms of form and substance but also in terms of identity, becoming new artefacts that are very different from what their maker had originally intended (figures 14 and 15). Examples like these clearly illustrate how dramatically instruments can be altered when they change hands and, consequently, roles.

The Motives behind Modification

After discussing the results of the modifications, the motives and rationales behind them can be more effectively analysed. All facts indicate that the modifications on DMO 5429 happened around the late nineteenth or early twentieth centuries, perhaps shortly before it entered the museum. By this time the vogue of small 'terz' guitars had waned and their value in the second-hand musical instrument market must have been low. Therefore, there would have been little hesitation about altering the guitar, especially since it was an unsigned instrument.

Moreover, at the time of its modification DMO 5429 was most likely in a derelict state due to neglect or damage. A hint to this assumption can be observed on the guitar's fingerboard. The guitar was originally equipped with a raised fingerboard,[24] as opposed to a fingerboard flush with the soundboard; fingerboards of this design are prone to breaking at the twelfth fret, placed usually on the body-neck join.[25] The fact that the original part of the fingerboard after the twelfth fret is missing is a further indication that the fingerboard and neck may have broken at some point, possibly during re-fretting with metal frets, rendering the instrument unplayable. Additionally, DMO 5429 may have been severely damaged on the body; the removal of the side parts on its upper bout cannot be explained otherwise.

The intention behind the quite intrusive modifications on DMO 5429 must have been to create a cittern/guitar hybrid or simply a strange-looking, 'exotic' instrument. Apparently the emphasis of this work was to revamp the instrument's visual or aesthetic elements rather than restore its musical abilities or function. The excessive decoration using coins, a metal plate and a carved figure is a clear sign that the instrument was altered in order to be used as a decorative item instead of a musical instrument, with the figure of Kasper definitely adding a symbolic or comic character to the instrument. After these changes DMO 5429 would have certainly found a suitable place either in a street theatre show, in a carnival music group,[26] or in one of the many 'cabinets of curiosities' assembled by collectors around the end of the nineteenth century.

24 As mentioned earlier, DMO 5429 may have had a 'floating' fingerboard after the body-to-neck join.

25 The fingerboard is quite weak in this area due to the fret groove on the twelfth fret. The author is thankful to Hayato Sugimoto for bringing this detail to his attention.

26 Several musical instruments were used by performing groups during carnival celebrations in Munich. For more details see Bauer and Tworek, *Schwabing: Kunst und Leben um 1900*. The author is thankful to Silke Berdux for this information.

Figure 14 Left: Pear-shaped cittern by Gérard Deleplanque, Lille, dated 1775 in the Muziekinstrumentenmuseum (mim), Brussels (inventory number 0537).
Right: A similar cittern by Gérard Deleplanque, Lille, dated 1776, which has been modified into a guitar, possibly during the early nineteenth century.

Figure 15 Left: Unsigned guitar, probably Austrian, 1815–1830, in the Musical Instrument Museums Edinburgh (MIMEd), Edinburgh (inventory number 298).
Right: A similar guitar (DMO 5429) which has been modified into a cittern.

The 'Terzguitarre': An Example of Deceptive 'Recycling'?

If the 'recycling' transformation of DMO 5429 was relatively easy to detect, the alterations on the second guitar depicted in the photograph shown in figure 1 are less discernible and more suspicious. This guitar (inventory number 5430),[27] also of a small size, has been catalogued as a terz guitar originating from Germany or Austria and dating from the second quarter of the nineteenth century.[28] According to the museum acquisition records, the instrument was described as a 'terz guitar of long form' ('Terzguitarre längliche Form'). Interestingly, like DMO 5429, this instrument was also purchased from Hans Hahn and came to the DM on 22 June 1906.[29] At first glance DMO 5430 (figure 16) looks similar to surviving guitars from the early nineteenth century. However, a closer examination of this instrument has revealed several uncommon characteristics which, like DMO 5429, point out to a 'recycling' of old material.

Starting with the front of the body, the soundboard is made of two pieces of spruce of fine grain. The soundboard wood, which is unvarnished, has only minor playing marks and scratches, but it is dark and stained, looking as if it is has been artificially aged. When compared to the heavy playing marks and other signs of use on the back, sides and fingerboard, the condition of the soundboard indicates that it is fairly new, as will be described below in detail. The rectangular shallow bridge is made of cheap fruitwood painted black; the black spots around its edges suggest that it was painted after it had been glued on the soundboard. The left and right sides of the bridge have been decorated with two symmetrically arranged, but not identical, flowers made of paper, pasted on the soundboard and afterwards painted black; in some areas black colour has been painted directly on the soundboard wood; these details indicate rather sloppy work (figure 17). The bridge has a metal saddle (probably nickel-silver) placed in a slot cut in front of the endpins. This is a rather unusual feature, since early nineteenth-century guitars typically had an ivory or bone saddle, although copper wire saddles have been occasionally used.[30] One of the endpins is presently missing, while the remaining five are all of varying sizes and designs, and most likely not original. The round soundhole, which is rather small compared to those on nineteenth-century guitars, is decorated with eight alternating strips of dark and light wood. The purfling on the soundboard edges consists of a single strip of brown wood, leaving a thin part of the soundboard

27 Hereafter referred to as DMO 5430. The instrument is currently in storage and accessible only upon request.

28 'Inv. Nr. 5430. Terzgitarre. Deutschland oder Österreich, 2. Viertel 19. Jahrhundert,' Wackernagel, *Europäische Zupf- und Streichinstrumente,* 89. The catalogue includes no photographs of this guitar.

29 'Ankauf Johann Hahn, München, 1906,' Wackernagel, *Europäische Zupf- und Streichinstrumente, 89.*

30 See, for example, the saddles on two terz guitars, the first by Martin Stoss, Vienna, 1821, the second by Bernard Enzensperger, Vienna, c. 1834, in Hofmann, Mougin and Hackl, *Stauffer & Co.,* 142–43 and 182–83 respectively.

Figure 16 Front, side and back views of the 'terz guitar' DMO 5430 purchased in 1906 from Hahn.

Figure 17 Detail of the soundhole and bridge of DMO 5430.

wood visible on the sides. A long section of the purfling wood is missing on the bottom towards the bass side; this area has been covered with filling material, probably mastic, and painted black.

The back and sides are made from a single piece of figured maple and have a uniform yellow varnish, with the back showing finer craftsmanship compared to the rest of the instrument. Notably, the centre back is arched, a rather uncommon feature for nineteenth-century guitars.[31] The back has sawing marks around the edges, especially on the top near the neck heel, indicating that it may have been removed from a larger instrument and then cut to fit the narrower outline of this small guitar (figure 18).

A further confirmation of this premise is the fact that the back has been attacked in various places by woodworm while the rest of the instrument is intact, and also the fact that on the treble side, around the waist of the guitar, a woodworm hole is partly opened, which would be impossible if the back had not been sawn at this point.[32] Moreover, the sides and back have observable adhesive remains on the join edges. In addition, the arched part is positioned slightly off-centre, suggesting that the back was not cut symmetrically, while the back wood overlaps the sides in several places.

That the back may have belonged to an older instrument is also confirmed by the traces of a small printed paper label pasted in front of the neck heel; on most guitars such labels are typically placed on the centre of the back and are visible through the soundhole. Unfortunately the most of it has been torn away, but the letter 'R' or 'A' (or a similar looking symbol) is still perceptible, as shown during the examination of the instrument with an endoscope. In addition, the back has a pointed projection just below the neck heel, which is a rather atypical feature; the longitudinal cracks on the right and left of this indicate it was cut roughly, causing the back wood to split. The small hole on the pointed projection suggests the presence of a secondary tailbutton, now missing, for the attachment of a strap; the primary tailbutton is made of bone and is fixed on the middle of the guitar's bottom.

Regarding the interior construction, the bracing on the soundboard consists of three horizontal bars. There are also three horizontal bars on the back, although the undersides of the bars, which are meant to support the back, are not shaped to match the arch of the back, but are flat, leaving a noticeable gap underneath them,

31 However, it is important to notice that several extant guitars by the Parisian maker Etienne Laprevotte have arched backs. The author is thankful to Hayato Sugimoto for this remark. See also Westbrook, *The Century That Shaped the Guitar,* 58.

32 Karel Moens has observed similar details on a spurious tenor viol attributed to Heinrich Ebert in the Muziekinstrumentenmuseum, Brussels (inventory number 1402). On this viol the back has been cut from a larger instrument and worm holes are exposed on various parts of the instrument due to the re-cutting. In addition, small wooden pieces have been inserted on the corner blocks, possibly in order 'to give the impression of an old instrument'. See Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 104.

proving that the maker or repairer did not follow any of the usual principles of construction logic. The back has side lining consisting of a thin, non-kerfed strip of wood, but the soundboard is glued directly on the sides with no supporting lining, which is a further construction incongruity, since surviving nineteenth-century guitars typically have lining on both the soundboard and the back. Moreover, the bars are not inserted in the lining, but stop before it, which is another uncommon practice. A long crack on the treble side of the guitar has been repaired in the past with some kind of tape or cloth for extra support and is visible on the inside of the instrument. Additionally, a thin wedge-shaped piece of maple, possibly originating from another instrument, has been glued on the bass side close to the heel; a rectangular piece of tape or cloth has also been pasted on the inside of this area (figure 19). Furthermore, there are filing marks and glue remains where the back and sides join together, providing more signs of the overall mediocre quality of work.

Figure 18 The back view of DMO 5430. Note the arched back and the repair marks along the edge.

Figure 19 Detail of the neck-heel join of DMO 5430 showing the thin, wedge-shaped piece of maple glued on the bass side.

The neck and fingerboard also have irregular features. The first four frets are made of bone and have deep grooves resulting from string pressure, suggesting that they are most likely original. In contrast, the remaining nine frets, made of brass and bearing no signs of use, are not original but were probably added when the fingerboard was re-fretted (figure 20). The existence of two different fret materials serves no particular purpose in terms of performance practice and also makes no sense from the viewpoint of acoustics or intonation, suggesting that whoever repaired this guitar had limited knowledge about the manufacture and maintenance of plucked instruments and used whatever material was available.

The present wooden nut is roughly cut and shaped. Moreover, the fact that the first fret distance is slightly shorter than the second one suggests that the fingerboard had been chopped off a few millimetres just below the nut during a previous repair. Furthermore, the original part of the fingerboard after the twelfth fret has been replaced, possibly during re-fretting; the new part rests slightly above the original fingerboard wood after the twelfth fret, creating a visible 'step', especially on the treble side.[33] The fingerboard has heavy playing marks on the first frets below the two highest strings, while the black coating on both the fingerboard and neck is quite worn off over the first few frets. Another noteworthy detail is that the fingerboard on DMO 5430 ends at a great distance from the soundhole, providing further evidence that both the soundboard and the fingerboard end may not be as old as the other parts; on nineteenth-century guitars equipped with a raised fingerboard after the body-to-neck join, the fingerboard usually extends to the end of the purfling above the soundhole.

The head has been fixed to the neck with a V-shaped join which is rather crudely executed, creating a considerable 'step' between the neck and the head (figure 21). Curiously, the head has a rectangular shape with a concave top, a style rather uncommon for early nineteenth-century guitars equipped with wooden pegs, which were typically furnished with a figure-of-eight head.[34]

33 Regarding the neck and fingerboard of DMO 5430 Buckland (personal communication via email, 3 April 2016) noted: 'It is quite possible that this guitar has a replacement neck. Perhaps a replacement was made for a damaged original neck. But, it is distinctly possible that the neck may have been intended for a repurposed application from its original form. For example, someone may have wanted a neck with a different scale length. Or, perhaps, the guitar originally was strung in a different manner, i.e. 5 courses. Alternatively, the guitar may have originally had a "flush" fingerboard that terminated at the neck/body joint. There are several noticeable and pertinent peculiarities. The neck joins the body somewhat between the 12th and 13th fret. Such a design choice would be highly unconventional if done as part of the original builder's design. Also, there are two apparent oddities concerning the neck angle. From the forward view, the neck is canted to the right. As the string alignment relative to the fingerboard appears normal, the canting may be an intentional detail to address another issue. From the side view, there is excessive forward angle as evident by the very high string action. However, as there appears to be some separation in the glue joint between the neck heel and the back, the excessive angle may simply be a result of this damage. One other point can be made about the neck. The fingerboard seems to exhibit several errors in fret placement. The fret to fret spacing, rather than being gradual and proportional, appears to be erratic. For example, the 8th to 9th fret spacing appears to be relatively smaller

Figure 20 Detail of the fingerboard of DMO 5430, showing the unusual change of fret material from bone to metal after the fourth fret.

Figure 21 Detail of the neck-to-head join of DMO 5430.

than it should be, especially in comparison to the 9th to 10th fret spacing. Furthermore, the frets do not appear to be exactly parallel to one another. Such an error can occur when the fret slots are cut *after* the fingerboard width is tapered rather than *before*. This would be expected to have a negative impact on intonation accuracy, particularly in the upper positions. However, the considerable wear in the black varnish on the rear of the neck in the area directly behind the first frets suggests that such intonation issues were of little practical concern to the owner. Another curious feature is the extended length of the fingerboard over the soundboard, yet it is only fretted for 13 frets. Conventional practice would have 17 to 19 frets. This fingerboard appears that it would be able to accommodate such a number of frets.'

34 A similar crescent-shaped head design is usually found on nineteenth-century guitars equipped with machine heads, like those manufactured in London by Louis Panormo, as pointed out in Westbrook, "Louis Panormo," 578.

The six wooden tuning pegs are also irregular (figure 22). Four of the pegs have a mother-of-pearl dot inlaid on the top, while two of them, namely those holding the first and sixth strings, are plain and slightly larger than the others. In addition, the first peg on the bass side is roughly trimmed to fit in the peg hole, confirming that it comes from a different instrument. As already described, DMO 5430 was most likely assembled using a combination of various old parts, presumably originating from a guitar made around the second quarter of the nineteenth century, and new components of a later date. The older parts suggest German or Austrian manu- facture, while the style and decoration of the instrument as a whole indicates Italian influence.[35]

This 'cut-and-paste' of old and new material was carried out with the intention to create an instrument which, though musically handicapped, looked elegant and structurally fit when viewed from a distance; at the same time it may have been an attempt to make the guitar look like a product of foreign manufacture, and therefore more expensive. Around 1900 the guitar was witnessing a revival in Munich, where a guitar club ('Gitarreclub München') was founded in 1899,[36] and therefore old guitars may have been considered desirable. Such a guitar could have easily been sold either as an antique guitar to an amateur musical instrument collector with an interest in historic instruments or as a cheap instrument for children.[37] In addition, the decorative elements of the guitar may have made it a desirable object in an artist's studio; around the end of nineteenth century musical instruments were commonly used as props for paintings.[38] For example, there are

35 According to Buckland, who has inspected photographs of the guitars in the DM provided by the author (personal communication via email, 29 February 2012) DMO 5430 'looks like a German guitar inspired by Italian design. The basic body shape, decor, small soundhole, and bridge, to my eye, just seem so reminiscent of Italian guitars of the late eighteenth/early nineteenth century. […] But, in this respect it does possess a certain graceful appearance. The execution of the neck, including the head design and off-black shellac seem more in keeping with Germanic guitars that I've encountered.'

36 See Grill, *Die Rezeption der Alten Musik in München zwischen ca. 1880 und 1930*, 51–58. For a comprehensive overview of the guitar scene in Munich around 1900 see also Huber, *Die Wiederentdeckung des künstlerischen Gitarrenspiels um 1900*. The author is thankful to the first anonymous reviewer for bringing this source to his attention.

37 Due to their small size such guitars were suitable for teaching children, as advocated by contemporary writers. For example, one nineteenth-century source mentions that they can properly be used 'for children learning to play the guitar [...] who due to the short length of their arms are not able play a regular guitar' ('eigentlich zur Erlernung des Gitarrespiels für Kinder […], die wegen der geringen Länge ihrer Arme die gewöhnliche Gitarre nicht zu spielen vermögen'), as quoted in Wackernagel, *Europäische Zupf- und Streichinstrumente*, 76. If not otherwise stated, all translations are by the author.

38 For the role of artists as collectors of musical instruments during the nineteenth century see Gétreau, "Alte Instrumente im Frankreich des 19. Jahrhunderts," 186–92. It is also worth noting that because of its low cost, portability, ease of learning and elegant appearance the guitar was a favourite instrument among amateur musicians, particularly artists. For more details see Britton, *The Guitar and the Bristol School of Artists*, 585–94; Poulopoulos, "Das Musizieren im Freien," 52–53; and Poulopoulos, "The Guitar as an 'Open-air' Instrument," 6–8.

several photos from painters' ateliers in Munich at the *fin de siècle* which include old musical instruments of various types that the painters may have actually not played themselves but often depicted in their paintings (figure 23).[39]

Figure 22 Front view of the head of DMO 5430. Note the uncommon head with a crescent-shaped top housing six irregular wooden pegs.

Figure 23 The atelier of F. W. Scholz (1855–1906), a painter in Munich. Note the guitar hanging on the wall among other stringed and wind instruments.

39 See, for example, Teufel, *Ateliers Münchener Künstler,* or Langer, *Das Münchner Künstleratelier des Historismus.* The author is thankful to Silke Berdux for drawing his attention to these sources.

In any case, a 'recycling' of this type and degree would have prevented the instrument's purchase and use by any expert collector or professional musician, and certainly a guitar in this state would only attract an unsuspecting and inexperienced customer.

Comparison to Other Guitars Acquired by Hahn in 1906

The two instruments described above are not the only unusual guitars acquired by the DM from Hahn in 1906. Another case worth mentioning is an unsigned guitar whose features likewise indicate rather poor craftsmanship as well as 'recycling' of old material. This guitar (figure 24), which belongs also to the Hahn collection in the DM (inventory number 5428),[40] has an uncommon body in the shape of a shield.

The soundboard of DMO 5428 consists of a large, thick piece of spruce of irregular grain joined at the treble side of the lower bout with a smaller piece of similar wood. This is an unconventional construction method, presumably aiming to save materials, but sacrificing the instrument's aesthetic and tonal qualities. The soundboard of guitars typically consists of two pieces joined across the centre of the body, and is traditionally made out coniferous wood such as spruce with a narrow and straight grain, which is known to have good acoustic properties; wood of wide and irregular grain is usually avoided. Moreover, the soundboard is unvarnished and has a soundhole decorated with alternating strips of dark and light wood, similar to DMO 5430, while the roughly-made bridge has been painted black in a sloppy way, like on DMO 5430, as evidenced by the spots of black colour on the soundboard wood around the bridge (figure 25). The soundboard has minimal playing marks compared to the scratches and worn-out varnish on the back and sides. The fingerboard has 18 bone frets which have been filed inaccurately, resulting in poor intonation. It is also clear that at some stage this instrument underwent a substantial repair, as confirmed by saw marks and scratches on the edges of the back and sides.

40 Hereafter referred to as DMO 5428. The instrument is currently in storage and accessible only upon request. For more details of this guitar see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 88.

Figure 24 Front, side and back views of the guitar DMO 5428 purchased in 1906 from Hahn.

Figure 25 Detail of DMO 5428 showing the bridge and the lower part of the soundboard with spots of black paint.

Guitars with a body of this shape, known as 'Wappengitarren', were quite popular in German-speaking regions, particularly in Tyrol, during the late nineteenth and early twentieth centuries.[41] However, the outline of DMO 5428 is not symmetrical as it is in similar contemporary guitars, such as a typical guitar made by Victorin Drassegg (1782–1847) of Bregenz in 1832 (figure 26), now in the Musikinstrumenten-Museum, Stiftung Preußischer Kulturbesitz, Berlin (inventory number 5874).[42] In addition, when compared to the guitar by Drassegg it is clear that the materials and overall construction of DMO 5428 are of a much lower quality. Curiously, the instrument does not have the lyre-shaped head typically found on such guitars, as seen in the depicted Drassegg guitar.

Another guitar purchased from Hahn in 1906 is a quite small instrument (inventory number 5431),[43] catalogued as a mid-nineteenth-century quarter guitar of unknown provenance[44] (figure 27), which shares many similarities with DMO 5430, labelled as 'Terzguitarre' and described earlier. DMO 5431 and DMO 5430 have similar body outlines and construction features, such as the rectangular, crescent-top (as opposed to figure-of-eight) shape of the head, the small soundhole placed much further below the end of the fingerboard when compared to other guitars, as well as the same number (13) and design of frets. Additionally, DMO 5431 has the same fingerboard style and pointed tip on the top of the back as DMO 5430, while its internal bracing consists of two horizontal bars on both the soundboard and back, with no side lining. Such common features suggest that both instruments may have been built or modified in the same workshop and around the same time, possibly shortly before their acquisition by the DM.

41 Urs Langenbacher, an instrument maker and restorer in Füssen to whom the author is grateful for providing useful information, refers to this guitar type as 'Tyroler Laute'.

42 For more details of this instrument see Restle and Li, *Faszination Gitarre,* 141.

43 Hereafter referred to as DMO 5431. The instrument is currently in storage and accessible only upon request.

44 'Inv. Nr. 5431. Quartgitarre. Provenienz unbestimmt. Mitte 19. Jahrhundert', Wackernagel, *Europäische Zupf- und Streichinstrumente,* 89. The catalogue includes no photographs of this guitar.

Figure 26 Left: DMO 5428. Right: A similar guitar by Victorin Drassegg, Bregenz, 1832, in the Musikinstrumenten-Museum, Stiftung Preußischer Kulturbesitz, Berlin (inventory number 5874).

Figure 27 Front, side and back views of the guitar DMO 5431 purchased in 1906 from Hahn.

Another instrument from the Hahn collection that has been altered is a small unsigned guitar (inventory number 5432).[45] This instrument (figure 28) has a new star-shaped rose and a new fingerboard on which the numbers of the frets have been written with white paint, a quite unusual feature for historic guitars (figure 29).

In order to obtain more detailed information about the alterations of the guitars from the Hahn collection, some of the instruments were inspected and photographed under a different light spectrum, in this case under ultraviolet (UV) light. This examination revealed varying levels of fluorescence on the surfaces of the instruments, confirming that the instruments bear new layers of coating in various places as well as residues of adhesives from later repairs, especially on the

Figure 28 Front, side and back views of the guitar DMO 5432 purchased in 1906 from Hahn.

45 Hereafter referred to as DMO 5432. For more details of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 90. The author is thankful to Andreas Michel for his comments on this guitar.

Figure 29 Detail of the rose and fingerboard of DMO 5432. Note the numbers written on the frets with white paint.

inside of the body. On DMO 5429 this is particularly evident on the lower part of the soundboard, the sides and the back (figure 30); on DMO 5430 on the outline of the soundboard and back (figure 31) and also on the area around the neck heel (figure 32); on DMO 5431 on the neck-heel join; and on DMO 5428 on the soundhole (figure 33).[46]

Figure 30 Detail of the body of DMO 5429 during its examination under ultraviolet light.

Figure 31 Front view of DMO 5430 during its examination under ultraviolet light.

46 The author is thankful to Susana Caldeira, conservator of musical instruments at the Royal College of Music, London, for her useful comments on the examination of the guitars under ultraviolet light.

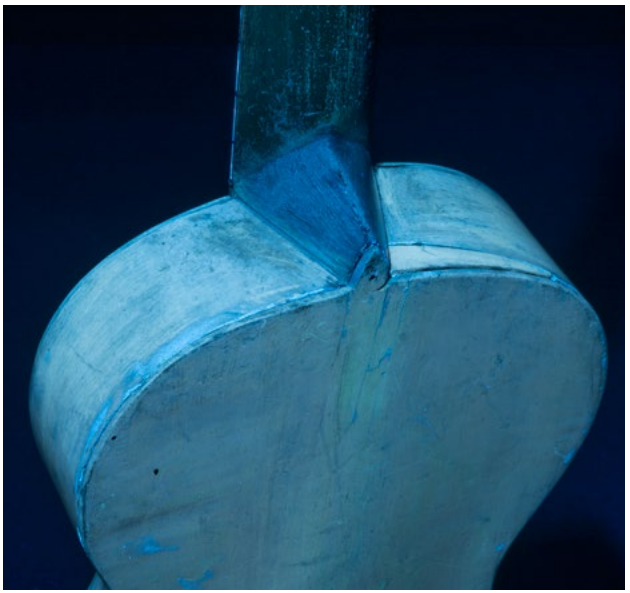


Figure 32 Detail of the neck heel and the back of DMO 5430 during its examination under ultraviolet light.

Figure 33 Detail of the soundhole and upper part of the body of DMO 5428 during its examination under ultraviolet light.

The Beringer Guitar: An Instrument in Its Original State

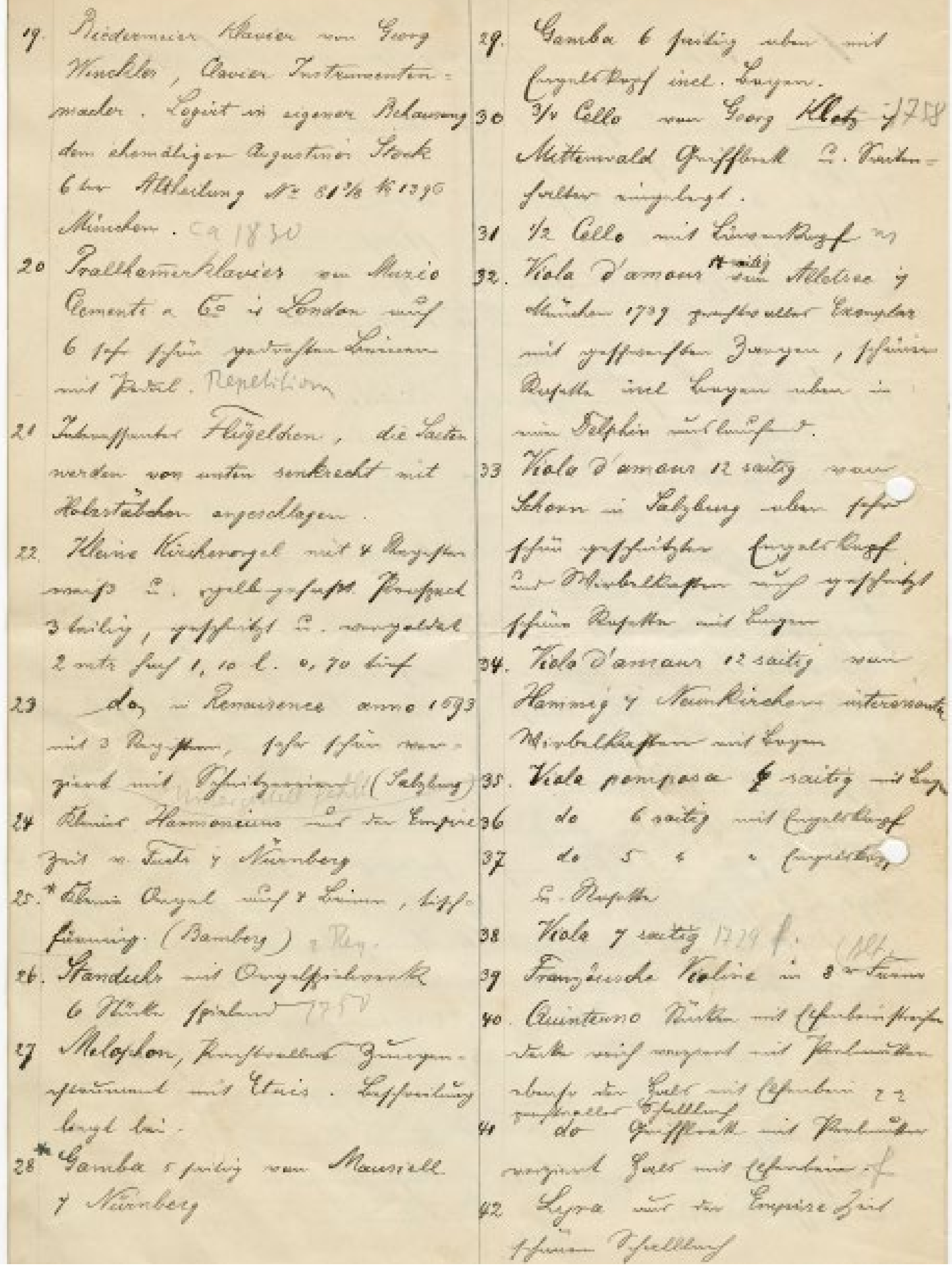
It would now be interesting to compare the instruments presented above to the third guitar in the photograph shown in figure 1. In contrast to the unsigned guitars purchased from Hahn, this instrument (inventory number 5099)[47] bears a label pasted on the back with the inscription 'Verfertigt J. G. Beringer im Amberg 1841' which is visible through the soundhole. Notably, this guitar (figure 34) was acquired around the same time as the Hahn instruments, although through a different acquisition procedure, as it was donated to the DM in 1906 by Georg Beringer (for more details see Part II).

This guitar is a representative example of an historic instrument preserved in its original state and in relatively good condition. It was made with materials and methods which are typical for nineteenth-century guitars, while both its construction as well as its appearance is in accordance with other surviving guitars from the same historical era and geographical region.[48] Even multiple ephemeral parts which could have been easily lost or damaged and substituted with new ones, such as the bridge endpins or the tuning pegs, are all identical on this guitar, while components that are commonly replaced due to heavy use, such as the nut, bridge saddle or frets, seem to be original. Additionally, the minimal playing marks on the treble side of the soundboard and on the first three frets on the treble side of fingerboard suggest that the guitar was used only occasionally. Although DMO 5099 is neither a particularly elaborate instrument nor was it produced by a renowned maker, it can still provide valuable information on nineteenth-century instrument-making techniques due to having retained its original manufacture characteristics intact.

47 Hereafter referred to as DMO 5099. The instrument is currently in storage and accessible only upon request. For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente*, 77.

