Panel session

Organology and the others: cross-disciplinary methods applied to the study of musical instruments

Gabriele Rossi Rognoni (moderator), Eliot Bates, Flora Dennis, Emily I. Dolan, and Eric de Visscher

Methodological discussions in the field of organology have been rare and discontinuous. An attempt to present a snapshot of current and new approaches was undertaken by Ardal Powell in Vermillion (SD) in 2006 as part of a previous joint meeting of AMIS and Galpin. On that occasion, the opening paper highlighted how ‘new practices in musical instrument studies broadly parallel recent developments in other disciplines, and underlying them is a shift that other disciplines have made far more consciously and with fuller discussion’. Ten years later, some of the approaches discussed then have been tested and specifically developed in our field and are beginning to show increasingly convincing results. Among them are approaches inspired by Science and Technology Studies (STS: the multi-disciplinary approach to the study of science and technology as socially embedded enterprises), Actor Network Theory (an approach first proposed by Michel Callon and Bruno Latour in the 1980s), Material Culture Studies (as the study of the relationship between people and objects), and the broader world of non-musical museums and object interpretation. However, most of the scholarship developed in these contexts has been published outside the typical organological venues and might have escaped the attention of a large number of colleagues. The adoption of approaches drawn from disciplines outside the study of musical instruments is in fact one of the most relevant trends within organology that has developed over the past decade. Its growth is already increasing the impact of studies on musical instruments beyond the domain of organology and musicology thanks to the adoption of vocabularies, research questions, and methodologies that are relevant and understandable to a broader audience. The proposed panel provides a critical overview of these fields and research methods. It is envisioned as a 90-minute session (5’ intro, 10-15’ per speaker without slides, 20’ discussion, 5’ closing remarks and thanks) that brings together colleagues who have been particularly active in developing the above described approaches in the specific domain of organology. Papers will be pre-circulated, in order to facilitate discussion and debate. Each will offer an overview of a particular methodological perspective and will reflect on the questions, challenges, and possibilities it raises for organology.

Gabriele Rossi Rognoni is Curator at the Royal College of Music Museum, London. He was Curator of the Musical Instrument Department of the Galleria dell’Accademia in Florence and adjunct professor in History of Music and Musical Instruments at the

Eliot Bates is a scholar specializing in the development of digital music technologies, and the transformations to instrumental performance practice that accompanied the adoption of computer-based recording techniques. He is a lecturer in ethnomusicology and popular music studies at the University of Birmingham. His most recent book is *Digital Tradition: Arrangement and Labor in Istanbul's Recording Studio Culture*. In addition to scholarly interests, for 20 years Eliot has been a performer and recording artist on the oud. Dr Flora Dennis (Senior Lecturer in Art History, University of Sussex) works on relationships between sound, music, images and objects in fifteenth- and sixteenth-century Italy. Co-curator of the V&A exhibition *At Home in Renaissance Italy (2006-7)*, she has been awarded research fellowships by the AHRC, Villa I Tatti (Florence), and the Italian Academy, Columbia University (New York). She is currently completing a monograph about music and the visual and material culture of the domestic sphere.

After studying philosophy, linguistics and music, Eric de Visscher has been artistic director of the Ars Musica Festival in Brussels. In 1997, he became Artistic Director of IRCAM, the musical institute of the Centre Pompidou in Paris. From 2006 to 2016, he was Director of the Musée de la musique (Philharmonie de Paris). He is now Research Fellow at the Victoria & Albert Museum (London). He has published in several magazines and exhibition catalogues, notably on the relations between visual arts and music.

Emily I. Dolan (Harvard University) works on the music of the late 18th and 19th centuries. She focuses on issues of orchestration, aesthetics, and instrumentality, exploring in the interactions between music, science, and technology. Her first book, *The Orchestral Revolution: Haydn and the Technologies of Timbre*, was published by Cambridge University Press in 2013. Currently, Dolan is working on her second book, *Instruments and Order*, and a collaborative project on timbre for Oxford Handbooks Online.

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**Papers**

**The Keyed Trumpet in European Sacred Music (c 1815-1846)**

**Robert Apple**

At last year's AMIS Annual meeting in Vermillion, SD, I presented a paper which brought to light 220 previously unresearched pieces that are scored for the keyed trumpet which date from the 1820s to the 1840s. The rediscovery of these pieces calls into question several of the conclusions and assumptions that brass scholars have previously made in regards to the keyed trumpet; several of which I addressed in my previous paper.

One of the major conclusions that musicologists have made in regards to the keyed trumpet is that it was mainly used by solo virtuosos, in Austro-Bohemian military bands, and in the Italian opera pit. While my research has uncovered new examples of music from each of these spheres, 55% of the surviving music that I have cataloged to date is sacred music that features the keyed trumpet. The fact that this sacred music vastly outnumbers the secular pieces that make use of the keyed trumpet points to the reality that the church was one of the most important venues, if not the most important venue, where the keyed trumpet was employed during this period. Also, given that, unlike the concert hall or opera, the church was a musical venue that one could attend without charge, and one that most people visited on a weekly basis, it is safe to conclude that the keyed trumpet was more commonly heard by a much wider audience than we have previously thought.

While I briefly touched on this church repertory in my last presentation, I believe that it is deserving of a dedicated examination due to its size and importance. While most of this repertory was composed for Catholic services, a notable minority is Protestant church music, and it consists of large works such as Masses, smaller works such as Catholic hymns and Protestant chorales, and sacred arias for solo voice and keyed trumpet obligato. These works were also by no means only confined to performance within the church itself but were also employed outside for various occasions, such as music for feast day processions for wind band and choir, and purely instrumental pieces, such as Trauermarsches. My goal in undertaking a more substantial study of this church music is to help paint a better picture of how the keyed trumpet was being used and heard by Europeans in their everyday lives and to help redefine the instrument's place in music history.

Robert Apple earned his Bachelors of Music in trumpet performance with a minor in history from the University of Central Florida in 2011 and his Masters of Music in trumpet performance from the University of South Florida in 2013. He is currently studying with Doctors Janet Page, Kenneth Kreitner, and David Spencer at the Rudi E. Scheidt School of Music, University of Memphis, where he is a PhD candidate in musicology.
'Instrument of the Future': the Ondes Martenot at the 1937 Exposition

Peter Asimov

Central to the elaborate musical offerings at the Exposition Internationale des arts et techniques dans la vie moderne (Paris, 1937) was a sensational new instrument: the Ondes Martenot. This musical phenomenon, invented by Maurice Martenot and subsidised by the French state, was touted as 'l'instrument de l'avenir' by Olivier Messiaen. Cast as a uniquely apt synthesis of the Exposition's twin themes of “art” and “technology” in modern life, the Ondes Martenot became an emblem of the values with which France sought to identify at the World's Fair.

The Ondes Martenot was showcased in a range of the Exposition's musical activities: via specially commissioned compositions accompanying the Fêtes de la lumière (nightly spectacles of light and water cast upon the Seine); via daily demonstrations featuring arrangements of classic works by Debussy, Franck, and Bach rendered by an iconic Ondes “orchestra” comprising eight women robed in mauve; and via performances for and by children of adaptations of non-Western melodies. Ultimately the instrument's enthusiastic reception by organisers and attendees alike earned its inventor a Grand Prix de l'exposition mondiale.

Despite the Ondes's abundant success following its 1937 appearances, minimal critical attention has been paid to the instrument itself. My paper responds to John Tresch and Emily Dolan's call for an “ethics of instruments” by examining the material characteristics of the Ondes Martenot and the nature of its wide-ranging exploits, using the 1937 Exposition as a rich setting for such a study. Aided by archival and press resources, I analyse the instrument's visual design and its many sonic capacities alongside the performances and repertoires for which it was deployed and its orchestrated role within those performances. This web of mediations reveals that the Ondes Martenot itself embodied a distinctly French union (or is it a blurring?) of “domestic” and “exotic”, extending beyond the realm of composition and into instrument design and performance presentation. Within the context of the Exposition spectacle, where myriad visual and aural aesthetics are vitally codependent, organological and musicological perspectives thus contribute in dialogue to a greater understanding of French interwar musical culture.

Originally from New York City, Peter Asimov is a PhD student and Gates Scholar at Clare College, University of Cambridge, and has degrees from the University of Oxford and Brown University. He is an accomplished pianist and chamber musician, and takes regular Ondes Martenot lessons with Nathalie Forget of the Conservatoire de Paris.

The bagpiper's arm. Controlling the bag: a multidimensional study

Cassandre Balosso-Bardin, Patricio de La Cuadra, Augustin Ernoult and Benont Fabre

Despite their many organological and esthetical differences, bagpipes are all played thanks to the movement of the arm on a bag, creating enough pressure to activate the reeds and produce sound. Repertoires, scales and registers vary according to the instruments and their musical cultures, going from a fully chromatic scale over two octaves (such as the uilleann pipes from Ireland) to a diatonic scale within a range of a sixth (such as the Greek tsampona or the Tunisian mizwid). Unlike fingerings and melodic ornamentation, the musician's arm technique is rarely discussed in bagpipe literature, nor is it particularly verbalised during a piper's tuition. According to Simon McKerrell, 'each player learns it individually and develops their own technique' (2011). Despite this lack of verbalisation, bagpipe experts seem to agree that the breathing technique and the bag are essential elements of their playing (Rice 2011, McKerrell 2011).

In this research, we endeavour to understand how the bagpiper exerts control on his/her bag. Understanding this may enhance our comprehension of the importance of the arm in a musical context. Our main questions are: what role does the arm have in the control of the instrument? Is the bag controlled with musical intention? Leading from this, further questions can be asked such as how does this influence the instrument's repertoire and the musician's performance?

To answer these questions, we will present data collected during three experiments in different cultural contexts and with musicians of different levels. Using acoustic equipment, we were able to measure the insufflated airflow, the pressure in the bag, the angle of the arm as well as make videos and record the sound.
In order to complement our scientific data, we carried out an online questionnaire which allowed us to gather information on the perception of musicians and their subjective impressions on the control of their instrument. With acoustic measurements, qualitative data and an ethnomusicological framework, this research offers a multidimensional and interdisciplinary study of the control of the bagpipe's bag.

Cassandra Balosso-Bardin is a lecturer in Music at the University of Lincoln. She completed a PhD in ethnomusicology at SOAS in 2015, focusing on the Mallorcan bagpipes. In 2016, she worked as a postdoctoral researcher at Sorbonnes-Universités, Paris, within the interdisciplinary Geste-Acoustique-Musique research project, for which she worked closely with the Lutherie-Acoustique-Musique team (Institut Jean le Rond d'Alembert, UPMC). She is also the founder and director of the International Bagpipe Organisation.

Mechanised Shawms: Comparing the Development of the Tenora, Suona and Jangsaenap

Núria Bonet

The Catalan tenora, the Chinese tenor keyed suona and the Korean jangsaenap are mechanised shawms of considerable length (c 65-86 cm) with a metal bell. They are remarkably similar visually and in sound, producing a similar nasal timbre best suited to outdoor playing. While the tenora was established around 1849 as a keyed version of the tenor xeremias, the keyed suona and jangsaenap appeared during the early 20th-century as mechanised versions of the suona and taepyongso respectively; their development is largely due to the need for an extended range and chromaticism to play in ensembles. However, the success of each instrument has been very different. The tenora and its treble counterpart, the tible, have become widely accepted as symbols of Catalan identity and tradition in their short 160-year history. The family of keyed suonas (piccolo, soprano, alto, tenor, bass) is considered to be of 'conservatoire-style' (also called gaeliang yueqi which means 'improved instruments') and therefore dismissed as inauthentic in the folk music setting; perhaps this is the reason for the little research done on this topic. The jangsaenap has known a similar fate; mostly played in North Korea, it has received little academic attention. This paper will compare these instruments from an organological but also historical and political point of view. The history of these mechanised shawms demonstrates the tension between the preservation of musical traditions, the modernisation of instruments and the creation of 'invented traditions'.

Núria is a PhD student at Plymouth University under the supervision of Prof Eduardo Miranda and Alexis Kirke. Her research looks at the use of sonification methods in music composition; her varied music has been performed by Psappha, Lucilin, and Xiganza amongst others, in locations ranging from a disused cotton mill to an underground fortification and the jungle at the Eden Project. In her spare time, she researches and talks about Catalan folk instruments.

