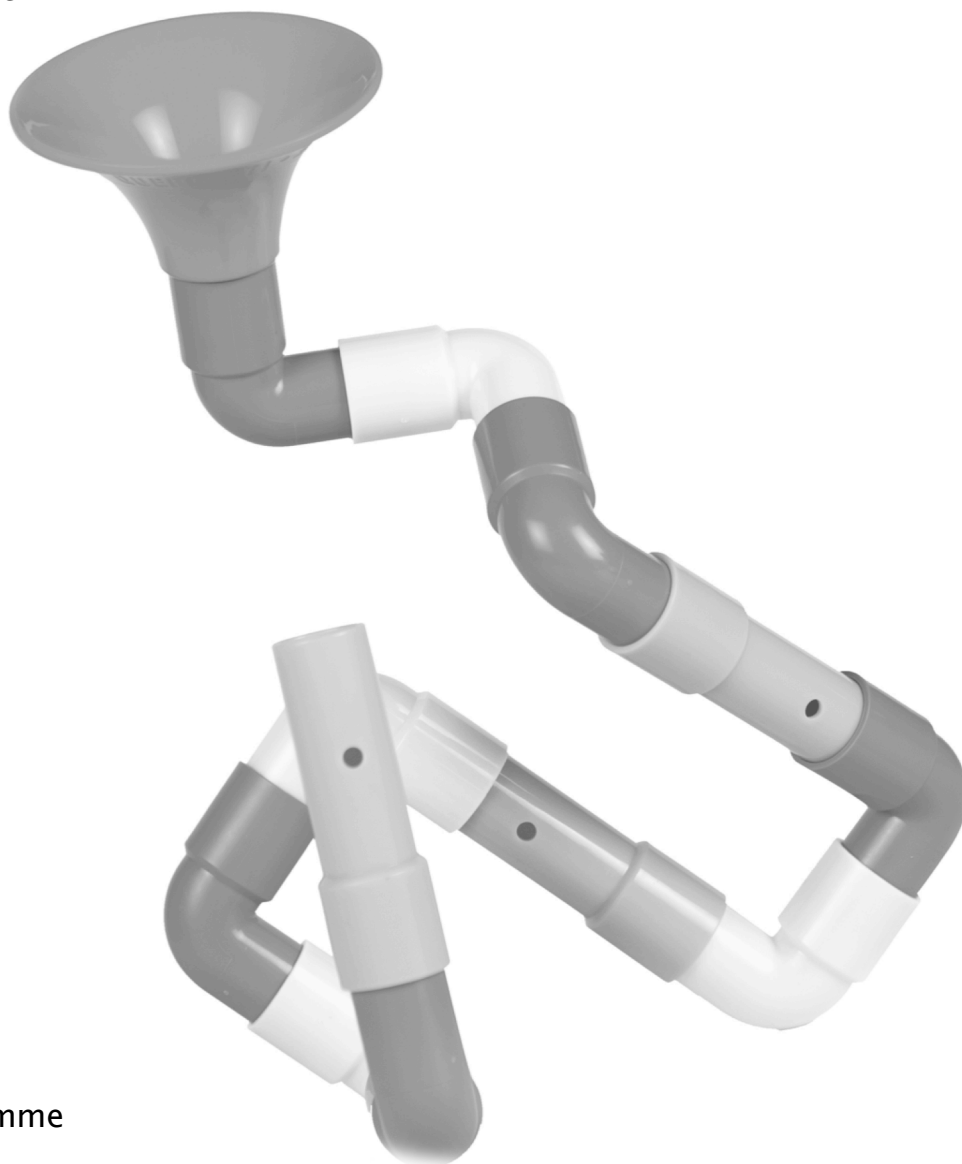


CIMCIM Annual Congress 2017 and  
Fourth International Romantic Brass Symposium

## **Presentation, Preservation and Interpretation**

### **The Challenges of Musical Instrument Collections in the 21<sup>st</sup> Century**

Wednesday to Saturday, 22-25 February 2017  
Basel/Bern



#### **Programme**

Organised by CIMCIM, the Bern University of the Arts and the Museum für Musik Basel in collaboration with Schola Cantorum Basiliensis and Klingende Sammlung, Bern, supported by the Swiss National Science Foundation

[www.hkb-interpretation.ch/cimcim](http://www.hkb-interpretation.ch/cimcim)

## Wednesday, 22 February 2017

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Museum für Musik, Im Lohnhof 9, 4051 Basel

08:30–9:30 Registration, Welcome coffee

09:30 Welcome and Introduction. Martin Kirnbauer and Gabriele Rossi Rognoni

**Panel 1 – Museums and the Contemporary I** – Chair: Gabriele Rossi Rognoni

09:45 Conny Sibylla Restle (Berlin): The Presentation of Electronic Musical Instruments in the Musikinstrumenten-Museum Berlin. Challenges, Concepts and Solutions in the Context of the Special Exhibition “Good Vibrations”

10:15 Stewart Carter (Winston-Salem): Musical Instrument Collections in China – A Preliminary Survey

10:30 Pause

**Panel 2 – Museum and the Contemporary II** – Chair: Martin Kirnbauer

11:00 Zahra Habibizad, Sara Kariman (Tehran): The Solutions of the Music Museum of Iran to the Challenge of how to Collect, Present and Conserve the New Generation of Iranian Music

11:30 Hayato Sugimoto (Kyoto): The Beatles’ Gear and “Fast Fashion”. Collecting Inexpensive Guitars as a Symbol of Popular Culture in Modern Society

12:00 Ivar Roger Hansen (Trondheim): From Next to Catastrophe to New Possibilities. The Fire at Ringve Music Museum in August 2015

12:15 Short walk (5’) to Schola Cantorum Basiliensis (SCB), Leonhardsstr. 6

12:30 Lunchtime concert (SCB, Kleiner Saal)

Visit to the special exhibition “Auf Takt! Metronome und musikalische Zeit” in the Museum für Musik.

**Panel 3 – Wind Instruments** – Chair: Patrice Verrier

14:45 Rebecca Wolf (Munich): Material in Music. Experiments with the Sound of Silver and Gold

15:15 Mattia Cavazzana *et al.* (Milan): The Workshop of Angiolino Ferloni (1919–2010), Maker and Repairer of Brass Instruments

15:30 Claudio Canevari *et al.* (Milan): The Cornett of the Accademia Filarmonica di Bologna. Studies and Hypotheses for its Reconstruction

15:45 Andrey Ikov (Moscow): Silver Collection – Historical Wind Instruments in a 21<sup>st</sup>-Century Museum Collection

16:00 Pause

**Panel 4 – A Window into the 21<sup>st</sup> Century** – Chair: Frank Bär

16:30 Mats Krouthén (Trondheim): Music on the Disc Musical Box as Early Mass Media and Early Popular Music. On Collection Management and (Dis-)Play

17:00 Wiebke Lüders (Voss): Framtids-Felemakeriet. The Norwegian Hardanger Fiddle-Making Tradition in the 21<sup>st</sup> Century

17:15 Kazuhiko Shima (Hamamatsu): How a Musical Instrument Museum should be in 21<sup>st</sup>-Century Society

19:30 Presentation of the reconstructed Arciorgano after Nicola Vicentino (and the research project “Studio31”) in the Predigerkirche (Totentanz 19)

## Thursday, 23 February 2017

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Schola Cantorum Basiliensis, Kleiner Saal, Leonhardsstrasse 6, 4051 Basel

09:00 Welcome and introduction. Thomas Drescher and Stephan Schmidt

### **Panel 5 – Keyboard Instruments** – Chair: Kathrin Menzel

09:15 Manuel Bärtsch, Sebastian Bausch (Bern): The Bockisch Network, Or: How Many People it Takes to Bring Back to Life the Knowledge of One Ingenious Inventor

09:45 Jurn A.W. Buisman (Heerde): From the Spirit of Place to the Spirit of Object and Back. Aspects and Viewpoints on a Working Collection of Historic Pianos

10:00 Sarah Davies (New York City): A Toggenburg Organ in the American West. The 1786 Joseph Looser Hausorgel in the National Music Museum (NM 4897), Vermillion, South Dakota

10:15 Birgit Heise (Leipzig): 125 years Hupfeld Piano Factory in Leipzig. What Shall we Do with so Much Different Material in the Whole Town?