48 In his comments on DMO 5099, Buckland (personal communication via email, 29 February 2012) mentioned that 'the Beringer guitar looks like a nice instrument. […] The body shape and decor is very much like similar guitars by Stauffer. The head bears a general resemblance to Stauffer, but is also its own style that seemed to enjoy a vogue during the second and third quarters of the nineteenth century. I have seen it on Austrian, German, and even French guitars. It seems to be a way to "dress up" a guitar with pegs (perhaps making it a bit more competitive with mechanical tuner equipped guitars?). It is generally associated with instruments made in more production oriented workshops, such as in Mirecourt and Markneukirchen. The only fairly well known maker to use this design, at least that comes to mind in a general sense, were the Mauchant brothers of Mirecourt.'

Figure 34 Front, side and back views of the guitar DMO 5099 donated in 1906 by Beringer.



19. Biedermeier Klavier von Georg Winckler, Clavier Instrumentenmacher. Logiert in eigener Behausung dem ehemaligen Augustiner Stock 6ter Abteilung No 81½ No 1390 München. ca 1830

20 Prallhammerklavier von Muzio Clementi & Co in London auf 6 [illegible] gedrehten Beinen mit Pedal. Repetition

21 Interessantes Flügelchen, die Saiten werden von unten senkrecht mit Holzstäbchen angeschlagen.

22. Kleine Kirchenorgel mit 4 Registern weiß u. gelb gefasst Prospekt 3 teilig, geschnitzt u. vergoldet 2 mtr hoch 1,10 l. 0,70 tief

23 do in Renaissance anno 1693 mit 3 Registern, sehr schön verziert mit Schnitzereien (Salzburg)

24 Kleines Harmonium aus der Empire Zeit v. Fuchs in Nürnberg

25.* Kleine Orgel auf 4 Beinen, [illegible] (Bamberg) 2 Reg.

26. Standuhr mit Orgelspielwerk 6 Stücke spielend 1758

27 Melophon, [illegible] Zungeninstrument mit Etuis. Beschreibung liegt bei.

28* Gamba 5 saitig von Maussiell in Nürnberg

29. Gamba 6 saitig eben mit Engelskopf incl. Bogen.

30 3/4 Cello von Georg Klotz 1758 Mittenwald Griffbrett u. Saitenhalter eingelegt.

31 1/2 Cello mit Löwenkopf

32. Viola d'amour 14 saitig von Alletsee in München 1727 prachtvolles Exemplar mit geschnitzten Zargen, schöne Rosette incl Bogen eben in ein Delphin auslaufend.

33 Viola d'amour 12 saitig von Schorn in Salzburg eben sehr schön geschnitzter Engelskopf und Wirbelkasten auch geschnitzt schöne Rosette mit Bogen

34. Viola d'amour 12 saitig von Hammig in Neukirchen interessante Wirbelkasten mit Bogen

35. Viola pomposa 5 saitig mit Bogen

36 do 6 saitig mit Engelskopf

37 do 5 " " Engelskopf u. Rosette

38 Viola 7 saitig 1729

39 Französische Violine in 8er Form

40. Quinterno Zither mit Elfenbeinschnitzerei [illegible] mit Perlmutter [illegible] mit Elfenbein prachtvoller Schnitzerei

41 do Griffbrett mit Perlmutter verziert Zarge mit Elfenbein

42 Lyra aus der Empire Zeit schöne Schnitzerei

Figure 35 The second page of a handwritten list showing the various instruments offered for sale by Hahn in 1906, preserved in the archives of the Deutsches Museum.

Provenance and Acquisition History

Previous Ownership and Acquisition by the Deutsches Museum

The previous section focused on the unusual features of the guitars DMO 5429 and DMO 5430 that resulted from drastic modification of the instruments, and pointed out their similarities to two other guitars, DMO 5428 and DMO 5431, which originated from the same owner. But where and when were these instruments 'recycled' and who might have been responsible for these actions? The answers to these questions can be traced back to the previous ownership and circumstances of the acquisition of the instruments by the DM in the early twentieth century. The investigation of the acquisition procedure of these instruments is of particular importance because, firstly, it is linked to the foundation and development of the musical instrument collection in the DM, and, secondly, the 'recycling' transformations of these instruments could help to identify similar practices on other instruments acquired around the same time.

As mentioned above, all four guitars were purchased by the DM in 1906 as part of a collection of about 170 musical instruments belonging to Hans (Johann) Hahn (1855–1936), a musical instrument manufacturer, repairer and dealer working in Munich.[49] This acquisition was a major step for the development of the DM's musical instrument collection not only because the Hahn collection comprised a wide variety of European keyboard, stringed, wind and percussion instruments, but also because it was the first large collection of historic musical instruments to be purchased by the DM. However, it also included several unusually constructed or modified instruments, such as the examined guitars.

The acquisition of the Hahn collection has been well documented in the correspondence preserved in the Verwaltungsarchiv of the Deutsches Museum Archiv (figure 35).[50] Moreover, details of the early history of the DM's musical instrument collection are outlined in a book by Franz Fuchs (1881–1971), a physicist who had studied at the Technical University of Munich and who had been recruited by the DM during his studies as an assistant soon after the museum's foundation.[51] Fuchs later became curator of the department of physics, to which the musical instrument collection belonged.

49 Hahn had established a music business as a musical instrument seller, piano tuner and technician at Holzstraße, Munich, by 1881. By 15 December 1902 he had moved his business to Hans-Sachs-Straße 11. When his collection was acquired by the DM in 1906 Hahn was still working at Hans-Sachs-Straße 11/I, not far from the present location of the DM on the Museumsinsel. For more details on Hahn see Henkel, *Lexikon Deutscher Klavierbauer,* 213–14.

50 Hereafter referred to as DMA, VA. In all the quotations the original spelling and punctuation has been retained.

51 For more details see Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 2.

However, apart from a few references in the book by Fuchs, the details surrounding the purchase of the Hahn collection have not so far been extensively or systematically researched.[52] Furthermore, although the museum catalogues by Hubert Henkel and Bettina Wackernagel contain some basic information on the history of the collection,[53] they have almost no details about the acquisition of the instruments from Hahn. Moreover, until now there has been no discussion of the presence of 'transformed' instruments in the Hahn collection, like the guitars presented earlier, and Hahn's role in these changes, which would help to further clarify their provenance, original state and subsequent alterations. Since the acquisition of the Hahn collection is chronologically connected to the early history of the DM, it is necessary to provide a brief account of the establishment and development of the musical instrument collection at the DM at the beginning of the twentieth century.

The Establishment and Development of 'Technische Akustik'

The musical instrument collection in the DM has a quite unconventional history which is strongly related to its character as a museum of science and technology. The museum, which was founded in 1903 as the 'Deutsches Museum von Meisterwerken der Naturwissenschaft und Technik', owned no objects at the time of its foundation; thus, several consultants from the academic and industrial sectors were invited to compile 'wish lists' of appropriate objects for each department.[54] Thus, in contrast to most other musical instrument collections assembled around the same time, such as those in the Victoria & Albert Museum in London or the Kunsthistorisches Museum in Vienna, this collection did not intend to show musical instruments as works of art, but rather focused on their development from a scientific, technical and historical perspective.[55] Additionaly, the exhibition of the collection would illustrate the implementation of the acoustic laws in the manufacture of musical instruments, indicating the close connection between science, technology and music.

52 Some facts concerning the acquisition of Hahn collection are included ibid., 10. While writing his book Fuchs most likely had access to the museum's correspondence archive, since he occasionally quotes passages from the original letters. However, he also probably wrote from memory and did not always copy the existing sources accurately, as confirmed by several inconsistencies between his text and the details presented in the surviving correspondence.

53 See Henkel, *Besaitete Tasteninstrumente,* 7–8, and Wackernagel, *Europäische Zupf- und Streichinstrumente,* 7.

54 For more details see Füßl, "Konstruktion technischer Kultur," 33–48.

55 For more details about the early history and development of the DM see Füßl and Trischler, *Geschichte des Deutschen Museums,* 45–103, as well as Hashagen, Blumtritt and Trischler, *Artefakte circa 1903,* 9–30.

During the conception of the various museum departments it was decided by Oskar von Miller[56] that musical instruments should be part of a museum section titled 'Technical Acoustics' ('Technische Akustik'), which would complement a different museum section called 'Physical Acoustics' ('Physikalischen Akustik'), both belonging to the department of physics.[57] For the preparation of the 'Technische Akustik' exhibition Miller started collaborating around 1904 with Oskar Fleischer (1856–1933), professor at the Berlin Musikhochschule and director of the royal musical instrument collection in Charlottenburg. By 1905 Fleischer had assembled a 'wish list' of instruments that would be suitable for the new exhibition,[58] which he then sent to Miller.[59] This list, published as 'Liste wünschenswerter Sammlungsgegenstände aus dem Gebiete des Musikinstrumentenbaues für das Deutsche Museum in München',[60] encompassed representative types of various musical instruments, including mechanical instruments and music automatons, presenting their chronological evolution from the antiquity to the present day. Although in many cases the list specified that the required instruments could be copies or reconstructions ('Nachbildungen'), Miller placed great value on having original historic instruments for the demonstrations of the instruments in use that would be held for visitors of the 'Technische Akustik' exhibition.[61] Considering the guitars as a distinct group it is necessary to examine how these were described in the 'wish list'.

56 Oskar von Miller (1855–1934), the founder of the DM, was an engineer from a family with a background in technical engineering and fine arts. For the role of Miller in the development of the DM see Füßl, *Oskar von Miller,* 251–86.

57 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 5.

58 Early handwritten drafts of this list in various unsigned and undated pages are included in DMA, VA 1752-2. The acquisition of artefacts through 'wish lists' by the DM at the beginning of the twentieth century is perhaps unique in the history of museums. At least in Germany, Füßl suggests, there are no other known examples of such a collecting concept based on 'wish-lists'. See Füßl, "Konstruktion technischer Kultur," 40.

59 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 5. According to Fuchs the list was sent on 3 September 1905.

60 See "Liste wünschenswerter Sammlungsgegenstände," 448, 457 and 459.

61 'Großen Wert legte v. Miller auf die Vorführung historischer Originalinstrumente, um den Besuchern ihre klangliche Eigenhart zu Gehör zu bringen'. Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 5.

The Guitars in the 'Wish List'

The development of the guitar was represented in the 'wish list' by four types of guitar developed in Europe; these were listed under the section 'plucked stringed instruments with a fingerboard' ('Zupfinstrumente mit Griffbrett') (figure 36).[62]

The first entry was an 'early Spanish guitar' ('Altspanische Gitarre'), probably referring to the 'vihuela', a guitar-shaped instrument with six double strings common in the fifteenth and sixteenth centuries, or to a 'baroque' guitar with five courses of double strings which was commonly used during the seventeenth and eighteenth centuries. The second, a 'modern (Italian) guitar' ('Moderne (italienische) Gitarre'), most likely denoted a guitar with six single strings which appeared around the end of the eighteenth century in Italy and became standard in the nineteenth century. The third entry included two types, namely a 'lyre guitar' ('Lyragitarre'), which is a guitar in the shape of a lyre, usually with six single strings, that enjoyed a brief vogue during the early nineteenth century, and a 'double (twin etc.) guitar' ('Doppel- (Zwillings etc.) Gitarre'), which referred either to a guitar with a twin body or, presumably, to a guitar with a twin neck, such as the 'Kontragitarre' or 'Schrammelgitarre' that was popular in Vienna in the late nineteenth century. It is important to point out that with the exception of the 'early Spanish guitar' there was a request for original guitars, not replicas. Another detail worth noting is the presence of the 'Chitarrone' and 'Colascione', variants of the lute and mandolin family, listed between the 'early Spanish guitar' and the 'modern (Italian) guitar', which indicates that the arrangement of instruments in the list was chronological rather than systematic.

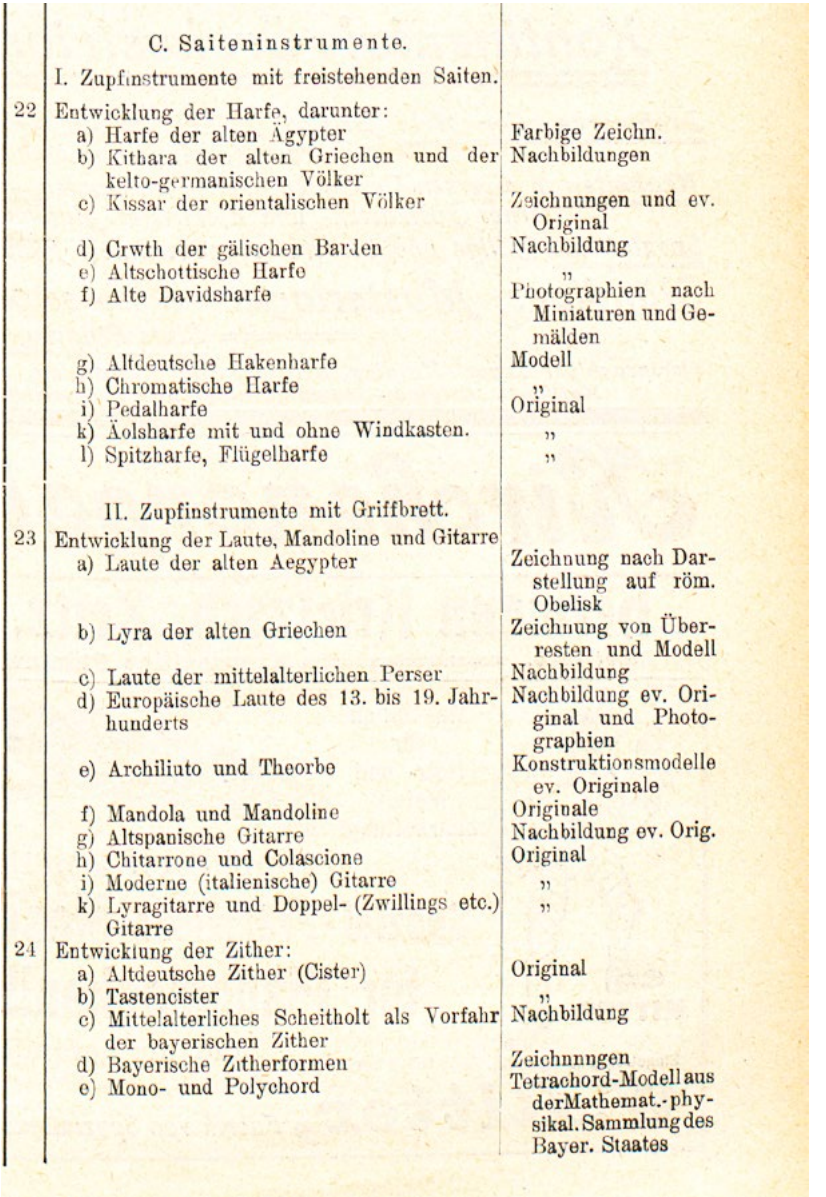
The selection of guitars in the 'wish list' mirrored Fleischer's overall concept for the exhibition, which focused primarily on two aspects of musical instruments, namely their taxonomy according to the method of sound production and their technical development, illustrated by examples which at the time were considered representative of improvement and progress.[63] Fleischer's approach to the evolution of instruments should come as no surprise since 'in the powerful wake of Charles Darwin's *On the Origins of Species by Means of Natural Selection* … (1859), elucidating the evolutionary history of instruments types – reconstructing their chronology and identifying missing links – became a central concern of organology'.[64] Interestingly, a book published around the same time as the wish list included similar typology of the evolution of the guitar, as did earlier publications.[65] In these

62 See Section C: 'Saiteninstrumente', Part II: 'Zupfinstrumente mit Griffbrett', Group 23: 'Entwicklung der Laute, Mandoline und Gitarre' in "Liste wünschenswerter Sammlungsgegenstände," 457.

63 This fact has been underlined also in Wackernagel, *Europäische Zupf- und Streichinstrumente*, 7.

64 Libin, "Progress, Adaptation, and the Evolution of Musical Instruments," 193.

65 See Biernath, *Die Guitarre seit dem III. Jahrtausend vor Christus*. The author is thankful to Andreas Stevens for drawing his attention to this source. A comparable linear evolution of the guitar was also presented by Ballard, *The History of the Guitar from the Antiquity to the Present Day*. The various guitar types in the 'wish list' were mentioned in Welcker von Gontershausen, *Neu eröffnetes Magazin musikalischer Tonwerkzeuge*, 72–77, and in Welcker von Gontershausen, *Über den Bau der Saiteninstrumente und deren Akustik*, 125–30.



	C. Saiteninstrumente.	
	I. Zupfinstrumente mit freistehenden Saiten.	
22	Entwicklung der Harfe, darunter:	
	a) Harfe der alten Ägypter	Farbige Zeichn.
	b) Kithara der alten Griechen und der kelto-germanischen Völker	Nachbildungen
	c) Kissar der orientalischen Völker	Zeichnungen und ev. Original
	d) Crwth der gälischen Barden	Nachbildung
	e) Altschottische Harfe	„
	f) Alte Davidsharfe	Photographien nach Miniaturen und Gemälden
	g) Altdeutsche Hakenharfe	Modell
	h) Chromatische Harfe	„
	i) Pedalharfe	Original
	k) Äolsharfe mit und ohne Windkasten.	„
	l) Spitzharfe, Flügelharfe	„
	II. Zupfinstrumente mit Griffbrett.	
23	Entwicklung der Laute, Mandoline und Gitarre	
	a) Laute der alten Aegypter	Zeichnung nach Darstellung auf röm. Obelisk
	b) Lyra der alten Griechen	Zeichnung von Überresten und Modell
	c) Laute der mittelalterlichen Perser	Nachbildung
	d) Europäische Laute des 13. bis 19. Jahrhunderts	Nachbildung ev. Original und Photographien
	e) Archiliuto und Theorbe	Konstruktionsmodelle ev. Originale
	f) Mandola und Mandoline	Originale
	g) Altspanische Gitarre	Nachbildung ev. Orig.
	h) Chitarrone und Colasciono	Original
	i) Moderne (italienische) Gitarre	„
	k) Lyragitarre und Doppel- (Zwillings etc.) Gitarre	„
24	Entwicklung der Zither:	
	a) Altdeutsche Zither (Cister)	Original
	b) Tastencister	„
	c) Mittelalterliches Scheitholt als Vorfahr der bayerischen Zither	Nachbildung
	d) Bayerische Zitherformen	Zeichnungen
	e) Mono- und Polychord	Tetrachord-Modell aus der Mathemat.-physikal. Sammlung des Bayer. Staates

Figure 36 Part of the 'wish list' as published in the *Zeitschrift für Instrumentenbau* on 21 February 1906 (p. 457). The various types of guitars required for the 'Technische Akustik' exhibition are included in group 23, presenting the development of the lute, mandolin and guitar. The left column contains the name of each instrument, while the right column contains the type (original object, copy, demonstration model, drawing, etc.) required for the exhibition.

sources the evolution of guitar was described as a linear, continuous development from the simple, 'primitive' forms of ancient civilisations of the East to the complex, advanced designs produced in the Western world.

Such facts reveal the prevailing attitude towards material culture at the turn of the twentieth century. Laurence Libin, former curator of the musical instrument collection at the Metropolitan Museum of Art, New York, has mentioned, for instance, that 'in assembling an encyclopedic repository of musical instruments at The Metropolitan Museum of Art in New York City, the enthusiastic collector Mrs. John Crosby Brown (1842–1918) explicitly sought "to trace the development of the several distinct types of musical instruments from the first rude beginning to the finished forms now in use, and secondly, to illustrate the varying forms assumed by these types under the influence of different civilisations […]"'.[66] This is no coincidence, he suggests, as in the late nineteenth century 'the schemes of gradual, purposeful evolutionary progress […] promoted a vital political agenda': by aiming to 'enforce social controls' and to prevent revolutions and social disorder 'museums, like churches and schools, should promote an ideal of slow, incremental progress as opposed to sudden, disruptive change.'[67]

Like other technical artefacts, musical instruments could be thus efficiently used in museums to illustrate the superiority and triumph of the industrialised, 'cultivated' Western societies at a global level. This contemporary collecting principle resulted in 'accumulations of curious and obsolete specimens' which 'illustrated the grand march of history toward a predetermined present, in which by a process allied to natural selection, the instruments of the symphony orchestra – the supreme musical ensemble, which played the most prestigious of musical forms – had reached a level of perfection that could scarcely be improved upon.'[68]

The Donation of the Guitar by Beringer

In December 1905 Miller visited the musical instrument collection in Charlottenburg under the guidance of Fleischer and soon after requested the loan of duplicate instruments from this collection for the 'Technische Akustik' exhibition.[69] By spring 1906 the DM had already acquired a number of instruments through donations from private owners and institutions, or through purchases from antique dealers in Munich and Innsbruck,[70] but it still lacked many items to complete the new exhibition.

In early May 1906 Miller repeated his earlier request to Fleischer, stressing that he needed a prompt decision since the 'Technische Akustik' exhibition was planned to open provisionally in the Bayerisches Nationalmuseum in October of that year,

66 Libin, "Progress, Adaptation, and the Evolution of Musical Instruments," 191.
67 Ibid., 190.
68 Powell, "The Hotteterre Flute: Six Replicas in Search of a Myth," 232.
69 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum*, 5–6.
70 Ibid., 6.

along with several other exhibitions, in order to coincide with the visit of the German Emperor Wilhelm II (1859–1941) and the Prince Regent Luitpold (1821–1912) in Munich.[71] On 29 May 1906 Georg Beringer, an old friend of Miller,[72] donated the guitar DMO 5099 to the DM. This was the first guitar to be acquired by the DM, although it did not correspond to any of the types described in the 'wish list'. Therefore, the DM still had to look further to find the wanted guitars.

The Visit to Berlin and the Viewing of the Gutsche Collection

On 23 May 1906 Fuchs, who was curator of the musical instrument exhibition in the DM,[73] was sent to Berlin to visit the collection in Charlottenburg[74] and secure a positive answer from Fleischer concerning the loan of the duplicate instruments. While in Berlin, Fuchs would have the opportunity to view, in addition to the collection in the royal music academy ('königliche Hochschule für Musik') at Charlottenburg, the 'Musikfachaustellung' in the Berlin Philharmonie[75] and the instrument collection of the 'Konzertmeister Gutsche'.[76] This collection included various European keyboard, wind and stringed instruments that could be obtained for the 'Technische Akustik' exhibition.[77]

Upon his return from Berlin, Fuchs, along with bringing good news concerning the loan of duplicates from Charlottenburg,[78] reported to Miller the high prices of

71 'Wir […] wären Ihnen für eine baldgefällige Entscheidung betreffs der leihweisen Überlassung wichtiger Objekte für die Gruppe "Akustik" sehr dankbar, da nunmehr definitiv feststeht, dass die Eröffnung des Museums im Oktober dieses Jahres in Gegenwart Sr. Majestät des Deutschen Kaiser und Sr. kgl. Hoheit des Prinzregenten stattfindet und wir daher mit den Ausstellungs-Arbeiten beginnen müssen'. Typed letter from Miller to Fleischer, 1 May 1906, DMA, VA 1752–2. On the other hand, Fuchs erroneously mentions that the opening was to take place in November 1906. See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum*, 6.

72 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum*, 6.

73 In addition to other duties in the department of physics, by 1906 Fuchs was responsible for the development of the new musical instrument exhibition in the DM. This is confirmed by the following description which states: 'Herr Ingenieur Fuchs ist mit der Bearbeitung der Gruppe "Technische Akustik" unseres Museums beauftragt'. Typed letter from Miller to Gedon, 30 May 1906, DMA, VA 1752-2.

74 Reported in typed letters from Miller to Fleischer, 15 and 18 May 1906, DMA, VA 1752-2.

75 For more details see *Offizieller Katalog der Musik-Fachausstellung*.

76 Reported in a typed letter from Miller to Fleischer, 21 April 1906. DMA, VA 1752-2.

77 The instruments offered for sale by Adolf Gutsche, listed in the correspondence of 5 June 1906, can provide an idea of his collection; notably, this list included no guitars. See the typed letter from Miller to Fleischer, 5 June 1906, DMA, VA 1752-2. However, in a previous letter to the administration of the DM, dating from 28 March 1905, Gutsche had listed some historic instruments that he was offering for sale, which included an 'Altsp. Guitarre' ('early Spanish guitar') and a 'Liraguitarre' (lyre guitar'). For more details see DMA, VA 4041.

78 The agreement by Fleischer to lend the duplicate instruments is confirmed in a typed letter from Miller to Fleischer, 28 May 1906, DMA, VA 1752-2, in which it is mentioned: 'Ganz besonders erfreut sind wir, dass Sie die Güte haben wollen, unserem Museum eine Anzahl Duplikate aus Ihren Sammlungen leihweise zu überlassen'. See also Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum*, 6.

the instruments on offer in the Adolf Gutsche collection.[79] On 28 May Miller wrote to Fleischer expressing his thanks for the willingness to loan duplicates. He also asked Fleischer to send a list of the instruments that could be loaned, since the DM was interested in buying some instruments from Gutsche and this had to be arranged soon, because Gutsche would depart on a journey in two weeks.[80] It seems that Gutsche also wanted to complete the sale quickly and from a note dated 2 June it is evident that he was forcing Miller to make a decision.[81] On 5 June Miller asked Fleischer's approval for the purchase of instruments from the Gutsche collection, suggesting that they could proceed with the order of the selected instruments on 7 June.[82] Fleischer eventually sent his consent by telegram on 8 June.[83]

However, one day later, in his correspondence of 9 June, Miller informed Fleischer that in the meantime they had been given an opportunity to purchase a complete collection of musical instruments. Miller therefore requested that Fleischer cancel the purchase of the instruments from Gutsche and to provide his opinion on the value of the recently offered instruments, of which he sent a list, noting that the collection could only be purchased as a whole.[84] What had happened that made Miller change his opinion in the last minute, and what was this new collection of instruments that had suddenly appeared on the scene?

79 'Nach meiner Rückkehr von Berlin berichtete ich v. Miller auch über die hohen Marktpreise von Klavichorden, Kielflügeln, Gamben, usw'. Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 8.

80 'Da Herrn Konzertmeister Gutsche in 14 Tagen verreist, wären wir Ihnen für baldgefl. Rücksendung der Liste ganz besonders dankbar, damit wir von demselben evtl. noch einige Instrumente für unsere Sammlung ankaufen könnten.' Typed letter from Miller to Fleischer, 28 May 1906, DMA, VA 1752-2.

81 'Da Musikinstrumentenhändler auf Entscheidung drängen, wären für baldige Beantwortung unseres Briefes dankbar. Hochachtungsvollst. Deutsches Museum'. Handwritten note (possibly to be telegrammed) from Miller to Fleischer, 2 June 1906, DMA, VA 1752-2.

82 'Nachdem wir auf unser ergebenes Schreiben vom 28. v. Mts. ohne Ihre geschätzte Rückäusserung geblieben sind, fragen wir höflichst an, ob Sie mit der Bestellung folgender Instrumente bei Herrn Gutsche einverstanden wären […]. Wir [können] am Donnerstag den 7. ds. Mts. die Bestellung an Herrn Gutsche abgehen lassen […]'. Typed letter from Miller to Fleischer, 5 June 1906, DMA, VA 1752-2. The total price for the listed instruments amounted 7890 M.

83 'soeben von pfingstpartie zurueck.-einverstanden.=Fleischer'. Telegram from Fleischer to Miller, 8 June 1906, DMA, VA 1752-2. See also the typed letter from Miller to Fleischer, 9 June 1906, DMA, VA 1752-2.

84 'Inzwischen wurde uns jedoch eine ganze Sammlung von Musikinstrumenten zum Kauf angeboten, deren Liste wir uns erlauben, Ihnen mitfolgend zu übersenden. Nachdem sich hierdurch die Entscheidung über den Ankauf der Instrumente von Gutsche ändern kann, wären wir Ihnen sehr dankbar, wenn Sie ganz allgemein und selbstverständlich ohne jede Verbindlichkeit in dieser Liste angeben wollten, welchen Wert nach Ihrer Vermutung die einzelnen Instrumente ungefähr besitzen. Die Sammlung wäre nur als zusammengehöriges Ganze zu halten […]'. Typed letter from Miller to Fleischer, 9 June 1906, DMA, VA 1752-2.

Gedon and the Offer of the Hahn Collection

To answer the above questions we have to go back a few days. Upon receiving the price list for the Gutsche instruments from Fuchs, Miller turned to Rudolf Gedon, an antique dealer in Munich with whom he was well acquainted, for advice concerning the price of the offered instruments.[85] On 30 May 1906 Miller wrote to Gedon mentioning the offer of instruments from the Gutsche collection in Berlin, asking him whether he would recommend the purchase of these instruments at the suggested prices or if it would be possible to find similar, but cheaper instruments, in Bavaria within the next two months.[86] Time was apparently pressing and Miller wanted instruments for the 'Technische Akustik' exhibition by the following August.

In his reply to Miller on 2 June 1906 Gedon found the prices of the instruments from the Gutsche collection to be quite high. In a couple of cases he also made comments on the prices of individual instruments in consideration of their age, adding that one cannot value the instruments if one has not seen them himself.[87] Gedon further mentioned that the day before he had visited the collection of Hans Hahn, which he described as 'a very interesting collection of good old instruments' and 'a whole collection of good, and seemingly of the best condition, instruments', consisting of 160 items.[88] Gedon noted that Hahn wanted

85 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 8. In his correspondence with Miller Gedon is described as 'Antiquitätenhändler' working at Arcostrasse 10.