Glass at Risk: Stability Issues in Claude Laurent's 19th Century Glass Flutes

Lynn Brostoff, Tana Villafana and Carol Lynn Ward-Bamford

The Library of Congress holds a collection of 17 rare glass flutes made in Paris by Claude Laurent, one flute by his protégé Breton, and a piccolo by Charly, a contemporary. The Laurent instruments range in date from 1807 to 1844 and vary in style from simple tubes with frosted exteriors to highly decorative flutes with jeweled keys and fluting. They are part of the renowned Dayton C. Miller Flute Collection, which contains nearly 1,700 flutes and related materials; they also represent the world's largest holding of Laurent flutes. The collection is highlighted by a particularly beautiful Laurent flute that was made as a gift for President James Madison.

Previous presentation of the Library's collaborative study into the history, manufacture and condition issues among the Laurent flutes detailed new historical information and disclosed for the first time that Laurent not only made flutes “en cristal,” as patented in 1806, but fabricated from an unstable potash glass formulation. This paper will highlight new results stemming from artificial aging of model glass samples based on different compositions of the Laurent flutes that refine our understanding of their relative stability or instability. In particular, the talk will present progress on a new initiative (supported by the NEH) that attempts to discover unique markers for typical 19th century glass compositions found in historical contexts.
collections by analyzing model and historical glass with ultraviolet (UV) light examination, fluorescence microscopy, steady-state emission spectroscopy, and pH testing. Results to date indicate that UV examination using short (255 nm) and long (355 nm) wave excitation immediately distinguishes between Laurent's leaded and potash glasses. Under shortwave illumination, the leaded glass glows bright blue and potash glass is a weak yellow. Initial findings also indicate that areas of degradation in potash glass have a distinct blue emission under longwave excitation, in addition to the green emission of non-degraded glass. Similar trends are also seen at the micro-scale using fluorescence microscopy. These results indicate that it may be possible to identify “at risk” glasses among Laurent flutes and other objects using an affordable and accessible black light wand equipped with appropriate filters, even before degradation is evident. We will also present our methodology for capturing the data in open access platforms intended to aid in the study and development of best practices for the care of these and other glass artifacts, including the question of performance or practice on historical glass flutes.

Lynn B. Brostoff holds a Masters Degree in Polymer Materials Science and a Ph.D. in Chemistry. In addition, Lynn holds a Masters Degree in Art History and a Certificate of Conservation with emphasis in Paper Conservation, the completion of which led to several years working as a paper conservator. For the last 25 years, Lynn has worked as a conservation scientist at leading museums and libraries, including the Metropolitan Museum of Art in New York, and the National Gallery of Art, the Smithsonian's Museum Conservation Institute, and the Library of Congress (LC) in Washington, DC, where she is currently a Senior Scientist. Lynn is Analytical Service Liaison at the Library; her current research focuses on verdigris pigment, iron gall ink, deterioration in 19th century glass.

Carol Lynn Ward-Bamford is a flutist and since 1993, has worked as Music Specialist and Curator of Musical Instruments at the Library of Congress Music Division. She holds degrees in music, performance on the flute, and archives management from Tufts University, the University of North Carolina, Chapel Hill, and Simmons College, and has studied flute with Kenneth Scutt, Thomas Nyfenger, Brooks de Wetter-Smith, Robert Stallman, Michel Deboest, and James Galway. Ms. Ward-Bamford oversees the Library's holdings of approximately 2,000 musical instruments where the instruments are maintained for study, performance and exhibit. Recent public talks on Public radio, webcast or televised include Concerts with Bill McGlaughlin, Stradivari, Stringed Instruments and Bows, Perumambuco Conservation, Stradivari Cellos, Bowmaking, The Travails of Musicians and the Ivory Ban, and recent exhibits on Flutes in the Dayton C. Miller Collection, Whittal Pavilion Collection, Treasures at the Library of Congress, Kislak Collection, Cultures and History of America, A Collector's Cabinet, Judith Leyster, and The American Violin. Tara Villafana is a chemist at the Library of Congress, focusing on non-invasive analytical techniques for studying organic materials. She received her PhD in chemistry from Duke University in 2015, having spent five years forging collaborations between Duke, the North Carolina Museum of Art, and the National Gallery of Art to apply nonlinear 3D chemical imaging to paintings and other artists' materials.

Musical Instruments and Ensembles in the Buddhist “Western Paradise”: Images from the Mogao Grottoes

Stewart Carter

From c 366 C.E. to 1300 in an oasis on the ancient Silk Road near Dunhuang, China, Buddhist monks dug nearly 1,000 caves in the face of a cliff above the Daquan River. The ceilings and walls of approximately half of these caves are decorated with Buddhist paintings, collectively including some 4,000 images of musical instruments. Many of these images are connected with the Buddhist concept of the Western Paradise, an important aspect of Mahayana or “Pure Land” Buddhism, a complex of religious practices that began in India but were also popular in Kashmir and Central Asia. From there they migrated to China along the Silk Road as early as the second century C.E., at which time many of the Pure Land sutras were translated into Chinese languages.

According to the Longer Sukhāvatīvyūha Sūtra, the Western Paradise is a land of beauty that surpasses all other realms. It is said to be inhabited by many gods, men, flowers, fruits, and musical instruments, and adorned with wish-granting trees where rare birds come to rest. Entering the Western Paradise is popularly regarded as the equivalent of attaining Enlightenment. The lavishly decorated Mogao Grottoes were designed to serve two central aspects of the Pure Land tradition, meditation and visualization. Though they vary considerably in size, few exceed twenty meters in width. They were conceived as “cave temples” where monks could worship and meditate. Images of the Western Paradise in the caves facilitated both worship and meditation.

My paper focuses on images of symmetrically arranged instrumental ensembles accompanying dancers. These images offer snapshots of Chinese musical practices during the Tang Dynasty (618-907), illustrating
the performance practices and structure of contemporary musical instruments. They further demonstrate how these ensembles and instruments relate to the concepts of the Pure Land and the Western Paradise.

Stewart Carter recently published *The Trombone in the Renaissance: A History in Pictures and Documents* (Pendragon). He is Editor of *The Historic Brass Society Journal* and co-editor of *Instruments, Ensembles, and Repertoire: Essays in Honour of Keith Polk* (Brepols). He is Past-President of AMIS and of the Society for Seventeenth-Century Music. He currently serves as Chair of the Department of Music at Wake Forest University.

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**“The Don Giovanni of wind instruments”: Flute-playing, Masculinity, and English Nationalism in the Georgian era**

**Lidia Chang**

Rarely is the first consideration of the young man, in the choice of an instrument, the abstract one of utility or public pleasure but [...] how he will look playing ... Armed with this deadly instrument, and accoutered point-device, the flautist makes his attack upon the principal beauty of the evening party, and happy is the victim if she is made an honest woman of. The flute [] has therefore a reputation not entirely musical. It is the Don Giovanni of wind instruments. (The British Minstrel, 1843)

There is no question among flute historians that the peak of that instrument's popularity occurred in England during the Georgian era, when an influx of German flute makers into the country made the instrument cheap and widely available. However, there has been little attempt to reconcile the flute's obvious popularity among English men of the middle and upper classes with the longstanding social restrictions that forbade such men from being musical. As the above quotation demonstrates, flute-playing men were often the objects of derision for their supposed vanity and their unsavory seduction of women, and yet during this same period the flute's popularity among wealthy and educated men skyrocketed. In this paper, I will examine the way the German flute made its way into English musical culture, demonstrating that its portability and sociality, in addition to its association with the English nobility, made the flute uniquely popular among English men in spite of the longstanding taboo surrounding male music-making in England. Indeed, I argue that the flute became a tool men used to actively circumvent societal restrictions placed on their music-making. In pursuing these claims, I will examine the evolution of flute design by English flute-makers through the Napoleonic wars, as well as a new school of flute playing pioneered by the English musician Charles Nicholson. This new performance style helped to alleviate longstanding cultural anxieties about the feminizing danger music supposedly posed to men, and it subsequently ushered in a new era in which middle and upper class English men could become well respected professional musicians in their own country. Ultimately, I argue that the flute came to be associated not only with traditional masculinity but with English nationalism itself.

Lidia Chang earned her Master's in Historical Performance on the Baroque flute at McGill's Schulich School of Music, and has recently completed a Masters in Historical Musicology at the University of Massachusetts. Her research focuses on the intersection of literature, gender, aesthetics, and performance practices in the long nineteenth century. Lidia is currently pursuing a PhD in Musicology at the City University of New York.

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**3D printing, musical instruments, and the Boosey and Hawkes Archive**

**Stephen Cottrell and Jocelyn Howell**

The reproduction of historic mouthpieces and other component parts usually depends on the skill of a small number of craftsmen, using tools and casting techniques, and is a detailed and lengthy process. 3D printing offers an alternative method of producing such parts, particularly for woodwind and brass instruments, and this technology has attracted increasing interest from both musicologists and performing musicians. This approach normally relies on scanning extant parts, using a CAT scanner for example, and converting the image into information that can be read and reproduced by a 3D printer.

In this paper we report on a project using a different methodology, which investigated the feasibility of using manufacturers' historical technical drawings to reproduce these replacement parts. Appropriate plans of two clarinet mouthpieces, a barrel and a bell were identified in the Boosey & Hawkes archive at the Horniman
Museum. Computer Aided Design (CAD) models of the clarinet parts were then created from the detailed measurements on the drawings, following which the information was similarly converted in order to be read by a 3D printer. These files were then used on different printers to compare the versions they produced. The parts, including two mouthpieces appropriate for the iconic Boosey & Hawkes '1010' clarinet model, were successfully printed using four different printers and materials. The printed parts all functioned effectively, and the best parts compared favourably with similar extant mouthpieces, suggesting that such parts can be generated in this way in the future, particularly in situations where plans exist but no surviving parts can be identified. The project proved that it is possible to 3D print cost-effective, usable clarinet mouthpieces, barrels and bells from archival technical drawings. Approaches such as these have substantial implications for non-invasive methods of reproduction in relation to copying historic instruments or instrument parts, since examples held in museum collections are often only available for examination and not for practical use. This presentation will demonstrate in more detail the results and implications of this particular project, and will include a short practical demonstration of the printed 3D parts on instruments similar to those for which the original parts (and their technical drawings) were intended.

Stephen Cottrell is Professor of Music at City, University of London. His research encompasses three inter-related areas: ethnographic approaches to musicians and music-making, particularly within the Western art music tradition; the study of musical instruments, especially the saxophone; and the study of musical performance. His publications include Professional Music-making in London (2004) and The Saxophone (2012). During a previous freelance career spanning nearly two decades he earned an international reputation as a saxophonist performing contemporary music.

Jocelyn Howell studied clarinet at Trinity College of Music (London) and completed her masters with distinction in clarinet performance under David Campbell at Canterbury Christ Church University, Kent. She has recently been awarded a PhD for her thesis, Boosey & Hawkes: The Rise and Fall of a Wind Instrument Manufacturing Empire - her research into the history of Boosey & Hawkes and related musical instrument companies funded by an Arts and Humanities Research Council collaborative doctoral award at City University (London) and the Horniman Museum. She has contributed to the New Grove Dictionary of Musical Instruments and is writing entries for Cambridge Encyclopedia of Brass Instruments. Jocelyn is currently completing an AHRC-funded post-doctoral project, concerning 3D printing, musical instrument components, and the Boosey & Hawkes Archive.

'Epinette a l'octave': French Keyboard Instruments at Octave Pitch

Edward Dewhirst

There is a rich history of stringed keyboard instrument building in France and 8-foot pitch eighteenth century French harpsichords are particularly popular with modern performers. However, instruments which sound an octave higher than normal, at octave pitch, have been over-looked in modern research and are seldom used in modern performance. Using historic manuscripts and images, and analysis of literary sources and surviving instruments, the picture of these over-looked instruments will be revealed. The references to the earliest documented stringed keyboard instrument in France, the eschequier, from the late fourteenth and early fifteenth centuries will be analysed and suggestions made regarding its likely design and pitch. This will be followed by analysis of the c.1440 manuscript of Henri Arnault de Zwolle and the likely pitch and design of the earliest French clavichords, virginals and harpsichords. Sixteenth and seventeenth century references in France to epinettes are numerous and will be analysed to expose the prevalence of small high-pitch stringed keyboard instruments in use in this period. A likely relationship to foreign keyboard instrument building, the terminology for such instruments and the musicians who owned them will be discussed. The principal source of information regarding early seventeenth century French virginals, the 1636 treatise Harmonic Universelle by Marin Mersenne, will be analysed in detail to reveal the construction of such instruments. There are also several surviving French octave-pitch virginals from the seventeenth century and a survey of these instruments will illuminate the different types and pitches of small high-pitch stringed keyboard instrument available in France in this period. The importance of octave pitch will be further illuminated with discussion of the octave-pitch register in seventeenth century 8-foot harpsichords and the likely use of such registers.