10:45 Pause

### **Panel 6 – Preservation and Presentation** – Chair: Christina Linsenmeyer

11:15 Balthazar Soulier, Andreas Hochuli (Paris): The Dilemma of Rendering Stringed Instruments Playable. A Discussion of Material Implications Based on Recent Interventions on Two 18<sup>th</sup>-Century Violins

11:45 Eleni Ralli (Basel): Harry Partch. The Importance of Conserving and Understanding his Instruments to Preserve his Music

12:15 Lunch Break (Lunch bag provided for the participants of the excursion)

12:30 Excursion to Schloss Bad Krozingen (Neumeyer-Junghanns-Tracey Collection of historical keyboards with a presentation by Catalina Vicens [Basel/Leiden]) and Bad Säckingen (Trompetenmuseum) with transfer to Bern (Arrival ca 19:15) (extra fee for the coach: 40 €)

## Friday, 24 February 2017

Bern University of the Arts, Grosser Konzertsaal, Papiermühlestrasse 13d, 3014 Bern

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09:00 Welcome and Introduction. Martin Skamletz

### **Panel 7 – Information and its Preservation** – Chair: Stewart Carter

09:15 Keynote Arnold Myers (Edinburgh): Information Preservation for Museum Instruments

09:45 Dominik von Roth, Linda Escherich (Nürnberg): Conservation of Knowledge Beyond the Object – the Rück Example

10:15 Laurence Libin (Ramsey): “Critical Organology”. A Challenge for Museums

10:30 Pause

### **Panel 8 – Conservation and Materials** – Chair: Laurence Libin

11:00 Jennifer Schnitker, Manu Frederickx: Preventive and Interventive Conservation of The Met’s Appleton Organ

11:15 Pjotr Juga (Trondheim): Rayhorn-O-Seven Guitar. A Case of Self-Degrading Plastic and Documentation Issues in Two Acts

11:45 Panagiotis Pouloupoulos (Munich): Composition Ornaments on Historic Harps. From Research to Exhibition

12:30 Lunchtime Concert: Ernesto Molinari, CLEX, contrabass clarinet extended

14:00 General Assembly CIMCIM

15:15 Pause

### **Panel 9 – To Play or Not to Play** – Chair: Giovanni di Stefano

15:45 Marie Martens (Copenhagen): Angul Hammerich and the Bronze Lurs. Once Again: To Play or to Display

16:15 Sabine K. Klaus (Vermillion): To Play or Not to Play? BIAS Will Help!

16:30 Daniel Debrunner (Bern): Fresh Wind – A Presentation of the Wind-Dynamic Organ I

17:15 (Bern Munster) Samuel Cosandey: Fresh Wind – A Presentation of the Wind-Dynamic Organ II

18:00 Visit to the Exhibition “C’est le vent qui fait la musique” in the Klingende Sammlung in Bern. Guided Tour with Adrian v. Steiger

## Saturday, 25 February 2017

Bern University of the Arts, Grosser Konzertsaal, Papiermühlestrasse 13d, 3014 Bern

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### Fourth International Romantic Brass Symposium.

#### Panel 10 – To Play vs. to Display – Chair: Arnold Myers

09:00 Keynote Robert Barclay (Toronto): Old and New. Mediating Musical Experience

09:45 Introduction. Adrian v. Steiger (Bern): Interior Corrosion in Brass Instruments

10:15 Martin Ledergerber (Affoltern): Humidity in Regularly Played Brass Instruments. Possibilities and Limitations of Preventive Conservation

10:45 Pause

#### Panel 11 – Preservation and Interpretation – Chair: Panagiotis Pouloupoulos

11:15 Emilie Cornet, Martin Mürner (Bern): Aspects of Corrosion Prevention on Historical Brass Instruments

11:30 Stefaan Verdegem (Gent): Stravinsky's *Sacre du Printemps* from the Musicians' Point of View

12:00 Daniel Allenbach (Bern): A View Into the Orchestra Pit at the Théâtre des Champs-Élysées, Paris, 29 May 1913

12:30 Lunch Break (Simple lunch provided)

#### Panel 12 – Analysis by Electrochemistry, XPS Surface Analysis, Endoscopy and Tomography – Chair: Adrian v. Steiger

13:30 Bernhard Elsener *et al.* (Zurich/Cagliari): Breathing New Life into Historical Instruments. How to Monitor Corrosion

Federica Cocco *et al.* (Cagliari/Zurich): How Surface Analysis can Contribute to an Understanding of the Preventive Conservation of Brass Instruments

David Mannes (Villigen): Monitoring the Condition of Played Historical Brass Wind Instruments by Means of Neutron Imaging

Martin Ledergerber (Affoltern): Endoscopy as an Examination Method

15:15 Roundtable Discussion. Inputs by Marie Wörle (Affoltern) and Trevor Herbert (Cardiff)

16:30 End of the Conference and Outlook on CIMCIM 2018 in China

17:00 Concert of the Brass Department of Bern University of the Arts: Stravinsky's *Sacre du printemps* (excerpts) and other brass chamber music

19:00 Farewell dinner (extra fee: 40€)

### Further Information

Coffee breaks and a simple lunch on Saturday are included in the admission fee of 100 € (4 days), 80 € (3 days), 60 € (2 days), 40 € (1 day); students free.

Other meals (e.g. in the Cafeteria Bellini at the Musik-Akademie Basel or the Restaurant Treffpunkt, Bern) on one's own account.

## Abstracts and Biographies

Conny Sibylla Restle (Berlin)

### **The Presentation of Electronic Musical Instruments in the Musikinstrumenten-Museum Berlin. Challenges, Concepts and Solutions in the Context of the Special Exhibition “Good Vibrations”**

Electric and electronic musical instruments belong to the most complex and difficult objects in our collections. They consist of delicate materials; how they make noise and sounds is very sophisticated; and their look and design may differ from the acoustic instruments we know so well and have explored so thoroughly. Almost every prototype (of which we have many in our collections) is rare and fragile. But the main difference to our “old” instruments lies in their use of electricity for creating and recording sound and music.

Apart from the electronic keyboards, almost every single electronic instrument has its own history and its own interface. Most of the electric and electronic instruments that already belong to museums are kept in storerooms and are as yet invisible to visitors. And long before deciding whether to show these instruments to the public, we have to answer questions about the condition and aesthetics of our object. We have to consider the difficult questions of conservation and restoration. And we have to find new methods to achieve visual and acoustic communication with our visitors.

Our special exhibition “Good Vibrations. A history of electric and electronic musical instruments” (24 March 2017 – 25 June 2017) will focus on all the main aspects of the development of electronic musical instruments since the late 19<sup>th</sup> century, their music, their sounds and their further development. This paper discusses the challenges and the concepts we deal with when we exhibit electric and electronic musical instruments, and it will determine possibilities for innovative and complex communication and interaction between object and visitor. We will place special emphasis on the music that has been composed for each new instrument, on the musicians, on their social background and on the consequences for the subsequent development of electronic instruments today and in the future.

**Conny Sibilla Restle** is head of the Berlin Musical Instrument Museum at the State Institute for Music Research – Prussian Cultural Heritage Foundation.

Stewart Carter (Winston-Salem)

### **Musical Instrument Collections in China – A Preliminary Survey**

China has a long and rich history of instrumental music but only a few museums devoted exclusively to musical instruments. My paper surveys nineteen instrument collections in China and Taiwan, offering general information on the size and scope of each. It focuses in particular on six institutions in Shanghai and Beijing that have significant holdings of traditional Chinese instruments. It further compares collection policies of these institutions with those of similar institutions in the West. The Shanghai Museum of Oriental Instruments, for example, holds many important historical Chinese instruments; it closely resembles Western museums in its

collections strategy and its displays, and it is the only institution in China with a published catalogue devoted exclusively to instruments. Certain other collections, however, consist largely of reproductions.