86 'Für diese Abteilung ["Technische Akustik"] sind uns von Berlin eine Anzahl Musikinstrumente zum Kauf angeboten worden und wären wir Ihnen sehr dankbar, wenn Sie uns hiebei mit Ihrem gütigen Rate unterstützen und uns angeben wollten, ob sich der Ankauf dieser Instrumente zu dem angegebenen Preis empfiehlt, oder ob es wohl möglich wäre, gleich interessante Instrumente zu einem wesentlich billigeren Preis innerhalb der nächsten zwei Monate für unsere Sammlungen in Bayern zu beschaffen.' Typed letter from Miller to Gedon, 30 May 1906, DMA, VA 1752-2.

87 It is worth mentioning that photographs of several instruments in Gutsche's collection were reproduced in the second edition (1920) of Ruth-Sommer, *Alte Musikinstrumente: Ein Leitfaden für Sammler.*

88 'Nachdem ich die Preise auf der Liste der Berliner Instrumente gesehen, habe ich mich noch einigermassen bei anderen orientiert, und gefunden, dass die Sachen im großen und ganzen doch etwas teuer sind. Besonders teuer erscheint mir das Cimbal um 4000 M die Theorbe zu 450 Mk. das Bibel Regal zu 800 M. auch das Serpent um 300 M finde ich für übertrieben besonders wenn die Instrumente späteren Datums sind. Man kann aber nichts bestimmtes sagen wenn man die Sachen nicht selbst gesehen hat. Lächerlich erscheint mir die Orgel um 1000 M und glaube ich hier leicht etwas zu finden. Preiswert erscheint mir dagegen das Trumscheid zu 200 M. die Viola d amour zu 120 M. die Hakenharfe zu 90 M. und die Tanzmeistergeige, wenn sie alt ist. Nun kam ich gestern auch zu Herrn Hahn in der Hans-Sachsstrasse 11./1 welcher eine sehr interessante Sammlung von guten alten Instrumenten hat und möchte ich raten auch diese Sachen zu besichtigen. das währe halt wirklich gleich eine ganze Sammlung guter und im besten Zustande geschichteter Instrumente 160 Stück. Herr Hahn will auch 30000 M dafür, aber ich halte es nicht für teuer, - und währe eine Besichtigung schon sehr zu empfehlen, für den Fall die Sachen besichtigt werden sollten müsste man mich oder Herrn Hahn zuvor benachrichtigen, da in der kleinen Wohnung die vielen Instrumente etwas übersichtiger aufgestellt werden müssten. Jedenfalls bin ich auch jederzeit sehr gerne bereit mich für die weitere Entwicklung des Museums, zur Verfügung zu stellen, und hat es mich riesig gefreut den großen Fortschritt der ganzen Sammlung bewundern zu können.' Handwritten letter from Gedon to Miller, 2 June 1906, DMA, VA 1752-2.

30,000 M for his collection, but he did not think that this price was too high, recommending that Miller visit the collection himself. In his reply Miller thanked Gedon for his advice, noting that the DM would withdraw from the purchase of the Gutsche instruments, mentioning, however, that before they could reach a definitive answer regarding the purchase of instruments from Hahn, he and Fuchs would like to view the collection. He suggested the date of 7 June, asking Gedon to be present.[89]

The Visit to Hahn's Premises and the Request for an Inventory List

The visit to Hahn's house, where the collection was located, took place on the arranged date. According to Fuchs, during this appointment Hahn showed the most important pieces of his collection and played on some of the instruments.[90] Miller was quite impressed by what he saw[91] and the next day he wrote to Hahn, requesting from him a precise list with the age, manufacturer and other details of the offered instruments, which would help Miller to make a final decision, mentioning that Fuchs would visit Hahn to pick up the list the following morning.[92]

The handwritten list provided by Hahn comprised in total 169 instruments and music-related artefacts, including ten guitars of various types (figure 37).[93] However, a similar typed list produced by the museum (figure 38) included 181 items.[94] It is notable that both lists included more objects than Gedon's reported 160 items.[95]

89 '[…] wir […] werden nach Ihrem freundlichen Vorschlage vom Ankauf der zu teuer befundenen Instrumente Abstand nehmen. Es wäre uns nun sehr erwünscht, wenn wir vor definitivem Ankauf der preiswerten Instrumente, die sehr interessante Sammlung alter Instrumente von Herrn Hahn besichtigen könnten. Wir bitten daher um freundliche Mitteilung, ob es möglich wäre dieselbe kommenden Donnerstag den 7. Juni vormittags 11 1/2 Uhr zu besichtigen. Der Unterzeichnete würde sich dann mit Herrn Fuchs zur angegeben Zeit bei Herrn Hahn in der Hans Sachsstrasse 11/1 einfinden. Wir wären Ihnen sehr dankbar, wenn Sie dann ebenfalls dort sein könnten'. Typed letter from Miller to Gedon, 5 June 1906, DMA, VA 1752-2.

90 'R. Gedon vermittelte für 7. Juni eine Besichtigung der in der Wohnung Hahns aufgestellten Sammlung. Herr Hahn erklärte die wichtigsten Stücke und spielte auf einigen Klavichords, Spinetts, Lauten, Violen usw. vor.' Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 8.

91 'v. Miller war von dem Gesehenen sehr beeindruckt'. Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 8.

92 'Bezugnehmend auf den Besuch unseres Herrn Dr. O. von Miller teilen wir Ihnen höfl. mit, dass der Vorstand unseres Museums eine Entscheidung über den Ankauf der angebotenen Sammlung nur treffen zu können glaubt, wenn ihm eine genaue Angabe über die zur Sammlung gehörenden Objekte vorgelegt wird. Um keine Zeit zu verlieren, wird Herr Physiker Fuchs morgen Vormittag 9 Uhr zu Ihnen kommen, und bitten wir Sie, zu gestatten, dass derselbe eine genaue Liste aller zusammengehörigen Objekte mit Angabe ihres Alters, ihrer Ausführung u. dergl. aufnimmt.' Typed letter from Miller to Hahn, 8 June 1906, DMA, VA 1752-2.

93 See the handwritten list by Hahn (undated, possibly 9 June 1906), DMA, VA 1752-2.

94 See the typed list of instruments from the Hahn collection (undated, possibly 9 June 1906), DMA, VA 1752-2.

95 Regarding the listed instruments, Fuchs reported: 'An Hand einer Liste konnte ich feststellen, daß die Sammlung aus 11 Klavichords und Spinetts, 10 Hammerklavieren und Flügeln, 3 Orgeln, 2 Harmonien, und 155 Schlag- Saiten- und Blasinstrumenten bestand'; Fuchs additionally noted that the list included several signed instruments. See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 8–9.

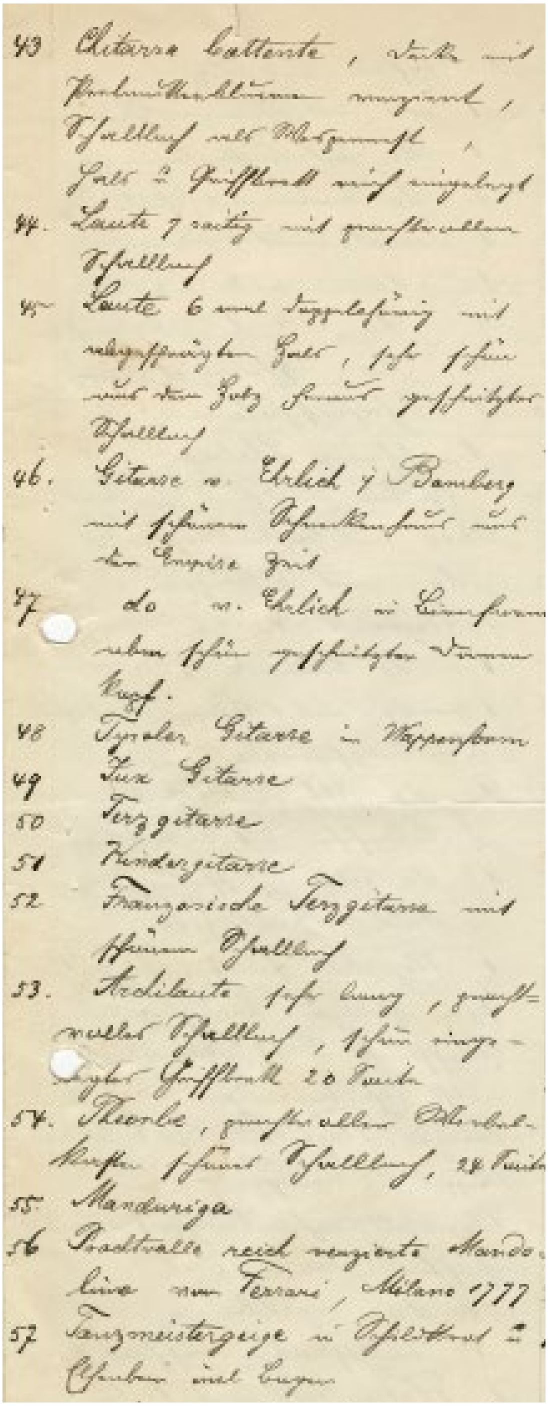
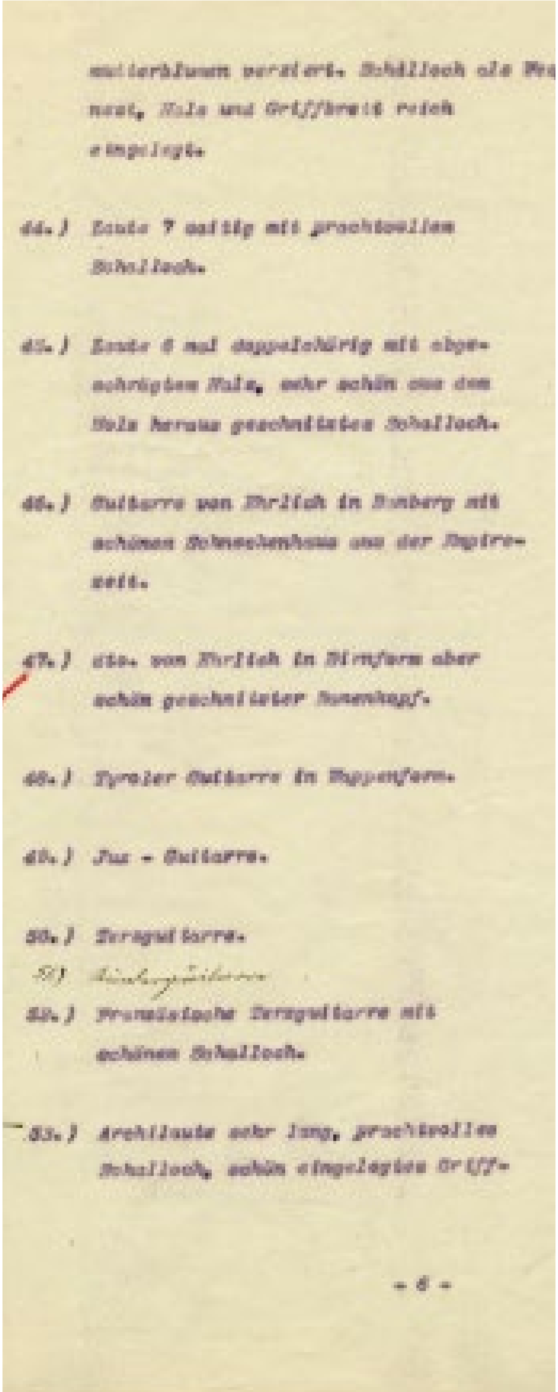


Figure 37 Detail of the handwritten list showing the instruments offered for sale by Hahn, including various types of guitars.



mutterblumen verziert. Schallloch als Ro-
nest, Hals und Griffbrett reich
eingelegt.

44.) Laute 7 saitig mit prachtvollem
Schallloch.

45.) Laute 6 mal doppelchörig mit abge-
schrägtem Hals, sehr schön aus dem
Holz heraus geschnittenes Schallloch.

46.) Guitarre von Ehrlich in Bamberg mit
schönen Schneckenhaus aus der Empire-
zeit.

47.) dto. von Ehrlich in Birnform aber
schön geschnitzter Damenkopf.

48.) Tyroler Guitarre in Wappenform.

49.) Jux - Guitarre.

50.) Terzguitarre.

51.) Kindergitarre

52.) Französische Terzguitarre mit
schönen Schallloch.

53.) Archilaute sehr lang, prachtvolles
Schallloch, schön eingelegtes Griff-

- 6 -

Figure 38 Detail of the typed list by the DM showing the instruments offered for sale by Hahn, including various types of guitars.

In both lists DMO 5429 is registered as a 'joke guitar' ('Jux Gitarre'), item no. 49, and DMO 5430 as a 'terz guitar' ('Terzgitarre'), item no. 50.[96] On the other hand, DMO 5428 is listed as a 'Tyrolean guitar in the form of a shield' ('Tyroler Guitarre in Wappenform'), item no. 48, whereas DMO 5431 as a 'child's guitar' ('Kinderguitarre'), item no. 51.

The Acquisition of the Hahn Collection

Having examined the list, Miller wrote to Hahn on 19 June hoping to negotiate a lower price. Miller maintained that, according to the museum experts, the 181 listed instruments were valued at 24,000 M and asked Hahn if he would be ready to proceed with the sale of the collection as a whole for this amount, which was 6,000 M less than what Hahn had initially asked for his instruments. Miller further expected that those instruments that would be used for demonstrations in the new exhibition should be repaired as well as possible by Hahn. Moreover, in order to facilitate the acceptance of the offer by Hahn and to accelerate the acquisition of his collection,[97] Miller mentioned that the most important instruments of the collection would bear labels stating that these pieces originate from the Hahn collection, arguing that this would have both financial and non-material benefits for Hahn. As a final point, Miller requested that some of the nicest instruments should be sent by the following Thursday because on Friday morning, 22 June 1906, the Prince Regent Luitpold would visit the museum collections and it would, therefore, be desirable to be able to show him these objects on this occasion.[98]

96 See the handwritten list by Hahn (undated, possibly 9 June 1906), DMA, VA 1752-2.

97 This detail has been highlighted by Fuchs who claimed: 'Um dem Besitzer den Entschluß zur Annahme des Angebots zu erleichtern […]'. Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum*, 9.

98 'Unter Bezugnahme auf die Besprechung mit dem unterzeichneten Herrn, Dr. Oskar von Miller, teilen wir Ihnen höflichst mit, dass die von Ihnen angebotene Sammlung alter Musik-Instrumente, nach der uns übergebenen Liste 181 Nummern umfassend, nach den Berechnungen unserer Sachverständigen für uns einen Wert von höchstens 24,000.- Mk. besitzt. Im Falle Sie bereit sind, uns die Sammlung um diesen Betrag als ein Ganzes zu überlassen, würden wir dieselbe käuflich erwerben und Ihnen die Kaufsumme sofort nach Ablieferung der in der Liste angegebenen Objekte ausbezahlen. Hiebei setzen wir voraus, dass diejenigen Instrumente, welche den Besuchern unseres Museums zur Erläuterung der betreffenden Technik vorzuspielen sind, von Ihnen soweit als möglich repariert werden. Wir wären ferners bereit, auf den wichtigsten Stücken der Sammlung Täfelchen anzubringen des Inhalts, dass dieselben aus Ihrer Sammlung stammen, in der Annahme, dass Ihnen hieraus bei dem zahlreichen Besuche unseres Museums noch besondere ideelle und materielle Vorteile erwachsen dürften. Sollten Sie bereit sein, auf unser Anerbieten einzugehen, so stellen wir Ihnen höflichst anheim, einige besonders schöne Stücke der Sammlung uns bereits am Donnerstag vormittag zu übersenden, da am Freitag vormittag Se. kgl. Hoheit der Prinzregent unsere Sammlungen besichtigen wird und es deshalb erwünscht wäre, bei der Gelegenheit Sr. Kgl. Hoheit auch diese Objekte zeigen zu können.' Typed letter from Miller and Walther von Dyck to Hahn, 19 June 1906, DMA, VA 1752-2.

One day later Hahn answered stating his surprise for the lower price the DM had valued his collection, mentioning that he had earlier received a higher offer for it from abroad. However, he accepted the proposed offer by the DM, maintaining that he did not want the collection to end up in a foreign country, and demanded a van for the transportation of the instruments on Thursday as had been requested. He further proposed to tune and maintain the instruments from time to time and announced his willingness to demonstrate some instruments during the Prince Regent's visit.[99] Miller replied the same day, thanking Hahn for accepting the offer and informing him that a van would be waiting the next day in front of his house.[100] From a letter of 25 June it is evident that the transaction was completed in two stages, with Hahn receiving initially 20,000 M for the delivery of a number of instruments, possibly those intended for the demonstration to Luitpold, while the last 4,000 M would be paid after the delivery of the remaining instruments. In this letter Miller noted again that the instruments were bought under the condition that, insofar as repairs were needed, Hahn was expected to undertake these repairs, and asked him to start with this work immediately. Lastly, Miller complained about the rather high invoice for the transport costs that Hahn had sent to the museum.[101] Hahn wrote back on 27 June 1906 reducing the bill for transport in half,[102] for which he received Miller's thanks the following day.[103]

99 'Ihr sehr geehrtes vom gestr. Tage beantwortend, bin ich überrascht, daß Sie mir nur 24000 M für meine Sammlung bieten, nachdem ich vom Ausland ein größeres Angebot erhielt. Da es mir hauptsächlich darum zu thun ist, die Sammlung nicht in das Ausland zu liefern, so bin ich bereit, Ihr geehrtes Angebot zu acceptieren, da Sie mir in anderer Weise entgegen kommen. Meine Klavierträger würden morgen Donnerstag früh die Instrumente unter meiner Leitung sachgemäß in das Museum liefern und bitte, einen geeigneten Wagen, vielleicht Möbelwagen bis um 8 Uhr früh zu schicken. Gleichzeitig bin ich gerne bereit, die Instrumente von Zeit zu Zeit zu stimmen und in Ordnung zu erhalten und wenn Sie es wünschen, würde es mir eine große Ehre bereiten S. Kgl. Hoheit am Freitag vorm. die Instrumente einzeln vorzuspielen und erklären zu dürfen'. Handwritten letter from Hahn to DM, 20 June 1906, DMA, VA 1752-2. See also Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 10.

100 'Ihrem geschätzten Schreiben vom Heutigen entnehmen wir, dass Sie mit den von uns vorgeschlagenen Propositionen einverstanden sind und teilen Ihnen höflichst mit, dass wir den von Ihnen gewünschten Möbelwagen für morgen früh 8 Uhr vor Ihr Haus bestellt haben.' Typed letter from Miller to Hahn, 20 June 1906, DMA, VA 1752-2.

101 'Wir beehren uns, Ihnen mitzuteilen, dass wir die Bay. Handelsbank angewiesen haben, Ihnen den Betrag von M. 20000.-- (Zwanzigtausend Mark) zur Auszahlung zu bringen und ersuchen höflichst um gefl. Empfangsbestätigung. Den Rest von M. 4000.-- werden wir nach Ablieferung der noch fehlenden Instrumente Ihnen überweisen lassen. Wir gestatten uns, Sie darauf aufmerksam zu machen, dass die Instrumente unter der Voraussetzung gekauft wurden, dass dieselben, soweit sie reparaturbedürftig sind, Ihrerseits repariert werden und ersuchen Sie nunmehr, mit diesen Arbeit alsbald beginnen zu lassen. Bezüglich Ihrer Transportrechnung vom heutigen Tage müssen wir unsere Verwunderung ausdrücken über den verrechneten Betrag von M. 24.--, den wir als Auslage für eine Tages-Arbeitsleistung von zwei Mann sehr hoch finden.' Typed letter from Miller to Hahn, 25 June 1906, DMA, VA 1752-2. See also Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 10.

102 See the handwritten letter from Hahn to DM, 27 June 1906, DMA, VA 1752-2.

103 See the typed letter from Miller to Hahn, 28 June 1906, DMA, VA 1752-2. This letter can be considered as the conclusion of the transaction, at least in financial terms. However, Hahn and the DM exchanged several letters through 12 September 1906 (see DMA, VA 1752-2) concerning the repair of two organs.

It can be safely assumed that by the end of June or early July 1906 most instruments from the Hahn collection, including the listed guitars, had already been transported to the Isarkaserne.[104] With the purchase of the 181 items from Hahn the DM had managed to fill a large gap in its music collection. In his letter to Fleischer on 12 July 1906 Miller confirmed the acquisition of the Hahn collection, stating that after this purchase there were only few objects lacking from the 'wish list', which could be hopefully obtained partly by donations and partly by exchanges, and claiming that the provisional exhibition that had been planned would be ready on time.[105] The instruments were firstly exhibited in 1906 in Munich in the 'Alte Nationalmuseum' (now Museum Fünf Kontinente) and in the 'Zweigmuseum' at the Schwere-Reiter-Kaserne in 1909,[106] where the plucked instruments, including harps, lutes, guitars and zithers, were displayed in the entrance of the musical instrument collection.[107]

What happened to Gedon and Hahn after this transaction with the DM? Gedon, the person who had introduced Hahn to the DM, was thanked by Miller for his assistance soon after the acquisition of the Hahn collection[108] and was later

104 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 11–12. It is noteworthy that in 1907 a number of instruments from the Hahn collection in the DM, including a pear-shaped guitar by Christoph Ehrlich (1781–1830), Bamberg (no. 47 in Hahn's list), were exchanged for instruments from the collection in Charlottenburg. Lists of the exchanged objects are included in DMA, VA 1754.

105 'Wir haben daher die uns angebotene Sammlung käuflich erworben. Nach der von Ihnen gütigst ausgearbeiteten Liste fehlen uns nunmehr nur noch sehr wenige Objekte, die wir teils durch Stiftungen, teils durch Tausch zu erlangen hoffen, sodass es möglich sein wird, die Gruppe bereits im provisorischen Museum nach Ihren geschätzten Intentionen nahezu vollständig aufstellen zu können'. Typed letter from Miller to Fleischer, 12 June 1906, DMA, VA 1752-2. See also Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 10.

106 Ibid., 25. Fuchs stated that the 'Zweigmuseum' was at the 'Isarkaserne' although it was actually at the Schwere-Reiter-Kaserne, as has been described in Füßl, "Konstruktion technischer Kultur," 34. Fuchs also mentioned the display of instruments in the exhibition of oriental art which took place in Munich in 1910: 'Auf der orientalischen Ausstellung (München 1910) stattete das Museum einen Saal mit Musikinstrumenten aus dem Depot aus, den v. Miller nach der Eröffnung in seiner neuen Reichsratsuniform besichtigte.' Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 28, footnote 8.

107 'Am 30.12.1908 bot sich der Presse eine interessante Spezialsammlung: Im Gang waren die […] Zupfinstrumente (Harfen, Lauten, Gitarren und Zithern) […] aufgestellt.' Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 25.

108 'Nachdem der von Ihnen freundlichst vermittelte Ankauf der Instrumenten-Sammlung des Herrn Hahn nunmehr zum Abschluss gebracht ist, möchten wir nicht versäumen, Ihnen für Ihre schätzenswerten Bemühungen in dieser Angelegenheit unseren verbindlichsten Dank auszusprechen und zeichnen […]'. Typed letter from Miller to Gedon, 25 June 1906, DMA, VA 1752-2.

gifted with a harmonium from Hahn's collection for his services.[109] The professional connection between Hahn and Gedon is unknown, but it is possible that Gedon profited out of this transaction. On the other hand, by early September 1906, only a couple of months after he had sold his collection to the DM, Hahn had moved to a new address, where he continued his business as a dealer in keyboard instruments.[110] Hahn remained in contact with the DM on various occasions in the following years,[111] at least until 1916, as evidenced in the surviving correspondence.[112]

From the details presented so far it is clear that there are several noteworthy details in the way the Hahn collection was acquired, which may be strongly connected with the presence of 'recycled' instruments in Hahn's possession and which can be better understood when examined within the contemporary sociocultural background. But before that it is necessary to describe why and how musical instruments change through human intervention.

109 See the typed letter from Miller to Gedon, 24 December 1906, and the handwritten letter from Gedon to Miller, 29 December 1906, both in DMA, VA 1752-2.

110 See the cards with printed and handwritten notes by Hahn to DM, September 1906, DMA, VA 1752-2. In one of the cards Hahn informed the public that he would be at his new address at Rumfordstraße 38/II from 5 September 1906.

111 From 5 November 1906, a few months after the acquisition of his collection by the DM, and until 31 December 1935, shortly before his death, Hahn was a member of the DM. Judging from the low membership number (01529) on his card, Hahn belonged to the relatively early members of the DM and in 1906 had donated 300 M for the construction of the present museum building. The author is thankful to Wilhelm Füßl for this information. For more details see DMA Mitgliederkartei, Hahn, Hans.

112 By January 1916 Hahn's address was at Rumfordstraße 28 as reported in a typed letter from Miller to Justizrat Schmidt, 31 January 1916, DMA, VA 1762-2. A handwritten note from Hahn dated 24 August 1916 is his latest correspondence with the DM; in this note his address had changed to Fürstenstraße 15/1. See the handwritten card from Hahn to DM, 24 August 1916, DMA, VA 1762-2.

Figure 39 Musical instruments have often been collected and preserved because of their decorative features as shown in the detail of the soundhole and rose of a colascione discussed on pp. 106–108.

Musical Instruments as Changing Artefacts

Musical Instruments: A Special Group of Artefacts

It has been stated that 'any object designed to make a sound, from a baby rattle to a viola, and from a fire siren to a gong'[113] can be defined as a musical instrument. However, apart from their ability to make sound, musical instruments have multiple 'voices' and 'bodies' which extend beyond their acoustic properties and material characteristics. For example, musical instruments can act as signifiers of status, rank and power, as holders of monetary or emotional value, or as indicators of the age, gender, class and intellectual level of their users. At a different level, they can also reflect technical innovation and scientific progress, highlight commercial, ceremonial, military or religious practices, represent national symbols, and preserve personal narratives or communal memories. In addition, musical instruments can illustrate contemporary aesthetics, theories and fashions, evoke historical events, and become associated with social, political or artistic movements. For these reasons, musical instruments are especially valuable in giving us the opportunity to understand not only the musical, but also the social and cultural life of our ancestors (figure 39).[114]

Most importantly, as functioning objects musical instruments are subject to alteration. In her analysis of bowed stringed instruments Myrna Herzog has maintained that 'from time immemorial, the relation between man and his musical instruments has been a process of constant change. Instruments are invented, modified and eventually abandoned, in response to the expressive needs of specific times, places and cultures. Transient by nature, they rise and fall together with the societies that have created them, and which they mirror'.[115] Therefore, as a result of human intervention instruments are continuously transformed during their lifetime, a process which will be briefly analysed below.

113 Andrew, *Standards in the Museum Curation of Musical Instruments 2005,* 5.

114 For a thorough discussion of the various social and cultural aspects of musical instruments see Dawe, "People, Objects, Meaning," 219–32; see also Libin, "Progress, Adaptation, and the Evolution of Musical Instruments," 205. Some observations on the multifaceted character of musical instruments are given in Birley, Eichler, and Myers, *Voices for the Silenced.*

115 Herzog, "Is the Quinton a Viol," 9.

The Life Cycle of a Musical Instrument and the Concept of 'Recycling'

The cultural life of any artefact comprises five stages, namely creation, original use, discard, collection and institutional acquisition, as has been proposed by artefact conservator Barbara Appelbaum.[116] According to Appelbaum 'each new stage in the life of an object typically involves a change of location, change of ownership, and change in use, with accompanying changes in attitudes toward many of its aspects. Transition in the last two stages – collection and institutional acquisition – also commonly means a less harsh environment and gentler handling. […] All these changes in the lives of objects are accompanied by changes in values'.[117] This model can be used effectively to describe the life cycle of musical instruments, particularly their transition from functioning objects to museum artefacts, and also to outline the reasons behind their 'recycling'.

The first two stages in the lifetime of an instrument comprise its creation and original use, the period when its main role is as a tool for the production of music. Use is crucial for determining whether an object should be considered a musical instrument. When a musical instrument is created it carries no other information apart from its technical characteristics; it is function that provides it with a series of music-related attributes. In his discussion on the conservation and use of historic musical instruments Robert Barclay, former conservator at the Canadian Conservation Institute, Ottawa, has stated that 'a musical instrument that has not yet been brought into a playing state is not yet a musical instrument; its list of aesthetic attributes entirely lacks those associated with the performance of music'.[118]

During original use the most obvious reason for intervention involves the replacement of worn-out ephemeral parts (e.g. strings, frets, nuts, bridges, saddles, jacks, reeds, etc.), the repair of cracks or dents or the strengthening of weak structural components. These changes are typically intended to solve functional problems, to ensure the regulation of the various parts and to enhance the instrument's playability.[119] While a musical instrument is in use priority is given in sustaining its functionality through regular maintenance; at this stage usually no other particular context has been yet attributed to the instrument. Hypothetically, as long as an instrument is repairable it can be used unceasingly, although it is common that at some point it is abandoned for any of a number of reasons, such the emergence of new musical styles, changes in prevailing fashions and sound models, or new technical developments, thus entering a stage of discard.

During discard, but sometimes also already during use, the instrument can follow two distinct paths. The first is when the instrument gradually becomes a

116 See Appelbaum, *Conservation Treatment Methodology*, 123–28.

117 Ibid., 124.

118 Barclay, *The Preservation and Use of Historic Musical Instruments*, 150.

119 Such actions belong to the regimen of 'currency', one of the three regimens defined by Barclay to describe human intervention on musical instruments; the other two regimens are 'conservation' and 'restoration'. For more details on the three regimens see Barclay, *The Preservation and Use of Historic Musical Instruments*, 37–67.

collectible item through 'singularisation', which typically leads to its collection and institutional acquisition. 'Singularisation' occurs when at some point an instrument begins to be valued and respected for its special musical, historical, technical, visual or other aspects.[120] Instruments which are 'singularised' have typically been given special attention by individuals or by society, being objects that 'have passed from transient to durable' and encompassing a set of values that are 'either stable of increasing'.[121] Most extant historic instruments that one finds today in museums and collections have survived simply because they have been through this process of 'singularisation'.[122] In theory, once instruments have been entrusted to a collection or institution, they are less susceptible to human intervention and have a greater chance of being preserved intact, although this has not always been the rule.[123] On the other hand, if an instrument is not 'singularised' but continues to be considered a replaceable utensil, it usually enters a second path, a phase of disposal, where progressively 'its value, both monetary and cultural, will approach zero'.[124] Disposal may result from constant use and repair, which lead to the gradual deterioration of the instrument, or from irreversible damage and neglect, which renders an instrument unplayable.