Eighteenth century French harpsichords at 8-foot pitch are well known to performers and audiences but there are also several surviving eighteenth-century octave-pitch virginals and harpsichords and literary references to such instruments from this period. A survey of these instruments and references will be presented to understand the different types and pitches of small high-pitch stringed keyboard instrument available in

http://www.euchmi.ed.ac.uk/gxsta.html
France in this period along with their construction and ultimate decline. The musician in times past invariably has access to a range of types and pitches of stringed keyboard instrument of which octave pitch was a prominent variety.

Edward is a specialist in historic keyboard instruments and plays the organ, harpsichord and piano. He recently submitted his PhD thesis entitled 'Stringed Keyboard Instruments at Nominal Octave Pitch' at the University of Edinburgh which was funded by the Arts and Humanities Research Council. He studied for his Bachelor and Masters degrees in Music at the University of Edinburgh and was also a tutor in music there during his time as a doctoral student.

**Community Building: The Laterna is Twentieth-Century Greek Culture**

Maxine Fawcett-Yeske

Of the many rich musical traditions in Greece, one finds little written about the portable barrel piano known as the laterna. The laterna did not originate as a Greek instrument. Barrel pianos of various types had their origins in England, Switzerland, Italy, and Turkey, among other places. Turkish music scholar Cemal Ünlü suggests that lateras first appeared in Istanbul at the close of the nineteenth century. These lateras were programmed to play waltzes and Italian melodies (sometimes arias from operas, among other selections.) Many of the laterna masters of this era in fact migrated to Greece after the population exchange of 1923. Papadopoulos estimates that by 1940 there were approximately 40,000 laternas in Athens and Piraeus, with an equal number likely in Thessaloniki. Perhaps its association with street musicians and immigrant groups has diminished the laterna's significance to some scholars. Yet drawing from an ethnomusicological perspective or even from the discipline of community planning, one can argue for the laterna's importance in the history of Greek culture. The public square, or plateia, is very important in Greek culture, serving a variety of functions both in rural and urban areas. For planning scholar Lucas Gaeta, Greece's history of the public space shows us the origins of democracy. The contemporary plateia, like an ancient theater, may play out community dramas for those sitting in cafes sipping coffee or shopping in stores that surround the square. At any time of the day or evening it is the perfect location for the laterna player to gather a crowd. Like a wandering bard, the laterna player also transports music from one residential neighborhood to another. He is xenos, stranger and guest, bringing news of the rest of the city, providing music that relates one neighborhood to another and to the city at large, bringing together members of specific neighborhoods into existence as community. The laterna's prominence in several mid-twentieth century Greek films suggests a popular culture awareness of its significance in people's lives. We examine, albeit briefly, the films “Laterna, Poverty, and Carnation” and “Never on a Sunday” for this characteristic. Thus, in this paper, we provide a technical description and brief history of the laterna and consider the musical, cinematic, and metaphorical importance of the instrument and the compositions in its repertoire to twentieth-century Greece.

This paper is the collaboration of three scholars: musicologist and ethnomusicologist, Dr. Maxine Fawcett-Yeske; Panagiotis Statthopoulos, mechanical engineer, city planner, and librarian of Greek descent; and Dr. Rick Cypert, a college English Professor who teaches classes in ancient rhetoric and Greek dramas. Dr. Maxine Fawcett-Yeske holds a Ph.D. in Music and teaches at the United States Air Force Academy in Colorado Springs.

**Finch-Hatton MS 2133. Towards a 17th-century English Grove?**

Michael Fleming

We have become accustomed to systematic approaches to describing instruments. The encyclopedic works of Praetorius and Merseme are fundamental sources for organology and have become as indispensable as they are familiar. But there is little evidence of an appetite for such material in early modern England. Discussions of instruments are rare both in published works and in private correspondence. Mentions of instruments lack any discussion, or even any mention, of the details that are of concern to organologists. They typically refer only to a single species of instrument, and they focus on their use rather than the instruments themselves. James Talbot's famous late 17th-century assemblage of information about instruments was not in any sort of national tradition.
This paper provides a brief description and analysis of a short and little-known document that is unconnected with Talbot and shows that his interest was not unique in England. The date this document was compiled is crucial for establishing its ultimate importance. If it can be shown to be relatively early, it would necessitate some refinements to instrument history, whereas if it is comparatively late, it demonstrates what would appear to be an unusual antiquarian interest in the obscure and the obsolete.

After university, Michael Fleming worked for Goble on early keyboard instruments (1974-79). As a self-employed maker, he attracted a national prize and an international clientele. He was awarded a PhD for his research into English viol-making (2001). He has produced The Galpin Society Journal since 2004 (editor 2005-09). His publications include the viol chapter in the catalogue of instruments in the Ashmolean Museum (2011), and the book Early English Viols: Instruments, Makers and Music (2017).

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**Lost and Found: Simon Hermstedt's clarinet**

**Heike Fricke**

The German clarinettist Johann Simon Hermstedt (1778-1846) started his musical career in 1799. He was a music director, chamber musician, and chapel master in the well-known court music of Sondershausen in Thuringia. The duke of Sondershausen, Günther Friedrich Carl I., was so impressed by Hermstedt's clarinet playing that he decided to take clarinet lessons with the virtuoso. Hermstedt's effective period thus falls into an era in which the clarinet just began to develop as a new instrument in the symphony orchestra. It was the time when Franz Tausch founded a Conservatory for wind instruments in Berlin, the time when Heinrich Baerman made a sensation as a clarinetist, and the time when Iwan Müller developed a thorough new concept for the instrument. Also Hermstedt was in need of an improvement of the instrument, for Louis Spohr had given him a concerto (C minor op. 26) that “seemed to be unplayable” as Spohr states in the preface of the first print of the Concerto. Furthermore, in this preface Spohr describes all the improvements that were initiated by Hermstedt and the instrument maker Johann Heinrich Gottlieb Streitwolf (1779-1837) in Göttingen in order to give an in-tune performance of this concerto. This paper will describe Hermstedt's instruments using contemporary sources. As the descendants of Simon Hermstedt gave recently his personal instrument, a clarinet in A by Streitwolf, to the German clarinet virtuoso Sabine Meyer the author was able to examine this very clarinet, which was so far a missing link in the history of the instrument. This paper will dwell upon the features of this instrument, which is surviving with its original mouthpiece, reeds and case and compare it to the surviving Streitwolf clarinet (979) in the Musical Instruments Museums Edinburg.

Heike Fricke prepared several exhibitions for the Museum for Musical Instruments in Berlin including Faszination Klavier and Faszination Klarinette. She catalogued the clarinets in the Shackleton Collection at the University of Edinburgh and the war losses of the Berlin musical instruments museum. Heike has been awarded by the New York Metropolitan Museum of Art an Andrew W. Mellon Fellowship. She published several books on the history of the clarinet and wrote for Die Musik in Geschichte und Gegenwart, Beethoven Lexikon, Geschichte der Musik im 20. Jahrhundert, and Mozart-Studien. Since 2009 she is the editor of Rohrblatt, the German professional journal for oboe, clarinet, bassoon and saxophone.

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**Geometry and conjecture: designing a 'new' 16th-century virginal**

**David Gerrard**

This presentation discusses the geometrical methods and practical choices involved in reconstructing an early keyboard instrument at a pitch level for which there is no direct exemplar - in this case, a mid-16th-century English virginal sounding a fourth above written pitch (i.e. the 'organ pitch' of the period). Such a hypothetical instrument must be rooted as deeply as possible in the practice embodied by relevant extant instruments, yet its creation inevitably requires a certain degree of licence. Surviving later English virginals illustrate some of the ways in which individual makers/workshops varied their own designs and, as will be demonstrated, many of the inherently flexible layout practices seen in these instruments allow for the creation of plausible new designs in the same tradition. Similarly, historically-
employed building techniques and ordering of construction operations enable a coherent design to arise 'on the bench' without recourse to drawings or complex measurements. The presentation will include a demonstration of the completed instrument, with musical examples drawn from contemporary sources that imply a keyboard of this type and pitch, and which first inspired this process of reconstruction.

David Gerrard is a PhD student and tutor at the University of Edinburgh, funded by the Arts and Humanities Research Council. Formerly organ scholar of Canterbury Cathedral and Magdalen College, Oxford, and assistant organist of Paisley Abbey, he holds degrees from Oxford and Edinburgh. Having worked extensively with Oxford’s Bate Collection and Edinburgh’s Russell and Mirrey Collections, David has given recitals on many significant historical harpsichords and clavichords.

Con voce argentina: sound descriptions and voicing parameters for Italian organ pipes from Renaissance to Baroque

Massimiliano Guido

Voicing is the final and more delicate act in the process of organ building, when the pipe is slightly adjusted in order to sound at its best. This research examines a variety of interrelated sources and elaborates on the sound concept typical of the late Renaissance in Italy. This can be summarized as a singing vocal quality, where the pipe speaks with full air and the formants are given full strength. The result is a clear silvery voice (voce argentina), balanced according to the dimension of the church, as stated in new archival findings such as building contracts and organ evaluation that have been recently discovered. These writings are then confronted with the corpus of documents already known and related to voicing and sound quality in organ treatises, letters, and other archival materials. The results are summarized into charts of aesthetic and qualitative descriptors that reflect a personal perceptive way of timbral and acoustic assessment. Albeit interesting for its historical value, this way of describing sound is less helpful to objective parameterization. Organ builders are often interpreting these sources more as an excuse to impose their personal taste and judgment than as a tool for investigating historical sound within the restoration process. The second part of the talk offers new evidence to link such a list to voicing parameters: languid position, cutups, nickings, and toe holes. Visual and aural evaluation of historical pipes will show further objective evidence to match pipe geometry to specific sound characteristics. This is demonstrated by examining historical pipes that were not altered from organs around Italy. Documentation proves a shared working process in voicing, directly linked to a common taste for sound quality.

Massimiliano Guido holds degrees in musicology, organ, and harpsichord and is a Senior Researcher at the Department of Musicology and Cultural Heritage, Pavia University where he teaches courses in history of musical instruments and history of theory. Previously he served as Banting Postdoctoral Fellow at the Schulich School of Music, McGill University, working on improvisation at the keyboard. He is the editor of Studies in Historical Improvisation: from 'Cantare super Librum' to Partimenti (Routledge, 2017).

Following the Instruments and Users: The Mutual Shaping of Digital Sampling Technologies

Paul Harkins

This paper will focus on the Fairlight Computer Musical Instrument (CMI), which is generally regarded as the first commercially available digital sampler. However, its designers, Peter Vogel and Kim Ryrie, were primarily interested in the use of digital synthesis to replicate the sounds of acoustic instruments; sampling was a secondary concern. Users of the Fairlight CMI began to use it to sample the sounds of everyday life (Peter Gabriel, Kate Bush) and experiment with the pre-set sounds of the sample library (Afrika Bambaataa, Arthur Baker). This paper will also focus on E-Mu's Emulator, which is often referred to as 'the first affordable digital sampler'. The designers of the Emulator never set out to manufacture a digital sampling instrument. Dave Rossum and Scott Wedge set up E-Mu Systems in the 1970s to develop analogue synthesizers. Faced with financial problems at the beginning of the 1980s, they decided to develop a new instrument using the digital sampling technology that was of secondary importance to the designers of the
Fairlight CMI. Users of the Emulator were encouraged by E-Mu's advertisements to make music by sampling the sounds of everyday life. However, one of the ways the digital sampling keyboard began to be used was by hip-hop producers sampling the sounds of drums from pre-existing recordings on vinyl. Using a conceptual framework from Science and Technology Studies (STS) and these two case studies as examples of how musicians use instruments in ways unimagined by their designers, my argument is that writing a history of music technologies such as digital sampling instruments needs to also be the writing of a history of the designers and the users of these music technologies.

Paul Harkins is a lecturer in the music department at Edinburgh Napier University. His doctoral research was on the history and use of digital sampling technologies; other research interests include copyright and the music industries. Academic publications include articles in *Popular Music*, *Popular Music & Society*, *IASPM Journal*, *Journal on the Art of Record Production*, and *Reseaux*.

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**New insights into the life and instruments of Gérard Joseph Deleplanque, maker in Lille in the 18th century**

Christine Hemmy, Philippe Bruguière and Jean-Philippe Echard

Gérard Joseph Deleplanque can certainly be considered as the most prominent stringed-instrument maker in Lille (North of France) in the second half of the 18th century. Indeed, more than sixty of his instruments - guitars, guitars (guitares anglaises), violins, viols - are still known today, in public museums and private collections. In luthiers' dictionaries, Deleplanque is renowned for the quality of the wood he used and the exuberant decorations of his instruments. Biographical information on this maker is scarce, though, and solely based on examination of labels found in instruments.