My paper is truly a preliminary survey. To the best of my knowledge, no comprehensive list of instrument collections in China has ever been compiled. To do so would be a daunting task, but it would be an important step in documenting the musical traditions of the Chinese people.

**Stewart Carter** is Past-President of both the Society for Seventeenth-Century Music and the American Musical Instrument Society. In 2012 he published *The Trombone in the Renaissance. A History in Pictures and Documents*. He serves as Editor of the *Historic Brass Society Journal* and General Editor of *Bucina. The Historic Brass Society Series*. Other editorial projects include *A Performer's Guide to Seventeenth-Century Music*, edited by Stewart Carter, revised by Jeffery Kite-Powell. He is currently Professor and Chair of the Department of Music at Wake Forest University in North Carolina.

Zahra Habibizad, Sara Kariman (Tehran)

### **The Solutions of the Music Museum of Iran to the Challenge of how to Collect, Present and Conserve the New Generation of Iranian Music**

The Music Museum of Iran is the only national music museum in Iran; with its broad approach it tries to collect and present all musical genres. According to the emphasis and focus of ICOM on the importance of education in museums, the Music Museum of Iran pays special attention to the musical instruments of the young generation.

Thus the question arises as to how the Music Museum of Iran can conserve and present new types of music such as rap, rock and all kinds of pop, depending heavily on extra-musical factors such as the scene, light, live performance or appearances by the artist. Furthermore, the Museum would like to reconcile the older and younger generations in this field. In fact, in addition to presenting historical instruments, it is of critical urgency that we should think about the presentation and conservation of a new generation of instruments and movements in music.

The Music Museum of Iran comprises different sections with different functions: an archive (media & audio), a permanent exhibition of national Iranian music, a library, a gallery dedicated to the evolution of the technology of recording from its beginnings to the present day, a workshop for making traditional Persian instruments and a research department. In order to achieve the primary goals mentioned, the Museum has to find solutions for the new challenges it faces. This requires new plans for all sections of the museum as well as ideas for new sections or new programmes for existing sections.

Among other projects, in recent years a professional recording studio, a conference hall, a visual art gallery (presenting different aspects of music in the language of the visual arts), a concert hall for live music in the garden and rehearsal rooms have been established, all of these being intended for the visitors. The main approach of the additional sections is to support new music streaming. The other solution of Music Museum of Iran is to hold different music festivals. This is a way of presenting new genres of music

(rap, rock, and pop) and conserving the contemporary voice of culture in addition to addressing historical instruments.

**Zahra Habibizad** graduated in Museum Studies at the Art University of Tehran in 2016 and has been the archive director at the Music Museum of Iran since 2010. She is the author of *Ecomuseums, Humans and Ecosystems* (2010), has contributed to Peter Davis's *Ecomuseums. A Sense of Place* (2011) and has published two catalogues on the "Shamse" Music Festival that she managed in 2011 and 2012. Zahra Habibizad has been a member of the board of the Farhang Museum journal writers since 2013.

**Sara Kariman** graduated in art research at the University of Science and Culture of Tehran with a focus on Iranian music (especially popular music) and a Master's thesis entitled *The Origin of Personal Style in Popular Music of the Fifties in Iran*. Since 2010 she has worked in the field of museums, first as a collaborator in research and education at the Fine Art Museum of Saad Abad cultural complex in Tehran, today in the archive of the Music Museum of Iran.

Hayato Sugimoto (Kyoto)

### **The Beatles' Gear and "Fast Fashion". Collecting Inexpensive Guitars as a Symbol of Popular Culture in Modern Society**

The Beatles, the most famous '60s rock group, still maintain an apparently invincible presence and global reputation despite no longer being in existence. Back in the 1950s they were merely working class lads and no one expected them to achieve such eminence. What made it possible for them to continue playing music despite their humble lifestyle and low earnings? Recent research has revealed the specification of the instrument of each member. In their early days they possessed inexpensive instruments. Moreover, the Cold War period's trade restrictions limited British trade with the U.S., frustrating musicians who wished to perform the trendy music imported from America using the same instruments pictured with celebrities on record sleeves. Youngsters, especially in the provinces, had no choice but to purchase imitations manufactured outside Britain in countries with low labour costs.

We can see this gear as equipment that underpinned popular culture. This socio-economic phenomenon occurred not only in the 1950s, however: it can be seen continuously from the Regency period (the first quarter of the 19<sup>th</sup> century) to the present day. Middle-class ladies and fledgling actresses in Regency Britain enjoyed the low-priced instrument called the harp lute, whereas we now have the social phenomena of globalisation and "fast fashion", typically in imports of economical products made in China. Today, some museums have already begun collecting inexpensive instruments of the 20<sup>th</sup> century, perhaps in most cases on the grounds of curiosity and celebrity use. Are these instruments genuinely of value for museums only because they once belonged to renowned musicians? This paper aims to propose a complementary approach, re-evaluating inexpensive instruments in the category of "popular culture" in modern society, collecting

and presenting them from the 19<sup>th</sup> century to the present day, and exploiting the museum as an educational platform.

**Hayato Sugimoto** learned the skill of guitar making from a Spanish guitar-maker and his colleagues in England between 2000 and 2005. In 2005, Sugimoto completed a BA (Hons) Music Technology (Musical Instruments) at London Metropolitan University. In 2009 he completed an MMus in Musical Instrument Research at the University of Edinburgh with a focus on aspects of French guitars made in the 19<sup>th</sup> century. In 2015 he completed a PhD at the University of Edinburgh with a thesis entitled *The Harp Lute in Britain, 1800–1830. A Study of the Inventor Edward Light and his Instruments*.

Ivar Roger Hansen (Trondheim)

### **From Next to Catastrophe to New Possibilities. The Fire at Ringve Music Museum in August 2015**

On 3 August 2015, the Ringve Music Museum was damaged by fire in the so-called “Hovedbygningen”, the Manor House. The fire started outside, being caused by the use of a gas burner to remove weeds from the pavement. Although the fire brigade was soon on the spot, there was extensive damage to parts of the building, the instruments and furniture.

Like other museums, Ringve continuously works with security plans for different scenarios, and we emphasise a systematic training. A real emergency situation nevertheless represents a different challenge. In my short paper, I will offer some reflections on how our security and emergency plans worked in practice on this occasion, how the evacuated instruments and furniture have been handled and conserved in several steps, how the fire revealed new knowledge about the history of the building, and finally how the situation has made it necessary to re-think the concept of exhibition and story-telling in the building. I will also, from a leader’s point of view, focus on how the museum took care of its staff from a human-environment systems (HES) perspective during a critical situation that brought traumatic experiences for everybody.

**Ivar Roger Hansen (b. 1955)** obtained his Bachelor’s degree in music education and a Master’s degree in musicology from the University of Trondheim. He has been the head of the Sound and Image Archive at the National Library of Norway in Mo i Rana (1991–97) and director of the Petter Dass Museum (2001–2013.) For 30 years he was a well-known choral conductor. From 2005 to 2009 Hansen was Vice-Chair of the Norwegian Arts Council. Since 2014 Hansen has been director of the Ringve Music Museum in Trondheim.

Separate programme for the **Lunchtime concert**

### **Exposition “Auf Takt! Metronome und musikalische Zeit”**

At the heart of «Up Beat!» are over 175 metronomes, musical chronometers and pulse-givers from the private collection of Tony Bingham in London, each of which has a story to tell. Alongside these ticking timekeepers from the 18<sup>th</sup> to 20<sup>th</sup> century, the exhibition also explores themes of concern for us all, such as how rhythm affects us, how listening to music influences inner pulse and the importance of being «in sync» with one another.

Rebecca Wolf (Munich)

### **Material in Music. Experiments with the Sound of Silver and Gold**

Developments in music life during the last two centuries have brought about an increasing variety in concert life and the professionalisation of musicians. These changes have been accompanied by demands for particular facets of sound and for high technical specifications in sound production. As precision tools for making music, instruments offered a wide range of possibilities. Driven by the demand for equality of sound and quality in general, musical instrument builders experimented with ways of improving or inventing instruments. One aspect of musical instruments came into especially sharp focus: the material.