It is mainly during the discard or disposal of an instrument that a form of 'recycling' can occur through human intervention of varying degrees. This intervention usually involves a 'recycling' of both materials and values, and it initiates procedures which can dramatically affect features of musical instruments that are analogous to the 'hardware' and 'software' parameters of any functioning system.[125]

120 This extends also to mechanical or automatic musical instruments. Although less dependent on or controlled by human performance, such instruments can allow interesting comparisons in respect to ornamentation, dynamics and other performance characteristics. For instance, Barclay has noted that 'organ barrels are considered an extremely valuable musicological resource because they encode the music as it might have been played, not as it was written in musical notation'. Barclay, *The Preservation and Use of Historic Musical Instruments,* 122.

121 Ibid., 5.

122 However, it is important to note that the historical and cultural values of musical instruments as collected artefacts are not fixed but may change over time. For example, when the Henry Ford collection of brass wind instruments was appraised in 1953 by Curt Sachs, it was found worthless, although recent research has shown that it is quite important for the history of brass bands and brass-instrument making in America during the nineteenth century. For more details see Linsenmeyer, "Through the Eyes and Ears of Musical Instrument Collectors," 4.

123 Several cases of instruments whose features were severely changed even though they had already been in collections or institutions are presented in Barclay, *The Preservation and Use of Historic Musical Instruments,* 89–201.

124 Ibid., 5.

125 The 'hardware' features of a musical instrument may include features that are largely determined by the manufacturer's initial design, such as construction materials and methods, shapes and sizes, dimensions, decoration, etc., while the 'software' features may include characteristics that are subject to variations depending on the instrument's use, such as timbre, pitch, compass, temperament, tonal range, tunings, string properties and arrangement, playing techniques, etc.

The 'recycling' of an instrument can bring it back to the stage of use, and this loop can continue repeatedly as long as the instrument is considered as an object worth preserving.

What these facts clearly show is that instruments have always been prone to change, and each of these changes typically removes an original characteristic of the instrument and adds something new. As Michael Latcham, former curator of the musical instrument collection in the Gemeentemuseum, The Hague, has pointed out that 'the unchanging instrument does not exist and the unchanging sound quality of an instrument is mythical. To call an instrument original is to snatch at a process of change in the hope of some tangible eternal truth'.[126] The 'recycling' processes described above will be illustrated with several examples in the following sections.

Adaptation, Improvement and Modernisation

According to Friedemann Hellwig, former conservator of musical instruments at the Germanisches Nationalmuseum, Nuremberg, one of the main reasons for the 'recycling' of musical instruments is the aim of adapting them to new musical demands, which may result from the decline of certain compositional styles, the development of new tonal ideas or changes in orchestral pitches.[127] The first candidates for such modifications are evidently those instruments which are operationally fit and can adopt new roles.[128] For example, in her comments on European stringed instruments from the musical instrument collection at the Royal College of Music, London, Elizabeth Wells, former curator of this collection, has pointed out 'the extent to which many of them have been altered', adding that 'it is, of course, those very alterations, as well as fine decoration, which ensured their preservation'.[129] In contrast, instruments which cannot be adapted to the new requirements gradually become worthless and disappear. For instance, many historic plucked, bowed and keyboard stringed instruments were desirable even after they were no longer in fashion, due to their adaptability to new styles, whereas woodwind instruments, 'being cheaper and offering less opportunity for decoration than strings were considered less worth preserving when they became obsolete; they were also harder to modernize'.[130] The same applies for percussion instruments, whose manufacture and musical role have traditionally been less prominent compared to stringed and keyboard instruments.

126 Latcham, "Soundboards Old & New," 51. For a broader discussion on originality and authenticity in material culture see Clifford, *The Predicament of Culture,* 222–26.

127 See Hellwig, "Restoration and Conservation of Historical Musical Instruments," 159.

128 One such example is a late nineteenth-century double-action 'Gothic' harp by Erard in the DM (inventory number 69539), which was altered under the directions of its previous owner, Karl Weigel, into a chromatic harp in 1906, thus creating an experimental prototype instrument. For more details of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 188–89.

129 Wells and Nobbs, *Royal College of Music,* x.

130 Libin, "Major Instrument Collections," 427.

The 'recycling' of plucked stringed instruments in order to adapt them for new musical tasks has a long history. One of the earliest examples is the citole in the British Museum, London (inventory number 1963, 1002.1), built in the fourteenth century. The medieval citole had been originally constructed as a plucked, guitar-like instrument, but was then converted to a violin around 1758, with further modernising modifications in the late eighteenth or early nineteenth centuries. It has been suggested by that the instrument's miraculous survival 'can be attributed to three factors: the quality of craftsmanship, with its richly carved decorative elements, its association with Elizabeth I of England (1558–1603) and her favourite Robert Dudley, Earl of Leicester, and its modification to keep pace with changing musical fashion'.[131]

Similar 'recycling' transformations can be observed on various historic plucked stringed instruments, particularly lutes and guitars. In one of his articles on historic lutes, Kenneth Sparr has maintained that 'plucked instruments as the lute and the guitar have very commonly been subject to changes, often successive, and, as is well known, lutes from Bologna and Padua were sought-after for centuries, and highly treasured (not to say highly valued). Most of them were converted more or less dramatically during the seventeenth-twentieth centuries, with additional stringing, new necks, bridges and peg boxes, reinforced barring of the soundboard, etc'.[132] Already during the seventeenth and eighteenth centuries old lutes, such as those produced by Laux Maler (1485–1552?) of Füssen working in Bologna in the sixteenth century, were modified 'to the point that only the body remained from the original instrument',[133] while the original neck, head, soundboard and internal bracing were replaced. In this way many historic lutes were transformed into theorbos, with additional bass courses on new extended necks to increase the low range,[134] while occasionally parts from discarded lutes or guitars were even used to construct hurdy-gurdies.[135] In his remarks on the conversion of lutes produced in the sixteenth century by German makers working in Italian cities, such as Bologna, Venice, Padua, or Rome, Matthew Spring has mentioned that 'instruments that survived into the seventeenth and eighteenth centuries became enormously valuable, and, like Stradivari violins in the nineteenth and twentieth centuries, were repeatedly renecked and restrung, so that they could play music of a later age'.[136]

131 Kevin et al., "A Musical Instrument Fit for a Queen," 13.

132 Sparr, "Remarks on an Unnoticed Seventeenth-Century French Lute in Sweden," 209.

133 Barclay, *The Preservation and Use of Historic Musical Instruments,* 40.

134 See Hellwig, "An Example of Lute Restoration," 64, and Hellwig, "Restoration and Conservation of Historical Musical Instruments," 163. For various examples of 'recycled' lutes see Hellwig and Hellwig, *Joachim Tielke,* 113–16, 118–20, 126–28, and 130–42.

135 See Palmer and Palmer, *The Hurdy-Gurdy,* 145. A composite hurdy-gurdy made using the back of a baroque guitar has been shown in Wells and Nobbs, *Royal College of Music,* 205. On the other hand, a guitar dated 1761 and attributed to Vincenzo Panormo is 'possibly a recycled hurdy-gurdy', as mentioned in Westbrook, "Louis Panormo," 583, footnote 8.

136 Spring, *The Lute in Britain: A History of the Instrument and Its Music,* 40.

The above-mentioned practices can be observed on an unsigned theorbo in the DM (inventory number 35252), donated by Salome Harburger in 1912 (figure 40).[137] The back of this instrument dates from the early seventeenth century, with the rest of the parts being later additions.

It is noteworthy that many historic lutes from the sixteenth and seventeenth centuries have been repaired or restored not just once, but several times during the eighteenth, nineteenth and twentieth centuries, a fact evidenced by the various labels pasted on their inside which usually bear the name of the restorer and the place and date of repair. For instance, a 'guitarised' lute examined by the author at the Metropolitan Museum of Art, New York (inventory number 89.2.153), has two labels pasted inside the body, with the inscriptions 'Frankfurd 1627.' and 'Zu einer Guitarre umgearbeitet / von F: F: L Lönstöter. Celle. 1807.', respectively. Both labels seem to be original, suggesting that the instrument had been built (or possibly repaired) in Frankfurt in 1627 and was later converted into a guitar by Lönstöter in Celle in 1807. A similar, but more extreme example, is a surviving body of a lute by Raphael Mest, Padua, 1627, in the Historical Instrument Collection at the Birmingham Conservatoire (inventory number 11.1), which bears five different labels pasted on the inside (figure 41).

Additionally, in the late eighteenth and early nineteenth centuries, when the fashion for the lute was declining and the instrument was being replaced by the emerging six-string guitar, old lutes were frequently 'reconfigured as guitars'.[138] A guitar tutor from the early nineteenth century mentioned that such lute-guitar hybrids 'are either fashioned from old lutes to guitars, or also made new in the shape of old lutes',[139] thus producing a richer and more refined sound but also having the disadvantage of being less easy to use. Another contemporary writer observed that 'lutes were often turned into guitars because they are nicer and softer in tone than the ordinary guitar', remarking that because of their round body such instruments 'are uncomfortable to play, which is why this type soon faded out'.[140]

137 Hereafter referred to as DMO 35252. The instrument is currently in storage and accessible only upon request. For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 22.

138 Oey, "Some Problems in Musical Instrument Conservation in Museum Collections," 6. See also Schlegel and Lüdtke, *The Lute in Europe 2,* 341–42. Several examples of 'guitarised' lutes are presented in Kinsky, *Musikhistorisches Museum von Wilhelm Heyer in Cöln,* 155–57, and in Wells and Nobbs, *Royal College of Music,* 54–55 and 64–65.

139 'Die Lauten-Guitarren werden entweder aus alten Lauten zu Guitarren umgearbeitet, oder auch nach der Form alter Lauten neu verfertiget. Diese haben nun allerdings beiderseits den Vorzug einer grössern Fülle und Stärke des Tons und einer schönern und lieblichern Zartheit desselben; nur ist freilich die Haltung derselben ebenfalls mit einiger Unbequemlichkeit verbunden.' Harder, *Neue vollständige theoretische und praktische Guitarre-Schule,* 9. The author is thankful to Erik Stenstadvold for bringing this source to his attention.

140 'Sonst wurden die Lauten häufig in Guitarren verwandelt, weil sie schöner und sanfter im Tone sind, als die gewöhnliche Guitarre. Daher verfertigte man auch späterhin neue Guitarren in Lautenform. Aber wegen ihres runden Körpers sind solche unbequem zu spielen, weshalb diese Bauart bald nachließ. Dazu trug auch der hohe Preis mit bei.' Otto, "Ueber den Bau der Bogeninstrumente," 96.

Figure 40 Front, side and back views of the unsigned theorbo DMO 35252 donated in 1912 by Harburger.

Figure 41 Detail of the various labels pasted on the surviving body of a lute made by Raphael Mest, Padua, 1627, in the Historical Instrument Collection at the Birmingham Conservatoire (inventory number 11.1). In addition to the maker's label (centre) it bears four other labels from repairs carried out by Antonius Bachmann (Berlin, 1753), Friedrich August Matthes (Berlin, 1822), Rogers and Priestley (Birmingham, 1891) and Ronald Taylor (Rugby, 1981); the last label is not shown in this photograph.

Likewise, according to a mid-nineteenth-century report these 'guitarised' lutes 'sounded smoother, softer than the guitars with flat or slightly arched backs', though it was also pointed out that new guitars 'were not easily built into this shape, because they are too expensive', while due to the bowled back 'they were very uncomfortable to hold'.[141] Similar comments about the conversion of lutes to guitars in later publications confirm that this phenomenon was continued at least until the early twentieth century.[142]

The typical conversion of these lutes involved keeping the old lute body, which was thought worth preserving because of its good acoustic properties, and adding to it new guitar parts, such as a new narrow neck, a new fingerboard with fixed frets, a new bridge for six single strings, and a new headstock with six pegs, usually in a 'figure-of-eight' shape.[143] These alterations can be observed on a 'guitarised' lute in the DM (inventory number 17196) purchased in 1908 from Otto Haake (figure 42).[144] Although the instrument bears an unauthentic label with the inscription 'Cristofolo Cocho all'Aquilla Doro / In Venetia 1711', it is also signed on the back of its soundboard with the number 1809, probably indicating the year when its conversion from lute to guitar took place.[145]

A similar process can be observed on baroque guitars. Such instruments, which typically had five double courses of strings, were frequently 'modernised' into six-string guitars with alterations to the bridge, neck, fingerboard and head once they became outdated.[146] As in the case of lutes, baroque guitars built with expensive materials and bearing eye-catching ornamentation, such as those produced by Joachim Tielke of Hamburg (1641–1719), were prime candidates for such modifications, as demonstrated by extant specimens.[147] On the other hand,

141 'Nachdem die Guitarre einmal beliebt geworden war, schuf man die meisten Lauten in Guitarren um. Sie klangen sanfter, weicher als die Guitarren mit flachen oder nur wenig gewölbten Böden. Neue wurden in diese Form nicht leicht gebaut, weil sie zu kostspielig sind, und wegen des Bauches sehr unbequem zum Halten waren.' Schafhäutl, "Über musikalische Instrumente," 131.

142 See, for example, Fack, *Materialien zu einer Geschichte der Guitarre und ihrer Meister,* 29–33. The author is thankful to Tom Heck for bringing this source to his attention. This topic is also discussed in Grill, *Die Rezeption der Alten Musik in München zwischen ca. 1880 und 1930,* 86–89.

143 See for instance, a 'guitarised' lute in the Museo degli Strumenti Musicali di Roma, Rome (inventory number P.V. 8190), presented in Cervelli, *La Galleria Armonica: Catalogo del Museo degli Strumenti Musicali di Roma,* 289. According to the description (p. 277) the instrument bears the inscription 'Matheus Buechenberg Rome 1617'.

144 Otto Haake was the son of Karl Haake (1849–1908), a piano manufacturer in Hannover who was reportedly an avid collector of antique instruments of all kinds, many of which were sold to the DM in the early twentieth century. For more details on Haake see Henkel, *Lexikon Deutscher Klavierbauer,* 209–10; on Haake's activities as collector see DMA, VA 4041. The author is thankful to Silke Berdux for this information.

145 Hereafter referred to as DMO 17196. The instrument is currently in storage and accessible only upon request. For more details of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 18–19.

146 Examples of such conversions are presented, for instance, in Wells and Nobbs, *Royal College of Music,* 106–08, 112–14, and 118–20.

147 See, for instance, the guitars in Hellwig and Hellwig, *Joachim Tielke,* 149–50, 152–55, 162–69, 174–75, 178–82, 186–90, and 194–98.

Figure 42 Front, side and back views of the 'guitarised' lute DMO 17196 purchased in 1908 from Haake.

gut-strung baroque guitars were sometimes converted to wire-strung chittare battenti, usually by bending the soundboard below the bridge, shortening the neck, and inserting endpins on the bottom of the instrument to attach the metal strings.[148]

Conversely, several examples of the wire-strung guittar (a type of cittern commonly known as the 'English guittar')[149] were altered into gut-strung instruments around the early nineteenth century, when the mellower sounds of the gut-strung harp and guitar were becoming popular, with changes to the original bridge, nut, frets and head, as well as a transition from double to single stringing.[150] An interesting 'reverse' modification is described in the following letter and receipt, written in 1813 by the Edinburgh violin maker Matthew Hardie to his client Gilbert Innes, which reads:

> Edin April 31 1813
> Sir, what you object about the bridge is of no consequence it can be either set back or forward as the lady or gentlemen find it please them it can be made higher or lower at any time. The strings thicker or smaller as the performer finds answer best. The tone is uncommonly good and as for the voice you talk of every lady sings to concert pitch What you allege will not stand reason there is no fault but can be rectified It is one of the finest in the country and such Antiont [sic] thing is perhaps not to be got It is worth 2 of Prestons in London I think the price of one is very cheap Mr Innes will let me know tomorrow morning what he intends to give for it I am you humble servant
> Matthew Hardie.
>
> Receipt for £2 stg. part of the price of 2 guineas for a guitar which I oblige myself to alter into its original state with a proper bridge and nut of 10 strings and to put frets on the finger board of ivory or ebony in Mr Innes' option and to string up the instrument properly after which … I am to claim for the remaining 12 s 6 d.
> Matthew Hardie[151]

148 See Martin, "The Early Wire-Strung Guitar," 135.

149 Although this instrument is now commonly known as the 'English guittar', during the second half of the eighteenth century, when it was developed and used in the British Isles, it was typically called 'guittar' (and more rarely 'guitar'). Therefore, the name 'guittar' has been adopted throughout this text for all references to the instrument. For more details on the development of the guittar see Poulopoulos, "'A complete Accompanyment to the Female Voice'," 97–120.

150 For more details see Poulopoulos, "Historical Use," 177–79; Poulopoulos, "A Comparison of Two Surviving Guittars," 53–54; and Poulopoulos, *The Guittar in the British Isles*, 365–66.

151 Quoted in Rattray, *Violin Making in Scotland 1750–1950*, 25. The date given by Hardie is wrong as April has only 30 days.

Hardie had apparently been asked by Innes to modify a wire-strung guittar, which had previously been converted to a gut-strung instrument with six strings, back into 'its original state with a proper bridge and nut of 10 strings', as well as with new frets on the fingerboard 'of ivory or ebony'.

The transformation of plucked instruments was equally motivated by the notions of improvement and modernisation, which became prevalent particularly during the late eighteenth and early nineteenth centuries. The advent of the Industrial Revolution gave a strong impetus to a large number of inventors who were competing to present the next ingenious device or apparatus, usually labelled as an 'improvement' to an existing instrument. Accordingly, improving alterations were largely driven by technological progress, by experimentation, as well as by the desire to come up with curiosities that could excite the contemporary public and attract new customers.

The modification of instruments in the name of improvement or modernisation typically involved the use of a new invention or technology, not just a simple change of existing materials and components. With the addition of newly invented accessories, old instruments could be updated and could, thus, recapture or increase their functioning potential through improvements in their sound, ergonomics, playability, tuning stability or portability. A common alteration of wire-strung guittars occurred in the late eighteenth century when new, more accurate tuning devices, such as watch-key machines, were developed and began to be installed on earlier plucked and bowed instruments through a process which usually involved the replacement of the original head and part of the neck.[152] The alteration of guittars to receive new tuning devices is confirmed in the following advertisement:

> FREDERICK HINTZ, Guittar-Maker to her Majesty, and all the Royal Family […] has now found out, on a Principal entirely new, several Methods, whereby it is much easier and exactly tuned, and also remains much longer in Tune than by any Method hitherto known […] those Ladies who choose to change theirs, or have them altered to this new Improvement, may depend on having them done to the greatest Perfection […].[153]

152 For more details on these alterations see Poulopoulos, *The Guittar in the British Isles*, 399–403; Poulopoulos, "The Influence of Germans," 67–68; and Poulopoulos, "'Wha Sweetly Tune the Scottish Lyre'," 156.

153 *St. James's Chronicle or the British Evening Post* (London), 5–8 July 1766.

This type of alteration can be seen on a bowl-back cittern in the DM (inventory number 5442), which has been equipped with a watch-key machine for six strings (figure 43).[154] The instrument, which was purchased in 1906 as part of the Hahn collection discussed earlier, bears the label 'Antonius Bachmann/Königl: Preus: Hofinstrumentenmacher/in Berlin 1782', with the date 1782 indicating either the date of its manufacture or that of a repair. Interestingly, a musical almanac from 1782 mentioned that Anton Bachmann (1716–1800), who was a renowned stringed instrument maker in Berlin, 'not only makes good new violins […], but also repairs old instruments with the best results'.[155]

However, the sickle-shaped head and the watch-key machine of DMO 5442 (figure 44) seem to have been added later, possibly around 1800, coinciding with the 'guitarising' conversion of the instrument with gut strings, a new bridge, and a new neck and fingerboard with twelve bone frets.

A bell cittern in the Victoria and Albert Museum, London (inventory number 201–1882), labelled 'Antonius Bachmann/Königl: Preus: Hofinstrumentenmacher/in Berlin 1769', has also been altered like the cittern DMO 5442, having at present a new fingerboard and frets indicating the use of gut strings, as well as a new rose, which is similar to that of DMO 5442.[156] It has been suggested that since 'Bachmann had a reputation not only as maker of new instruments but as a successful repairer of old ones',[157] he was probably the restorer, rather than the maker, of the originally wire-strung bell cittern.

154 Hereafter referred to as DMO 5442. The instrument is currently in store and accessible only upon request. For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 58.

155 'Er verfertigt nicht nur sehr gute neue Violinen [...], sondern reparirt auch alte Instrumente mit dem besten Erfolg'. Quoted in Elste, "Berlin als Zentrum des Großstadtgeigenbaus," 11.

156 For a description of this instrument see Baines, *Victoria and Albert Museum Catalogue of Musical Instruments,* 46 and figure 68.

157 Engel, *A Descriptive Catalogue of Musical Instruments in the South Kensington Museum,* 326.

Figure 43 Front, side and back views of the modified cittern DMO 5442 purchased in 1906 from Hahn.

Figure 44 Detail of the watch-key tuning machine for six strings on DMO 5442.

It is noteworthy that a lyre guitar dated 1811 in the DM (inventory number 64021) by Johann Gottlob Thielemann (1766–1821), another stringed instrument manufacturer in Berlin, is equipped with a similar watch-key machine for six strings (figure 45).[158] This instrument was donated to the DM in 1931 by Emilie Seipel, the wife of Raoul Walter (1863–1917), a well-known opera singer in Munich.[159] Guitars built in the form of an ancient Greek lyre became quite popular in Europe between 1800 and 1830, especially among amateur female musicians, largely due to the influence of Neoclassicism in art, architecture, interior design, and fashion.[160] In contrast to common guitars, lyre guitars were seldom modified once they were no longer in fashion, perhaps because they were difficult to convert due to their unconventional body shape, and as a result many of them have survived in their original state. Nevertheless, it is notable that an unsigned lyre guitar purchased from Hahn in 1906 (inventory number 5422) bears traces of repairs inside the body, has been re-varnished on the sides and back, and seems to have various non-original parts on the neck and head.[161] On the other hand, even though lyre guitars with watch-key machines are rare, since most of them were equipped with wooden pegs, the watch-key machine on DMO 64021 (figure 46) is most likely an original feature and not a later addition, as was often the case with wire-strung guittars. This is also confirmed by the fact that a similar mechanism was used on another guitar by Thielemann dated 1806 in the Musikinstrumenten-Museum, Stiftung Preußischer Kulturbesitz, Berlin (inventory number 5797).[162]

But gut-strung guitars were also modified to receive new tuning mechanisms. For instance, in a discussion of the features of guitars by Louis Panormo (1784–1862), James Westbrook has argued that London guitar makers such as Panormo 'were not the first to use mechanical tuning machines on their guitars, but they were certainly the first comprehensively to adopt this new invention. As late as the second half of the 19th century, luthiers in important guitar-making countries such as Italy, Austria, France and Spain were still including the old kind of wooden friction pegs and were slow to respond to this new innovation, perhaps because the guilds or their traditions held them back'.[163] However, he continues 'many foreign made guitars found in Britain routinely had their heads altered to accommodate London-made tuning machines, and […] Panormo and his contemporaries would

158 Hereafter referred to as DMO 64021. The instrument is currently in storage and accessible only upon request. For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 96–97. Wackernagel (p. 96) mentions that the lyre guitar was purchased from R. Walter, a fact which is contradicted by the examination of the correspondence concerning the acquisition of the instrument, as will be shown below.

159 See the correspondence between Seipel and the DM in November and December 1931, included in DMA, VA 1769. For more details on Raoul Walter see the online database BMLO (Bayerisches Musiker-Lexikon Online, http://www.bmlo.lmu.de/, accessed 24 March 2016).

160 For more details on the development of the lyre guitar see Bonner, *The Classic Image,* and Ophee, "The Story of the Lyre-Guitar."

161 For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 84.

162 See Hurttig, *Johann Gottlob Thielemann und der Berliner Gitarrenbau um 1800,* 34–36 and 53–57. The author is thankful to Martin Hurttig for this information.

163 Westbrook, "Louis Panormo," 576.

Figure 45 Front, side and back views of the lyre guitar DMO 64021 by Johann Gottlob Thielemann, Berlin, 1811, donated in 1931 by Seipel.

Figure 46 Detail of the watch-key tuning machine for six strings on DMO 64021.

have carried out this work'[164] occasionally. This is documented from the fact that in 1830 Panormo had been asked to change the head of a guitar for a new one with tuning machines, although he eventually declined, claiming that 'a machine head would spoil the tone of the guitar'.[165]

Another frequent alteration concerned the upgrading of plucked stringed instruments with keyed mechanisms, a practice strongly influenced by the commercial success of the pianoforte. Due to its growing popularity during the last quarter of the eighteenth century the wire-strung guittar attracted the interest of several inventors, such as Christian Claus, (also mentioned as Clauss, active 1783–1799), a German working in London, who in 1783 patented a keyed hammer mechanism for the instrument. This mechanism, referred to as 'grand improvement', could be attached to older guittars at a small cost, as Claus stated in 1784:

> By Authority of his Majesty's Royal Letters Patent. FORTE PIANO GUITTAR. CHRISTIAN CLAUSS, of Frith-street, Musical Instrument-maker, original and sole Inventor of the said Instrument, respectfully informs the Nobility and Gentry, that, after a long series of experiments and study, he has completed his unrivalled improvements on the FORTE PIANO GUITTAR, for which (against all opposition) he has obtained his Majesty's Royal Letters Patent. […] the grand improvement may, at a small expense, be affixed to any other Guitar of the old form and make.[166]

The modification of old guittars around the late eighteenth century to install a watch-key tuning machine and/or an external piano-key mechanism is also confirmed in an advertisement by Warrell & Co, a musical instrument dealer in London, who in 1784 announced:

> WARRELL & CO's IMPROVED MUSICAL INSTRUMENTS [...] Guittars on the last new Construction, superior in Tone; and to which may be added the Piano Forte Movement at Pleasure.– Old Guittars altered to Tune with the Watch Key; and good Second hand ditto, sold very Cheap.[167]

On the other hand, the success of a new instrument often accelerated the conversion of similar earlier instruments that were considered unfashionable, in order to imitate the new types. For example, around 1800 Edward Light (c. 1747/8 – c. 1832), a musician and musical instrument inventor in London, advertised the conversion of guitars (and possibly guittars) to the new-invented harp guitars:

164 Westbrook, "Louis Panormo," 578.

165 Quoted ibid.

166 *Morning Post and Daily Advertiser* (London), 26 January 1784.

167 A copy of this advertisement is in the Heals Collection, British Museum, London (inventory number 88.86). For more details see Poulopoulos, *The Guittar in the British Isles,* 400–01.