The main focus of this article is to present the newly-gathered biographical data on Gérard Deleplanque. Extensive research in the funds of Archives municipales de Lille and Archives départementales du Nord led to primary sources dealing with dates of birth and death, genealogy and family events, and more importantly, to his professional activity: apprentice period, installation as an instrument-maker, successive workshop addresses. Among others, we present archives documents allowing (1) to date precisely the move of the workshop from one address to the other, explaining the diversity of the labels in surviving instruments; (2) to re-attribution to his successors the instruments dated after his death in 1783, but still bearing his name on their labels.

The organological and decorative features of the different types of the surviving instruments by this maker will also be presented, with a specific focus on 23 instruments examined by the authors at the Musée des Instruments de Musique (Brussels) and the Musée de la musique (Paris).

Christine Hemmy is Curatorial Assistant at the Musée de la musique since 1997.

Philippe Bruguière is the curator in charge of Western plucked instruments and non-Western instruments.

Jean-Philippe Echard is the curator in charge of bowed string instruments.

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**The Madras “Sruti” Harmonium and its Precedents**

Cleveland Johnson

The South Asian harmonium developed from the European harmonium during the second half of the nineteenth century. No sooner had it been indigenized than its suitability for the classical music of the region came under question, and that century-old stigma surrounds the instrument still today.

A unique response to this controversy is found in an unusual harmonium, discovered by the author in a private instrument collection in Chennai (formerly Madras) India. This instrument, dating from the first decades of the twentieth century, was likely a demonstration instrument or prototype. Although its intent, using a keyboard mechanism, was clearly a gesture to microtonal sruti (the smallest intervals of pitch, as described by some Indian theorists, discernable by the ear), the pitches produced by this harmonium do not conform to Indian theory (neither in number nor frequency).

The striking significance of the “Madras Harmonium” is its extensive key system, subdividing the octave into sub-semitone pitch units. Instead of the usual twelve keys per octave, this instrument provides the player...
with 24. The actual frequencies of these 24 pitches, however, do not align either with the 22 sruti values, propounded by Indian theorists (and their British-Colonial counterparts), or with the 24 equal-tempered quarter tones of the traditional Western tonal system. The unsophisticated construction of the instrument and its irregularly-spaced, roughed-in pitches—inconsistent with any particular theory—suggest that the instrument was indeed experimental. It was, however, most certainly conceived to exist within the Western concept of a twelve-note octave.

As a South Indian product, this harmonium is unlikely to have been inspired by the vigorous early 20th-century thinking regarding microtonal sruti in North India by musicians and scholars such as Ernst Clements. Rather, the influence for this instrument might best be sought in the scholarship of Abraham Pandither, an advocate of equal temperament in the South, or from within his circle of influence. Even without an attribution for its designer or maker, this unique instrument represents the creative dynamic and cross fertilization between Western and Indian theory, practice, and instrument innovation.

Cleveland Johnson is Director of the National Music Museum. He is Professor Emeritus and past Dean of the School of Music (DePauw University) and the immediate past Executive Director of the Thomas J. Watson Foundation. Dr. Johnson holds a doctorate from Oxford University. He is a scholar/performer of historic pipe organs in northern Europe and an authority on the Carnatic music of South India, with research funded by the American Institute of Indian Studies and ASIANetWORK.

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Thirty years of the piano trade in the censuses of England (1881 to 1911)

Marie Kent

A study of the piano-related returns in the 1881 census of England has given us a snapshot of the piano industry workforce operating in England at that time. At least 6,462 men, women and children were working in c400 piano-related occupations across 42 English counties, the majority based in London. Thirty years later, a study of the 1911 census of England shows that their number had more than doubled. This short paper highlights some of the early findings of a current and comparative study of the two census populations and asks: Who were these new workers and what new skills did they possess? Were they related to the old workforce and performing the same jobs, and in the same locations? And if not, why and how were their circumstances changed? As always, when peering into the homes of the populace as they completed their census returns on a single night in April, some amusing and sobering revelations can be learned.

Marie Kent is a Cambridge Junior Research Fellow aiming to reveal hidden facts about the piano through a study of the people who made them. She is currently conducting a pioneering comparative study of more than 20,000 returns in the 1881 and 1911 censuses of England, exposing the remarkable growth and changing demographics of the piano industry workforce at the peak of the instrument's popularity before the First World War.

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A standard for 3D-computed tomography of musical instruments - first results of the MUSICES-project

Sebastian Kirsch, Frank Bär, Theobald Fuchs, Christian Kretzer, Markus Raquet, Gabriele Scholz, Rebecca Wagner, Sarah Wagner and Meike Wolters-Rosbach

The MUSICES-project is funded by the German Research Association (Deutsche Forschungsgemeinschaft, DFG) and develops since 2014 a standard for X-ray Computed Tomography (CT) imaging of historical musical instruments. MUSICES is a cooperation of the Germanisches Nationalmuseum, Nuremberg and the Development Center for X-ray Technology (EZRT) of the Fraunhofer-Institute for Integrated Circuits (IIS) in Fürth.

A main task of MUSICES is the device-independent description of technical parameters for 3-D CT imaging of various materials, object sizes and material combinations occurring in musical instruments. Another objective is the specification of a sustainable metadata model, in order to make all measurements replicable, comparable and accessible. The required spatial resolution in terms of a minimum voxel size is defined in a way to allow investigations such as exact geometrical measurements at otherwise inaccessible parts, dendrochronological dating or further processing of the volume data sets like the derivation of surface models, input data to acoustical analysis or 3-D printing.

http://www.euchmi.ed.ac.uk/gxsta.html
In June 2017 around 100 different musical instruments will be scanned using various types of X-ray-CT-systems and reconstruction parameters and preliminary final results of the project can be presented. The chosen instruments represent a wide range of issues, specific questions and tasks of using CT for musical instruments. The scanned objects include several stringed instruments from a kit violin to an entire double bass, brass instruments from single mouthpieces to bass tube, small and big keyboard instruments, various wind instruments such as recorders, crumhorns, cornettos, clarinets etc. and ethnological objects. The lecture presents various examples of all measurements. Further, the chances, but also the challenges of this technique are discussed in detail. The examination workflow contains also best practice reports concerning transport and climatic conditions as well as advices for preserving mounting of objects with strongly varying geometrical shapes. A recommendation on data processing, handling and storage is also described. A database containing all information about the objects and technical X-ray-parameters is presented as well as a solution for making big data sets easily accessible: A web-based viewing software (developed by the Fraunhofer EZRT) provides means for visualization of large data volumes via the internet, additionally featuring tools like clipping and measuring.

Sebastian Kirsch studied literature and art history in Munich (M.A.) and conservation science in Vienna (Diploma). Since 2014 he works in the MUSICES-project, first as conservator, since 2015 as project manager. Besides of that he is currently working on a PhD in musicology.

The Instrumentarium of the Gymnase Musical Militaire (Paris, 1836-1855)

James Kopp

During the early 19th century, the repertory of French regimental bands expanded to include opera overtures and other concert music. Elaborate scorings demanding up to 27 specialist players led by 1827 to recruiting challenges and discipline problems. To address these difficulties, the Gymnase Musical Militaire was founded in 1836. From its beginning, the gymnase taught recently invented instruments: keyed ophicleide, as well as valved cornets, horns, and trumpets. Traditional flute, oboe, clarinet, bassoon, trumpet, horn, and trombone were also taught, sometimes in variant models conceived for outdoor use. The gymnase is often remembered as a foil to Adolph Sax, who on 22 April 1845 promoted his powerful new saxhorns, bass clarinets, and saxophones in an open-air competition. A band equipped with Sax's instruments bested a larger band of gymnase professors and students, playing traditional instruments. Ministerial endorsement of the Sax instruments soon followed. In November 1846, saxophone and saxhorn players were hired (after competitive auditions) as professors at the Gymnase, further expanding its instrumentarium.

Twelve instrumental methods expressly written for gymnase instruction are known, and several others written by gymnase professors are worthy of note. The method books imply a high level of artistic training, including elaborate demands for phrasing, varied articulations, and ornamentation. This paper will be an illustrated introduction to the Gymnase Musical Militaire, with particular attention to its instruments, suppliers, professors, and instructional methods.

James Kopp is the author of The Bassoon (Yale UP, 2012) and many articles in JAMIS, Galpin Society Journal, and Lexikon der Holzblasinstrumente (Laaber, forthcoming). He was a senior editor of The Grove Dictionary of Musical Instruments. He has performed widely as a bassoonist and has led workshops on reed-making techniques at The Juilliard School of Music, the Royal Academy of Music (London), and many universities. He earned a PhD from the University of Pennsylvania.

The “Jesses Cassus” Harpsichord

John Koster

A harpsichord in private ownership in California has been the subject of intrigued speculation since 1956, when it was mentioned and illustrated with two photos in the first edition of Donald Boalch's Makers of the Harpsichord and Clavichord. Its apparent significance has stemmed from the interior decoration of the case, which is quite similar to that of mid-seventeenth-century English virginals, and from the lack of any known English harpsichord made between 1622 and 1683. Although the owner supplied information to Boalch,
Raymond Russell, and Frank Hubbard, who discussed it in his Three Centuries of Harpsichord Making (1965), the instrument has generally not been available to specialist researchers. The present author recently had the opportunity to examine and photograph it in some detail. First, the “Jesses Cassus” inscription, thought to be the name of the maker, a repairer, or owner, is not a name. The inscription was written in blue crayon by a modern restorer to indicate the treble and bass ends of the lower guide, dessus and basses. Elements of the decoration, especially the gilt embossed paper on the nameboard and on the case around the soundboard, might well be English. The case, with its too short cheekpiece, could not reasonably have contained a serviceably designed harpsichord. Although it conceivably includes some seventeenth-century parts, at best it has been brutally rebuilt from its original form. The soundboard has been reduced in length, but does not fit hypothetical reconfigurations of the case outline. Thus, it probably has nothing to do with the “English” case elements. Moreover, the style of the soundboard painting, particularly its arabesques rendered in viscous paint, seems more Continental than English. The two geometrical roses are finer than those typical of English virginals and, unlike these, are not gilded. The wrestplank veneer, continuing the grain of the soundboard, was a resonant soundboard under the nut. The platelike lower guide was made for three rows of 57 jacks, one of which was a nasal stop, also evident in a gap in the wrestplank veneer. Having nothing to do with these elements is the keyboard, now with a compass of 57 notes, AA to f3 but originally BB to c3. Plausibly, the “Jesses Cassus” was made up from parts of three instruments. Enough of the soundboard and its associated elements remains to allow a hypothetical reconstruction of the original harpsichord in the early German style from which they came.

John Koster studied music history at Harvard College and for many years was a harpsichord maker in the Boston area. From 1991 to 2015 he was Professor of Music, Conservator, and Curator of Keyboard Instruments at the National Music Museum in South Dakota. He received the American Musical Instrument Society's Curt Sachs Award in 2016 and continues to be active as an organologist with related interests in the histories of music, art, and technology.

The Gibson Upright, the Steinway Strike of 1919, and the First Red Scare

Laurence Libin

Booth Tarkington and Harry Leon Wilson's 1919 play The Gibson Upright portrays a socialist labor uprising in an American piano factory after World War One. The play shows how struggles over wages, working conditions, and control of means of production were popularly perceived from a conservative viewpoint. While fictional, the play reflects reality in that the Piano, Organ, and Instrument Workers International Union struck against Steinway & Sons a few months after the play premiered. The strike quickly spread, putting thousands out of work at the outset of what came to be called the First Red Scare. The Gibson Upright is interesting historically for its unique setting in an instrument factory, its portrayal of the piano manufacturer Andrew Gibson as a model of modern American entrepreneurship, and its presentation of the ubiquitous upright piano as an icon of American industrial know-how. The play shows Gibson besieged by a workers' revolt led by disgruntled immigrants, subverted by Marxist rhetoric personified by a female Russian socialist labor organizer and piano technician, with whom Gibson falls in love. Conflict between Marxism and capitalism was the playwright's underlying concern; they set out to affirm the superiority of the capitalist system and to caricature socialist aims as put into practice ineptly in the piano factory after insurgents take it over.

The destabilizing threat of Bolshevik propaganda was actually being investigated in 1919 by a subcommittee of the Congressional House Committee on the Judiciary. The well-publicized hearings bolstered the spectre of the First Red Scare and so roused interest in the play's topic. I offer a critical interpretation of the playwrights' political aims and examine their flawed but amusing depiction of piano manufacturing. If time permits, the climactic action, an anarchist bombing of an upright piano, could be re-enacted.