With this paper I would like to give an overview of our research group on “The Materiality of Musical Instruments. New Approaches to a Cultural History of Organology”, offering an example of experiments with metal in woodwind-instrument building. The research group unites musicological methods with material culture studies and acoustics. We will investigate the role played by materials in the invention of instruments and the sensory perceptions that these instruments invoked.

One example brings us into mid-19<sup>th</sup>-century Germany. Collecting concepts around the construction materials as substance, this paper examines instrument builders, their knowledge, writings on their experiences and experiments, and their performances of music. The flutes and writings of Theobald Boehm exemplify the relevance of the characteristics of materials. This example raises certain questions about the influence of substances on the sounds of instruments and, in turn, about the ways that discussions about the materials used for musical instruments led to further experiments in acoustics. What light does the relationship between sound and material cast on historical concepts of materiality? In this paper, I address these questions with reference to some experiments on the use of metal, especially silver and gold, for woodwind instruments by Boehm.

**Rebecca Wolf** leads the research group “Materiality of Musical Instruments: New Approaches to a Cultural History of Organology” at Deutsches Museum, Munich. She has worked on materials and music as a Fellow at the Harvard Music Department and at the Max Planck Institute for the History of Science. Her first book on Friedrich Kaufmann’s trumpet automaton (1810) won the Award of Excellence of the Austrian Ministry for Science. She teaches musicology in Munich and has published on instruments made of glass, musical automata, music in peace and war, and musical-instrument makers.

Mattia Cavazzana, Franco Ferloni, Claudio Canevari (Milan)

### **The Workshop of Angiolino Ferloni (1919–2010), Maker and Repairer of Brass Instruments**

Angiolino Ferloni was born in Faloppio (Como) after World War I; after a period as a worker in a brick furnace he began his long career in 1933 in the new brass instrument-making factory of the renowned prof. Romeo Orsi company in Cavallasca (Como). During World War II, Ferloni took refuge in Switzerland. After the end of the war he worked at the Hirsbrunner factory in Sumiswald near Bern. In 1948 he went back to Italy and from 1952 onwards he ran his own workshop. A repairer of brass wind instruments is a highly specialised, skilful artisan, and still plays an important role nowadays. When Ferloni was active in Italy his clients were mainly musicians, both professionals and members of bands across Lombardy and Switzerland. As an instrument maker, Ferloni took part in projects to design and build prototypes of new instruments, e.g. a contrabass trombone. He kept on working until 2007; during his professional life he had contacts with all the most important Italian instrument makers and repairers, some of whom, like A. Benicchio and L. Alziati, are still alive and in some cases even still active. Angiolino Ferloni's family preserved almost all the material that documents his long activity; this rich collection includes workshop tools, musical instruments and parts, drawings and moulds, sketchbooks and clipboards with information about the instruments that he made or repaired, catalogues, documents about his commercial activity and his family life and a large image archive.

Claudio Canevari, Mattia Cavazzana, Vincenzo Onida (Milan)

### **The Cornett of the Accademia Filarmonica di Bologna. Studies and Hypotheses for its Reconstruction**

There is much evidence that cornetts were played during the music sessions of the Accademia Filarmonica di Bologna, founded in 1666. A cornett, mentioned in the most ancient inventories, is preserved in the collection of musical instruments of the Accademia Filarmonica. Its features are peculiar and related to its construction and use. The instrument was made with a right-handed fingering and subsequently modified to invert this: part of the leather was removed and never replaced. The joining line of the two halves, clearly visible without the leather, is irregular and out-of-plan; the two parts of the cornett were probably obtained from a single block of wood split along the grain. The instrument was probably made by a skilful, fine maker; it was also modified with great ability. The conservation state is poor; for urgent conservation reasons, the cornett cannot be played and should be submitted to a conservative restoration, excluding *a priori* the restoration of its musical function. In preliminary studies, the cornett was photographed, the bore was inspected with a microcamera and a digital microscope was used to obtain images of significant areas. So far it has been measured using manual methods: a considerable amount of data and measurements were collected. A technical drawing of the cornett was realised; the numerical data were plotted and analysed with statistical methods. In a further step, the instrument will be submitted to a high-resolution CT to create a 3D model, and to non-destructive chemical analysis. Once data has been collected in a

satisfactory quantity, copies of the cornett will be made, applying different methods: manual carving, 3D printing and CNC woodworking machinery. The copies will be used for musical and acoustic experimentation.

**Claudio Canevari** teaches applied sciences and technologies at the Civica Scuola di Liuteria of Milan (CSLM) and was a member of the staff that founded the CSLM in 1978; he has participated in important conservative restorations, studies and museum catalogues for musical instruments in Italy. **Vincenzo Onida** is a maker and restorer of historic woodwind instruments, is a historic bassoon player and gives the seminars on wind-instrument making at the CSLM. Canevari and Onida coordinate the activity of a CSLM research group on the technology and history of wind instruments. **Mattia Cavazzana** and **Franco Ferloni** recently graduated successfully in music-instrument making; they actively collaborate in the wind instruments research group.

Andrey Ikov (Moscow)

### **Silver Collection – Historical Wind Instruments in a 21<sup>st</sup>-Century Museum Collection**

The Glinka National Museum Consortium of Musical Culture has a collection of silver musical instruments that are military awards, mostly from the time of the Napoleonic wars. Forty-three silver instruments (thirty-six trumpets, two trombones, three bass trumpets, a bugle, and an alto saxhorn) were received as awards by various regiments of the Russian army and make up this highly valuable collection along with four military trumpets and a timpano. Most of the collection is presented in the Museum's exhibition. The instruments have inscriptions that tell us what events they were associated with. Two of the St. George's trumpets have the following engravings: *For distinction in defeating the enemy and expelling them from Russian soil in 1812.*

The instruments that comprise the collection were made in the first half of the 19<sup>th</sup> century, and this paper will be dedicated to the topic of preventive conservation and the way these instruments are played and displayed in the exhibition today.

**Andrei Ikov** studied the trumpet at the Moscow Special Music School and the Moscow State Conservatory with Georgy Orvid and Lev Volodin. He received further input from Timothy Dokshidzer and Anatoly Selianin, professor of trumpet of Saratov Conservatory. Since 1996 Ikov has taught at the Moscow Special Music School, the Gnessin State Musical College, and the High School Ippolitov-Ivanov; since 2008 he has been the senior trumpet lecturer at the Tchaikovsky Moscow State Conservatory. Often cooperating with the Glinka National Museum Consortium, he here presents its great collection at the CIMCIM annual conference of 2017.

Mats Krouthén (Trondheim)

**Music on the Disc Musical Box as Early Mass Media and Early Popular Music. On Collection Management and (Dis-)Play**

The late 19<sup>th</sup>-century disc musical box and its repertory of contemporary popular music, programmed on perforated, pinned discs, represents an early example of mass-produced music platforms and media. This phenomenon raises new questions and challenges for the work of Ringve Music Museum that curates this collection, also with regard to a planned future exhibition and digital presentation and to cooperation with other user groups.

**Mats Krouthén** has worked as a curator at Ringve Music Museum in Trondheim, Norway, since 2000. He has specialised in keyboard and mechanical instruments and has also published articles on string instruments and general collection management. He has likewise curated exhibitions on other topics, such as on violin making, a synthesizer from the sixties and Norwegian Black Metal culture. In the 1990s he studied musicology (cand. phil.) at Gothenburg University, with an ethnomusicological approach to regional music history. He also worked for several years there as a research assistant in various projects.

Wiebke Lüders (Voss)

**Framtids-Felemakeriet. The Norwegian Hardanger Fiddle-Making Tradition in the 21<sup>st</sup> Century**

Hardanger fiddle-making has a long tradition in Norway. Beginning with the *Jaastad-fele* from Hardanger – the earliest known, extant Hardanger fiddle dated 1651, and continuing with Isak and Trond Botnen's fine instruments, the Hardanger fiddle made its way in the 18<sup>th</sup> century from the Hardanger region into the folk-music and instrument-making traditions of other areas in Norway.

For some years, however, there has been a decrease in the practice of Hardanger fiddle making, and only a handful of younger fiddle-makers are left to keep up this valuable tradition.