> MUSIC.-The New HARP-GUITAR, &c.
> MR Light respectfully informs Ladies, his HARP-GUITAR is now completed, and are ready for Sale at his Musical Academy […] other kinds of Guitars may be strung and tuned like the Harp-Guitar, if sent here.[168]

But even harp guitars were altered after their fashion was over. Hayato Sugimoto, who has systematically examined numerous surviving examples of the various 'harp lute' models introduced by Light in the early nineteenth century, has shown that the modification of harp guitars, which typically had seven or eight strings, into six-string Spanish guitars, with alterations to the neck, fingerboard and bridge, was not uncommon.[169] Comparable cases of 'recycling' in order to keep up with the latest improvements or with new designs have also been observed on Spanish guitars throughout the nineteenth century.[170]

Likewise, an early Swedish music dictionary by Carl Magnus Envallsson, published in 1802, refers to the Swedish lute, a hybrid instrument combining features of the cittern and lute that was often built by 'recycling' older instruments, as the 'improved Cittern':

> The improved Cittern, or the Swedish Sittra, nowadays more used and so sought after abroad, and whose improvement is credited to the gentlemen ANKAR and KRAFT. It is supplied with gut strings and is similar to a Lute in its construction, but concerning its tuning more similar to the Cittern.[171]

Competition with other instruments was another reason for the improvement or modernisation of plucked instruments. For example, in 1803 in London an advertisement by Thomas Cahusac, musical instrument maker, and Monsieur Monteau, professor of music, titled 'The New Improved SPANISH GUITAR', announced that Monsieur Monteau 'has much improved the Spanish Guitar by a Pedal, and

168 *Morning Chronicle* (London), 8 May 1800. The conversion may refer either to wire-strung guittars or gut-strung guitars. The author is thankful to Hayato Sugimoto for drawing his attention to this source.
169 See Sugimoto, *The Harp Lute in Britain*, 114–28.
170 On the 'recycling' of Spanish guitars Buckland (personal communication via email, 29 February 2012) stated: 'I'm reminded of the nine string guitars associated with Napolean Coste. He had these made by Lacote but then added things himself such as a finger rest on the top, and perhaps a few other things. Also […] when Legnani retired from concertising around 1850, he went into lutherie. He didn't build guitars in the style of the Legnani-Stauffer guitars, but rather in the Italian style most closely associated with Gaetano Guadagnini. But the Legnani-Stauffer guitar was a popular design that was copied by many makers in several countries, often being modified to suite various purposes (i.e. Russian 7-string guitars, steel strings, etc.). It is interesting how many nineteenth century guitar innovations disappeared and then re-appear, either copied or re-invented, much later of very divergent designs.'
171 Quoted in Sparr, "Remarks on an Unnoticed Seventeenth-Century French Lute in Sweden," 219–20.

he can, in a few Lessons, instruct any Lady to play the most difficult passages in Music with the greatest ease and facility, which no other Instrument of the kind is capable of doing'.[172] In 1842 a newspaper announcement stated:

> GREAT MUSICAL CURIOSITY.– An extraordinary improvement has just been made in the SPANISH GUITAR, till now justly considered as a mere musical toy. The new Guitar will rank among the most agreeable instruments; it is full of power, and the beauty and clearness of its tone, particularly in the high notes, strike the hearer with surprise.[173]

Practices analogous to those described above can be observed in the field of bowed instruments. Regarding instruments of the viol family, particularly those with sympathetic strings, Rachael Durkin has mentioned that 'barytons, like many viols and violas d'amore, have undergone conversions and adaptations to sustain their usability'.[174] In his comments on surviving barytons Terence Pamplin has remarked that 'the few remaining seventeenth-century baroque instruments have all been converted for use in the later classical period by restringing the lower manual with iron and brass strings of reduced diameter to allow the higher tessitura to be achieved'.[175] Moreover, due to the demand for the sound produced by sympathetic resonance in the late seventeenth century, 'luthiers took to converting existing wire-strung viols to englische violets', with such alterations being evident on extant instruments 'where the sympathetic strings are attached at the pegbox by metal tuning pins'.[176] In a book which presents all types of instruments produced by Antonio Stradivari (1644–1737), arguably the most famous instrument maker of all time, Stewart Pollens has claimed that 'in many cases, we can better understand Stradivari's concepts […] through his patterns and forms than from the instruments themselves, for most of his extant viole da gamba, viole d'amore, guitars, and mandolins have been greatly modified or even converted into other types of instruments'.[177]

The 'recycling' of old bowed instruments, particularly violins, became quite common in the late eighteenth and early nineteenth centuries. With the growth of orchestras and the establishment of public concerts demanding larger concert halls, performed music became louder, more dynamic, and harmonically more ambitious and complex. Thus, the flexibility and volume of stringed instruments had to be reinforced in order for them to hold their own against the dominant woodwind, brass and percussion. During this time the features of many Italian

172 *The Morning Post* (London), 13 June 1803. The author is thankful to Chris Page for pointing out this source.

173 Quoted in Westbrook, "The Creation of the American X-Braced Guitar," 7.

174 Durkin, "A Barretone, an Instrumentt of Musicke," 97–98. See also the changes described in Herzog, "Is the Quinton a Viol," 22.

175 Pamplin, "The Influence of the Bandora on the Origin of the Baroque Baryton," 222.

176 Durkin, "The Viola d'Amore," 146.

177 Pollens, *Stradivari,* 1.

baroque violins were radically changed by means of alterations to the neck angle and fingerboard dimensions in order to meet the new performance standards and the gradual rising of concert pitch. Such modifications 'allowed greater facility in playing below the fourth position, and permitted a higher bridge and string tension to be employed, thus increasing the dynamics and compass of the instrument'.[178]

Because of the great reputation of bowed instruments made in Cremona, such as those by Stradivari, Amati, Ruggieri and Guarnieri, many older instruments were modified to imitate their unique sound. For example, in Georgian London the ingenious mechanic and inventor John Joseph Merlin (1735–1803) reportedly offered 'to amend Stainer-model violins to give them the brighter tone of the Cremonese instruments',[179] while he installed his 'new-invented Pegs, and Tail-pieces which prevent the strings from slipping'[180] on old bowed instruments by enlarging the holes on the pegbox.

In the nineteenth century violins by Stradivari acquired a mythic status among musicians and collectors, leading to drastic modifications to keep them in use. Already in 1813 a report in France stated that, mainly due to rise in concert pitch, 'almost all of Stradivari's violins have been rebarred, and all have had need of interior or external restoration'.[181] In his comments on surviving examples of Stradivari instruments Peter Walls has observed that 'almost all Stradivari instruments have been irrevocably and fundamentally changed', adding that 'we are left with the paradox that musicians, makers and collectors have, on the one hand, assumed that Stradivari was the greatest violin maker of all time while, on the other hand, been confident that they have known how to improve his instruments'.[182]

Likewise, with the decline of the soft-sounding viol and its counterparts during the late eighteenth century, many instruments were adjusted to the specifications of the louder and more versatile members of the violin family. As numerous surviving examples demonstrate, during this time and later 'many viols were transformed into cellos'[183] and numerous extant violas d'amore were modified into violas, with structural changes to the body, neck, fingerboard and head, as well as alterations to the original string materials, number and arrangement.[184] For instance, concerning Stradivari's viols Herzog has claimed that 'research on the subject has been hindered by the instrument dealers' choice to transform and sell

178 Barclay, *The Preservation and Use of Historic Musical Instruments,* 39.

179 Palmer, "Merlin and Music," 92. It is important to point out that in 1774 Merlin had also patented a piano action mechanism that could be installed on harpsichords. A combination harpsichord-piano, equipped with Merlin's patent action and dated 1780, survives in the DM (inventory number 43872). For more details of this instrument see Henkel, *Besaitete Tasteninstrumente,* 98–102.

180 Quoted in Palmer, "Merlin and Music," 93; see also the descriptions of instruments on pp. 106–10 of the same book.

181 Quoted in Linsenmeyer, *Competing with Cremona,* 98.

182 Walls, "Review of 'Stradivari' by Stewart Pollens," 1–2.

183 Barnes, "Restoration," 242.

184 For examples of modified bowed instruments of the viol family in the DM see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 259–266 and 271–276; similar instruments are also discussed by Wells and Nobbs, *Royal College of Music,* 134–37, and 144.

all the extant Stradivari viols as celli'.[185] An indicative example is a bass viola da gamba, produced in the workshop of Stradivari, Cremona, c. 1730, which was converted in 1831 into a violoncello with an adjustable neck. Apart from obvious modifications on the body, neck and head, the instrument was also equipped with a screw mechanism for the adjustment of the neck similar to those used on guitars by Johann Georg Stauffer and other Viennese makers in the early nineteenth century.[186]

Equivalent 'recycling' procedures are evident on historic keyboard stringed instruments. The best documented examples concern Flemish harpsichords dating from the seventeenth century, many of which were commonly altered in France during the eighteenth century. This alteration, known as *ravalement,* included major modifications of the construction in order to increase the compass, with the replacement of action parts, the extension and redecoration of the soundboard and case, and the addition of unison-tuned strings for a richer sound.[187] A large number of these instruments, particularly those of the Ruckers family, were 'suitably enlarged and redecorated to satisfy contemporary taste and musical requirements'.[188] Discussing the aesthetic renovation of a much altered harpsichord by Andreas II Ruckers (1607– before 1667) of Antwerp dated 1646, in the Musée de la Musique, Paris (inventory number E.979.2.1), Sheridan Germann has claimed that 'one can count six or seven different painters in the decoration of this instrument, none of whom tried very hard to submerge his personal style into that of the whole'.[189]

Alterations of historic virginals or harpsichords 'almost certainly involved considerable modifications to the stops' and required the 'refashioning, replacing, removal or addition'[190] of various mechanical parts. The article for 'Clavecin' in the ground-breaking *Encyclopédie ou dictionaire raisonée des arts, sciences et metiers* by Diderot and d'Alembert, published in the second half of the eighteenth century, reported that 'the incomparable harpsichords of the three Ruckers and of Couchet, as they have come from the hands of these masters, are absolutely useless today, since these great artists, who understood the tonal part superbly well, have succeeded very badly from the point of view of the keyboard. Besides this all these Flemish harpsichords are so small that the pieces or sonatas which are written today cannot be played on them'. The modification procedure was then clearly explained: 'This is why they undergo a grand ravalement, giving them sixty-one keys in place of the fifty which they used to have. Moreover, in place of the 100 strings (because most of the harpsichords of the Ruckers were made with only two

185 Herzog, "Stradivari's Viols," 185.

186 This instrument is in the National Music Museum, University of South Dakota, Vermillion (inventory number NMM10845) (for more details see http://orgs.usd.edu/nmm/Cellos/Stradivari/10845StradCelloViol.html, accessed 1 March 2016).

187 See Kottick, *A History of the Harpsichord,* 248–257.

188 Barnes and Beare, "Forgery," 789; see also Barnes, Beare and Libin, "Faking and Forgery," 255.

189 Germann, "Monsieur Doublet and His Confrères," 206.

190 Oey, "Some Problems in Musical Instrument Conservation in Museum Collections," 4.

strings per key) they have been given 183 strings by adding a grand unison, by which means the tone becomes even more manly and majestic.' The same source mentioned that 'a harpsichord by the Ruckers or by Couchet, artistically cut and enlarged, with jacks, registers and keyboards by Blanchet, has become today a very precious instrument'.[191]

The updating of old keyboard instruments normally corresponded to the knowledge and methods of the time. For example, a clavichord made c. 1794 by Johann Bohak (c. 1754–1805), a Viennese maker from Bohemia, reportedly belonging to Joseph Haydn and now in the Royal College of Music, London (inventory number RCM177), was 'updated and improved' in the early 1830s during its restoration in a Viennese piano factory 'with parts and techniques consistent with early 19th century Viennese pianoforte practice'.[192] In some cases, the instruments were refurbished by their own makers shortly after they were manufactured. Latcham has argued, for instance, that 'the earliest pianos made by Walter, including the one acquired by Mozart, have been substantially altered. Surprisingly, there is little doubt that it was Walter himself who altered Mozart's piano, probably c. 1800 at the request of Mozart's widow Constanze'.[193]

Sometimes the alteration of instruments was even motivated by competition among makers, as reported in a court case from the early 1790s involving the company of Dodds & Claus and the instrument maker William Hatton (active 1793–1795) in New York, which is evidenced in the following quotation:

> We repeat, we know nothing of Mr. Dodds, yet think that the evidence of his own apprentice, Peter Utt, who declared on oath the instruments were altered after they left the shop of Mr. Hatton, does not speak much for the uprightness and honesty which you Justitia wish to persuade the public he possesses […].[194]

Although the full details of this story are unknown, it is apparent that Dodds & Claus had modified instruments by Hatton in ways that did not improve, but rather impaired their musical qualities, possibly with the intention to harm his reputation as a maker.

It is finally important to note that in many cases the 'adaptation' of instruments to new circumstances is unintentional and little can be done to prevent it. Typically constructed of fragile and delicate materials, instruments are often subject to accidents and natural disasters, such as earthquakes, floods or fires. Although these may leave permanent marks on the instruments, they are of little research

191 All passages from the *Encyclopédie* quoted in O'Brien, *Ruckers,* 301–302.

192 Barclay, *The Preservation and Use of Historic Musical Instruments,* 70; see also pp. 78 and 220.

193 Latcham, "Mozart," 384–85. For a discussion of the alterations on Mozart's piano by Gabriel Anton Walter (1752–1826) see also Latcham, "Authenticating and Dating," 71–5 and 81–2, and Latcham, "Historische Belege," 10–12.

194 'For the Diary.-To Justitia', included in *The Diary or Loudon's Register* (New York) of 14 November 1793. The author is indebted to Daniel Wheeldon for bringing this source to his attention.

value for organologists or musicologists. However, in other cases 'adaptation' is dictated by extreme social or political conditions, often ending in destruction or irreparable damage. For example, many harpsichords were cruelly damaged during the French Revolution because of their association with the French aristocracy,[195] while others 'perished as firewood during the winter of 1816',[196] when they were used to provide heating for the classrooms of the Paris Conservatoire.[197] Likewise, during World War II several musical instrument collections in European museums suffered heavy casualties. In 1943 a bomb attack caused severe damage to the collection now housed in the Grassi Museum in Leipzig, which holds a very important department of musical instruments. The bombing destroyed a whole collection of pianos, while during the war a number of other instruments from this museum were reportedly used for firewood.[198] Towards the end of the war many instruments in the Bayerisches Nationalmuseum in Munich were heavily damaged, including the lute collection, which until then had been one of the finest in Germany.[199] Such incidents reflect above all changes in values and are thus quite important from a historical perspective.

Forgery and the Musical Instrument Trade

Although musical instruments often change to meet new demands, their 'recycling' has not always been driven by practical issues or honest motives; the modification of instruments may also be undertaken for the purposes of forgery, a pervasive phenomenon in art and science.[200] Forgery and faking usually involve 'the creation of a new deceptive object, sometimes the conflation of old parts from several different sources, and sometimes the mere addition of an inscription to an existing innocent object in order to associate it with an advantageous name or period'.[201]

The 'recycling' transformation of old musical instruments in order to deceive started in the pre-industrial era.[202] In the late eighteenth and early nineteenth centuries forgery was quite common in the musical instrument market, where 'some makers chose to counterfeit instruments or exploit the reputation of contem-

195 See Kottick, *A History of the Harpsichord,* 248.

196 Libin, "Major Instrument Collections," 428.

197 More than 20 harpsichords were reportedly burnt in May 1816 for that purpose. See Gétreau, "Alte Instrumente im Frankreich des 19. Jahrhunderts," 185.

198 See Fontana/Heise, *Museum für Musikinstrumente der Universität Leipzig.*

199 See Wackernagel, "Musikinstrumente," 455.

200 Although forgery is more common in works of art, science has not been immune to such practices, particularly specimen-based fields such as taxidermy, palaeontology and archaeology. For more details see Jones, *Fake,* 90–97.

201 Barnes and Beare, "Forgery," 789. For an overview of faking and forgery in musical instruments see Barnes, Beare and Libin, "Faking and Forgery," 255–57.

202 For a comprehensive chronology of forgery in musical instruments see Restelli, *La falsificazione di strumenti musicali,* 23–75.

poraries',[203] although this did not necessarily always involve 'recycling' practices. As early as the last quarter of the eighteenth century the *Encyclopédie* by Diderot and d'Alembert, mentioned above, stated that 'one finds makers in our time who have copied and counterfeited the harpsichords of the Ruckers. The exterior can be misleading, but the tone quality always exposes the fraud'.[204]

In addition, with the establishment of the patent system, the only way to produce new instruments protected by patents or privileges of monopoly was by copying them illegally. This is evident in the case of the orphica, a small portable piano invented and patented around 1795 in Vienna by Carl Leopold Röllig (c. 1754–1804). As Benjamin Vogel suggests some extant forged orphicas were 'surely made without a licence or in ignorance of its expiry […] at the time when Röllig was still alive or his licence still in force'.[205]

Gradually many instrument makers began to label their products to prevent fraud (but ironically, as will be shown later, labelling has also created issues of authenticity in historic musical instruments). John Preston (1727–1798), the most prolific manufacturer of guittars in Georgian London, introduced clearly recognisable stamps on the front and back of his instruments to prevent other makers from replicating his designs, as mentioned in the following advertisement:

> JOHN PRESTON, Of Banbury-Court, Long-Acre, London, GUITTAR and VIOLIN-MAKER, BEGS Leave to acquaint the Nobility, Gentry, and others, That he has lately found out and invented a new Improvement, or Instrument, for Tuning of Guittars; and which is greatly approved of by all Masters and Dealers in this Branch of Business, in England, Scotland, and Ireland, by many Years Practice and Industry, which never could as yet be found out, though various Attempts has been made for that Purpose, but to no Effect. […] N. B. Please to beware of Counterfeits, as the Proprietor signs his Name on the Belly of the above Guittars; and all Orders sent shall be punctually observed, and at the lowest Prices, Wholesale and Retail, for ready Money only.[206]

Christian Claus, the inventor of the pianoforte guittar mentioned earlier, used similar methods to protect against his imitators and competitors:

> Royal Patent Forte Piano Guitars. MESS. Clauss and Co. the original and only Inventors and Patentees of the inimitable and beautiful new-invented Forte Piano Guitar, which, for Richness and Strength of Tone, Facility of Execution, and Delicacy of Expression, may be justly said even to rival the Piano Forte itself, return Thanks to the Nobility, Gentry, and the Public in General, for the

203 Whitehead, "Robert Falkener," 312.
204 Quoted in O'Brien, *Ruckers,* 301.
205 Vogel, "Orphicas: Genuine, Less Genuine and Fakes," 36–37.
206 *London Evening Post* (London), 7 January 1766, and *Gazetteer and New Daily Advertiser* (London), 3 February 1766.

> generous Patronage they have experienced. The universal Approbation, with which this Instrument has been favoured, having induced some Persons to attempt imposing a spurious and wretched Imitation for Sale, with Intent to injure the Patentees, and to defraud the Purchasers, the Public are requested to observe, that the Patent Instrument is distinguished from all others, by being stamped on the Front with His Majesty's Arms, surrounded with the Words Clauss and Co. Inventors, London, Patent Instrument; and also stamped below the Bridge with the Address of the Patentees, No. 7, Gerard-street, Soho, where they are to be had, and where may also be had several Pieces of New Music adapted to this Instrument. […].[207]

Claus was ready to recompense financially those who would report to him imitations of his patent instrument, which he thought capable of rivalling even the pianoforte:

> By Authority of his Majesty's Royal Letters Patent. PIANO FORTE GUITTAR. CHRISTIAN CLAUSS, of Frith-street, Soho, sole Inventor and Patentee of the new and inimitable Improvements on the Piano Forte Guittar, most respectfully acquaints the Nobility and Gentry, that he has now ready for sale several beautiful Piano Forte Guittars, of exquisite tone, which, independent of the advantages they possess under the patent, will be found in every respect greatly superior to any that can be offered to the public. […] Indeed, so peculiarly excellent are the improvements, and so distinguished is the honor and reward the Patentee has received that it is not wonderful to find the trade attempting to impose an imitation of the Patent Instrument upon the public […]. The Patentee herby engages to pay a reward of 20 Guineas to any person who will discover any imitation upon his patent, by making and vending the Patent Piano Forte Guittars.[208]

Likewise, in 1799 Sébastien Erard announced an equally generous reward to those who would reveal the imitators of his new patent mechanism for the single-action harp:

> ERARD'S NEW PATENT HARP.– One Hundred Guineas Reward.– Messrs. Erard and Co. are informed that attempts have been made to counterfeit the Mechanism of their New Patent Harp: Whoever will bring information against the culpable to No. 15, Great Marlborough-Street, shall, on his or their conviction, receive a Reward of 100 guineas.[209]

207 *London Gazette* (London), 5 April 1785. The same advertisement also appeared in the same newspaper on 12 and 26 April 1785.

208 *Morning Herald and Daily Advertiser* (London), 1 May 1784.

209 *The Times* (London), 10 May 1799.

Similar cases from the early nineteenth century have been reported in the London guitar trade. In an advertisement from 1801, Light, the inventor of the harp guitar, mentioned earlier, warned customers against counterfeit instruments sold in London, stating that such imitations which are 'made, and now offered at Music Shops, are neither made, strung, tuned, nor played on, like his'.[210] Furthermore, in his remarks concerning the imitation of Spanish guitars in Panormo's style, Westbrook has observed that 'there was much copying of other people's instruments' […] within the community of London based guitar-makers. This practice was illegal, but little was done to prevent it save the placement of newspaper announcements to alert the public', adding that those who copied Panormo's design possibly intended 'to deceive the public into thinking they had bought an equivalent guitar at a cheaper price'.[211]

Likewise, an advertisement from 1844 suggests that non-authorised copies of the so-called 'melophonic' guitars patented by Henry Barelli and exclusively manufactured by the Roudhloff brothers, Dominique (1798–?) and Arnould (c. 1804–?), were sold in London:

> MESSRS. ROUDHLOFF, 81, Charlotte-street, Fitzroy-square, beg to acquaint the public in general and the musical trade that they are […] the only manufacturers of the Melophonic Guitars […] and that they disown all guitars sold as melophonic which do not bear their label and signature.[212]

In Vienna during the late 1820s and early 1830s counterfeit guitars, imitating the models produced by the prominent violin and guitar maker Johann Georg Stauffer (1778–1853), appeared in the market. Such instruments, which were 'imported from Germany, France or elsewhere – or even seemingly made locally', forced Stauffer to denounce them in the press, as recorded in an announcement in the *Wiener Zeitung* of 1833 in which Stauffer and his son 'directly accused their colleague Franz Heinrich Schmidt of selling worthless imitations'.[213]

However, the forgery of musical instruments, often involving a 'recycling' of old material, reached an unprecedented peak during the late nineteenth and early twentieth centuries. Around that time the demand for historic instruments had grown significantly among professional performers and collectors, but connoisseurship and scholarly research was not so advanced as to prevent counterfeit.[214]

210 Quoted in Sugimoto, *The Harp Lute in Britain,* 135–36. Sugimoto (pp. 252–53) also briefly discusses the sale of counterfeits of Light's harp lutes between 1814 and 1815 not only in London but in other places in England.

211 Westbrook, "Louis Panormo," 578.

212 Quoted in Westbrook, "The Creation of the American X-Braced Guitar," 7. Interestingly, Westbrook (p. 10) notes that the Roudhloff brothers may have been occasionally involved in 'recycling obsolete instruments', referring to a surviving harp guitar which seems to have been modified by them in the 1840s.

213 Hofmann, Mougin, and Hackl, *Stauffer & Co.,* 70.

214 For a fascinating account of forgery in the nineteenth and twentieth centuries see Jones, *Fake,* 161–246.

These early collectors, motivated by 'Darwinian theories of evolution, scientific interest in acoustics, easy contact with colonial areas and abundant funds', accumulated large numbers of instruments which formed 'the nuclei of many museum collections'.[215] Moreover, from the 1870s onwards many collectors were competing against each other with the common desire to acquire 'a complete range of historical instrument types from the Renaissance until at least the French revolution'.[216] Christina Linsenmeyer, former curator at the Musical Instrument Museum, Phoenix, has observed that 'from the mid-19th century to the early 20th century, we can even say there was a collecting "boom" among the rising class of industrialists and bankers in Europe and North America, a kind of collecting race, made possible by a concurrent boom in wealth', adding that *'it is essential to understand these collectors in order to understand our current museum collections*'.[217]

In order to meet the needs of the growing numbers of collectors and enthusiasts, a parallel network developed, made up of musical instrument makers and dealers who saw a profit in producing and selling forgeries of antique instruments. Mark Jones, who edited the catalogue of an exhibition on fakes that took place in 1990 at the British Museum, London, explained that 'the collecting mania created a paradise for dishonest dealers'.[218] These people often employed a wide variety of forging techniques, some of which were not entirely new. For example, the practice of adding a false label to associate an instrument with a renowned maker has a long history, particularly in stringed instrument-making. This practice can be observed as early as the third quarter of the seventeenth century, when Francesco Ruggieri was using false labels of his teacher, Nicolo Amati, a famous violin maker, to increase the value of his instruments.[219]

But it was during the last quarter of the nineteenth century that this method became a widespread practice, especially in the violin trade.[220] This fact is evidenced in an amusing court case which took place in London on 10 and 11 February 1882 between and Henry Hodges, a private dealer in violins, and Georges Chanot, II, a known violin maker and dealer.[221] Georges Chanot, II (1831–1893) had substantial experience with old violins through his father, Georges Chanot, I (1801–1883), a famous violin maker and connoisseur.[222] In 1881 Hodges had purchased a violin bearing the label 'Carlo Bergonzi, Cremona, fecit Anno 1742' from Chanot for

215 Libin, "Collections," 439; see also Libin and Myers, "Collections," 610.

216 Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 97.

217 Linsenmeyer, "Through the Eyes and Ears of Musical Instrument Collectors," 1. Linsenmeyer, to whom the author is grateful for sending him useful information on this topic, is currently editing a forthcoming book titled *Through the Eyes and Ears of Musical Instrument Collectors (1860–1940)* which will survey over 20 collectors from 10 different countries who were active during the collecting 'boom' of the late nineteenth and early twentieth centuries.

218 Jones, *Fake,* 161.

219 See Barnes and Beare, "Forgery," 790. See also Barnes, Beare, and Libin, "Faking and Forgery," 256, and Harvey, *Violin Fraud,* 11–12.

220 For similar counterfeiting practices in the piano trade see Cole, *The Pianoforte in the Classical Era,* 311–20.

221 The case has been vividly documented in Heron-Allen, *De fidiculis,* 16–40.

222 For more details on Chanot see Beare, Milliot, and Linsenmeyer, "Chanot," 503–04.

£55.[223] The high price was justified by the fact Carlo Bergonzi (bap. 1683–1747) was a Cremonese violin maker whose instruments were of an outstanding quality.[224] Interestingly, Chanot had initially asked £150 for the violin, but Hodges bought it for £55, receiving however, a receipt for £75, as Chanot 'did not wish any dealer to know he had sold it so cheaply'.[225] Nevertheless, a subsequent inspection of the violin by William Ebsworth Hill, of the well-known violin-making family in London, proved that it had been made in the nineteenth century – and certainly not by Carlo Bergonzi or any member of the Bergonzi family – since Hill attributed the instrument to Giovanni Francesco Pressenda, an early nineteenth-century maker from Turin.[226]

Chanot, who admitted that he had bought the instrument in Paris and had himself put the label in, was eventually fined £70. The following conversation between the judge and the defendant (Chanot) is indicative of the counterfeiting practices used in the trade of Cremonese violins:

> His lordship - Where did you get it [the label] from?
> Witness - Oh, we have always some about? (Laughter) I took it from an old violin, and put it in when I repaired this one.
> Mr. Justice Field - This is not at all a creditable mode of dealing. Why did you do this?
> Defendant - Because people will not buy a violin without a name in it. (Laughter).
> His lordship - How many of these loose labels have you got?
> Defendant - I have about 50 of one kind or another.[227]

During cross-examination Chanot's son likewise mentioned that 'When his father thought it necessary they took labels out of old instruments and put them into others'[228], adding that his father kept about forty or fifty labels in a small box.[229] Interestingly, when questioned how much he would ask for the violin if he would sell it again Chanot answered that 'that would be according to who the customer was'.[230] Furthermore, Chanot mentioned that the violin was 'one of those he had

223 *The Morning Post* (London), 13 February 1882.

224 For more details on Bergonzi see Beare and Rosengard, "Bergonzi," 314.

225 In the description of the transaction Heron-Allen suggests otherwise, maintaining that it was Hodges who asked for this receipt, as was common for amateur dealers who had little experience in old instruments. See Heron-Allen, *De fidiculis,* 17 and 33.

226 See *The Morning Post* (London), 13 February 1882. See also Heron-Allen, *De fidiculis*, 14–15, 20 and 31.

227 *The Morning Post* (London), 13 February 1882. The same conversation is included in Heron-Allen, *De fidiculis,* 33. However, in Heron-Allen's version Chanot states that 'I took this particular label from an old instrument (a mandolin), and put it in when I repaired this one'.

228 *The Morning Post* (London), 13 February 1882.

229 See Heron-Allen, *De fidiculis,* 36.

230 *The Morning Post* (London), 13 February 1882; see also Heron-Allen, *De fidiculis,* 31–32. In his cross-examination Chanot claimed that the violin was 'worth from £25 to £30', while in Heron-Allen, *De fidiculis,* 33, it is mentioned that Chanot had bought it in Paris from a picture dealer for 'about £18'.

exhibited at the Paris Exhibition', this most likely being the Exposition Universelle that took place in 1878 in Paris, where Chanot had participated and had won a Medal of Honour.[231]

The Hodges-Chanot case was greatly publicised in the English, Scottish and Irish press, with titles such as 'Hodges v. Chanot.– The manufacture of violins',[232] 'Tricks in trade',[233] 'Remarkable action about a fiddle',[234] 'The tricks of violin dealers',[235] 'What is a fiddle?',[236] 'Cremona violins.– Remarkable evidence',[237] or the 'Value of a violin',[238] to name just a few. In a newspaper article titled 'The Strange Tale of a Fiddle', published soon after the above-mentioned case, the author stated that the revealed details 'form but a bare suggestion of what is a widespread system of deception' adding that 'the amount of fraud and trickery practised by fiddle-dealers quite surpasses all the jugglery and deception so often connected with "old masters", old china, battle-field relics, bronzes and antiques generally'.[239]

The author explained this phenomenon on the basis that 'very few people are in the position to study genuine examples of the best makers, and it is only by study of the most careful and discriminating description that one is enabled to recognise the real thing when one sees it'.[240] The author further pointed out that 'there can be no doubt that the public are to blame in some measure for a bad state of things; they will not buy fiddles unlabelled, and, knowing nothing about the subject, foolishly believe all that ingenious dealers tell them'.[241] This opinion was clearly in accordance with Chanot's statement that 'people will not buy a violin without a name in it', showing how deeply the musical instrument trade was influenced at that time by the tastes and desires of a largely amateurish audience of collectors.[242] In order to illustrate this argument, the author provided the example of three different people who answered independently to an advertisement regarding the sale of a supposedly genuine Stradivarius, mentioning that each one of them eventually purchased 'a violin with the Stradivari label, a case and a bow', all paying the 'ridiculous sum of thirty shillings'.[243]

231 *The Morning Post* (London), 13 February 1882. See also Heron-Allen, *De fidiculis,* 13 and 33.
232 *Daily News* (London), 13 February 1882.
233 *The North-Eastern Daily Gazette* (Middlesbrough), 13 February 1882.
234 *The Derby Mercury* (Derby), 15 February 1882.
235 *The Bristol Mercury and Daily Post* (Bristol), 14 February 1882.
236 *The Dundee Courier & Argus* (Dundee), 16 February 1882.
237 *Freeman's Journal and Daily Commercial Advertiser* (Dublin), 16 February 1882.
238 *The Era* (London), 18 February 1882.
239 *The Graphic* (London), 18 February 1882.
240 Ibid.
241 Ibid.
242 For a similar case in the violin trade see the 'Balfour frauds', presented in Harvey, *Violin Fraud,* 17–19, concerning the sale of a violin with a fake Stradivarius label sold in 1901 by Balfour & Co. Harvey (p. 19) writes that this violin 'thereafter had an adventurous career in Europe and by the 1960s it had acquired genuine Stradivari ribs!'
243 *The Graphic* (London), 18 February 1882.