Laurence Libin is editor in chief of the Grove Dictionary of Musical Instruments, past president of the Organ Historical Society, emeritus curator at the Metropolitan Museum of Art, and honorary curator of Steinway & Sons. He is a Life Fellow of the Royal Society of Arts, 2010 Fellow of the Likhachov Foundation, and recipient of the Curt Sachs award from AMIS and the Anthony Baines prize of the Galpin Society.
Horsehair Harp Strings

Karen Loomis

Harps have long had a place of importance in Welsh music, and a significant source of notated bardic harp music, the Robert ap Huw manuscript, comes to us from Wales. Recent decades have seen renewed interest in performance of the music in this manuscript, after its tablature was largely deciphered in the 1970's. The music, however, predates the development of the harp usually associated with Wales, the Welsh triple harp. Before the triple harp, Welsh harps had a single rank of strings, and in the 15th - 17th centuries, these would be equipped with bray pins to produce a buzzing sound. Gut would have been a typical string material, but Welsh sources particularly mention harps with strings of horsehair, with one 16th century poet comparing the sound favourably to the buzzing of a bumble bee.

For stringed musical instruments, choice of stringing material is central to creating a particular timbre and tuning, which in turn can profoundly influence interpretation of historical repertory. Modern reconstructions of gut-strung bray harps are available for performance of early harp repertory, and can be heard on a number of recordings, including selections from the Robert ap Huw manuscript. But what would it be like to play this early Welsh harp music on a horsehair strung harp, and how would it sound?

This paper presents the results of the author's systematic experimentation with horsehair as a stringing material for bray harp. Prior to this work, experiments with horsehair harp strings were few and limited, and no attempt had been made to string a bray harp with horsehair. Properties and behaviour of horsehair strings for bray harp will be discussed and will be compared and contrasted with gut strings, with sound and musical examples. The practicalities of making and maintaining horsehair strings will also be discussed, including making strings longer than the length of the hair. The presentation will include a demonstration of horsehair string making.

Karen Loomis is an organologist with expertise in historical harp research. She has worked closely with National Museums Scotland since 2010, conducting scientific analysis of the Queen Mary and Lamont harps, and earned a PhD from Edinburgh University in 2015. Her research has been published in the Galpin Society Journal and Early Music, and featured in the BBC documentary Scotland's Treasures. Karen is the secretary of the Historical Harp Society of Ireland's governing board.

Berlioz's Symphonie fantastique, a laboratory of ideas in the use of new valved brass instruments in Paris

Thierry Maniguet

The Symphonie fantastique is considered as one of the major pieces of nineteenth-century music, and many scholars have emphasized the originality of this work in many aspects, in particular for what concerns the instrumentation. Conceived in a few months in early 1830, but based on earlier material to at least some extent, the Symphonie fantastique was performed for the first time on December 1830 the 5th. The orchestral score was not published until May 1845.

Among several new features, as for instance the use of two harps in the second movement, Berlioz called upon valved brass instruments that were barely known in Paris at that time. Kept in the French National Library, the autograph score shows constant revision, dated from early 1830 to, at least, the end of 1832. Among the modifications, several concern precisely brass instruments and especially the “cornet à pistons”, for which was added a virtuoso part, at a moment that has not been dated exactly until now.

By seeing the various alterations of Berlioz's score in the light of the emergence of valved brass instrument (trumpets, horns and cornets) in Paris during the 1828-1833 years, this presentation will attempt to give a better insight into the composition of this symphony and the context of the first performances. A precise chronology of the development of valved instruments in Paris during this critical period will be given as well as will be evoked the names of the possible first performers of the parts written for brass instruments.

After studies of sciences, musicology and musical acoustics at the Paris universities of Pierre-et-Marie-Curie and Sorbonne and at the Conservatoire National Supérieur de Musique de Paris, Thierry Maniguet teaches piano and theory in academy during ten years. Specialised in organology, he is then, during eight years, a representative for the French musical instrumental heritage. Curator at the Musée de la musique since 2000, he conceived the new exhibition of the rooms devoted to 19th and 20th centuries.
He is Professor of organology at the Conservatoire National Supérieur de Musique de Paris and is a lecturer in several French academic institutions.

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**Paper and Parchment Fragments inside the Instruments: new Research Perspectives**

**Donatella Melini**

The focus of my paper is on the information that can be obtained from the fragments of parchment or paper present in musical instruments. The practice of using strips of this material for the consolidation of the musical instruments has very ancient origins and is still normally in use even today. For economic reasons these strips were often made of recycled material coming from codices or documents. The study of these fragments can now provide much interesting information in the field of organology, musicology and history of economic exchanges in the past. About this I am now working on a project aimed at finding such parchment or paper fragments inside musical instruments. To date, I have found many instruments in several international public and private collections and the information obtainable from the fragments that they contain confirms the importance of a similar research, although original and unique. Thanks to it, it is possible, for example, to identify the luthiers, their cultural entourage and, above all, their modus operandi: the size of the fragments, their placement inside the instruments and the choice of materials (parchment or paper) supply important details as to their construction technique. Not to mention the analysis of the texts (notary and literary texts, letters, music) attested within the fragments that can hold many surprises.

Donatella Melini, is PhD in Musicology (University of Innsbruck) and graduated in DAMS at the University of Bologna, where she also got the Certificate of “Specialization in History of the Renaissance Art”. She received her Master Degree in “Philology of Musical Texts” at the Faculty of Musicology of Cremona and the title of “Master Lute maker and restorer” at the Violin Making School of the City of Milan.

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**The Russian Bowed Lute Gudok. Morphology, Tunings, Playing Techniques**

**Ulrich Morgenstern**

Until the mid-19th century the gudok was one of the most widespread musical instruments used by Russians peasants. It attracted the attention of Russian and Western ethnographers and organologists from the late 18th century onwards. At the same time it is one of the most mysterious folk musical instruments of Russia. Not a single gudok has survived and no notations or recordings of gudok playing are known. The proposed paper aims to reconstruct of the morphology of the gudok as well as the playing technique, texture and repertoire of the instrument. It is based on historical sources (iconography, written sources, recent fieldwork) and on a critical assessment of 19th and 20th century organology. In doing so it will be necessary first of all to correct some popular misconceptions:

1. The confusion of the 11th-15th century Byzantine lyre found in Veliky Novgorod with the gudok as it is known from 18th/19th century sources. Unlike the former, the gudok has much in common with European bowed lutes, known from the Renaissance period.
2. The identification of the eight-shaped fiddle of the Perm region, documented in the 1970s as a gudok and the supposed continuity between gudok and Russian folk fiddle (violine) playing.
3. The supposed survival of gudok playing in recent fiddle traditions of Southern Russia and the borderland of Russia and Belarus.

All of the descriptions of the gudok indicate that the instrument had a pear-shaped glued body, a fingerboard, and a scrolled pegbox with side pegs and three strings, bowed simultaneously. The typical texture was most likely based on a single melody and a lower drone, occasionally enriched by chordal accents. This texture - and also one of the gudok tunings (unison and fifth) - corresponds to balalaika tunes in the rare “fiddle tuning” of the Pskov province. This differs from Russian fiddling based on fifth-tuning and bowing of rarely more than two strings simultaneously.

research: European folk music, ethno-organology, multipart instrumental music, history of scholarship, folk music in political movements, revivalism in Austria.

But is it an 'ūd? The quwaytara, lute of the Horniman Museum

Salvatore Morra

Oral traditions may leave scant material traces of repertoires, but the instruments on which they rely pose intriguing historical questions that may in turn lead us to reimagine repertoires and practices. For the North African region some of these questions relate to the so called 'ūd 'arbi, a four double-course short necked plucked instrument consisting of a sound chest made of a series of ribs, linked to a flat front surface of wood, pierced by three sound holes, near which a membrane made of shell and wood protects the belly from the strokes of the plectrum. I discuss an 'ūd that touches on histories of the North African 'ūd family in which members are known variously as kouitra in Algeria, 'ūd 'arbi in Tunisia, 'ūd ramāl in Morocco (Loopuyt and Rault, 1999; Saidani, 2006; Elsner, 2002; Houssay and Früh, 2012). It was a gift to London's South Kensington Museum from the Viceroy of Egypt in 1867. The gift was made in Paris, where the instrument was part of the Egyptian display at the Paris Expo (Beckies Willson, 2016). It is of the North African type, and is indeed labeled as a 'lute', 'quwaytara' in its current home, the Horniman Museum in London.

The concern of this research is in what this particular 'ūd/quwaytara may tell us about the cultures to which it belongs, tracing its history through the centuries and places. Accurate observation of its craftsmanship such as: wood, bone ornamentations, rosettes carving, shape design, materials, intersects with the investigation of images, texts, manuscripts pre- and postdating the instrument's arrival in London, as well as with the handful of surviving North African 'ūd(s) from subsequent decades held in museums (MIM, Brussels and CMAM, Sidi Bou Said) and private collections (Tunisia). In my paper, I work through some of the questions the instrument, and its construction, raise. It prompts us to consider multiple interlocking histories of 'ūd 'arbi type in North Africa, and indeed to reflect critically on some theories of 'ūd making in current circulation in Tunisian urban centers as well as nuance the various narratives about 'ūd history in the other North African countries.

Salvatore Morra holds a BMus in guitar performance from the music college “Nicola Sala” in Benevento Italy, and completed his MMus in Music Studies at the University of Cambridge, having been awarded the Thalman Masters Scholarship (2012-2013). He also holds a degree in language and culture (Arabic/English) at the University “L'Orientale” of Naples, Italy. He is currently pursuing a Doctorate at the Royal Holloway, University of London, undertaking a project that examines musical instruments as objects existing at the intersection of material, social and cultural worlds, with particular focus on the Tunisian 'ūd.

Articulating Camber: The Sound of François Xavier Tourte's Early-period Bows

Ellie Nimeroski

The camber (arch or bend) of the early Tourte bow (to be dated as 1780s) remains a mysterious aspect both to the maker and the player: bow experts agree that the original cambers of old bows have been lost, due to prolonged exposure to humidity, in reaction to poor re-hairs, or in changes of wood tension over many years. As I historically informed violinist accustomed to a status quo of cambered 18th-century bows, I feel at a loss to explain how exactly the new Tourte bow would have affected a new style of playing. Jean-Baptiste Vuillaume (1798-1875) famously measured bows of François Xavier Tourte (1747-1835), and although these mathematical calculations allow us to reproduce the taper of a Tourte-model bow, they do not tell us the degree of its camber. But if, as Louis Spohr proclaimed in 1832, the bend of the Tourte bow was the key to its success, then what artistic new path did Tourte initially show? Robert Seetzky (2004) suggested that late 18th-century camber would have been much less pronounced than what modern-day violinists are used to and comfortable with: bows might even have been straight at playing tension. If this is true, should we also revise our assumptions of their “revolutionary” playing possibilities? Using three differently cambered versions of a single bow model (achieved by heating and bending the wood), I will discuss various degrees of success in realizing three types of bowing articulations that have been associated with the new French school of playing: the bouncing stroke (sautillé or spiccato), the accented on-the-string stroke (martelé or fermé à la pointe, as Kreutzer called it) and the sustained legato.
My demonstration will include live examples from selected French repertoire. I will suggest that the detached articulations are sharper and more outspoken as the bow is further bent, and that, combined with the higher heads characteristic of Tourte’s early building period, the early Tourte offered a new terrain for musical expression: at the bow’s tip. This lower balance point of even the mildly cambered bow led to a physical change in bowing technique. Tourte, following his instincts as an artisan, led the way in proposing a new language of composition for Parisian violinist composers.

Ellie Nimeroski is a professional baroque violinist and violist apprenticing in the workshop of historical bow maker Bruno Sporcq, and she is working towards a PhD at the Orpheus Instituut and KU Leuven. She completed a Masters in performance at McGill University (Montreal) and performed with Arion, Clavecin en Concert, and Tafelmusik in Canada. In Europe she performs as a chamber musician and with period instrument ensembles Anima Eterna Brugge and Les Talens Lyriques.

REVERSE ENGINEERING AND A RECONSTRUCTION OF THE 'VAN EYCK' ORGAN

Andrzej Perz, Jan Boon and Patrick De Baets

The paper describes the ongoing research being carried out at the School of Arts of the University College Ghent on the organs from the late Middle Ages, with focus on the organ that is depicted in the famous Ghent Altarpiece from 1432, by the Van Eyck brothers. The aim of the project is to build the playable reconstruction of the organ as a result of a study involving many fields. The current work, following a few previous attempts of different researchers in the past, is meant to be strongly founded on the latest state of knowledge about the mediaeval organ-making, keyboard instruments, music practice and, last but not least, the art of painting.