One of the reasons for the lack of interest in Hardanger fiddle-making among young people is undoubtedly the disproportionately low price of newly built fiddles. As folk instruments, Hardanger fiddles do not command prices on the market that are anywhere as high as for handmade classical violins, despite the fact that the process of Hardanger fiddle-making is much more elaborate and time-consuming than making a classical violin.

One possible approach to solving this problem lies in the development of modern technologies and the use of machines such as computer-controlled shapers to make Hardanger fiddle-making more economic. But is this the right way to keep alive this unique tradition of high cultural value as a symbol of extraordinary Norwegian craftsmanship?

This paper will discuss the topical issues, ethical questions and opportunities regarding the continuation of the Hardanger fiddle-making tradition in Norway.

**Wiebke Lüders** is a conservator of wooden musical instruments and holds a degree from the Academy of Fine Arts in Vienna. Since 2016 she has been

working as conservator of Hardanger fiddles and other bowed string instruments at the Hardanger fiddle workshop of the Ole Bull Academy in Voss in Norway, an institution dedicated to the education of students in Norwegian folk music and dance. In the course of her engagement at the Ole Bull Academy, Wiebke has become more and more interested in the Hardanger fiddle-making tradition and has started to build Hardanger fiddles herself.

Kazuhiko Shima (Hamamatsu)

### **How a Musical Instrument Museum should be in 21<sup>st</sup>-Century Society**

Musical culture in Japan in the past 150 years, after Meiji-Ishin Revolution, has been characterised by an excessive focus on Western, European classical music and a disregard for Japanese music. The Japanese government at the time adopted a policy centred on Western culture in order to catch up with Europe and America. They thought that Western culture was superior to the Japanese. For example, many Japanese Ukiyoe paintings and Buddha statues were removed or destroyed. In the field of music, the government thought that Western music was the best way to make Japanese people civilised, so they instituted a new education system. This new system abandoned Japanese traditional music and adopted Western music instead, especially choral singing for every student. Reed organs were also determined to be the most suitable instruments for accompanying singing.

This education system has made many excellent Japanese musicians of European music, but at the same time it has led the Japanese people to be prejudiced against the traditional music and instruments of Japan and other non-Western countries. This history has brought about a serious situation on the Japanese music scene, both for traditional Japanese music and Western music.

In this context, the Hamamatsu Museum of Musical Instruments has two important missions. One is to make these facts clear to ordinary people, so as to change their prejudices and sense of value about music. The other is to make them aware of the unique achievements of the musical instrument industry of Hamamatsu, especially the earliest good-quality reed organs, made by Torakusu Yamaha, the founder of Yamaha, to whose accompaniment all Japanese students sang. The Hamamatsu Museum must inform people not only about the instruments themselves, but also about this cultural aspect that is unique to Japan.

**Kazuhio Shima**, born in Osaka in 1955, graduated from Kyoto University, Department of Education. He taught at high schools for 13 years, including three years in Jakarta in Indonesia. He studied the recorder and ethnomusicology under Prof. Nobuo Nishioka at the Osaka College of Music and played in London and elsewhere, winning many prizes such as the Osaka Cultural Festival Award. He joined the staff of the Hamamatsu Museum in 1994. After it was opened in 1995, he worked as its chief curator, and from 2004 onwards as director. The museum was awarded the Grand Prize at the Japan National Art Festival in 2012 and the world-famous Koizumi Fumio Prize for Ethnomusicology in 2014.

Manuel Bärtsch, Sebastian Bausch (Bern)

**The Bockisch Network, Or: How Many People it Takes to Bring Back to Life the Knowledge of one Ingenious Inventor**

With their Welte-Mignon reproducing piano, Karl Bockisch and Edwin Welte invented one of the most sophisticated musical instruments ever conceived. The surviving instruments, together with roughly 5,300 hand-played music rolls, constitute an essential corpus for research on musical interpretation in the first three decades of the 20<sup>th</sup> century. Researchers, however, are confronted with overwhelming challenges when dealing with the Welte-Mignon. It was largely the ingenious invention of a single man, Karl Bockisch, and almost the entire original documentation was lost during World War Two. So genuine expertise on how to operate the system optimally is extremely scarce, and scattered around the world among a few very experienced specialists. In order to meet the highest scientific standards when treating the Welte-Mignon as evidence of musical interpretation, we have to bring together specialists from such diverse fields of interest as engineering, piano and organ building, sensor technologies, sound and performance studies, musicology and, last but not least, pianists experienced in the performance styles of the early 20<sup>th</sup> century.

Year-long efforts at the Bern University of the Arts in bringing together the most outstanding specialists in each of these fields have shown that it is simply not enough to let them all work on their respective tasks separately from each other. In this presentation, Manuel Bärtsch and Sebastian Bausch will discuss several issues in which a process of constant exchange and mutual evaluation between all the involved parties has proven to be crucial to unfolding the true potential of roll recordings in their research on interpretation and performance practice.

**Manuel Bärtsch** graduated from the Musikakademie Basel (Piano: Jürg Wyttenbach, chamber music: Walter Levin) with a soloist's diploma. He performs as a soloist, chamber musician and pianist in ensembles for modern music. He teaches at the Bern University of the Arts and has participated in several research projects focussed on the Welte-Mignon piano and the musical content of its conserved interpretations. He has published various articles on interpretation research and is currently working on his doctoral thesis about piano interpretations on Welte rolls.

**Sebastian Bausch** is currently working on his doctoral thesis, in which he examines and compares different styles of piano playing in the academic tradition of the conservatories in Leipzig and Frankfurt at the end of the 19<sup>th</sup> century. This is part of his work as a research fellow at the Bern University of Arts. As a performer, he feels equally at home on the harpsichord, organ and pianoforte, which he studied variously with Jörg-Andreas Bötticher, Wolfgang Zerer and Edoardo Torbianelli at the Schola Cantorum in Basle (Switzerland). He gives concerts regularly, both as a soloist and as a chamber musician.

Jurn A.W. Buisman (Heerde)

**From the Spirit of Place to the Spirit of Object and Back. Aspects and Viewpoints on a Working Collection of Historic Pianos**

The Museum Geelvinck is in the process of developing its working collection of historic pianos and other early keyboard instruments to meet the educational requirements of the Conservatory of Amsterdam on the one hand (offering practice opportunities on historic pianos) and the requirements of its own programme for music in historic houses on the other. Regarding the latter, we can see a growing connection between the concept of “sounding heritage” in historic venues and an awareness that an instrument may have an aspect of intangible cultural significance.

Playing music was integral to historic houses in the past. Our “Music in Museums” programme seeks to offer visitors connecting narratives between the historic place and historically informed period music, thus enhancing their combined experience of place and music.

The notion of “the spirit of place” (*genius loci*) for historic houses has a parallel in musical instruments: their history can be considered “the spirit of the object”. If we are aware of these narratives or even the patina of age, a musician and his audience may appreciate a performance on a historic instrument more than the same performance on a copy of the instrument.

This is still the case, even when the instrument is only partly authentic.

Preventive conservation in relation to living musical heritage, such as working historic pianos within the environment of a historic house ensemble (e.g. historic pianos belonging to the original period furnishings of a historic house) differs significantly from the conditions that are usual in a museum environment. However, these instruments make a contribution to presenting sounding heritage to a wider audience.

**Jurn A.W. Buisman** is the director of the Museum Geelvinck in Amsterdam and Zutphen and keeper of the Sweelinck Collection of historic pianos of the 18<sup>th</sup> and 19<sup>th</sup> centuries. In 2011 he initiated the annual Geelvinck Fortepiano Festival, featuring 40 concerts, a fortepiano competition, master classes, a call for new competitions for historic pianos and a symposium. He is also the Secretary General of ICOMOS-NL, a contributing member of ICOMOS ISC Cultural Landscapes and chairman of the Chopin Stichting Nederland (IFCS) and several heritage organisations, including for the UN Honorary Consul of Belarus.