Unfortunately, this long 'tradition' of false labelling[244] continued well into the twentieth century. The *Essai d'un Dictionnaire Universel des Luthiers*, a dictionary of luthiers compiled by René Vannes that first appeared in 1932, contained 'a comprehensive display of maker's labels, this itself becoming a source for the rogue dealer' and it has been reported by Westbrook that 'out of only one hundred copies sold only a few have survived with the labels intact'.[245] The same probably happened with other dictionaries or catalogues published in the early twentieth century which depicted instrument labels.[246] Some instruments with forged labels also illustrate the ignorance of their fakers, such a surviving guitar which is labelled 'Gio. Battista Fabricatore' and 'is dated 1823 although Fabricatore died in the first decade of that century'.[247]

Around the last quarter of the nineteenth century the techniques of forgers had become quite advanced; in addition to adding counterfeit labels, they included artificially 'aged' new instruments to give them a more authentic appearance. This method, introduced by the Parisian violin maker and dealer Jean-Baptiste Vuillaume (1798–1875), gave the instruments a worn-out, vintage look, making them look older and rarer, and was soon copied by other makers.[248] Other, more drastic methods employed by forgers included 'the upgrading of good quality old instruments, and even the making of two out of one by mixing the genuine parts of, for example, a Maggini viola with a new fake back and a reshaped 18th-century front'.[249] In other cases 'a bass violin or a guitar might have been cut down and reshaped into a viol'.[250] In an article about instruments at the the Kunsthistorisches Museum, Vienna, Gerhard Stradner has suggested that two bowed instruments of the collection (inventory numbers SAM92 and SAM101 respectively) 'were apparently built up using parts of available string-instruments', a fact indicated by their backs, 'which are shaped out of fan shaped strips, which possibly come from a cittern or a chitarra battente'.[251] Furthermore, discussing modifications on violins, Charlo Chiesa and Bruce Carlson have argued that 'out-sized instruments have sometimes been cut down or built up accordingly to "standardize" their dimensions to taste of the period or even to individual whim'.[252]

244 Even the steam engine pioneer James Watt may have employed similar counterfeit methods as a musical instrument maker. It is known that Watt worked in his early career as a repairer and maker of musical instruments even though he had no particular musical talents. Watt's surviving tools in the Science Museum, London, include a metal stamp 'T LOT', which may have been used with the intention to deceive customers by giving the impression that Watt's instruments had been produced by the well-known Parisian woodwind maker Thomas Lot (1708–1787). For more information see Wright, "James Watt," 123–25.

245 Westbrook, *Guitars Through the Ages*, 19.

246 See, for instance, Lütgendorff, *Die Geigen- und Lautenmacher vom Mittelalter bis zur Gegenwart*, or Kinsky, *Musikhistorisches Museum von Wilhelm Heyer in Cöln*.

247 Barnes, Beare, and Libin, "Faking and Forgery," 257.

248 For more details see Beare, Liivoja-Lorius, and Kass, "Vuillaume," 270–71.

249 Barnes and Beare, "Forgery," 790; see also Barnes, Beare, and Libin, "Faking and Forgery," 257.

250 Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 98.

251 Stradner, "Musical Instruments in an Inventory by Andrea Mantova Benavides," 74.

252 Chiesa and Carlson, "Violin Expertise," 7.

The most well-known case of forgery in the field of musical instruments is that of Leopoldo Franciolini (1844–1920), a dealer of old musical instruments working in Florence at the *fin de siècle,* whose counterfeiting techniques involved the combination of parts from two or more different original instruments or the integration of parts from a genuine instrument in several new fakes. Many unknown details about Franciolini's practices were first presented in the mid-1970s by Edwin Ripin, who did extensive investigation on Franciolini's life and work,[253] although some of the information has been since contradicted or revised through new research. For example, according to Ripin, Franciolini, who was a dealer of various antique objects, including coins, medals, furniture, weapons, and porcelain (figure 47), also used parts from damaged instruments or pieces of furniture to create supposedly 'rare instruments' which never existed in reality; he sometimes even employed modern substitutes, such as celluloid, to imitate the ivory inlays found on original specimens. However, it is important to note that during her systematic examination of original and fake extended-neck lutes in several collections Sayce found no evidence that Franciolini used parts of old instruments, thus refuting the common assumption that he rebuilt old instruments.[254]

In recent decades numerous instruments by Franciolini or his associates have been identified in private and public collections of musical instruments, such as those in Boston, Brussels, Copenhagen, Edinburgh, New York, and Vienna, to name but a few. For example, Barclay has noted that several plucked instruments, such as chittarones and theorbos, in a major museum in North America 'went through Franciolini's hands', adding that 'the soundboard of one of them was once attached to a virginal or spinet'.[255] In addition, in their book on the development of the lute Andreas Schlegel and Joachim Lüdtke have noted that Franciolini's 'lute instruments are often based on bowls from large instruments of the 18th/19th century mandolin family and are sometimes lavishly decorated.'[256]

One such example is an unsigned theorbo in the DM (inventory number 5433), also purchased in 1906 as part of Hahn collection mentioned above (figure 48),[257] which is quite similar to instruments built in Francolini's workshop. The theorbo by Hahn has all the characteristics attributed to Franciolini's fake extended-neck lutes. For instance, it is 'built on a centre line because this makes them easier to build', whereas 'historical archlutes have a slight offsetting of the neck, and a more obvious offsetting of the upper neck, giving the whole a slightly

253 For more details see Ripin, *The Instrument Catalogs of Leopoldo Franciolini*, v-xv.

254 For more details see Sayce, "How to Spot a Fake Lute," 7–8.

255 The author is thankful to Barclay (personal communication via email, 7 September 2012) for this information.

256 Schlegel and Lüdtke, *The Lute in Europe 2,* 343. Several constructional aspects of Franciolini's lutes that are linked to the mandolin tradition have been discussed in Sayce, "How to Spot a Fake Lute," 8–9.

257 Hereafter referred to as DMO 5433. The instrument is currently in storage and accessible only upon request. For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 16.

Figure 47 The front cover of Franciolini's catalogue from 1895, showing that apart from antique musical instruments he also sold a variety of historic objects, including coins, medals, furniture, weapons, and porcelain.

Figure 48 Front, side and back views of the unsigned theorbo DMO 5433 purchased in 1906 from Hahn.

crooked aspect'.[258] Additionally, the open-backed pegbox has 'the gothic window cutout, with a tiny hole decoration at the top (a typical Franciolini affectation)',[259] while, contrary to historical practice, the first peg behind the nut is on the treble side than on the bass (figure 49). Moreover, the instrument has 19 strings, which is a historically uncommon arrangement, while the choice of woods, the decorative materials and patterns, and the overall poor craftsmanship suggest the practices used by Franciolini and his circle.

In addition, Sayce has mentioned that on Franciolini's instruments 'alongside pre-construction worm damage one often sees signs of inexplicable damage; presumably the consequence of violent "antiquing" or "distressing"; perhaps they were hitting the soundboard with chains or something similar'.[260] In general, Franciolini's modifications emphasised the decorative and visual aspects, but paid little attention to the musical qualities of the instruments, since many examples originating from his workshop could not have been playable.[261] For instance, considering lutes with extended necks Sayce has pointed out that many of Franciolini's instruments have very thick soundboards made with low quality wood, as in the case of DMO 5433 (figure 50); they are also structurally weak and could possibly not withstand the normal string tension.[262]

258 Sayce, "How to Spot a Fake Lute," 8.
259 Ibid.
260 Ibid., 9.
261 For a comprehensive description of Franciolini's techniques see Ripin, *The Instrument Catalogs of Leopoldo Franciolini,* ix-xv.
262 See Sayce, "How to Spot a Fake Lute," 8–11.

Figure 49 Details of the fingerboard (left) and neck (right) of DMO 5433. The inauthentic materials and decorative patterns suggest that the instrument may have been made in Franciolini's workshop. Note also that contrary to historical practice, the first peg behind the nut is on the treble side rather than on the bass.

Figure 50 Detail of the soundboard and rose of DMO 5433. The low quality of the soundboard wood and the design of the rose are indicative of Franciolini's workshop.

That DMO 5433 may have been built in Francolini's workshop is further confirmed by the fact that similar instruments were advertised in his catalogues. An almost identical instrument is depicted, for instance, in Franciolini's catalogue from 1895 (figure 51).[263]

Franciolini's counterfeiting methods were eventually revealed and in 1910 he was tried and found guilty of commercial fraud. He was sentenced to four months' imprisonment but instead he paid a fine of 1000 lire and was released. After this incident his business activities decreased significantly, although he probably continued his forgery practices until he died in 1920. By that time private collectors, museums, and the wider public had become more aware of and cautious about forgeries and fakes, not least because of the presentation and discussion of such artefacts in contemporary exhibitions and publications. For instance, the earliest known exhibition of fakes and reproductions was organised in 1916 at the Pennsylvania Museum and School of Industrial Art in Philadelphia. The curator and author of the exhibition catalogue wrote in the preface that 'there is perhaps no public or private collection of any importance in this country which does not contain some spurious objects, and we know of no European museum which is entirely free from forgeries'.[264] However, what makes Franciolini an important figure in organology is the fact that 'he was active at the time when many of the world's large public and private collections were being formed and when several major reference works on instrument makers were being compiled'.[265] As a result, instruments which were modified in his workshop are 'found in many museums and pictured in many books, while the names and dates of the purported makers of instruments he sold (many of them apparently fictitious) have been included in standard reference works in the field'.[266]

But apart from Franciolini there were several other dealers of fake instruments whose dishonest work has only lately began to be revealed.[267] One such case seems to be Charles Hautstont (1863–1929),[268] a maker and dealer of musical instruments working in Brussels during the late nineteenth and early twentieth centuries, who is mostly known for his replicas of antique stringed instruments which are housed

263 A very similar archlute in the Museo degli Strumenti Musicali di Roma, Rome (inventory number P.V. 8196) is described in Cervelli, *La Galleria Armonica: Catalogo del Museo degli Strumenti Musicali di Roma,* 353. However, the description of the instrument (p. 341) does not make any mention of the possibility that it may have been built by Franciolini or his circle.

264 Barber, *Exhibition of 'Fakes' and Reproductions,* 6. The author is thankful to Felicity Strong for bring this source to his attention. Strong, who is currently researching fakes and forgeries in the field of fine arts, presented several representative cases in her paper 'Exhibiting the Inauthentic: The Intent to Deceive' at the International Conference of the Leibniz Research Alliance 'Historical Authenticity' titled 'Museums – Places of Authenticity?', Mainz, 3 and 4 March 2016.

265 Ripin, *The Instrument Catalogs of Leopoldo Franciolini,* 350.

266 Ibid.

267 For more details see Restelli, *La falsificazione di strumenti musicali,* 98–103.

268 For information on Hautstont (sometimes spelled Hautstone or Hautstout) see Haine and Meeus, *Dictionnaire des facteurs d'instruments de musique en Wallonie et à Bruxelles,* 210–11. The author is thankful to Ignace De Keyser for drawing his attention to this source.

Figure 51 Left: DMO 5433. Right: A similar instrument, listed as no. 2, depicted in Franciolini's 1895 catalogue.

in various European collections.[269] It is noteworthy that before opening his own workshop in Brussels in 1883, Hautstont had previously been an apprentice of Vuillaume, the violin maker mentioned earlier who was known for producing such fine copies of Cremonese instruments that even experts would sometimes mistake them for the real thing. It is, therefore, quite possible that due to his involvement in the violin trade Hautstont became familiar with counterfeiting practices on musical instruments.

In 1910 Hautstont sold seven stringed instruments and a mélophone to the DM for 1570 francs,[270] among them an unsigned archlute (inventory number 24499).[271] Like the instruments from Hahn presented earlier, the archlute by Hautstont is rather crudely made, possibly using the back of a large instrument of the mandolin family, and has several features which indicate that, like the theorbo shown above, it was built more for display purposes than for musical performance (figure 52).

Nevertheless, it seems that the DM was pleased with this set of instruments and kept in contact with Hautstont, because two years later Fleischer and Fuchs bought two keyboard instruments from him, namely a harpsichord (inventory number 37587) signed 'HANS RUCKERS ME FECIT ANTWERPIAE 1573'[272] and a virginal (inventory number 37588) signed 'ANDREAS RVCKERS ME FECIT ANTVERPIAE 1617'.[273] This is how Fuchs describes this transaction: 'On 23.12.1915 while travelling through Brussels I saw at Ch. Hautstont's [shop] a harpsichord by Hans Ruckers, Antverpiae 1573 […] and a spinet by Andrea Ruckers, Antverpiae 1617, which we acquired for 3,700 francs under guarantee of authenticity'.[274] Interestingly, the documents concerning this transaction, which took place in 1912, and not 1915 as in Fuchs's account, show that the guarantee of authenticity was provided by Hugo Helbing, an antique dealer in Munich, rather than by a musical instrument maker or specialist.[275]

269 See Wackernagel, *Europäische Zupf- und Streichinstrumente,* 346.

270 The other seven instruments were a viola d'amore (inventory number 24498), a violoncelle d'amour (24500), a pochette (inventory number 24501), a harp (inventory number 24502), a hurdy-gurdy (inventory number 24503), a mélophone (inventory number 24504), and a replica of a medieval fiddle (inventory number 24505).

271 Hereafter referred to as DMO 24499. The instrument is currently in storage and accessible only upon request. For more details of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 21.

272 A description of this instrument is included in Henkel, *Besaitete Tasteninstrumente,* 74–76.

273 A description of this instrument is included in Henkel, *Besaitete Tasteninstrumente,* 103–05.

274 'Am 23.12.1915 sah ich auf der Durchreise in Brüssel bei Ch. Hautstont ein Cembalo von Hans Ruckers, Antverpiae 1573 […] und ein Spinett von Andrea Ruckers, Antverpiae 1617, die wir unter Garantie der Echtheit um 3700 Frcs erwarben'. Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 51.

275 This is remarked on in the revision notes (1987, pp. 1–4) of Fuchs's book by Fritz Thomas (1926–2013), former curator of musical instruments at the DM, which were kindly provided to the author by Silke Berdux. In these notes (p. 3) Thomas wrote that 'the guarantee was made by an antique dealer and not by a musical instrument expert' ('Die Garantie wurde von einem Antiquitätenhändler erstellt und nicht von einem Instrumentenfachmann'). This is confirmed in a typed letter from Miller to Helbing, 4 March 1913, DMA, VA 1761-1. Thomas also rightly pointed out that the date of the trip was 1912 and not 1915, as mentioned by Fuchs.

Figure 52 Front, side and back views of the unsigned archlute DMO 24499 purchased in 1910 from Hautstont.

Both of these instruments have been extensively altered. According to Grant O'Brien, who has extensively examined surviving instruments by Ruckers, the harpsichord 'has been reworked and "restored" a number of times' and has 'a spurious compass, scaling, and disposition'.[276] Moreover, the rose 'appears to be a genuine Andreas Ruckers rose in which the top of the letter A has been cut apart and the two sides of the letter then bent into a vertical position to make an H'.[277] On the other hand, the virginal has been 'enlarged without altering the original scalings or plucking points', with various modifications to its original parts, while the lid has traces of printed paper bearing the date 1720, indicating the date (or earliest possible date) of these alterations.[278] However, the soundboard painting is not original, but of a later date, and the instrument has a new rose similar to that of a virginal by Ruckers in the Muziekinstrumentenmuseum, Brussels (inventory number 4600), suggesting that 'both instruments at one time passed through the hands of the same restorer'.[279] It is also important to note that in 1915 the piano manufacturer Carl Pfeiffer of Stuttgart, who had been asked by the DM to repair and tune the Hans Ruckers harpsichord, had doubts regarding its authenticity, openly stating that it is a fake.[280]

The above-mentioned cases show how the 'recycling' not just of materials, but also of ideas and values, has determined the fate of many historic instruments. For example, the simplistic, naive view that old instruments are worthy only when labelled with a famous name or that authentic instruments should look worn-out or somehow unusual, has misled many collectors into buying fakes. As has been pointed out by in an article by John Barnes and Charles Beare, one of the negative effects of forgery which involved replacing labels and changing instrument parts was 'not only that the decent instruments were quite often mutilated, but that so many original labels of interesting makers were removed and more famous and fashionable names substituted'.[281] Unfortunately during such transformations the original features of many instruments were irretrievably distorted. However, since

276 O'Brien, *Ruckers,* 277–78.

277 Ibid.

278 Ibid., 258.

279 Ibid., 259. For more details of the two instruments in the DM see pp. 258–59, and 263. According to O'Brien the virginal in Brussels was purchased in 1913 from 'the stringed instrument restorer at the Brussels Museum, C. Houtshout' who is almost certainly the same person as Hautstont. Several of the remarks made by O'Brien regarding the two Ruckers instruments in the DM are also mentioned in Henkel, *Besaitete Tasteninstrumente,* 74–76 and 103–05 respectively. Moreover, according to Henkel (p. 76) the harpsichord bears an inscription which indicates that the instrument was repaired in the early twentieth century by Hautstont before it was purchased in 1913 by the DM.

280 'Der Ruckers-Flügel ist völlig auseinandergenommen. Dabei habe ich eine weniger angenehme Entdeckung gemacht: ich halte den Flügel für eine grobe Fälschung. […] ich habe das Gefühl, daß der, der das Instrument dem Deutschen Museum für teures Geld verkaufte, zur Verantwortung herangezogen werden sollte'. Typed letter from Pfeiffer to Miller, 15 September 1915, DMA, VA 1762-1.

281 Barnes and Beare, "Forgery," 790; see also Barnes, Beare, and Libin, "Faking and Forgery," 257.

a successful forger needs to know the taste of his clientele and the degree of their historical and technical expertise, forgeries can reveal important information not only about those who are responsible for the deception, but also about their victims.

The Role of Museums as Collectors

Equally important as private collectors and dealers in promoting certain practices in the trading and collecting of historic musical instruments were museums, which in the late nineteenth and early twentieth centuries were still establishing their role as important sites for preserving cultural heritage. Before the widespread establishment of museums, the main owners of historic instruments were musicians, instrument manufacturers and dealers, as well as individuals with a general interest in arts and antiques, whose private collections were eventually acquired by museums in Europe and North America. However, the majority of these private collectors were 'rich dilettantes with little musical knowledge' and 'only a few were music scholars of the first rank'.[282] As a result, 'collectors of every level of sophistication […] eventually gave to museums many significant instruments (as well as many fakes)'.[283] In the case of stringed instruments, it has been argued, for instance, that 'the proportion of fake lutes to genuine ones now in existence is probably 2:1 or 3:1'[284] or that '19th century collectors were often fooled by supposedly early viols […] that in fact were cut down from later instruments'.[285]

Regarding fake musical instruments such as those produced by Franciolini, Jeremy Montagu, former curator of the Bate Collection of Musical Instruments at the University of Oxford, has stated that 'there were many more [than today] in the great collecting period of the late nineteenth and early twentieth century, a number of which turn up in the auction rooms today, a depressing number catalogued as though they were originals', adding that he is aware of 'two or three theorbos, a "Bizey" racket and several keyboards'.[286] Montagu has also suggested that 'museum curators have always been suckers for a good fake, and indeed often perpetrated them or commissioned them when they needed to fill a gap in the collection',[287] mentioning the examples of Victor-Charles Mahillon (1841–1924) and Canon Francis William Galpin (1858–1945), two pioneers in the study of

282 Libin, "Collections," 440; see also Libin and Myers, "Collections," 610.
283 Libin, "Collections," 440; see also Libin and Myers, "Collections," 610.
284 Sayce, "How to Spot a Fake Lute," 13.
285 Barnes, Beare and Libin, "Faking and Forgery," 257.
286 Montagu, "Historical Instruments and Their Role," 5–6.
287 Ibid., 6.

musical instruments and avid collectors of historic examples.[288] The private collections of Mahillon and Galpin formed the basis of the musical instrument collections in the Muziekinstrumentenmuseum, Brussels, and in the Museum of Fine Arts, Boston, respectively. A similar case is that of Mary Elisabeth Crosby-Brown, mentioned earlier, whose collection of instruments, including a number of fakes, was acquired by the Metropolitan Museum of Art, New York.

In recent decades the work of various researchers has proved that many supposedly authentic stringed instruments which are now housed in museums were heavily modified or rebuilt during the nineteenth century, so that at present only few of their original parts are retained. One such researcher is Karel Moens, curator of the musical instrument collection at the Vleeshuis Museum, Antwerp, who initially intended to investigate the early history and development of viols, but gradually detected various issues of authenticity on old bowed stringed instruments and has discussed this topic in various articles.[289] During his research Moens examined and analysed several bowed instruments belonging to major European collections, many of which were formed in the late nineteenth and early twentieth centuries. Not surprisingly, among the examined instruments Moens discovered many cases of 'recycling' transformations which probably occurred in the nineteenth century, leading him to claim that 'a study of extant early viols tells us more about the nineteenth century than about the sixteenth century'.[290] Moens has further argued that on many instruments even the dendrochronological dating of the soundboard cannot always provide sufficient or accurate information about the other parts of the instrument or about the original shape of the soundboard and the instrument as a whole, particularly for those instruments which have been constructed from re-cut parts of older instruments.[291]

Moreover, as Montagu has pointed out, 'the major European collections, other than those which were the detritus of playing ensembles, […] seems to have begun as a *Kunst-Kabinetten* or *Curiosität-Kabinetten*'.[292] Some of the early museums, which grew out of private collections, continued to cultivate 'a taste for the exotic'[293] in order to draw visitors, by exhibiting supposedly historic instruments with unusual shapes or elaborate decoration, like those depicted in the catalogues of Franciolini.[294] A characteristic example is a colascione in the DM (inventory number 17206) which was purchased from Otto Haake in 1908 along with various other instruments (figure 53).[295] As mentioned earlier, a colascione had been included in the 'wish list' of the DM, preferably as an original instrument rather than as a replica.[296]

288 See ibid.

289 See, for example, Moens, "Problems of Authenticity of Sixteenth Century Stringed Instruments," 41–49; Moens, "'Renaissancegambas'," 161–237; Moens, "Vuillaume and the First Violin Makers," 130–38, 160–62; Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 97–113; Moens, "Les 'violons Amati de Charles IX'," 71–96; and Moens, "Tiefe Streichinstrumente," 75–100.

290 Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 113.

291 See Moens, "Problems of Authenticity of Sixteenth Century Stringed Instruments," 41–49.

Figure 53 Front, side and back views of the colascione DMO 17206 purchased in 1908 from Haake.

292 Montagu, "Collecting Musical Instruments," 1. For more details on the development of musical instrument collections before the twentieth century, particularly in France, see also Gétreau "Instrumentenkabinette in Frankreich zur Zeit der Bourbonenkönige," 61–73, and Gétreau, "Alte Instrumente im Frankreich des 19. Jahrhunderts," 181–213.

293 Libin, "Collections," 439.

294 For a concise overview of the exhibition of historic musical instruments during the late eighteenth century see Haine, "Expositions d'instruments anciens dans la seconde moitié du XIXe siècle," 223–40. For information on the history and development of musical instrument collections and exhibitions in Europe see also Schmid et al., "Instrumentensammlungen," 970–76.

295 Hereafter referred to as DMO 17206. The instrument is currently in storage and accessible only upon request. For a description of the instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 43.

296 See Section C. II 'Zupfinstrumente mit Griffbrett. Entwicklung der Laute, Mandoline und Gitarre' in "Liste wünschenswerter Sammlungsgegenstände," 457. The list included 'Chitarrone' and 'Colascione'.

Sadly, the example acquired by Haake was not an original baroque colascione, but a bogus creation. Recent examination of the instrument has shown that it was made by combining the body of an old mandocello with the top part of the neck and head of a mandolino, adding an unusually long neck between these parts to make it resemble a colascione.[297] Moreover, the five wooden frets above the rose of DMO 17206 are of irregular width and thickness and have been glued rather clumsily onto the wood of the soundboard, suggesting that they are later additions (figure 54).

From this perspective, the colascione is reminiscent of taxidermy curiosities assembled using parts from different animals, such as the objects commonly referred to as mermen or 'feejee mermaids', which were originally thought to have been made with head of a monkey attached to the body a fish, although the recent examination of an example in the Horniman Museum, London (inventory number NH.82.5.223) has shown that it was actually made from a combination of papier-mâché and parts of fish.[298] A rather different fake colascione, belonging to the Crosby Brown collection which ended up at the Metropolitan Museum of Art, New York, also 'appears to be a late 19th century fabrication'.[299] On this instrument, which most likely originated from Franciolini's workshop, the wood of the soundboard dates from about 1840 according to dendrochronological analysis.

The request for such instruments must have been immense, since there were advertisements in newspapers in which the decorative character of the instruments was explicitly described as desirable.[300] In the case of historic lutes Sayce has maintained that 'extended neck lutes, which are so large and dramatic, make a fine impression in your collection display case',[301] thus rendering such instruments attractive for collectors. For example, a sumptuously ornamented archlute in the Horniman Museum, London (inventory number 15.10.48/49) had been labelled as '16th-century Spanish' but is actually 'a fake built up around the remains of an old genuine instrument' that was 'almost certainly intended to be collected rather than played'.[302] Gabriele Rossi Rognoni, curator of the musical instrument collection at the Royal College of Music, London, has remarked that the products of Francolini, and possibly other forgers, 'are not failed attempts to create credible musical instruments, but instead decorative pieces of furniture perfectly suitable for a large number of customers who were not interested in subtlety of sound or in any musical efficiency at all, and were probably less interested in the historic authenticity of a piece than its good matching with the rest of the furniture'.[303]

297 For more details on the historical and technical features of the colascione see Schossig, "Der Colascione," 35–56.

298 For more details see Viscardi et al., "Mermaids Uncovered," 98–116.

299 Puzzovio, "The Restoration of a Fake Colascione," 15.

300 See Rossi Rognoni, "The 'New Early Instrument' Market in the Time of Leopoldo Franciolini," 4–5.

301 Sayce, "How to Spot a Fake Lute," 7.

302 Jones, *Fake,* 210–11.

303 Rossi Rognoni, "The 'New Early Instrument' Market in the Time of Leopoldo Franciolini," 5.

Figure 54 Detail of the five wooden frets above the rose of DMO 17206.

Besides, as already mentioned, for didactic purposes most early museum exhibitions usually intended to showcase the history and development of the various instrument families and types from the antiquity to the modern times. In many cases, when original examples could not be obtained, museums ordered replicas simply to complete their current lineup. Thus, quite often copies or reconstructions of antique instruments that survived only as two- or three-dimensional depictions, such as paintings, frescoes, illustrations, sculptures, carvings, etc., or as fragments, were often built especially for museum exhibitions. Such instruments demonstrate a wide variety of craftsmanship, with some being finely made and probably intended to be played, whereas others were clearly made as display pieces rather than as sounding devices. For example, in 1908 the DM received donations of several reconstructions of ancient bowed stringed instruments from the firm of Neuner and Hornsteiner from Mittenwald, which was a centre of violin-making in Germany. Although Neuner and Hornsteiner in general produced instruments of good quality, the common characteristic of the reconstructions acquired by the DM is that they are rather crudely made, in some cases using low-quality materials or even employing inauthentic components, such as mass-produced parts used on modern violins. Furthermore, on some of them the neck is not rounded as usual but cornered, suggesting that they were not made to be played but that they were principally made to be displayed frontally in museum exhibitions.[304]

Similar observations have been made regarding the wood used on two rebecs from the collection of musical instruments at the Galleria dell' Academia in Florence. In this example, the choice of an unusual type of wood (poplar) indicates that 'the instruments were not built to be played, but just as an aesthetical object'.[305] Another example is a 'fantasy' replica of a medieval fiddle made around 1900 and labelled 'Adalbert Schürrlein, Nürnberg' in the Germanisches Nationalmuseum, Nuremberg (inventory number MIR774). These weird creations may have been inspired by illustrations in early organological publications, such as Sebastian Virdung's *Musica getutscht und ausgezogen* (1511), Martin Agricola's *Musica instrumentalis deudsch* (1529), or Michael Praetorius's *Syntagma Musicum* (1618), some of which had appeared as facsimiles by the late nineteenth and early twentieth centuries. Other instruments were the products of imagination of their modern makers rather than faithful reconstructions based on historical evidence.