The interpretation of the newest extensive documentation of the panel with the Musical Angels of the Ghent Altarpiece in macrophotography, infrared macrophotography, reflectography and X-rays strengthens the hypothesis that the Van Eyck brothers had at their disposal a real instrument as a model. Among the revealed technical aspects of the depicted organ are: a very fine bevel at the edge of the upper labium, which can be the result of the voicing process; distinctive narrow bulges at the edges of labia, pressed in the metal sheet on the inner side of the pipe; or a soldered joint between the body and the foot of the pipe. Another example is the original length of the pipes in the second row, visible in the infrared, indicating the double chromatic arrangement of the pipe rank, what suggests a compass that is more coherent with the possible number of original keys. Analysis of the perspective in the panel with the 'Musician Angels' shows that there are surprisingly many lines in the painting that are converging towards two vanishing points (or rather 'zones'), which can be used as reference for drawing a 3D model of the organ, even if the perspective as such was still not completely developed at that time of the history of art.

The reconstruction of the 'Van Eyck' organ, that is being performed on basis of this interdisciplinary study is by its very nature empirical and will help to verify theoretical assumptions experimentally.

Andrzej Perz is a research assistant at the School of Arts of the University College Ghent in Belgium, from which he graduated in 2012 with honours as Master of Musical Instrument-Making, defending his thesis on the reconstruction of a mid-17th century Flemish viol. He is also a graduate of the Academy of Music in Poznan, Poland and laureate of a few instrument-making competitions, as well as the De Blonde-Torck prize, awarded to the best students of the School of Arts.

Modern Modularity: The Rise of the Component Trombone

Byron Pillow

Since their first commercial appearance in the 1990s, 'modular' trombones-instruments designed with a wide range of interchangeable components and no preset configuration-have rapidly become the expected preference of professional trombonists not only in symphonic settings, but increasingly across a variety of genres and markets. The degree of customization and the plethora of stock component combinations made possible by the modular style of instrument design and marketing is otherwise unparalleled among wind instruments. Here the history and use of modular trombones is outlined to the present day, following their coincident rise after the introduction of the axial flow valve on to the emergence of boutique modular
manufacturers and mass-market infiltration. Through a consumer-centered evaluation, some of the interesting organologic implications of inherently non-standardized instruments are explored with regards to their manufacture, distribution, collection, and relevance. The modular concept itself presents a springboard for discussion of fundamental aspects of how, and when, a collection of separate components forms a unique musical instrument, and how those components exist simultaneously as individual commodities and subordinate fragments. This dichotomy, coupled with the global, virtual marketplace in which modern musicians reside, blurs lines between manufacturers and instrument styles, and muddles the usability of traditional research methods in documenting instrument chronology.

Byron Pillow is currently a graduate assistant studying the history of musical instruments at the National Music Museum, University of South Dakota in Vermillion, SD. His research interests cover a variety of topics such as the development and industry surrounding the modern trombone French keyboard mechanics and temperaments, philosophical matters of art-object duality, collections-based education, and the functions of material culture and heritage in community growth and preservation.

'Shedding New Light on the Production Strategies of Erard'

Panagiotis Poulopoulos

The name of Sébastien Erard is synonymous with the development of the modern harp and piano. The case of the pedal harp alone suffices to elucidate Erard's gradual establishment as one of the most prolific inventors and large-scale manufacturers of musical instruments during the early nineteenth century. It is no coincidence that in Erard's time the pedal harp witnessed an unprecedented technical and aesthetic upgrading, enjoying a great popularity which almost equaled that of the pianoforte. From 1794 until his death in 1831 Erard took several patents for the pedal harp and produced thousands of instruments with both single- and double-action mechanisms in London and Paris. The success of Erard's improvements for the pedal harp is confirmed by the fact that many of his innovative ideas were imitated by his competitors and some are still in use today.

However, although the recent investigation and interpretation of the Erard archives has unearthed a wealth of information regarding Erard's business structure and operation, very little in comparison is known about his production strategies as evidenced on extant instruments. Furthermore, despite new publications that have covered extensively Erard's biographical and professional activities, the profiles of his employees and associates remain relatively unknown. Moreover, several features of Erard's harps, such as the presence of different serial numbers, inscriptions and other construction marks on the wooden and metal parts, which could illuminate Erard's workshop practices, have not been studied systematically until now.

This paper will present and analyse Erard's manufacturing methods, focusing on new discoveries made during the examination of surviving harps by Erard in public and private collections. Additionally, the paper will describe previously overlooked aspects of the design, decoration and trademarking on Erard harps, which were so important for the advertising and marketing of these instruments to a middle- and upper-class clientele. Finally, the paper will discuss how Erard's production system, involving standardisation of models, division of labour, stockpile of components, and 'assembly line' methods, reflect above all the industrialisation of the harp at the beginning of the nineteenth century.

Panagiotis Poulopoulos is an organologist with a BA in Conservation of Antiquities and Works of Art (TEI Athens), a MMus in Musical Instrument Research and a PhD in Organology (both University of Edinburgh). He has worked in various museums in Greece, Great Britain and Germany, and has published several articles on the documentation, preservation and exhibition of musical instruments. Currently he is post-doc fellow at the Deutsches Museum and Advisory Executive Board Member of CIMCIM.

Between sirens and pianos: Hermann von Helmholtz's scientific and musical instruments

Katharina Preller

Recent organological studies by Julia Kursell, Alexandra Hui and Emily Dolan point out the common features and practices of musical and scientific instruments. For his groundbreaking theory “On the
Sensations of Tone” Hermann von Helmholtz made equal use of these two types of artifacts. The readers are requested to imitate a lot of experiments in order to train their hearing. In doing so the boundary between ordinary instruments and measuring tools becomes blurred. It is therefore no surprise that Helmholtz chose a representative of both disciplines, the acoustician and trained violin-maker Rudolph Koenig, to build his devices for the most part.

Fortunately a rich variety of Helmholtz’s own musical and scientific instruments is preserved. The number of 65 keyboard and string instruments at Germanisches Nationalmuseum Nuremberg alone gives an idea of his collection’s former extent. Despite the very practice-oriented approach of “On the Sensations of Tone” no one has yet included these objects in a survey. In this paper I would like to let them speak and to ask for their interrelationship.

Steinway & Sons claimed to have learned so much from Helmholtz’s theory that they expressed their gratitude by giving him various pianos as a present. One of them, an early example to be equipped with the so-called duplex scale, is now located at Deutsches Museum in Munich. This construction represents an application of the new insights into acoustics. Helmholtz gained a broad knowledge about music by engaging himself in issues of tuning as well as playing and building instruments. In addition resonators, double sirens and tuning forks enabled him to examine controversial phenomena as combination tones or tone color. The newly-developed apparatus for the synthesis of sound can even be considered as an early synthesizer.

Katharina Preller studied musicology as well as cultural sciences at the Universities of Munich and Augsburg. Since August 2016 she is the Ph.D candidate in Dr. Rebecca Wolf’s research group “Materiality of Musical Instruments: New Approaches to a Cultural History of Organology” at Deutsches Museum Munich. Using the relationship between Steinway & Sons and Hermann von Helmholtz as a case study, she examines the intersection of instrument making and acoustics research.

An Assessment of Regional Variations in Early Bassoons: With an Emphasis on Saxon eighteenth-century Instruments

David Racho and Bryant Hichwa

The eighteenth-century bassoon is among the least studied of the woodwind instruments. In particular, there is no extant study of regional similarities or differences inherent in this instrument. The authors have amassed an impressive data base of more than 120 original bassoons, illustrating physical characteristics of these eighteenth- and nineteenth-century European bassoons. The data provides a focused lens under which to examine the Baroque bassoon from a wider viewpoint. In the present study, eighteenth-century instruments in our data base are divided into groups, according to six important bassoon-making centers: Saxony (Dresden and Leipzig), Paris, London, Brussels, Hesse, and Lyon. Our research has shown that the eighteenth-century bassoon bore profile can be divided into three distinct zones: a large conical bore, a transitional conical bore, and small conical bore. In addition, a critical modification made to the bore, a diminishing of the 180-degree boot joint turn around length, alters the acoustic length of the boot joint. The use of computational graphs illustrates similarities and differences between these three bore zones, as well as highlight other physical characteristics, such as tone hole position, tone hole diameter, boot joint length, and segment length.

Because our data base is especially rich in Saxon measurements, the Saxon bassoon is used as the point of comparison; we have data from twenty, early bassoons from this region, including the only two original Eichentopf and the only two original Poerschmann bassoons known at this time. Our lecture will include the particular design of bassoon-making in Saxony in the eighteenth century and what made it unique. Finally, we will discuss the characteristics that make the Dresden bassoon different both from Leipzig bassoons and from bassoons of other important makers.

According to the work of Dr. Herbert Heyde, the business model used by eighteenth-century Saxon instrument makers was one that made use of journeymen craftsmen as the instrument fabricators. We have measured original bassoons made by Saxon craftsmen Gottlieb Crone, Carl Wilhelm Sattler, Paul Ludwig Lehnhold, Johann Christian Bauer, and Johann Christian Gehring. We also have measurement data from the only extant bassoon with the stamp of Leipzig music dealer Matthäus Hirschstein. By comparing bore design, and tone hole size and placement, we will speculate as to who made this Hirschstein bassoon, as well as other unmarked, anonymous bassoons in our data base. Finally, we will disclose intriguing similarities between bassoons made hundreds of kilometers apart.

http://www.euchmi.ed.ac.uk/gstsa.html
Bryant Hichwa, Professor Emeritus of Physics and Astronomy at Sonoma State University, teaches courses on the Physics of Musical Instruments and studies the musical acoustics of historical instruments. His research interests include acoustical analysis and modeling of woodwinds. Hichwa has appeared on National Public Radio’s Science Friday discussing “the physical principles of musical instruments”. Professor Hichwa’s other research interests include the distance hearing mechanism of African elephants, the key success factors of colony nesting sea birds and restoration of native habitat in northern California. He also conducts nature photography workshops.

David Rachor, Professor Emeritus of Bassoon at the University of Northern Iowa, is an internationally recognized scholar and performer on both the modern and period bassoon. He has travelled extensively, presenting bassoon performance master classes, giving seminars on historical reed-making and has presented papers at the Stiftung Kloster Michaelstein, Galpin Society and American Musical Instrument Society Conferences. Professor Rachor now lives in Tempe, Arizona, where he performs Medieval and Renaissance music with Bartholomew Faire.

Two Eighteenth-Century English Clarinets: their characteristics and importance

Albert Rice and Nophachai Cholthitchanta

In 2016, two private collectors purchased English five-key clarinets made during the 1760s by John Mason and by Thomas Cahusac Senior. Clarinets by these makers during the 1760s were previously not known. In 1754, clarinets appeared in London as part of a clarinet and horn quartet that played during one concert during the summer at Ranelagh, an outdoor garden, and in 1755 and 1756 in a Symphony by Charles Barbandt. Clarinets gained rapid acceptance in many sectors of English society, and during the 1750s, may have had either four or five keys. The 1760s and 1770s were extraordinarily important years for the development, introduction, and use of new instruments such as the square piano and the five-key clarinet. Many composers, amateur and professional players, and the public embraced the clarinet and they were sold, played, and taught in London and in different counties.

The discovery of the Mason and Cahusac clarinets provides crucial evidence about the design and development of the earliest English instruments, and gives us points for comparison with English clarinets made later in the eighteenth century. The purpose of this presentation is to establish the characteristics of the Mason and Cahusac clarinets, and to compare them to later eighteenth-century English clarinets. Characteristics discussed include: the number of sections; the shape of the mouthpiece window; the number of keys; the shape of the Ab/ Eb key lever; the shape of the Fb/ C# shank; the shape of the bell; and the symbols used as part of the makers’ stamps. The Mason and Cahusac clarinets are compared to an anonymous four-key English clarinet (c 1760), and clarinets by George Miller, Charles Schuchart, Thomas Collier, and Henry Kusder dating from 1765 to 1770. These comparisons are extremely valuable in showcasing the organological development of the clarinet during this transitional period.

Dr. Albert R. Rice (Claremont, California, U.S.A.) holds a Ph.D. from Claremont Graduate University. He is a clarinetist, author, appraiser of musical instruments, review editor for the AMIS Journal and Newsletter, and past president of the American Musical Instrument Society. He has written three books on the history of the clarinet published by Oxford University Press, a catalog of the Marlowe A. Sigal Musical Instrument Collection (Aiglen, Pennsylvania, 2015), and Notes for Clarinetists: A Guide to the Repertoire (New York, Oxford University 2017) and is a retired librarian and musical instrument curator. His awards include the Galpin Society’s Anthony Baines Prize of 1999, and the American Musical Instrument Society’s Curt Sachs Prize of 2011, honoring lifetime devotion to scholarship related to musical instruments.