Sarah Davies (New York City)

**A Toggenburg Organ in the American West. The 1786 Joseph Looser Hausorgel in the National Music Museum (NM 4897), Vermillion, SD**

The 1786 chamber organ of Joseph Looser, a house organ from the Toggenburg Valley, Canton St. Gallen, now in the National Music Museum in Vermillion, South Dakota, is the starting point for this consideration of organ building in Reformed areas of the Swiss Confederation. In the wake of Zwingli and Calvin's Reformation ban on instruments in worship, organs in Northern Swiss and Southern German churches, the largest and most advanced of any in Europe, were silenced, sold, damaged and destroyed from 1524 on.

While the plea of Zurich's congregations (*"Gebt uns Orgeln!"*) went unheeded until after the middle of the 19<sup>th</sup> century, the cantons east of Zurich were becoming the locus of a new and vibrant Protestant organ culture. In the mid-18<sup>th</sup> century, prosperous burgers and pious farmers created a demand for small, decorative organs for the *Firstkammer* of their homes, used not only for family devotions and for the informal worship services of itinerant Pietist preachers, but for moments of light-hearted entertainment. The *"guldigi Töön us silbrige Pfyffe"* ("golden tones from silver pipes") of the first *Toggenburger Hausorgeln* were produced by a father and son of the venerable Looser [*Looßer*] family, Wendelin (1720-1790) and Joseph (1749-1822). Over the next seventy years, nearly one hundred beautifully crafted, carved and painted chamber organs left their workshops in Kappel. Given the many fine, small organs which subsequently dotted the musical landscape of the Toggenburg between 1750 and 1820, the unique legacy of the Loosers remains secure as a special moment in the organ-building history of Reformed Switzerland. Special too is that the lovely, 6-register Vermillion organ is the single example of this musical moment in an American museum collection. With virtually no research on these instruments or their historical context in English, the preservation of Joseph Looser's organ in America offers a stimulus and a singular opportunity for English-speaking scholars to further study this phenomenon.

**Sarah Davies** earned her PhD at New York University with a dissertation on the *geistliche* repertoire in Renaissance Swiss and German tablatures for lute and organ; her Master's thesis at Rutgers University was on William Byrd's *Nevell Booke*. Her recent paper on the organ as a confessional sign in Germany and Switzerland will be published by the University of Leuven; her current research includes an ongoing project on organ sermons of the 17<sup>th</sup> and 18<sup>th</sup> centuries, and on the place of the organ in *Kirchenordnungen*. As an organist, she has been heard on historic instruments in America and Europe, including Tannenbergs in Pennsylvania, Silbermanns in Basel and the early 15<sup>th</sup>-century organ in Sion.

Birgit Heise (Leipzig)

### **125 years of the Hupfeld Piano Factory in Leipzig. What Shall We Do with So Much Different Material in the Whole Town?**

In the more recent history of musical instruments, in the time between 1880 and 1930 we can observe both the phenomenon of massive trade with "normal" musical instruments and a shift from metal discs and player pianos to the gramophone and radio. Especially in Leipzig, the capital of the disc musical box and "Phonola" piano player, we find plenty of evidence of this. The Hupfeld factory, for example, founded 125 years ago, was the largest maker of player-pianos and orchestrions in Europe. Nobody knows of it today, neither in Leipzig nor elsewhere, except for specialists.

But where and how can we remember it? For one thing, in the musical instrument museum of the university, where a new special section shows pianos and players, XXL-posters and video-clips of Hupfeld orchestrions; and from time to time there is a "live" presentation of piano rolls. Furthermore, we are planning two projects in 2017 that will be novel and important for our

museum. First, there will be a special database about the Hupfeld company, including all types of pianos, orchestrions and rolls, with sounds, pictures and animations of the instruments; secondly, we shall photo-scan our approximately 2,000 Hupfeld piano rolls as MIDI-files. Taken together, these two measures mean we are breaking new ground, because we are paying attention to both the company and its instruments as well as to the music associated with them.

But what shall we do with the rest? The original factories from 1892 and 1911 are preserved, as is the opulent “Villa Hupfeld”, the ornate grave and, last but not least, a huge archival collection that awaits in the state archives. Together with the Heritage Institute, historians, the working group Industrial Architecture, experts of player pianos and students of musicology, we are working through the archival holdings and are organising a symposium with a printed publication in addition to our other measures.

We can also talk about a musical instrument exhibition all over Leipzig: during the year 2017 there will be guided tours and bus tours through the town. By no later than 2019 we hope to present a database about the Hupfeld company, with all our instrument types and our music rolls, in image and sound. It’s a modern kind of catalogue – but also a continuation of the traditional printed catalogue of the museum.

**Birgit Heise** studied musicology and history of art at the University of Halle, Germany. For her PhD she carried out research on representations of musical instruments in Saxon churches. Since 1993 she has been a curator at the Musical Instrument Museum of the University of Leipzig, where one important project has been the completion of the catalogue of European percussion and friction instruments in the collection. During recent years, she has dealt with the importance of Leipzig for the production of self-playing instruments. Numerous of her publications concern similar subjects. She gives seminars at Leipzig University.

Balthazar Soulier, Andreas Hochuli (Paris)

### **The Dilemma of Rendering Stringed Instruments Playable. A Discussion of Material Implications Based on Recent Interventions on Two 18<sup>th</sup>-Century Violins**

The majority of historical violins have been in continuous use since the time of their creation. As a consequence, they have repeatedly been modified over time. Stringed instruments that have been put aside and unaltered for a long time are extremely rare.

Rendering historical collection instruments playable inevitably implies certain interventions, such as setting up a sound post, bridge and strings, readjusting tuning pegs or regluing loose parts. A thorough understanding of the impact of such interventions on the material integrity is essential when discussing whether to play a historical stringed instrument. The aim of this paper is to present criteria for the evaluation of the invasiveness of restoration interventions to playing order, from a material technological point of view.

We base our information on the recent treatment of two Italian violins from the 18<sup>th</sup> century: one from the workshop of Antonio Stradivari dated 1708

(Ex-Davidoff), belonging to the collection of the Musée de la musique in Paris, the other from the workshop of Giovanni Battista Gabbrielli, dated 1769 and belonging to a private collection. While the Stradivari violin reveals many previous modifications, the Gabbrielli instrument does not show any signs of restoration.

These contrasting states of preservation form the basis of a comparative study of the invasiveness of restoration measures. The ability to assess the purity of the original materials and to detect potential contamination is crucial for material analytical studies. This further emphasises how the ongoing development of scientific investigation methods must be taken into account when assessing the information contained in the materiality of musical instruments.

**Balthazar Soulier** is a conservator and expert for stringed musical instruments, and the director of the Atelier Cels in Paris. After studying the cello, Soulier was trained as violin maker at the state violin-making school of Mittenwald and worked for a number of years as a restorer in several renowned violin restoration workshops. In 2010 he graduated from the Stuttgart State Academy of Art and Design (Germany) with a diploma in the Conservation of Easel Paintings and Polychrome Wooden Sculptures (with a thesis on historical lute varnishes). In 2014, he founded the Atelier Cels in Paris – a conservation workshop specialising in the development of conservation treatments and materials for the care of historical stringed instruments.

**Andreas Hochuli** is a conservator of stringed instruments at the Atelier Cels in Paris. After being trained as violin maker at the Swiss School of Violin Making in Brienz, Hochuli studied Conservation and Restoration at the Bern University of Applied Sciences. He graduated with a Master of Arts degree in Conservation/Restoration in 2016, writing his Master's thesis on "Varnish infilling – Developing specific coatings for restoration applications based on the example of infills for stringed musical instrument varnishes".

Eleni Ralli (Basel)

### **Harry Partch. The Importance of Conserving and Understanding his Instruments to Preserve his Music**

Harry Partch constructed his own instruments, and these represent his musical ideas and express his music aesthetic and his music theory system based on overtone and undertone series. His instruments, of which he created different versions during his lifetime, were mostly played by Partch himself and his own ensemble.

Since Partch's death there has been an increasing interest in performing, analysing and understanding his music. Nevertheless, various problems have arisen concerning the condition of his instruments, their technical convenience and tuning, and the notation that Partch used for them.