At the same time there were serious attempts to produce accurate replicas of historic instruments, and for this purpose the loaning of instruments between museums or private collectors and instrument makers was not uncommon. One such case concerns the copying of the so-called 'Bach harpsichord', an instrument allegedly belonging to Johann Sebastian Bach, now in the Musikinstrumen-

304 For more details on these instruments see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 336–341. Some of these instruments were based on images included in contemporary books, such as those in Rühlmann, *Die Geschichte der Bogeninstrumente.*

305 Fioravanti and Signorini, "Non-Invasive Approach to Wood Species Identification in Historical Musical Instruments," 12.

ten-Museum, Stiftung Preußischer Kulturbesitz, Berlin (inventory number 316). One of the earliest copies of the 'Bach harpsichord' was made by the firm of Carl Anton Pfeiffer (1861–1927) in Stuttgart in 1909, after borrowing the original harpsichord from the collection in Berlin for examination and measurements; the copy was donated to the DM the same year (inventory number 18545).[306]

A similar, but more complicated, case is the replica of a medieval fiddle made in 1908 by Charles Hautstont (inventory number 24505) which was sold to the DM in 1910.[307] This fiddle can be considered 'a copy of a copy', since it was modelled after a fiddle replica in the Muziekinstrumentenmuseum, Brussels (inventory number 1331),[308] which had been made in 1891 by Auguste Tolbecque (1830–1919), a French musician, instrument maker and collector working in Niort. Tolbecque had most likely based his replica on a fiddle shown in the fresco *Via Veritatis* ('Way of Salvation') painted c. 1365–1368 by Andrea di Bonaiuto in the Spanish Chapel of Santa Maria Novella in Florence, since Tolbecque also referred to this image in two of his books.[309]

It is important to note that a fiddle similar to the one in the DM had been sold by Hautstont in 1908 to the Musikhistorisk Museum in Copenhagen (the predecessor of the present Danish Music Museum – Musikhistorisk Museum & The Carl Claudius Collection).[310] From Hautstont's correspondence with Angul Hammerich (1848–1931) and Victor-Charles Mahillon, curators of the collections in Copenhagen and Brussels, respectively, it is known that Hautstont had been authorised to copy Tolbecque's fiddle in the Brussels museum. Interestingly, in one of the letters, dated 23 June 1908, Hammerich mentioned that the reproduction of the fiddle that Hautstont produced for the Copenhagen museum does not have 'the difficult ebony and ivory inlays', with which Tolbecque had decorated the fiddle in the Brussels museum.[311] The fiddle sold by Hautstont to the DM is also without inlays, even though the medieval image by Bonaiuto that had inspired the original Tolbecque replica, does show various inlays on the soundboard. Perhaps this was a way for the museums, and also for Hautstont, to reduce the time and cost of building the copies, though compromising to a certain extent their authenticity. Furthermore, in a letter from 2 May 1910 the DM stated that they were willing to

306 For more details of this instrument see Henkel, *Besaitete Tasteninstrumente,* 92–94.

307 For a description of this instrument see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 342.

308 For more details of this instrument see Mahillon, *Catalogue descriptif & analytique du Musée instrumental du Conservatoire royal de musique de Bruxelles,* 14–15, and De Keyser, "Les collectionneurs belges au XIXe et au début du XXe siècle," 80. The author is also grateful to Anne-Emmanuelle Ceulemans for information on replicas of ancient instruments in the Muziekinstrumentenmuseum in Brussels.

309 See Tolbecque, *Notice historique sur les instruments à cordes et à archet,* 8, and Tolbecque, *L'art du luthier,* 8.

310 This instrument is briefly described in Hammerich, *Das Musikhistorische Museum zu Kopenhagen,* 102.

311 The author is grateful to Marie Martens and Lisbet Torp for providing him with copies of this correspondence, which is preserved in The Danish Music Museum – Musikhistorisk Museum & The Carl Claudius Collection's instrument archives at the Danish Music Museum in Copenhagen.

pay Hautstont 180 francs for the fiddle replica (as a comparison, they were willing to pay 350 francs for an antique archlute or a violoncello d' amour), adding that they wanted the bigger of the two models that Hautstont was offering,[312] which suggests that Hautstont may have been occasionally making (and perhaps keeping a stock of) such instruments for museums or private collectors.

Sometimes, with the knowledge and consent of a museum, a maker or restorer would also modify and use parts of whatever old instruments were available in his workshop to come up with a new 'historic' instrument that would meet the museum's requirements. One example of the more 'brutal' type concerns a 'recycled' harpsichord that was modified into a clavicytherium (inventory number 46452) and donated to the DM in 1918 by Georg Steingräber.[313] At the time of the donation the clavicytherium was seen as an important acquisition not least because it was in playing condition. Fuchs stated later that 'an upright harpsichord (clavicytherium), which, being in full playing condition constituted a valuable addition to our collection, was sent to us on 30 July 1918 by George Steingräber'.[314] The documentation of the clavicytherium in the early 1990s by Henkel proved that it was built using parts from an old Italian harpsichord dated 1709, with various modifications to the original soundboard, keys and internal construction, while the lid is decorated with painting dating from the early twentieth century.[315]

Similar 'cannibalising' of historic instruments may have been done repeatedly in Steingräber's workshop, since he apparently specialised not only in the restoration of old harpsichords but also in forgeries.[316] Prior to the clavicytherium Steingräber had also donated to the DM a fake three-manual harpsichord signed 'BARTOLOMEO CHRISTOFARI FECIT FIRENZE AD MDCCII' (inventory number 9232).[317] When the harpsichord was acquired in 1907 it was considered as authentic and for many years it was one of the greatest attractions of the DM collection for both researchers and the public, as evidenced in numerous surviving photographs and the correspondence preserved in the museum archives. In 1953 the instrument was even included in catalogue celebrating the first 50 years of the DM as one of the two representative examples from the collection of musical instruments.[318] However, it was later discovered that the instrument originated from Franciolini's workshop, where it had been heavily modified, and it had also received several repairs, probably in Steingräber's own workshop.

In some cases old instruments were 'recycled' to be used in museums as demonstration objects. For example, a modification that occurred with the approval of the DM can be seen on a guitar (inventory number 17200) that had been purchased by the DM in 1908 from Otto Haake (figure 55).[319] In 1934 the guitar was re-fretted with movable frets by Otto Paret (1860–?) in order to demonstrate his patent

312 'Für die Nachbildung eine alten Fidel der grösseren von den beiden bei Ihnen vorhandenen Exemplaren, wären wir bereit 180 fr. zu bezahlen'. Typed letter from Miller to Hautstont, 2 May 1910, DM, VA 1758.

313 Georg Steingräber (1858–1932) was a keyboard instrument manufacturer and restorer in Munich. See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 14, footnote 4.

314 'Ein aufrechtes Cembalo (Clavicytherium), das vollkommen spielbar eine höchst wertvolle Bereicherung unserer Sammlung darstellte, übersandte uns am 30.7.1918 George Steingräber.' Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 51.

Figure 55 Front, side and back views of the guitar DMO 17200 purchased in 1908 from Haake. At the time of its acquisition by the DM the guitar had a typical fingerboard and frets, which were modified in 1934 by Otto Paret.

315 See Henkel, *Besaitete Tasteninstrumente,* 84. The date '1709' is handwritten in ink on the C/E key lever.

316 In his revision notes (1987, pp. 1–4) of Fuchs's book Fritz Thomas (p. 1) points out that 'Georg Steingraeber spezialisierte sich nicht nur auf Restaurierung […] alter Cembali, sondern auch auf Fälschungen'. Thomas mentions that this information was provided by Friedrich Ernst, Steingräber's former colleague and restorer at the musical instrument collection in Berlin. The author is thankful to Silke Berdux for information on Ernst.

317 See the description of this instrument in Henkel, *Besaitete Tasteninstrumente,* 77–81. An enharmonic virginal (inventory number 9231) donated the same year to the DM by Steingräber had been similarly altered and faked with a false label, probably by Franciolini, as mentioned in Henkel (p. 108). Another extensively restored harpsichord (inventory number 20779) described in Henkel (pp. 86–87) was donated to the DM by Steingräber in 1909, although Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 28, gives the date of acquisition as 1910.

318 See Zenneck, *Fünfzig Jahre Deutsches Museum München,* 51, figure 43. A photograph of the instrument during a demonstration for the public is included in Conzelmann, *Deutsches Museum München,* 91. The author is thankful to Silke Berdux for this information.

319 Hereafter referred to as DMO 17200. The instrument is currently in storage and accessible only upon request. For more details of this guitar see Wackernagel, *Europäische Zupf- und Streichinstrumente,* 92.

fingerboard. Paret was a priest with an interest in musical instruments, who in 1911 had been granted a patent for a new fingerboard which provided just intonation for guitars, lutes and similar stringed instruments ('Grifbrett für Gitarren, Lauten, und ähnliche Saiteninstrumente').[320]

The alterations involved the cutting of the original fingerboard and the removal of the original frets after the seventh fret, the addition of a new raised fingerboard and movable frets to enable just intonation for different chords, the installation of three brass levers on the neck to regulate the fret positions, and possibly the change of string material from gut to wire (figure 56). Interestingly, before obtaining the guitar to modify Paret had initially asked the DM for a lute, as evidenced in the surviving correspondence.[321]

Although it was a historic example in good condition, at the time of its modification the guitar was probably seen as a disposable instrument that could be 'sacrificed' to be used for demonstrating intonation and temperament, and simultaneously could expand the range of uncommon intonation systems represented in the collection. Apparently at that time the educational purpose was considered more important than preserving the history and originality of the instrument.

The Effects of Restoration and the Establishment of Conservation

In addition to the establishment of the first museums, the late nineteenth century also saw the development of the 'Early Music' movement, which advocated performance on original instruments in pursuit of a more authentic musical experience. With a growing interest in performing on genuine instruments around the end of the nineteenth and the beginning of the twentieth centuries, many historic examples belonging to private collections, and later in museums, were modified as a result of their restoration and use, in many cases with detrimental results. For instance, due to human error the silver trumpet found in Tutankhamun's tomb was unfortunately 'shattered on being played in 1939 after more than 2300 years'.[322] Similarly, the earliest surviving piano, dated 1720 and made by Bartolomeo Cristofori (1655–1731), in the Metropolitan Museum of Art, New York (inventory number 89.4.1219), was put 'into playing order before 1875, and the consequences, which included major alterations to the hammers, are more or less irreversible', while 'in 1938, when it was already in the custody of a major museum, the Cristofori was drastically restored once more, with inadequate documentation'.[323]

320 For information on Paret's invention see Schubert, "Vor hundert Jahren 'zogen die Parets auf'," 4; see also Zuth, *Handbuch der Laute und Gitarre,* 88 and 271. The author is thankful to Silke Berdux for this information.

321 'Ihr sehr geehrtes Schreiben vom 29. ds. Mts. haben wir erhalten und daraus gern entnommen, dass es Ihnen erwünscht wäre, das von Ihnen erfundene Griffbrett für eine absolut reine Guitarre in unserem Museum vertreten zu sehen. Zur Anbringung des Griffbrettes könnten wir Ihnen aus unseren Sammlungen eine einfache Gitarre zur Verfügung stellen, eine Laute ist leider nicht verfügbar.' Typed letter from Fuchs and Bäßler to Paret, 31 January 1934, DMA, VA 1771.

322 Arnold-Forster and La Rue, *Museums of Music,* 33.

323 Cole, *The Pianoforte in the Classical Era,* 325.

Figure 56 Detail of the fingerboard with movable frets on DMO 17200.

The main issue with the restoration of an instrument to an earlier, supposedly original state is that it has always been dependent upon the available information, which, as new details emerge, can prove wrong or incomplete.[324] As has been noted by John R. Watson, conservator and associate curator of musical instruments at the Colonial Williamsburg Foundation, 'every restoration, no matter how well-documented or sympathetic, wipes away evidence and makes the original condition, one condition more remote'.[325] As a result, many restored instruments have become modern interpretations of what they originally were. For example, in the discussion of the restoration of a quartet of stringed instruments by Amati it has been argued that 'modern instruments are designed for modern players – these Amatis are not. Their creators would not recognise their own instruments … The Amatis today don't sound anything like their creator intended, especially the second violin and viola […]'.[326]

Such cases clearly demonstrate why the excessive restoration of old violins to keep them in playing condition has been a subject of heated controversy for years. In her remarks on how tradition has prevented innovation in the violin trade Linsenmeyer has noted that 'for one, the violin family remained continuously in use, undergoing modifications rather than replacement by a new model. Additionally, old instruments have continued to be used in a modern context (made possible by modernization techniques); the old instruments proved not only to work in their new context, but gained an exaggerated quality of improving over time', leading to the false impression that old violins are somehow indestructible, or even immortal, and consequently instigating 'a multitude of forgeries, and techniques of antiquing that are unique to the violin family'.[327] It has been further observed that violin making constitutes a unique paradox since it 'combines two contradictory elements: the modernization of original instruments and the antiquing of modern copies. This appears in no comparable area of instrument production, nor in the applied arts'.[328] However, a similar phenomenon, where the constant modification of original instruments occurs in parallel with the antiquing of modern copies, is evident in the domain of the electric guitar, an iconic instrument whose history has been shaped, like the violin, by both 'mythology and misconceptions'.[329] As happened with old Cremonese violins in the nineteenth century, because of the growing demand and rocketing prices of vintage electric guitars, particularly American models from the 1950s and 1960s, several guitar manufacturers in the 1990s began to employ aging techniques on

324 This issue has been discussed in Huber, "Vom Sinn und Unsinn des Restaurierens," 18–29, where the author (p. 22) suggests that 'restoration means interpretation'. The author is indebted to Silke Berdux for bringing this source to his attention.

325 Quoted in Barclay, *The Preservation and Use of Historic Musical Instruments*, 158.

326 Quoted ibid., 110.

327 Linsenmeyer, *Competing with Cremona*, 26.

328 Quoted ibid.

329 Hill, *George Beauchamp and the Rise of the Electric Guitar up to 1939*, 228.

brand-new guitars in order to recreate the worn-out appearance and feel that original instruments have after many years of use (often referred to by musicians and collectors as the 'vibe', 'mojo', or 'coolness' of an instrument).[330]

It has been claimed that 'restoration can be seen as covering the scars and damage of the past, and thus distorting the past by beautifying it, and denying part of the history of the object'.[331] In the past the restoration of instruments was often followed by their aesthetic 'renewal' to correspond to the current fashions and to harmonise with contemporary furniture and interior design. For example, two seventeenth-century lutes which were 'repaired in 1907 by Rudolf Heckel of Dresden', have a 'rather unrefined open fretwork' carved on the back of the pegbox in historically inaccurate 'Art Nouveau style'.[332] Moreover, before it was understood that 'limitations form an instructive part of an instrument's character', restorations in the past often attempted to make an instrument more 'universally useful than the original'[333] by adding modern components or by removing original parts.[334] For instance, Christian Döbereiner (1874–1961), a pioneer of the 'Early Music' movement in Munich, advocated the removal of frets from the viola da gamba, considering them a primitive aid for players and arguing erroneously that frets belonged to the typical features of the lute but not to those of the viol.[335] In the case of bowed instruments Annette Otterstedt, curator at the Musikinstrumenten-Museum, Stiftung Preußischer Kulturbesitz, Berlin, has furthermore suggested that musicians 'could learn a good deal about viols by looking at fiddles that have not been subjected to corruption in being adapted to modern practice'.[336]

Historic keyboard instruments have been equally mistreated during restoration; it is known, for instance, that several instruments had their baseboards 'broached by a trap-door to gain access to the inside',[337] on others the entire interior

330 See, for example, the development of the 'Relics' series by Fender in Wheeler, *The Stratocaster Chronicles,* 227–245.

331 Quoted in Kevin et al, "A Musical Instrument Fit for a Queen," 16–18.

332 Both instruments are in the National Music Museum, University of South Dakota, Vermillion (inventory numbers NMM10213 and NMM10214 respectively). For more details of the instruments see http://orgs.usd.edu/nmm/PluckedStrings/Lutes/10214ItalianLute.html, accessed 1 March 2016.

333 Barnes, "Restoration," 242. The 'Early Music' movement has gradually changed the way that musicians feel and respond to historic instruments. For instance, it is now commonly accepted that if performers cannot play on historic instruments this is usually because they cannot understand their particularities or peculiarities because they are more used to playing modern instruments. In many cases, it is not the instrument's fault, but the player's.

334 The distorting effects of multiple restorations are exemplified in the history of the Bach organ in Leipzig, as discussed in Hübner and Wiese, *Bach Museum Leipzig,* 31–33. The author is obliged to Silke Berdux for bringing this detail to his attention.

335 See Grill, *Die Rezeption der Alten Musik in München zwischen ca. 1880 und 1930,* 83–85.

336 Otterstedt and Reiners, "What Old Fiddles Can Teach Us," 219.

337 Barnes, "Restoration," 242.

structure was radically altered or renewed, while in more invasive treatments important historic instruments had even their original soundboards replaced.[338] For example, concerning the restoration of some early pianos, including one by Ferdinand Hofmann (1756–1829), Latcham has stated that 'another Hofmann instrument with a soundboard that dates from this century is the small square piano […]. The new soundboard has a thickness and stiffness suited to twentieth century taste'.[339] In many cases the quality of the sound on restored stringed instruments was affected negatively by 'the stiffening and strengthening of structures which had been designed to be free and responsive'[340] or by using thicker strings than what would have been normally used. Similarly, the retuning of early woodwind instruments by altering the original finger-holes obliterated important evidence of non-equal temperaments.[341] Such procedures have distorted the identity and role of many historic instruments and have degraded their original musical properties, rendering those instruments 'working replicas of themselves'.[342] In her comments on the history of the musical instrument collection at the Royal College of Music, London, Wells has remarked, for example, that between 1938 and 1964 several instruments of this collection suffered from 'vandalism, theft, poor atmospheric conditions and woodworm infestation', noting, on the other hand, that fortunately 'most of the collection did escape the uninformed restoration to which many instruments elsewhere were subjected'.[343]

The last decades of the twentieth century witnessed a significant change in the attitude of musicians, scholars, museum professionals, and the wider public towards historic musical instruments and their restoration.[344] This was largely due to the development of museum conservation as an independent science. During the second half of the twentieth century conservation grew rapidly as a response to the negative and irreversible results of restoration, as well as due to progress in the research and treatment methods for the conservation of historic artefacts. This led to the gradual inclusion of conservation studies in undergraduate and postgraduate academic programmes, and the increasing representation of conservators in publications, conferences and workshops related to the preservation of cultural heritage, which included musical instruments. These developments in the field of conservation, which raised new demands for the treatment of historic musical instruments, coincided with the formation in 1960 of CIMCIM, the International Committee of Musical Instrument Museums and Collections (now renamed International Committee of Museums and Collections of Instruments and Music), one

338 See Barclay, *The Preservation and Use of Historic Musical Instruments,* 185–201. Some issues regarding the alterations on keyboard instruments, especially due to recent restorations, are discussed in Watson, "Historical Musical Instruments," 69–82.

339 Latcham, "Soundboards Old & New," 53.

340 Barnes, "Restoration," 242.

341 Ibid.

342 Quoted in Barclay, *The Preservation and Use of Historic Musical Instruments,* 163.

343 Wells and Nobbs, *Royal College of Music,* viii.

344 See Barclay and Watson, "Conservation," 680–83.

of 31 international committees of ICOM, the International Council of Museums, with the goal to promote and establish new standards in the conservation and use of musical instruments in museums and collections.[345]

It is noteworthy that by the early 1990s the term 'restoration' already stopped being used in documents published by CIMCIM.[346] This change of attitude is also shown by the fact that the article for 'restoration' in the first edition of *The Grove Dictionary of Musical Instruments* (1984) is not included in the second updated edition of the dictionary (2014), and has been replaced instead by the term 'restorative conservation', which is discussed within the article for 'conservation'. In contrast to restoration, conservation involves minimal intervention, encouraging instead respect for the original qualities and substance of an object, using, as much as possible, reversible materials and methods. Moreover, conservation focuses on the analytical and systematic documentation of an artefact in order to draw conclusions about its original construction, use and function, and records in detail any change in its material and cultural properties that may occur during treatment.[347] It has also been recognised that the meticulous research of an object's history and use is of paramount importance for any further decisions regarding its preservation.

In regard to musical instruments, conservation gives more emphasis to their historical and technical values, strongly rejecting efforts to return them to playing condition simply for an ephemeral and subjective exploration of their musical characteristics. Instead, practitioners of conservation advocate the construction and use of replicas for performance, especially when the surviving artefacts have been preserved in original state or when they are too rare or too fragile to be played.[348] As has been stated by Watson 'all old musical instruments [...] have not one but two voices. They have a musical voice, and they have a historical voice',[349] both of which should be preserved for future generations.

345 For more details see CIMCIM, "What is CIMCIM," http://network.icom.museum/cimcim/welcome/what-is-cimcim/, accessed 11 March 2016.

346 The author is thankful to Judith Dehail for bringing this detail to his attention. Dehail mentioned several details concerning the role of CIMCIM in the shift from restoration to conservation in her paper 'Conflicting Authenticities: The Case of the Musical Instrument Museum from the Visitors' Perspective' presented at the International Conference of the Leibniz Research Alliance 'Historical Authenticity' titled 'Museums – Places of Authenticity?', Mainz, 3 and 4 March 2016.

347 For an overview of the current standards and ethics regarding the conservation, research, exhibition and education practices of music collections see Arnold-Forster and La Rue, *Museums of Music,* 1993; Barclay, *The Care of Historic Musical Instruments,* 1997; and Andrew, *Standards in the Museum Curation of Musical Instruments 2005.*

348 The main criteria for returning instruments to playing condition are described in Barclay, *The Preservation and Use of Historic Musical Instruments,* 233–242. See also Appelbaum, *Conservation Treatment Methodology,* 144–45.

349 Quoted in Barclay, *The Preservation and Use of Historic Musical Instruments,* 233.

Conclusions

Between Wish and Reality: An Evaluation of the Hahn Collection

Having discussed the various changes that can be commonly identified on surviving historic instruments, and under which conditions these can happen, we can now return to the instruments that were purchased by the DM from Hahn in 1906. There are several interesting observations concerning the manner of acquisition of the Hahn collection, particularly in connection to the contemporary sociocultural environment described earlier. To begin with, it seems that the DM purchased the instruments from Hahn rather hurriedly and, to a certain extent, without questioning or doubting their authenticity. Although the DM was quite progressive among museums in establishing a team of leading experts to select objects for its exhibitions, in preparing and publishing a comprehensive list of the desired instruments, and also in contacting and working with external scholars as consultants for their acquisition, unfortunately this did not prevent the acquisition of artefacts of a dubious character. As has been described earlier, shortly before the purchase of the Hahn collection, the museum sought advice regarding the quality and originality of Hahn's instruments not from a musical instrument specialist, but from Gedon, an antique dealer. At the end of the nineteenth and the beginning of the twentieth centuries, antique dealers were considered a reliable source of expertise regarding old musical instruments, largely due to the scarcity of reference publications and the rather primitive state of organology as a scientific discipline at that time.

In addition, the fact that in this and other cases the museum approached antique dealers for advice and, more importantly, trusted their opinion, sheds light on the nature of the museum profession at the beginning of the twentieth century, when many curators were primarily enthusiasts rather than scholars, and when communication between museums and experts in order to prevent fraud was slower and more difficult. For instance, as mentioned previously, the guarantee of authenticity regarding a harpsichord and virginal supposedly made by members of the Ruckers family which were purchased by the DM from Hautstont in 1912, was provided by Helbing, who was an antique dealer, and not by a musical instrument specialist. Later it was found out that both instruments had been heavily modified, with various changes to their original features and the addition of new parts.

The second point of note is that the Hahn collection was bought in its entirety, even though many of the instruments were not included in the original 'wish list'; for instance, out of the ten guitars acquired from Hahn only the lyre guitar (item no. 42 in Hahn's list) corresponds to the guitars in the museum's 'wish list'.[350] None of the other nine guitars purchased from Hahn can be described as an 'early Spanish guitar', a 'modern (Italian) guitar' or a 'double (twin) guitar' such as the museum initially desired to acquire. The example of the Hahn collection reflects to some extent the general acquisition policy of the DM in the years following its foundation. In his comments on the museum's early history, Wilhelm Füßl has pointed out that, despite the creation and circulation of 'wish lists', the artefacts collected by the DM during the years between 1903 and 1909 were in general not the result of an established acquisition strategy with systematic criteria, but happened rather accidentally; he adds that the profile of the 'technological culture' exhibited in the DM during these years was created partly by plan and partly by chance.[351]

The acquisition of a private collection as a whole, even when it included objects which were not necessarily appropriate for research or exhibition, was not uncommon among museums in the early twentieth century. A comparable case concerning a collection of instruments (in this case scientific, rather than musical) that was purchased *en bloc* by a young museum can been observed in the acquisition in 1930 of the collection of Anton (Antonius Wilhelm Mari) Mensing (1866–1936) by the Adler Planetarium and Astronomy Museum in Chicago, which was founded on the model of the DM as a museum of science and technology.[352] Like the Hahn collection, which was purchased a few months prior to the official opening of the first DM exhibition, the Mensing collection arrived in Chicago on 18 March 1930, less than two months before the opening of the Adler Planetarium and Astronomy Museum.[353] The acquisition of a well-known and varied collection was significant particularly for new institutions aspiring to be perceived as places of serious scholarly study, and, as has been claimed, 'the acquisition of the Mensing collection by the Adler only months before it actually opened no doubt played a crucial role in establishing the identity of the Adler as a museum, and one with an important collection'.[354] Similarly to Hahn, Mensing's intention to sell his collection as a whole is confirmed in a surviving letter from 17 September 1929, in which Mensing's son stated that his father's collection of 'Alte wissenschaftliche Instrumente' ('old scientific instruments'), as he called it, 'may perhaps be for sale

350 This fact is confirmed in a 'wish list' of instruments with comments dating from 1908, which is included in DMA, VA 4041.

351 See Füßl, "Konstruktion technischer Kultur," 38 and 52.

352 For more details on the acquisition of the Mensing collection by the Adler Planetarium and Astronomy Museum see Taub, "'Canned Astronomy' versus Cultural Credibility," 243–50. The author is grateful to the second anonymous reviewer for pointing out this source.

353 See ibid., 243.

354 Quoted ibid., 247.

only en bloc, but no objects are sold separately'.[355] It comes to no surprise that this collection, which consisted of over 500 scientific instruments, also included a number of imitations and fakes, as the work of various researchers has shown.[356]

As a major collector of antique objects, including books, maps, prints, and scientific instruments, Anton Mensing had been previously involved also in the early development of the Scheepvaartmuseum in Amsterdam. Interestingly, when this museum was founded in 1916 a committee was formed in order to start collecting objects even though no building was available, just as in the case of the DM. Prior to the opening of the museum in 1922 the largest single collection owned by the museum was Mensing's library, whose items were acquired through loan, donation or purchase. The museum opened officially on 1 November 1922 by Wilhelmina, Queen of the Kingdom of the Netherlands (1880–1962), and it is notable that for this event Mensing had provided 166 objects form his collection which arrived one day before the opening and were returned a month later. Although there is limited information on these objects, it has been suggested that some of them were later sold to the Adler Planetarium and Astronomy Museum. Moreover, it seems that Mensing had not sent to the Scheepvaartmuseum all the acquired objects from his collection because while compiling an inventory the collection the museum director found out that some items were still in their previous whereabouts or could not be located at all, thus leading to a conflict between Mensing and the museum between 1922 and 1925.[357] The example of Mensing as collector and his transactions with museums highlight the various complexities in the transition of collections from private hands to public institutions during the early twentieth century.

Returning to the Hahn collection, a third point of note is that many instruments seem to have been collected, and later sold, by Hahn because of their decorative character, since the descriptions in his list present the instruments as works of art, providing details of their visual aspects, such as the decoration style or materials, but only limited information on their musical or technical features, such as number of strings, compass, etc. For instance, item no. 42 is described as 'Lyra aus der Empirzeit, schönem Schalloch' ('lyre guitar from the Empire time, nice soundhole'), whereas item no. 43 as 'Chitarra battente, Decke mit Perlmutterblumen verziert. Schalloch als Wespennest, Hals und Griffbrett reich eingelegt' ('Chitarra battente, soundboard decorated with flowers of mother-of-pearl, soundhole as wasp nest, neck and fingerboard richly inlaid'). On the other hand, it is notable that many of the guitars, as well as other instruments, that were sold to the DM by Hahn are unsigned, raising further questions concerning their

355 Quoted ibid., 245.

356 For more details on issues of authenticity in relation to the Mensing collection see De Clercq, *Scientific Instruments: Originals and Imitations*. It has been suggested that Mensing possibly collaborated with the Feeterse brothers, Jacob and Christian, who were active as forgers of scientific instruments in Amsterdam in the early twentieth century.

357 For more details see Mörzer Bruyns, "The Amsterdam Scheepvaartmuseum and Anton Mensing," 235–41.

provenance and authenticity. Collectors usually seek to acquire signed instruments or at least instruments whose features can be easily attributed to a well-known maker, workshop or school of instrument-making, which is not the case with several of the instruments from the Hahn collection.

Furthermore, regarding the terminology used during the transaction with Hahn a detail worth noticing is the adoption and use of the term 'joke guitar' for DMO 5429 in the museum list. This term does not correspond to any known historical guitar type, but is a fictional name probably applied to the instrument by Hahn. Despite its altered state, the guitar could have been classified organologically by comparing its features with other surviving examples, a further indication that the instrument was not examined properly during its acquisition, and even much later. It is noteworthy that, regardless of their different characteristics, the guitars DMO 5429, DMO 5430 and DMO 5099 have similar scale lengths and overall dimensions, a fact easily confirmed when DMO 5429 was inspected side by side with the other two guitars.[358] This significant detail has been so far overlooked in the study of the two guitars. Although the catalogue descriptions of the two instruments provide their basic dimensions and construction features, there is no comparison between them and no mention of the fact that DMO 5429 may have been originally built as a terz guitar similar to DMO 5430; the instrument has been catalogued simply as 'Gitarre'.[359]

This is an indication of the inconsistent nomenclature and terminology in the field of organology at the beginning of the twentieth century. This is also confirmed by the fact that the guitar DMO 5432, shown earlier, was included in Hahn's list as 'French terz guitar with nice soundhole' ('Französische Terzgitarre mit schönem Schalloch', item no. 52) although its scale length is closer to that of a standard guitar. Furthermore, as already mentioned, the soundhole of this guitar, its most remarkable feature according to Hahn's description, is a later addition. In addition, in her notes on the development and characteristics of the terz guitar Wackernagel has included DMO 5430 but not DMO 5429 among the discussed examples.[360] That the three guitars DMO 5429, DMO 5430 and DMO 5431 were not considered particularly valuable is also reflected by the fact that there are no photos of the instruments in this catalogue.[361]

The state of the examined guitars also shows that there was apparently limited 'filtering' of the acquired instruments according to their rarity, genuineness, condition of preservation, and prospective use as museum artefacts. Another inconsistency is found in the number of Hahn's instruments: Gedon had originally mentioned 160 instruments, Hahn's list included 169, and the final museum list contained 181. It is possible that some items were added by Hahn at the last

358 See the table in the Appendix.

359 See Wackernagel, *Europäische Zupf- und Streichinstrumente,* 89.

360 See ibid., 76.

361 Photographs of the guitar DMO 5429 along with a brief description of the Hahn collection were published recently in the DM's internal magazine "Die Eule" (March 2016, issue 3).

minute to make the total number look higher and thus more impressive. At the time of the purchase some of these instruments were already of limited historical, musical or educational value and had low potential as display or demonstration items, a fact which would have easily be noticed after a preliminary inspection and comparison of their state. Rather ironically, Gedon had stated that one cannot value instruments if one has not seen them himself in his comments about the Gutsche instruments, which had been offered to the DM prior to the purchase of the Hahn collection.[362] One wonders whether the instruments in the Gutsche collection were of a better quality than those of Hahn, especially given the fact that Gutsche was a professional musician rather than a dealer.