A native of Thailand, Nophachai Cholthitchanta joined the University of Arkansas as professor of clarinet since 2001. Formally, he was the principal clarinetist of the Bangkok Symphony Orchestra, L’Orchestre Mondial Des Jeunesse Musicales, and was a member of Greeley Philharmonic Orchestra, Kansas City Chamber Orchestra, New Ear Ensemble etc. He has performed at music festivals as a soloist, chamber music musician and orchestral member in the major concert halls in more than twelve countries including Concertgebouw Hall, Berlin Philharmonic Hall, Vienna Konzerthaus. In addition to modern clarinet, Nophachai is also a researcher and an avid collector of historical clarinets.

“Brass” Instruments as Music-Producers in Ancient Italy

Jeremy Sexton

Scholars have often considered the aesthetic response of ancient Mediterranean societies, and of the Romans in particular, to “brass” musical instruments (that is, lip-blown aerophones). Many believe that, for the ancient Romans, brass instruments were not “musical” at all, being considered noise-making devices that
were useful for signaling purposes. Apparently contradicting this view, however, several depictions of brass instruments produced by the Romans and Etruscans (from whom the Romans got their most characteristic brass instruments, the cornu and lituus) show these instruments clearly grouped with such other instruments as the lyre and the tibia. For example, in a late Imperial mosaic scene preserved in the Villa Romana del Casale near Piazza Armerina, Sicily, and examined on-site by the author, several figures engage in musical performances and competitions. Among these musicians appears one young man playing the tuba, a long, straight trumpet. The form of the instrument and the dress of the player closely resemble the appearances of tuba players in other mosaic art from the same period, an example of a tubicen type that occurred in mosaic art during the late empire. Yet, within the same scene appear players of the lyra, tibia, and cithara, instruments more often considered by scholars to have been associated with music (as opposed to mere sound production) in the ancient world. The fact that the tuba is here grouped with such other instruments suggests that this particular artist or patron viewed it as similar in its musical capabilities. Other Roman and Etruscan depictions confirm this view of brass instruments. For example, a Roman mosaic in Nennig, Germany depicts a cornu (a large, G-shaped instrument that wrapped around the player's body) paired with a water organ, an object that is quite clearly “musical” in its sound-producing capabilities, since specific keys of the instrument correspond to specific pitches. Moreover, Etruscan cinerary urns from Volterra and a first-century BC Roman funerary relief from Amiternum depict brass instruments played alongside tibiae in processional contexts. The great variety of instruments that appear with brass in such depictions indicates an association among these different types of instruments in the ancient Roman and Etruscan mindset. My paper demonstrates that brass instruments, to some ancient Romans and Etruscans, were indeed considered capable of producing “music” in the same sense as the lyra, the tibia, and other instruments.

Jeremy Sexton is a senior at Wake Forest University, where he is double-majoring in Music in the Liberal Arts and Mathematics and minorin in Latin. He received a Richter Scholarship to conduct research on Roman and Etruscan “brass” instruments in Italy during the summer of 2016. His current work on his senior honors thesis concerns depictions of such instruments in Imperial Roman monuments. Sexton intends to pursue musicology in graduate school.

The pitch question and how to communicate about it

Adrian V. Steiger

For historically informed performances, wind players usually perform on replicas. But in many cases, adequate replicas do not (yet) exist. This is especially true for 19th-century wind instruments on account of their great variety of technical devices. So when we search for a suitable period wind instrument in playing condition, we need detailed information from the owner. But it is not easy to provide such information.

* The keyword or valve equipment can be described with the help of verbal descriptions, photos and videos.
* The interface question is more crucial. Appropriate mouthpieces have to be located for the specific instrument, while reeds have to be made by trial and error.
* The playing pitch of an instrument is a very important aspect for concert use. Historic instruments differ substantially in pitch, depending on their geographical and musical origins. This paper will present the results of a recent study on the pitch question for historic brass instruments. It also demonstrates that players differ substantially from each other. Their playing pitch on the same instrument can differ up to 60 cents between “high” and “low” players. This is especially true when they play on period instruments with period mouthpieces. So - how can cataloguing information help us here?

Adrian v. Steiger is a Swiss musician and musicologist. He completed his Ph.D. in 2013 on the wind instrument collection of Karl Burri in Bern. At the Bern University of the Arts he conducts research projects, mostly on wind instruments (organology, repertoire, conservation, and materiality). He has published essays in the Galpin Society Journal, the Journal of the Historic Brass Society, the New Grove Dictionary of Musical Instruments, and elsewhere.

The Norwegian Krogharpe - History, Lore, Construction and Playing Technique

Nancy Thym
In museums in Norway and Sweden there are 9 surviving examples of a very unique harp, the Norwegian krogharpe. Most of them are from Norway's easternmost valley of Østerdal. Several of these instruments resemble harps depicted in medieval European iconography. Most of the extant Norwegian harps can be dated to the 17th and 18th centuries and are characterized by a very unique feature: the forepillar is a hollow soundbox, identical in construction to the actual soundbox. Both soundboxes are hollowed out of a solid piece of wood and covered with a lid at the back, a typical medieval construction method. The neck, in many cases also hollow, is a simple curve, the tuning pins are wooden blades, and the strings are of metal with very wide spacing.

At first glance, the krogharpe appears to be an isolated regional phenomenon. But closer examination reveals that it shares features of construction and decoration with the medieval harps of Scotland and Ireland on the one hand and the arched harps of Siberia on the other. The presentation will explore these relationships. The “harp” or some form of stringed instrument is mentioned in Norse Sagas of the 13th and 14th centuries and also in medieval Norse ballads. There are literary references to the krogharpe dating from the 16th to the 19th centuries, but traditional harp playing died out completely in Norway by the beginning of the 19th c. It appears to have been played predominantly by women.

By examining early Norwegian descriptions of harp playing and comparing them to other Northern traditions such as those in Scotland, Ireland and Siberia, an attempt has been made at reconstructing a playing style. It is very different from that of the conventional harp and will be demonstrated on a reconstruction of the krogharpe from Westgaard in Østerdal dating from 1776.

Nancy Thym studied archaeology, theater and dance at UC Berkeley and organology and ethnomusicology at UCLA. She has received awards and grants for her research on the Bohemian hook harp, the Siberian harp and the Norwegian krogharpe and written numerous publications on the history of the harp. As a performer she transforms her extensive research into concert programs, which are both entertaining and educational, combining harp music, songs and storytelling.

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One Instrument, Two Destinies: The Chinese Seven-Stringed Zither Qin in China's Cultural Revolution and Taiwan's Cultural Renaissance

Tsan-Huang Tsai

China's civil war of the post WWII era ended with the “retreat” of the KMT government to Taiwan in 1949, and a subsequent blockage of any direct contact or exchange between the Republic of China and the People's Republic of China. The two sides of the Taiwan Strait represented not only very different views on what Modern China should be, but also carried opposing ambitions on the development of Chinese culture. Both the Cultural Revolution (1966-76) in the People's Republic of China and the Chinese Cultural Renaissance (1966-??) in the Republic of China in Taiwan were politically motivated movements based on the belief that certain types of suitable cultures could lead the nation to progress. Using written documents, oral histories, recordings and surviving instruments as the main sources of references, this paper examines the government intervention on the Chinese seven-stringed zither qin in both China and Taiwan during this particular era. Being one of the oldest musical and scholarly traditions, the qin was treated cautiously but often unfairly during the Cultural Revolution: several reform efforts were introduced that included remodelling / improving the instrument and its strings, composing and rearranging revolutionary repertoires, electing suitable traditional repertoire and moderating the notation. The political and cultural elites in Taiwan took a very different approach. The qin, its music and associated stories were used to promote the idea that the music of the qin had great power in cultivating individuals as well as creating social harmony, a concept dated back to Zhou dynasty China (c 1046 BCE-256 BCE). The qin's historical handbooks, antique instruments, traditional repertoires and musical styles became the main source of materials to produce an idealised model of qin instruments, to arrange suitable music to accompany “The National Rite Prototypes”, and to compose traditional Chinese music for other musical and operatic genres. Finally, this paper demonstrates how these two destinies of the qin have framed contemporary debates over this ancient musical tradition since 1980s.

Tsan-Huang Tsai, a Senior Lecturer at Australian National University. Having studied ethnomusicology at Sheffield and anthropology at Oxford, he taught at Nanhua University and the Chinese University of Hong Kong before joined the ANU in 2013. He is the author of two edited books Captured Memories of a Fading Musical Past: The Chinese Instrument Collection at CUHK (2010) and Listening to China's Cultural Revolution: Music, Politics, and Cultural Continuities (2016), and more than twenty articles.

http://www.euchmi.ed.ac.uk/gxsta.html
Made in Amsterdam: a rediscovered cittern from 1771

Geerten Verberkmoes

Cittern family instruments enjoyed popularity in the second half of the eighteenth century, most notably on the British Isles and in France. Many such instruments from these regions have survived in museums and private collections. This 'guitarr' fashion also took root in the northern Netherlands, although very few extant Dutch-made, late eighteenth century citterns have remained. The recent rediscovery of a cittern signed 'BOUSSU, á Amsterdam, 1771', previously only known from written sources, adds another (and early!) example to this small but significant group of Dutch-made instruments.

This paper presentation starts with a short introduction on the use of cittern type instruments in late eighteenth-century Holland. Then, the rediscovered cittern is comprehensively described and portrayed, based on visual observations, endoscopy and CT-scanning, which allows for a detailed analysis of its construction. Its known provenance is also presented. Furthermore, it is discussed and argued whether the violin maker Benoit Joseph Boussu (1703-1773) - primarily known for the bowed stringed instruments he produced in his Brussels period between c 1750 and c 1761 - was truly the maker of the instrument, or merely the trader who only signed the bought-in instrument before reselling it.

These analyses lead to the conclusion that a cittern, of equal quality and appearance as foreign examples, had already been built in the Netherlands as early as 1771, including in its design a - for those days - innovative watch-key tuning mechanism.

Geerten Verberkmoes (1968) holds degrees in chemistry (MSc), music (BMus) and musical instrument making (MA), and has worked in the fields of chemistry education and acoustics. Currently, he is a musical instrument maker and teaches instrument making and acoustics at the School of Arts in Ghent, Belgium. In addition, he is working on a PhD (Ghent University / School of Arts, Ghent) concerning the life and instruments of the eighteenth century violin maker Benoit Joseph Boussu. His research appears in publications such as Early Music and The Galpin Society Journal.

The Freiberg Violin - New Insights into Renaissance Violins North of the Alps

Thilo Viehrig and Nancy Thym

In the late 1970s the musical instrument restorer Peter Liersch and the musicologist Herbert Heyde made a sensational discovery. The 30 instruments in the hands of angels standing in a gallery 12 meters above the floor of the burial chapel in the Freiberg Cathedral not only look real but are actual late 16th century instruments, some of them with labels from a workshop in Randeck, south of Freiberg, Germany. Not until the year 2002 was it possible to take the instruments from the hands, which had held them for 400 years.

Under the direction of Dr. Veit Heller, the Musical Instrument Museum of the University in Leipzig, Germany initiated a project to examine the instruments using all possible modern scientific means and to make exact reconstructions using only the methods possible at the time they were originally built. As part of this project, musical instrument builder and restorer Thilo Viehrig examined and built reconstructions of the violins and harps. The original violins were built by a family of professional musical instrument builders, yet they appear to be simple musical instruments that would have been played by folk or itinerant musicians. They were placed in the hands of angels in the extravagant burial chapel of the princes of Saxony. Here is a unique example of the interrelations between traditional music, professional instrument builders and religious art. The Freiberg violins are the only extant examples of violins built north of the Alps from this period and are completely different in sound and construction from the Italian violins, which superseded them in the early 17th century. This leads to serious ramifications for performance practice of pre-17th century music north of the Alps. Reconstructions of the Freiberg harp and violin built by Thilo Viehrig will be demonstrated.