This presentation will be given in 3 steps:

First, there will be a presentation of the original Harry Partch Kitharas I and II. Secondly, we shall present the reconstructed version of these instruments by Musik Fabrik in Cologne – a work-in-progress since 2013 – and discuss the

“innovations” and “corrections” that they made.

Thirdly, we shall discuss the reasons for preserving those instruments, the further innovations that may be made, and why those innovations are useful not only for performing the music of Harry Partch, but also for using these instruments in “today’s” music.

Additionally, we shall approach the question as to how an improvement in the notation system (Partch uses tablature) can help performers and the composers to deal with Partch instruments and his music.

**Eleni Ralli** (1984, Greece) has a Bachelor in “International, European, Economical and Political Studies-UOM”, a Bachelor and Master (Excellent) in Composition from the Department of Music Studies-AUTH and a Master in Composition and Music Theory (Excellent and honourable distinction) from the Basel Music Academy. Currently she is studying for a Master in Research on the Arts at Bern University. She has diplomas in harmony, counterpoint, fugue, orchestration and composition from the State Conservatory of Thessaloniki. Her works have been performed in Germany, Ukraine, Switzerland, Greece, Poland, Holland, Israel and Italy.

Keynote Arnold Myers (Edinburgh)

#### **Information Preservation for Museum Instruments**

It is generally accepted that museums should not only preserve objects, but also information about them. What information museums preserve and how they do it varies widely, despite professional codes of good practice and the availability of content management systems tailored to museums. In the case of musical instruments, there are specific kinds of information that do not always fit into commercial packages.

This paper analyses the various kinds of information relating to musical instruments in terms of importance and vulnerability to loss and degradation, it examines some of the systems museums have employed for its storage and retrieval, and suggests a realignment of priorities for data storage and long-term preservation.

**Arnold Myers** completed his doctorate at the University of Edinburgh with research into acoustically based techniques for the taxonomic classification of brass instruments. He has worked in parallel as an information scientist and as Curator and Director of the Edinburgh University Collection of Historic Musical Instruments. He is now a Professor Emeritus at the University of Edinburgh and Senior Research Fellow at the Royal Conservatoire of Scotland.

Dominik von Roth, Linda Escherich (Nuremberg)

#### **Conservation of Knowledge Beyond the Object – the Rück Example**

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 Nürnberg since 1962, contains more than 17,000 documents and adds a

worldwide, unique depth and complexity. Altogether, these factors give the Rück Collection an immense value that goes far beyond a usual collection of musical instruments. The ongoing DFG research project “Musikinstrumente sammeln – das Beispiel Rück” focuses on the vast correspondence conducted by the Rück family 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 of making these carbon copies and filing them was a very significant step, for it already demonstrates the central idea of collecting in a modern, museum sense. This conscious act of creating history is to be regarded alongside the musical instruments and, especially, their alterations. Rück’s unique correspondence on acquisition and sales negotiations provides an insight into the pricing and economics of historical musical instruments for the time before, during, and after the Second World War in 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 to acquire an overview of provenance, corresponding musical instruments and archival material connected to linked cross-references. This way, a huge music instrument collection, of which only a small part is displayed, can be grasped as a whole and becomes an objectification of cultural history while also being an important step towards the “digital museum”. By using selected examples, this paper will offer an insight into the possible contextualisation of objects and a deeper understanding of its contemporary value(s) at a specific time.

**Linda Escherich** studied Musicology and Performance Studies at Leipzig University (2008–2014). From 2013 onwards, she worked as a scientific collaborator at the “Felix Mendelssohn Bartholdy Briefausgabe” project of Leipzig University. Since 2015 she has been a scientific collaborator at the Germanisches Nationalmuseum Nürnberg for the research project “Musikinstrumente sammeln – das Beispiel Rück”. Her main research interest is in historical keyboards, music instrument collections and Leipzig as a city of music and music publication.

**Dominik von Roth** studied Musicology, History of Art and Cultural Management at the Universities and Music Universities of Weimar, Jena and Perugia. Besides activities in the field of cultural management, he completed a PhD in Musicology. Since 2012 he has worked as a scientific collaborator at the DFG project “Die Neudeutsche Schule. Schriftenedition, Datenbank und Studien”, as a project coordinator for “Schütz und Luther” (Heinrich-Schütz-Haus Weißenfels, 2015), and since 2016 as the coordinator of the DFG project “Musikinstrumente sammeln – das Beispiel Rück” at the Germanisches Nationalmuseum Nürnberg.

Laurence Libin (Ramsey)

### **“Critical Organology”. A Challenge for Museums**

“Instrument museums are mausoleums, places for the display of the musically dead, with organologists acting as morticians, preparing dead

instrument bodies for preservation and display.” (Bates, “The social life of musical instruments”, *Ethnomusicology*, Vol. 56, No. 3; p. 365)

At the 2013 meeting of the American Musicological Society, ten musicologists and ethnomusicologists, including the author of the above remark, addressed the topic of “Critical Organology”. None of the participants was a scholar whose main focus of study is musical instruments. Not surprisingly, the response among organologists to their talks was critical. One reviewer noted that “By characterizing organology in such vague terms as ‘materiality-based’, the panel recirculated a simplistic conception of traditional organology as *only* focused on the physical description of objects, neglecting the field’s long history of interdisciplinary analysis”.

It is easy to find errors and questionable assertions by proponents of “critical organology” (a term apparently introduced in 2008). However, our response cannot be only to complain about their myopic vision. Rather, we should guide these scholars toward museums that offer resources for collaborative learning.

The idea that object-focused organology is passé echoes the approach of the “new musicology”, born in the 1970s from a belief that the basic work of investigating primary sources was largely complete, hence it was time to move on to sociological issues. But exploring the “social lives” of instruments has long been a central pursuit of organology. To be taken seriously, such studies require solid foundations rooted in an examination of the instruments themselves. For building these foundations, museums and their methodologies are indispensable. I will suggest ways for CIMCIM to promote this message.

**Laurence Libin** is editor-in-chief of the *Grove Dictionary of Musical Instruments*, emeritus curator of musical instruments at the Metropolitan Museum of Art, honorary curator of Steinway & Sons, and past president of the Organ Historical Society.

Jennifer Schnitker, Manu Frederickx (New York)

### **Preventive and Interventive Conservation of The Met’s Appleton Organ**

In 1982, the Department of Musical Instruments at the Metropolitan Museum of Art installed a fifteen-foot, 16-rank pipe organ. Built by Thomas Appleton, this organ has survived nearly musically unaltered, largely the effect of benign neglect. At the Met, it serves as an important part of the instrument collection and has been played semi-regularly. In 2016, the instrument galleries closed for a renovation project, offering an opportunity for conservators to undertake the evaluation, documentation and treatment of this important organ.

Treatment of the mechanism was critical at this point for its satisfactory functioning, and included work on pipes, bellows and wind chest, all performed by an outside organ restorer. Intervention on the casework was completed in-house by the two instrument conservators. The mahogany boards and veneers have faded significantly from light exposure, and restoration coatings of beeswax had become dull and grey-tinged.

Conservation work focused primarily on the development of a two-part

coating system which would protect the wood from further light damage and at the same time improve its aesthetic authenticity.

The environmental challenges of the display location, feasibility and longevity of our interventions, appropriateness of restoration work, monetary and time costs, and role of the instrument within and outside the institution all needed to be weighed. While time and monetary costs of treatment are always factors, in this case the consequences of not intervening weighed heavily in the equation. The guarantee of further deterioration, a lack of aesthetic authenticity, and loss of public access to a playing organ in a museum collection, coupled with the fact that opportunities for intervention are rare, argued in favour of the treatment of mechanism and casework. We utilised interventive conservation and preventive conservation strategies for the preservation of this important organ.

**Manu Frederickx**, Associate Conservator for Musical Instruments at The Met in New York, received a Master degree in musical instrument making from the Royal Conservatory in Ghent in 2002. He has worked as an independent maker and restorer of harpsichords and plucked string instruments, and trained in the conservation of wood at the Royal Academy of Fine Arts in Antwerp. From 2004 to 2015 he was a lecturer at the School of Arts of University College Ghent, where he became head of the Musical Instrument Making Department in 2013. He worked as a conservator at the Musical Instrument Museum in Brussels from 2009 until joining The Met in 2015.