However, possibly because the new exhibition had to open in autumn 1906, anticipating the visit of Prince Regent Luitpold, and Miller had earlier expressed his fears that the collection would be not complete by that time,[363] the museum hastened the purchase of the Hahn collection, taking relatively little time for a proper examination and documentation of the instruments. This is a prime example of how politics may sometimes influence the decisions taken by museums. A similar situation has been observed by Moens concerning the purchase of the Correr collection by Mahillon for the Muziekinstrumentenmuseum in Brussels.[364] Moens has claimed that Mahillon apparently 'did not compare the instruments against the inventory list when they arrived because the discrepancies are inexplicable'.[365]

The details of the transaction also suggest that Hahn was equally eager to sell his collection when he was contacted by the museum, which is another uncommon fact. Passionate collectors are usually tied up in an emotional way with their collections, and sometimes it takes a long time before they decide to give away even a single object. However, Hahn was ready to sell his collection at once and not piecemeal, but as a whole, otherwise he would not have instantly accepted the lower price offered to him for it. This is a clear indication that he wanted to secure a deal with the DM immediately, probably knowing that his collection included several instruments of dubious authenticity. Additionally, the fact that Hahn mentioned the earlier higher offer from abroad was probably an attempt to accentuate the importance of his collection and urge the DM to buy it at once. A similar trick was used in the case of the Haake collection. After the death of Karl Haake, his son, Otto, approached the DM offering his father's collection of musical instruments for sale, mentioning that earlier he had intended to sell it as a whole to someone in England.[366]

362 'Man kann aber nichts bestimmtes sagen wenn man die Sachen nicht selbst gesehen hat'. Handwritten letter from Gedon to Miller, 2 June 1906, DMA, VA 1752-2.

363 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 6.

364 See Moens, "Problems of Authenticity on Sixteenth-Century Italian Viols," 98–100.

365 Ibid., 99.

366 See Fuchs, *Der Aufbau der technischen Akustik im Deutschen Museum,* 23.

It can, therefore, be argued that Hahn's collecting philosophy may have been driven as much by a passion for historic instruments as by professional acumen. One of Hahn's primary motivations to part with his collection was most likely profit (evidenced also by the rather high transport costs for which Hahn charged the DM), and the museum's intention to put labels with his name on some of the exhibited instruments may have enhanced his decision, as this meant free advertisement for him. Hahn apparently considered trading his collection to the DM more as a lucrative business option rather than as an action of benefit to future generations, since, in contrast to other, more devoted collectors, he left no particular guidelines in regard to the instruments' future display, preservation and use.[367] Furthermore, one can easily imagine that his offer to tune and maintain the instruments occasionally did not come free of charge. Moreover, the fact that Hahn had moved to a new address soon after the sale of the collection, indicates that some of the money he had received from the DM was probably invested in the expansion of his business as much as in building a new collection of historic instruments. For example, it is important to point out that Hahn participated along with other collectors and dealers, as well as with the DM, in an exhibition which took place in Munich in 1910, where he displayed several historic instruments for sale. This suggests that he may have had a bigger collection than the one he sold in 1906 to the DM or that by 1910 he had acquired some new historic instruments.[368]

Another noteworthy detail is that the museum had asked Hahn to repair those instruments that were in need of repair as soon as possible, which is another confirmation that his collection included objects in various states of preservation. As has been mentioned earlier, shortly after the purchase of the Hahn collection in his letter of 25 June 1906 Miller reminded Hahn of this request and asked him to undertake this task immediately.[369] It is not certain which instruments were repaired and to what extent before they were delivered to the museum, but it is possible that some, including the 'recycled' guitars, returned to Hahn's workshop during this time in order to be restored to playing condition or at least to be revamped so that they could be presentable at the opening of the new exhibition, since a good playing condition was a prerequisite for the acquisition of instruments by the DM. Unfortunately, no records that could provide more details regarding the degree and methods of repair by Hahn are known to have survived.[370] However, the

367 See, for example, the stipulations concerning the Benton Fletcher collection of early keyboard instruments, which were intended to promote the study of early music, as mentioned in Barclay, *The Preservation and Use of Historic Musical Instruments,* 153–54.

368 For a complete list of the instruments displayed in this exhibition see *Ausstellung historischer Musikinstrumente,* 279–283.

369 '[…] Wir gestatten uns, Sie darauf aufmerksam zu machen, dass die Instrumente unter der Voraussetzung gekauft wurden, dass dieselben, soweit sie reparaturbedürftig sind, Ihrerseits repariert werden und ersuchen Sie nunmehr, mit diesen Arbeit alsbald beginnen zu lassen. […].' Typed letter from Miller to Hahn, 25 June 1906, DMA, VA 1752-2.

370 It should be pointed out that in March 1906, a few months before the Hahn collection was acquired, the DM had informed Johann Haslwanter, a zither manufacturer, about the intention to restore some old stringed instruments for the 'Technische Akustik' exhibition, mentioning that 'in unserer Gruppe

unusual features of the guitars described earlier betray the work of an amateur repairer or restorer with limited knowledge and skills in instrument making. Since the guitars had previously been in Hahn's ownership, the person who carried out this work was presumably Hahn or his associates.

Although Hahn is mentioned as a previous owner of several 'recycled' instruments presented in the museum catalogues by Wackernagel and Henkel, almost no details are given about his possible role in these transformations. Furthermore, the fact that the guitars seem to contain components from various instruments indicates that the person responsible for the modifications must have had access to old instrument parts; such parts may have been lying in abundance in Hahn's workshop, given the quantity and variety of his collection. Interestingly, the photograph showing the two 'recycled' guitars by Hahn among other instruments of the collection, shown in figure 1 of this book, was also included in a book by Hermann Ruth-Sommer published in 1916, ten years after the acquisition of the instruments, in which the author thanked several museums, including the DM, for the permission to publish images of 'valuable old instruments'.[371] Paradoxically, in the foreword of the second edition of his book he also informed potential collectors about issues of authenticity in historic musical instruments, briefly referring to their repair and transformation.[372]

Before the purchase of the Hahn collection in June 1906 the DM owned only 25 instruments, of which less than ten were stringed instruments.[373] The Hahn collection, which included about 170 instruments of all kinds, formed the core of stringed instruments in the DM. Thus, it determined the representation and overall quality of this type of instruments in the DM, as well as future acquisitions of similar specimens. For example, in the case of guitars in the collection of the DM, almost 50% were acquired in 1906 by Hahn. By no means all the instruments originating from Hahn's collection have been modified or falsified, but a considerable number of them, including the guitars shown earlier, contain non-original components, mostly made with low-quality materials and methods, while others seem to have been constructed using parts from old instruments, possibly to be

"Technische Akustik" beabsichtigen wir, einige alte Saiten-Instrumente reparieren bzw. ergänzen zu lassen'. Typed letter from Miller to Haslwanter, 28 March 1906, DMA, VA 1752-2. As evidenced from later correspondence the restoration concerned three Chinese stringed instruments and the planned work included restringing and tuning, as well as a new bridge for one of the instruments, along with an estimation of costs. See the typed letter from Miller to Haslwanter, 3 April 1906, DMA, VA 1752-2. No similar details survive for the instruments repaired by Hahn.

371 The writer intended to show 'some images of valuable old instruments' ('einiger Bilder wertvoller alter Instrumente'). Ruth-Sommer, *Alte Musikinstrumente: Ein Leitfaden für Sammler,* 7. The photograph of the three guitars is presented on p. 33, Table II.

372 'Immerhin haben wir versucht, auf die verschiedenen Zusammenhänge gebührend hinzuweisen, die für den Sammler in Frage kommen – besonders bei "Umarbeitungen" alter Instrumente und bei solchen Stücken, die mehr oder weniger eines "Instandsetzens" bedürfen.' Ruth-Sommer, *Alte Musikinstrumente: Ein Leitfaden für Sammler,* 2nd ed. 1920, 5.

373 The author is thankful to Silke Berdux for this information.

sold as 'display' pieces than as musical instruments.[374] Moreover, the similarities between several instruments from the Hahn collection indicate that they have passed from the same workshop, probably also from the same hands. As has been pointed out 'fakes hunt in packs, they are rarely made as unique specimens, and the fabrications of the same workshop wear a distinct family likeness'.[375]

The question which cannot be answered with certainty is whether Hahn was responsible for these actions or he was himself the victim of other dealers who provided him with supposedly original, but in fact 'recycled', instruments. It is important to mention, for instance, that apart from the sale to the DM, Hahn had sold a number of musical instruments to the Historisches Museum in Basel, including a lyre guitar in 1904 (inventory number 1904.675), a clavichord by Christian Gottlob Huber, Ansbach, 1782, in 1905 (inventory number 1905.86), and a glass harmonica of anonymous manufacture in 1912 (inventory number 1912.487); the original condition and overall quality of these instruments suggests that not all instruments in Hahn's possession were problematic.[376] Nevertheless, there are many more issues worth investigating. For example, how and why had Hahn managed to acquire so many antique instruments and what was his background and expertise in this area? Who were his assistants who may have been involved in the 'transformation' of instruments during this time? What was his clientele and what sort of connections with other antique dealers did he have? Further archival and biographical research on Hahn, which unfortunately could not be carried out during this short project, may possibly answer some of these questions.

But it is often easy to focus on and criticise the actions of a single individual or a particular institution, especially when these can be exposed by the advanced methods of scrutiny and the availability of sources that modern researchers have in hand. However, when a set of motives and rationales extends to the actions of more people then it becomes a phenomenon that needs to be studied more thoroughly. Hahn was not the only person to have provided the DM with 'recycled' instruments in his possession (and the DM was apparently not the only museum to have purchased such instruments); the cases of Otto Haake, Charles Haustont, and Georg Steingräber are equally suspicious. As shown by several examples in this book, and from a preliminary inspection of surviving instruments and archives in the DM, it is obvious that each one of them must have been involved in the 'recycling' of historic musical instruments, and, most importantly, all of them had

374 It is worth noting that the two guitars, as well as DMO 5099, were included in a list of duplicates which the DM prepared in 1911 for a potential exchange in return for other instruments, as evidenced in DMA, VA 1759. Moreover, in 1925 the DM compiled a list of instruments for sale, which included the guitars DMO 5429 and DMO 5430 among several other instruments from the Hahn collection, documented in DMA, VA 1766 and also in DMA, VA 4041.

375 Quoted in Koster, "A Contemporary Example," 96. The author is grateful to Silke Berdux for drawing his attention to this article.

376 The author is grateful to the first anonymous reviewer for sharing this information.

contacts or transactions with the DM involving the acquisition of instruments during the museum's early years. Of course, as in the case of Hahn, it cannot be proved whether they had purchased the instruments in that state from others or they were themselves involved in their transformation. Thus, by looking deeper into the profiles and actions of these persons we could have a clearer picture about the trading and collecting of musical instruments in Munich, and to some extent also in Germany and Europe, in the late nineteenth and early twentieth centuries.

Epilogue

The 'Scholar-in-Residence' research project in the DM provided the opportunity to examine the various changes in the substance, identity and role of historic musical instruments and to discuss their transition from functioning objects to museum artefacts, which is a quite significant, controversial, and often provocative topic. To quote Hellwig, 'the more we get to know about musical instruments the more we are confronted with the fact that very few of the objects of our studies have survived unchanged'.[377] This project examined in detail how the 'recycling' transformations of musical instruments document the multiple alterations of their historical, technical, aesthetic and cultural aspects throughout their lifetime, and how such changes reflect a process of continuous 'recycling' of both materials and values.[378] It is important to note that, just like musical instruments, there has been a considerable 'recycling' of music. For example, music pieces have been frequently adapted or arranged to suit the tastes of new musicians and their audiences, while surviving scores have often been falsified or deceptively attributed to known composers in order to increase their worth.[379] However, this subject needs a separate discussion and analysis which cannot be included in this book.

In addition, the project attempted to identify the various reasons behind the 'recycling' of historic musical instruments and underlined the differences between them, providing a historical overview of the 'recycling' practices used on musical instruments during the last four centuries and listing many representative examples in Europe and North America. Moreover, the project analysed the motives and criteria behind such practices and how these correspond to the ethics and standards in musical instrument collections in the past and now. The examples presented in this book show that as musical tools instruments have constantly been subject to adaption, improvement or modernisation to retain their usability and these

377 Hellwig, "An Example of Lute Restoration," 64.

378 The 'recycling' through modification, improvement or 'cannibalisation' is also common in the history of scientific instruments, as has been shown by the various examples presented in Schaffer, "Easily Cracked," 706–17. The author is thankful to the second anonymous reviewer for bringing this source to his attention.

379 See, for instance, Sadler, "Vincent d'Indy and the Rameau Oeuvres complètes," 415–21, or Anderson et al., "Forgery in the Music Library: A Cautionary Tale," 865–92.

changes can reveal a wealth of information about their acceptance and use in different eras. On the other hand, as collectible or 'musealised' artefacts, instruments have been susceptible to forgery and extensive restoration, which have distorted their original features, often leading researchers to wrong conclusions. In both cases it is necessary to identify the different stages of an instrument's lifetime before the reasons and results of human intervention can be clearly detected and understood. However, this can be quite a complex task because the borders between these stages are sometimes ambiguous.

The project also allowed the investigation of the early history of the musical instrument collection at the DM, which until now remained largely unknown. The results of this research have shed light on the circumstances surrounding the purchase of a collection of musical instruments from Hans Hahn in 1906, which was the first major collection of instruments to be acquired by the DM. In 1905 the newly-founded DM published a 'wish list' of musical instruments required for a permanent exhibition titled 'Technische Akustik'. This 'wish list', as well as the exhibition, which aimed to provide a concise overview of the development of musical instruments through the centuries, largely reflected the evolutionary theories presented in contemporary publications on musical instruments. Interestingly, in the section of plucked stringed instruments, the 'wish list' also included four types of guitars to represent the development of this instrument from the fifteenth to the twentieth centuries. In 1906 the DM was offered for sale a collection of instruments from Adolf Gutsche in Berlin, but in the last minute they decided to buy the collection of Hans Hahn, an instrument manufacturer and collector in Munich, strongly influenced by the advice of Rudolf Gedon, a local antique dealer.

By July 1906 the museum had purchased a whole collection of musical instruments, among them ten guitars, from Hahn. However, the acquired instruments did not correspond to the items in the 'wish list', and, although in surviving documents they are described as 'old' and 'seemingly of the best condition', a considerable number of them have quite unusual features. Moreover, the close inspection of the guitars and other plucked stringed instruments from the Hahn collection has indicated that some of them may have been restored or modified by Hahn in order to be used as 'display' pieces rather than as musical instruments, while others may have been constructed using parts from old instruments, possibly with the intention of deception or forgery. The unusual features and modifications observed on several plucked instruments from the Hahn collection and described in this study, along with references in extant letters to the restoration of instruments by Hahn before and after their acquisition by the DM, indicate that he or his associates may have been responsible for these changes.

Furthermore, the study of the surviving correspondence provided a fascinating insight into the early days of the musical instrument collection of the DM, illustrating the dominant role of musicians and antique dealers in the market of historic instruments, whose expertise was relied on due to lack of sufficient academic publications on the subject. The presented material also revealed significant details regarding the acquisition, documentation, conservation and exhibition practices in museums in Germany and other countries during the early twentieth century. Finally, the project was a starting point for the examination of 'recycled' plucked instruments of the guitar, lute, and cittern families in the DM and other collections, which until now have been given little attention by scholars, although certainly additional examples need to be studied before a more comprehensive view can be obtained. Simultaneously, the project was an important preparatory work for the design of the new permanent exhibition of musical instruments in the DM, since it enabled the further documentation of the collection and the selection of representative artefacts for display. Future research activities could involve the inspection of more instruments and archives concerning Hahn, as well as the other four names mentioned earlier, namely Gutsche, Haake, Haustont and Steingräber, who were active during the early twentieth century. Due to the limited time these investigations were outside of the scope of this project.

Organology is a science that moves forwards by looking backwards, and the examination of surviving specimens is quite important for the understanding of the history and development of musical instruments and music. It is now commonly accepted that most musical instrument collections, especially those formed during the late nineteenth and early centuries, include objects with varying degrees of authenticity, ranging from originals, less original specimens (e.g. ones that have been extensively modified, converted, modernised, restored), copies, reconstructions and replicas, as well as imitations, fakes, and forgeries. The cases presented in this book have shown that a thorough study and comparison with other instruments of the same type or period is crucial for the determination of their provenance, original state and any subsequent alterations.[380] Moreover, as Latcham has stated, 'by investigating musical instruments we are endeavouring to understand the minds of their makers and the concepts and traditions that may have guided them, rather than just the instruments themselves'.[381] However, the case studies presented in this article have shown that by studying extant instruments in collections we sometimes learn more about the practices of instrument dealers and the tastes of collectors in modern times than about historical musical instrument making and performance.

380 The importance of systematic comparison of extant instruments is also underlined in Barnes, "Restoration," 241. The growing importance of scientific methods in the examination and documentation of instruments is also evident in recent or current initiatives, such as the COST Action 'WoodMusICK' (Wooden Musical Instrument Conservation and Knowledge), which aims to promote interdisciplinary collaborations for the research and preservation of wooden musical instruments (see http://woodmusick.org/, accessed 7 March 2016).

381 Latcham, "Soundboards Old & New," 51.

Perhaps the time has come for museums to reconsider the way they collect, preserve, research and exhibit 'recycled' artefacts, which have traditionally been regarded as embarrassing and problematic.[382] It has been argued, for instance, that stringed instruments are 'almost unique in the way they have lent themselves to continued use, repair, restoration and conservation' and that 'the museum as custodian' can offer such instruments 'a new life, one of display and interpretation'.[383] From this perspective, 'recycled' instruments can be effectively used as educational tools for both specialists (musicians, instrument makers, organologists, etc.) and the wider public, which may have a limited, sometimes even prejudiced, understanding of such objects.[384] In his concluding remark on the fakes by Franciolini, Rossi Rognoni has maintained that 'modified instruments should not be regarded as shameful errors of ignorant curators or collectors, but as an important document of a relevant moment in the history of taste and be preserved as such, independently from their aesthetical value'.[385] It is expected that the results of this project will initiate a broader interdisciplinary study which will enhance our experience and awareness of 'recycling' not only regarding historic musical instruments, but also regarding other 'functioning' objects of cultural heritage.

382 This issue is further evident in the fact that there is no standard nomenclature to describe such 'recycled' instruments in online databases, museum catalogues and exhibition texts, which can lead to confusion for the reader. For example, a search for 'lute' in the online database MIMO (Musical Instrument Museums Online, http://www.mimo-international.com/MIMO/, accessed 1 March 2016) produces entries for numerous instruments in different states (e.g. 'guitarised' lutes); these modifications are not always mentioned in the descriptions of each instrument.

383 Kevin et al., "A Musical Instrument fit for a Queen," 18.

384 Over the years museum fakes have become a popular theme in literature, a fact that reflects their appeal to a broad audience. One of the finest fictional stories concerning fake museum artefacts is vividly accounted in Eton, *Triple Take*.

385 Rossi Rognoni, "The 'New Early Instrument' Market in the Time of Leopoldo Franciolini," 7. Frank Bär, curator of musical instruments at the Germanisches Nationalmuseum, Nuremberg, also emphasised the historical value of modified instruments in his paper 'Change as a Rule? About Alterations in Musical Instruments' presented at the joint conference of the Galpin Society, The 'Making the Tudor Viol' Project, and CIMCIM, titled 'Musical Instruments: History, Science and Culture', Bate Collection of Musical Instruments, Oxford, 25 to 29 July 2013.

Appendix

Examination Data

The following table presents the main construction features and dimensions of the guitars DMO 5429, DMO 5430 and DMO 5099 as examined and measured by the author in February and March 2012, and in March 2015. All described materials have been identified only by macroscopic examination.

The main construction features and dimensions (in mm) of three guitars in the Deutsches Museum

Inventory number	5429	5430	5099
Scale length (distance from nut to 12th fret × 2)	528 (264×2, hypothetically)	524 (262×2)	561 (280.5×2)
Distance from nut to bridge (saddle top)	532	530	559
Overall length (including protruding parts)	811 (originally 764)	796	841
Body shape	Pear (figure-of-eight, originally)	Figure-of-eight	Figure-of-eight
Soundboard/back profile	Flat/flat	Flat/slightly arched in centre	Flat/slightly arched
Body length at front/back	354/357	384/386	376/378
Body width at lower bout/ waist/ upper bout of front	247/135/59	246/143/197	282/153/222
Body width at lower bout/ waist/ upper bout of back	246/130/59	243/140/194	284/153/223
Body depth at neck heel/ waist/bottom (including front & back)	54/58/59	59/61/62	64/72/74
Number of parts on soundboard/back/sides	1×1×2 (joined on bottom)	2×1×1	2×1×2 (joined on bottom)
Soundboard material	Spruce	Spruce	Spruce
Back and sides materials	Figured maple, pine (not original)	Figured maple	Figured maple

The main construction features and dimensions (in mm) of three guitars in the Deutsches Museum

Internal bracing type, bars under soundboard/back	Horizontal, 3×1 (originally 3×3)	Horizontal, 3×3	Horizontal, 4×4
Side lining	Bottom only, not kerfed	Bottom only, not kerfed	Bottom and front, not kerfed
Soundhole diameter (D)	60	55	69
Distance from bottom of soundhole to bottom of body	214	204	186
Bridge shape, material and dimensions (W/T/H)	Trapezoid, pine (?) (not original), 71/22-16/15-13	Rectangular, fruitwood, 76/25/4	Mustachio, fruitwood (?), 146/27/12.5
Saddle material and type	No saddle	Nickel silver (?), round	Nickel silver (?), round
String attachment method	Six iron nails	Wooden endpins	Wooden endpins
Distance from bridge (pin centre) to bottom of body	72 (88)	93 (105)	64 (83)
Tailbutton material and dimensions (D/T)	Fruitwood (?), 14×7	Bone, 9×7	Bone, 7.5×8.5
Purfling on soundhole	10 strips of light/dark wood	8 strips of light/dark wood	8 strips of light/dark wood
Purfling on soundboard edges	10 strips of light/dark wood	1 strip of dark wood	8 strips of light/dark wood
Coating on front	Dark orange/brown varnish	No varnish	Yellow varnish
Coating on sides and back	Yellow varnish	Yellow varnish	Yellow varnish
Neck shape and material	C-shape, maple	C-shape, maple	C-shape, maple
Neck-to-body join type and angle	Not original, consisting of two parts (bottom & top) joined to body with screw	Cone, 45°	Cone (with 2 side parts), 45°
Fingerboard length	365 (originally)	324	402
Fingerboard width at nut/body join/end	38/49 (cut)	39/49/51	39/49/53
Fingerboard thickness at nut/body join	2.5×1.5	2.5×2	5×3
Fingerboard material and profile	Fruitwood (?), flat	Fruitwood (?), flat	Fruitwood (?), arched (radius <6")
Neck length from nut to body join (bass side)	265	265	280
Neck thickness at nut/7th fret	17/19	14/16	17/20
Coating on neck and fingerboard	Black	Black	Black

The main construction features and dimensions (in mm) of three guitars in the Deutsches Museum

Fret number and material	11 (originally 16-20 frets), brass	13, bone and brass	20, brass
F1 position (measurements from centre of nut)	29	27 (bone)	32
F2	56	54	60
F3	83.5	81	89
F4	109.5	107	114
F5	134	130 (brass)	139.5
F6	157	153.5	164
F7	179	174	186 (M-o-P dot)
F8	198.5	193	206.5
F9	217.5	211	225
F10	233.5	229	244.5
F11	250	246.5	262.5
F12	264 (hypothetical, since fingerboard is cut at F11)	262	280.5 (M-o-P dot)
F13	NA	277.5	297
F14	NA	NA	312
F15	NA	NA	325
F16	NA	NA	338
F17	NA	NA	351 (M-o-P dot)
F18	NA	NA	363
F19	NA	NA	374
F20	NA	NA	384.5
Head shape and material	Figure-of-eight, maple	Rectangular, maple	Violin scroll (to bass), maple
Neck-to-head join type and angle of head at nut	V-shape, 14°	V-shape, 6°	no join (1 piece), 14°
Headstock length from nut to top	135	139	175
Headstock width at bottom/middle/top	38.5/54/43/68	38.5/37	37/65/40/52
Headstock thickness at bottom/top	10.5×9	11.5×11.5	10×9×7.5
Nut material & dimensions (W/T/H)	Ebony, 38.5×9×6.5	Ebony (?), 39×5×5	Ebony, 40×7×8
Tuning mechanism	6 wooden pegs	6 wooden pegs	6 wooden pegs
Peg hole diameter (D)	9	6	7
Peg material and average dimensions	All pegs missing	Ebony, 57×21.5×8	Ebony, 63×20×9

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Cover

A provisional exhibition of plucked instruments in the early twentieth century at the Deutsches Museum. DMA, CD_65488

A Study of 'Recycled' Guitars

Figure 1 Frontispiece: Detail of DMA, CD_65488
Figure 2 DMA, CD_72432, 434, 433
Figure 3 DMA, CD_72435
Figure 4 DMA, CD_72436
Figure 5 DMA, CD_72439
Figure 6 DMA, CD_72438
Figure 7 DMA, CD_72437
Figure 8 DMA, CD_72440
Figure 9 DMA, CD_72441, 443
Figure 10 © Jutta Esser, Deutsches Museum
Figure 11 DMA, CD_71533, 555, 554
Figure 12 DMA, CD_L_6622_156
Figure 13 © Charles Leski Auctions Pty Ltd, reproduced with permission.
Figure 14 Left: © Muziekinstrumentenmuseum (mim), Brussels, reproduced with permission. Right: © Charles Leski Auctions Pty Ltd, reproduced with permission.
Figure 15 Left: © Musical Instrument Museums Edinburgh (MIMEd), University of Edinburgh, reproduced with permission. Right: DMA, CD_72432
Figure 16 DMA, CD_72445, 447, 446
Figure 17 DMA, CD_72448
Figure 18 DMA, CD_72449
Figure 19 DMA, CD_72451
Figure 20 DMA, CD_72450
Figure 21 DMA, CD_72452
Figure 22 DMA, CD_72453
Figure 23 © Bildarchiv Foto Marburg/Teufel; Filser, reproduced with permission.
Figure 24 DMA, CD_72427, 429, 428
Figure 25 DMA, CD_72430
Figure 26 Left: DMA, CD_72427, Right: © Bildagentur für Kunst, Kultur und Geschichte (bpk), reproduced with permission.
Figure 27 DMA, CD_72456, 458, 457
Figure 28 DMA, CD_71556, 558, 557
Figure 29 DMA, CD_71563
Figure 30 DMA, CD_72++444
Figure 31 DMA, CD_72454
Figure 32 DMA, CD_72455
Figure 33 DMA, CD_72431
Figure 34 DMA, CD_72424, 426, 425

Provenance and Acquisition History

Figure 35 Frontispiece: DMA, CD_72694
Figure 36 Deutsches Museum Bibliothek, *Zeitschrift für Instrumentenbau* 26, no. 15 (1906): p. 457
Figure 37 DMA, VA 1752-2, CD_72695
Figure 38 DMA, CD_72693

Musical Instruments as Changing Artefacts

Figure 39 Frontispiece: DMA, CD_71567
Figure 40 DMA, CD_71568, 570, 569
Figure 41 © Birmingham Conservatoire Historical Instrument Collection, Birmingham Conservatoire, Birmingham City University, reproduced with permission.
Figure 42 DMA, CD_72459, 461, 460
Figure 43 DMA, CD_71559, 561, 560
Figure 44 DMA, CD_71562

Figure 45 DMA, CD_72466, 468, 467
Figure 46 DMA, CD_72469

Figure 47 © Danish Music Museum – Musikhistorisk Museum & The Carl Claudius Collection, reproduced with permission.
Figure 48 DMA, CD_72407, 410, 408
Figure 49 DMA, CD_72412, 413
Figure 50 DMA, CD_72411
Figure 51 Left: DMA, CD_72407, Right: © Danish Music Museum – Musikhistorisk Museum & The Carl Claudius Collection, reproduced with permission.
Figure 52 DMA, CD_72403, 406, 404
Figure 53 DMA, CD_71564, 566, 565
Figure 54 DMA, CD_71567
Figure 55 DMA, CD_72462, 464, 463
Figure 56 DMA, CD_72465

Index

The following index includes the names of individuals, families or firms mentioned in this book. Where no individual member is mentioned in the text, the family name or father (I) and son (II) with a same first name are indexed. In some cases it has not been possible to identify the first names.