Instrument builder and musician Thilo Viehrig studied violin and organ building as well as instrument restoration. His specialty is the performance practice and reconstruction of historical instruments. He established the musical instrument museum at the Center for Performance Practice in Michaelstein, Germany and his copies of historical instruments and reconstructions of archaeological finds can be viewed in various museums. As a musician he has specialized in historical bowed instruments - vielle, rebec, baroque violin.

http://www.euchmi.ed.ac.uk/gxsta.html
Policy, pricing, and provenance of a huge musical instruments collection: The Rück project - a view onto the whole

Dominik Von Roth and Linda Escherich

The Rück collection is outstanding not only because of its core holdings - about 1,500 objects - which represent nearly the complete development of European musical instrument making. The related acquisition correspondence, also belonging to the Germanisches Nationalmuseum Nuremberg since 1962, contains more than 17,000 documents and adds a world-wide unique depth and complexity. Together, these factors give the Rück collection immense value that goes far beyond a usual collection of musical instruments. The ongoing DFG research project “Musikinstrumente sammeln - das Beispiel Rück” (Collecting musical instruments - the Rück example) focuses on the vast correspondence conducted by the Rücks from the mid-1920s until the death of Ulrich Rück in 1962. The earliest extant carbon copies concerning the collection date from 1924. The simple idea to make carbons and to file them is a very significant step, for it already bears the central idea of collecting in a modern museum sense. This, maybe, conscious act of creating history is to be regarded alongside with the musical instruments and especially with its alterations. Rück's unique correspondence on acquisition and sales negotiations provides a highly detailed insight into pricing and economics of historical musical instruments for the time before, during, and after the Second World War all over Western Europe.

To explore all this information a virtual research environment (WissKI) was created not only to collect large-scale data, but also to enable researchers getting a systematic overview on price ranges, provenance, corresponding musical instruments or archival material connected to linked cross-references. In addition, there will be a virtual library reflecting the academic discourse on musical instruments up to the 1960s. That way, and thanks to the international network of Rück, a huge musical instruments collection, which is only partly on display, can be grasped as a whole and becomes an objectification of cultural history while also being an important step towards the 'digital museum'.

By selected examples the paper will give an insight into the Rück collection and especially into the so called RückPortal, its structure, content, and research possibilities.

Dominik von Roth: Studies in musicology, history of art and cultural management at the University of Music “Franz Liszt” Weimar, Friedrich-Schiller-University Jena, and at the Università degli Studi di Perugia (Italy). Next to activities in cultural management, doctorate in musicology (2014). Since 2012 research assistant in DFG-project Die Neudeutsche Schule. Schriftenedition, Datenbank und Studien; Project coordination of Schütz und Luther (Heinrich-Schütz-Haus Wei_ enfels, 2015), since 2016 coordinator of the DFG-project Musikinstrumente sammeln - das Beispiel Rück at the Germanisches Nationalmuseum Nürnberg.


The Court-Musician Franz Fiala and his Invention the Tastengitarre

Daniel Wheeldon

In nineteenth century Germany there emerged an instrument called the Tastengitarre (Keyed Guitar), where a piano hammer mechanism within the body of the guitar could strike the strings through the sound hole. This idea is similar in concept to the pianoforte guitar in London during the 1780s, where a similar mechanism acted upon the six courses of an English guitar.

Little is known about these German instruments since nearly all of them have been lost, this study will look at the only two known instruments. One was previously owned by Wilhelm Heyer and was attributed by Georg Kinsky to Karl Ludwig Bachmann, this was lost during the second world war and the only surviving information is contained in Kinsky's catalogue of 1912. The second instrument fortunately still survives in the Metropolitan Museum of Art in New York (MMA 89.4.3145) bearing two labels: one with the name Matteo Sprenger, and the other F Fiala. It is clear that these two instruments are entirely different from one another, and that it is possible that one was made by Bachmann and the other Matteo Sprenger and Franz Fiala.

Franz Fiala was a musician in the Baden court and we read that in December 1819 he was granted the sole
right to manufacture and sell Tastenguitarre. In light of this account Andreas Michel and Philipp Neumann write in Leipzig University's 2016 catalogue Gitarren 17. Bis 19. Jahrhundert that the lost Leipzig instrument ought to be ascribed to Franz Fiala. However, this claim has not been informed by the presence of MMA 89.4.3145. This study will use detailed observations of MMA 89.4.3145 to consider the design influences of Fiala's invention. Detailed diagrams of this instrument have been made, including the pianoforte mechanism, which is comparable to late eighteenth century British pianoforte actions. This similarity is perhaps a tie albeit slight to the London-made pianoforte guitar of the 1780s. In addition to examining surviving instruments this study will return to the original nineteenth century texts to explore Bachmann's association with this instrument. Writers in the first half of the twentieth century, namely Kinsky and Galpin, have recognised only Bachmann as the author of the Tastenguitarre and this claim deserves full consideration. It is quite possible that Bachmann was not at all involved in the manufacture of the Tastenguitarre and so it is important a coherent history of this instrument is presented.

Daniel Wheeldon grew up in Surrey and Singapore before moving to London to study Musical Instruments (BSc) at London Metropolitan University and his Masters at Edinburgh University. In 2015 he was awarded a Chester Dale fellowship to catalogue and document all pre-1900 European guitars at the Metropolitan Museum of Art in New York. He is currently in Edinburgh as an AHRC funded PhD student researching the interactions of different schools of instrument making in London and Germany.

Scotland's Supply of Musical Instruments c1750-1815: a New Source

Lance Whitehead

While the origin of instruments entering Caledonia during the Scottish Enlightenment remains problematic, reliant to a large extent on the haphazard survival of family and business accounts, a previously untapped source promises to shed new light on the topic. The Leith Port Books (1742-1830) preserved at the National Records of Scotland, document imports and exports through Scotland's leading harbour, and, while not a significant contributor to the country's overall economy, certain types of musical instrument passed through these docks on a regular basis. Concentrating on items entering Scotland up to the end of the Napoleonic period, this paper lifts the lid on the most common musical instrument imports, and helps confirm the building activities of one of Edinburgh's leading piano firms. Since London is excluded from the Leith Port Books, some additional pecuniary transactions concerning suppliers based in this city will be used to complement the story.

Lance Whitehead studied music and organology at the University of Edinburgh, 1983-1994. Initially concentrating on the design and construction of early keyboard instrument, he has since widened his research field to include socio-economic aspects of musical instrument building in eighteenth- and nineteenth-century Britain. Lance has had a portfolio career as school music teacher, museum curator and crime scene investigator. He currently teaches aspects of music at both Edinburgh and Napier Universities, plays the organ at his local church and edits The Galpin Society Journal.

The Gamba Oboe; a forgotten organ stop rediscovered

Owen Woods

Organs come in many shapes and sizes, but most feature both flue pipes and reed pipes (either beating or free) in their tonal architecture. Unfortunately, the pitch of flue pipes varies more markedly with temperature than that of reed pipes, meaning that reeds and flues are often out of tune with each other at different times of year and require regular visits from an organ tuner. Reeds are also expensive to make and to voice and require more maintenance once installed. In the nineteenth and early twentieth century, efforts were made to solve this problem by designing and voicing flue pipes that could fulfill some of the functions of reed pipes. They are collectively known as “Labial Reeds” and attempts have been made to imitate the Oboe, Clarinet, Euphonium, Saxophone, French Horn and Tuba using this technique. This paper focuses on the “Gamba Oboe”, a Labial Reed designed to imitate the Oboe organ stop. It resembles most closely a Bell Gamba, with a tapered resonator capped with a conical bell. It was a specialty of the noted organ building firm “Harrison and Harrison” for their smaller organs, many of which were
installed close to the factory in County Durham. The earliest known organ featuring this stop dates from 1887 and the last from 1907, the whole comprising 51 known examples at the time of writing. This date range spans the handover from founder Thomas Harrison to his two sons, Arthur and Harry - a pivotal time for the firm. The extensive archives stored at the factory and in the Durham County Record Office give a fascinating insight into how the firm was run at that time, with some delightful stories emerging about the people behind the organs.

Only around 20 Gamba Oboe stops are still extant, with many instruments being altered or destroyed, scrapped or vanished off the record. As many as possible have been visited and examined to see how uniform the design was over its lifetime. Sound recordings and measurements have been taken and simple acoustic measurements have been made in order to establish how effective the imitation really was. The design has also been put in context with similar stops from other builders, this being the start of a wider project into Labial Reeds. We show that this supposed cul-de-sac of organ building is not without interest and has the potential for modern day application.

Owen Woods is an organ builder with Harrison and Harrison in Durham and an amateur researcher. He graduated from the University of Cambridge in 2012 with a Masters in Engineering. The research undertaken for his dissertation was presented at the 2013 GS conference, for which he won the Debut Paper Prize. It was later published in GSJ LXVIII. Owen also organised the successful GS conference 2015 in Cambridge, in association with the Institute of Acoustics.

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A Review of the Application of High Speed Photography to Musical Instrument Research at the University of Edinburgh

Alan Woolley, Amaya Lopez-Carromero and Murray Campbell

Many interesting aspects of the behaviour of musical instruments involve vibrations and other types of motion at speeds too rapid to be followed by the human eye. One way of making it possible to visualize such phenomena is by using a high speed camera and slowing down the replay of the images. This technique has been used at the University of Edinburgh over many years to study the sound generating elements in reed and brass wind instruments. Recently the incorporation of Schlieren optics, which makes variations in air density visible as shades of grey, has made it possible to directly visualize high amplitude sound waves. This presentation describes studies of the lips of trombone players, the shock waves from the end of a trumpet bell showing their distribution and shape, the vibration of bagpipe reeds showing the effect of the shape of the bore of the chanter and the vibration of organ pipe reeds. High speed photography has also been used to study the movement of the key and pallet of a mechanical action pipe organ showing the effects of pluck due to the pressurised air in the windchest acting on the bottom of the pallet valve underneath the pipes.

Alan Woolley has been studying pipe organs for the past eighteen years, obtaining an MA in Organ Historiography from the University of Reading in 2000 and a PhD in Musical Instrument Research from the University of Edinburgh in 2006. This was followed by a research project funded by The Arts and Humanities Research Council centring on mechanical actions and the extent to which they allow the player to control the transients. Amaya Lopez-Carromero graduated in 2009 in Civil Engineering followed by an MSc in Environmental and Building Acoustics at the Universidad Politécnica de Madrid (ETSICCCP). She then became an Erasmus student at ISVR in the University of Southampton studying structural vibrations and vibration control. In March 2014 she was selected for the BATWOMAN ITN Project, a Marie Skłodowska-Curie action funded by the European Union, becoming an Early Stage Researcher and PhD student studying brass instruments at The University of Edinburgh. Murray Campbell is Professor of Musical Acoustics at the University of Edinburgh and has received worldwide recognition for his work which includes a particular interest in historic instruments. He is also a performer on a wide variety of musical instruments and is Director of a number of instrumental ensembles that give regular public performances.

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The Câlâpitâ: The History, Uses, and (Attempted) Revival of an Extinct Gamelan Instrument

Tyler Yamin

One hundred years ago, a wooden or bone clapper was an important part of numerous royal gamelan traditions across Indonesia. The only such instrument encountered in these classical ensembles of bronze...
metallophones, in Bali it lent its unique sonority to the gamelan gambuh (palace orchestra of drums and metre-long bamboo flutes) and in Java to a single performance enacted for a holiday celebration transpiring once every eight years. Today, however, the cälápítã - alternately known as kapita, lupita, or tjepta - has vanished from every single ensemble that once incorporated it, and is now remembered only by a single centenarian Balinese musician. Driven by historical and ethnographic research, this presentation is an exploration of this simple idiophone as both a sound-producing object and one implicated within layers of cultural-historical significance. I trace the life of this instrument from its origins in tantric rituals, for which it was specifically constructed from human bones, to its zenith of performance before the kings of Bali and Java, to its eventual abandonment due to both musical apathy and the turmoil of the Second World War. I also investigate the construction and playing techniques of the instrument, a topic largely informed by archival research. In particular, I introduce photographs and notational examples (handwritten in the margins of typewritten pages) found in ethnomusicologist Colin McPhee’s unpublished field notes authored in the 1930s. Connecting this project to a time-honored tradition of gamelan building outside Indonesia, I describe my own attempts at reconstructing the cälápítã from this photographic evidence. Despite sufficient musical documentation, Balinese musicians have been reluctant to re-incorporate it into performance practice, and instead treat it as an artifact of a past era-a reconstructive attempt during the 1980s, albeit unaided by photographic or notational documentation, similarly failed. This anticlimax is not the conclusion of the cälápítã's life, however; it is just another chapter in an ongoing story of this musical instrument, one that narrates the history of a nation and development of a musical tradition from the perspective of a simple material assemblage made from string and wood or bone.

A graduate student in the UCLA Department of Ethnomusicology, Tyler Yamin also teaches the gamelan ensembles of Loyola Marymount University and the University of San Diego, where he is Artistic Director. Actively repatriating old Balinese recordings in order to revive lost or dying traditions, he directs a community group that performs this music on instruments he built himself. His research applies both phenomenological and nonanthropocentric approaches to the study of musical instruments and object personhood.

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