**Jennifer Schnitker** is an objects conservator with a specialisation in musical instrument conservation. She received her M.Sc. in 2014 from the Winterthur/University of Delaware Program in Art Conservation. Having worked with instrument collections at the Horniman Museum and Gardens (London, UK) and the Colonial Williamsburg Foundation (Virginia, USA), she is currently employed as an Assistant Conservator in the Department of Objects Conservation at the Metropolitan Museum of Art. Her work includes the conservation of broadly ranging instruments, in both playable and non-playable condition.

Pjotr Juga (Trondheim)

### **Rayhorn-O-Seven Guitar. A Case of Self-Degrading Plastic and Documentation Issues in Two Acts**

The preparation of an exhibition is a complex and multidisciplinary process. In an ideal situation, conservators and curators work hand in hand to achieve their final goal. Based on a case study of the Rayhorn-O-Seven guitar, a musical instrument containing decaying cellulose nitrate, this paper will reflect on a variety of decision-making aspects related to conservation, past documentation issues as well as future conservation and documentation projects. Dealing with modern auto-destructive materials such as cellulose nitrate or acetate has always caused problems for conservators. The degradation of those materials happens with a constantly increasing deterioration speed. Early recognition of the problem is crucial for preventive conservation, as is consistent documentation.

This paper will present the following problems and dilemmas:

- Can previous conservation reports be of any help when making decisions for an exhibition's content? And how easily available should such information be?
- What can/should we do when we realise that the damage occurring is of a repetitive nature?
- How important is it to commit enough quality time to find out about underlying issues and damaging factors during the preparatory conservation work?
- What happens when we find out that, due to its poor condition, the use of one of our top objects is unexpectedly called into question?
- What sort of decisions can be made to satisfy both the conservator's and the curator's demands?
- How can conservators help curators, and vice versa?
- And, finally, how much information do we actually have available in our catalogues?

Inspired by Rayhorn-O-Seven guitar conservation, a survey on plastics has been conducted on objects from a few museums in central Norway. The museums in question have collections of objects with moderate to high contents of modern materials. Two of the museums have musical instruments in their collections and one is a museum of applied arts. In an attempt to find answers to the above problems, the second part of this paper will present the results of the survey conducted on modern materials.

**Pjotr Juga** is a preventive and modern materials conservator in MiST, Museums in South Trondelag, Norway.

Mainly working on the research and conservation of modern materials, his tasks also include an advisory role in regards to preventive conservation and active conservation help across six museums that do not have conservation staff.

He graduated in 2000 as a paper and leather conservator at the Nicolaus Copernicus University in Torun, Poland, and has worked in a variety of cultural institutions across Europe, including at municipal and academic libraries in Poland, and museums and archives of national importance in the United Kingdom.

Panagiotis Pouloupoulos (Munich)

### **Composition Ornaments on Historic Harps. From Research to Exhibition**

One of the most distinctive features of historic harps is their decoration with gilded composition ornaments. Such ornaments were commonly used from the late eighteenth century onwards in picture frames, furniture and interior design, as well as on musical instruments, in order to replace intricate and time-consuming wood carvings. Being soft and flexible when warm, but quite hard and durable when dry, composition could be cast in wooden or metal moulds, thus offering a large variety of decorative shapes and patterns. However, until now relatively little has been known about the application of composition ornaments on harps, despite the fact that such decorative elements played an important role in the marketing of these instruments. On the other hand, although the use of composition was a fast, inexpensive and

consistent method of decoration, with the passing of time and due to their chemical and mechanical degradation these ornaments can become fragile, creating several issues of conservation and preservation. Moreover, because of their large size and delicate condition, many historic harps are usually kept in museum stores. Consequently, this causes problems of presentation and interpretation, since the museum public cannot fully appreciate and understand these instruments and the innovative techniques employed for their construction and decoration.

This paper will discuss the manufacture and use of composition ornaments on harps by providing information collected during the examination of surviving instruments and archives in public and private collections.

Additionally, the paper will present a current project regarding the reconstruction of composition ornaments on a double-action pedal harp by Erard which will be displayed as a demonstration instrument for visitors in the new permanent exhibition of musical instruments at the Deutsches Museum.

**Panagiotis Poulopoulos** is an organologist with a BA in the Conservation of Antiquities and Works of Art (TEI Athens), a Master's 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. Since 2016 Panagiotis has been an Advisory Executive Board Member of CIMCIM. He is currently a post-doc fellow at the Deutsches Museum, researching into the development of the early pedal harp.

### **Lunchtime concert: CLEX – Contrabass clarinet extended**

The flawed sound and technical quality of the contrabass clarinets commercially available today have been improved in a Bern University of Applied Sciences research project by means of a radically new approach: the traditional mechanics are replaced by sensory dynamic keys and motor keys. This means that no more compromises are necessary in the positioning of the finger holes. The sound and intonation have markedly improved, with new audio-visual interfaces created for composers and performers.

The Swiss clarinet player **Ernesto Molinari** is an outstanding and versatile soloist on every instrument of the clarinet family. Having been a member of Klangforum Wien, he nowadays teaches at the Bern University of the Arts as well as at summer schools for contemporary music in Darmstadt and Graz.

Marie Martens (Copenhagen)

### **Angul Hammerich and the Bronze Lurs. Once Again: To Play or to Display**

Even though the bronze lurs from Nordic prehistory have been investigated during the 19<sup>th</sup> and the 20<sup>th</sup> centuries, they remain a mystery.

This paper does *not* aim to throw new light on aspects of music archaeology – this has been thoroughly done by music archaeologists and other experts

on the subject. Instead, the paper will focus on the bronze lurs from the point of view of the written sources found in the Danish Music Museum's comprehensive archives and library, and also by including materials and information held by The National Museum of Denmark.

We shall also look at the lurs as museum objects, and at the question of playing versus displaying these musical instruments from the Bronze Age. The Danish music historian Angul Hammerich (1848–1931) was the first to carry out a thorough examination of the original bronze lurs. His strongly criticised thesis (1893) on the lurs was based on his research and experiments of *playing* the original instruments in The National Museum of Denmark.

The original lurs have been played occasionally since the 1890s, and have been recorded three times. This paper will look into the repertoire played on all three occasions. Furthermore, we will discuss the pros then and the cons now of playing the fragile bronze lurs. Based on archival material and other written sources, we will look for possible answers.

Finally, the paper will look into the aspect of the "revival" of the bronze lurs in modern times through a survey of Danish Viking centres and museums. Historically, there is no connection between the Viking Age and the bronze lurs. Yet some of the centres use copies of these spectacular instruments in their presentation. Maybe because it's good for business? – We will ask them why.

**Marie Martens** (born 1970), the Danish Music Museum – Musikhistorisk Museum & the Carl Claudius Collection in Copenhagen.

She took her MA in Musicology and Italian at the University of Copenhagen, majored in musicology, and has worked at the Danish Music Museum since 2001. Since 2006 she has been a curator with the museum's library and archives as her main responsibility. She is now also partly responsible for the instrument collections.

Sabine K. Klaus (Vermillion)

### **To Play or Not to Play? BIAS Will Help!**

For the project *Trumpets and Other High Brass*, up to now 60 brass-wind instruments from the Joe R. and Joella F. Utley Collection at the National Music Museum have been recorded by specialist performers for the DVDs that accompany this book series.

In the process of selecting suitable instruments, the *Brass Instrument Analysis System* (BIAS®), developed by the Institut für Wiener Klangstil in Vienna, has been used to determine whether or not an instrument is a likely candidate for recording. This process reduces unnecessary stress on instruments that would turn out to be unplayable or unsatisfactory for recording, helping the curator and player in the selection process.

Once selected on the basis of acoustical measurements gained with BIAS, compromises have to be made to make an instrument fit for recording. This includes minor maintenance, such as the use of valve oil. Conservation concerns that result from making a brass wind instrument usable and playing it for a recording will be discussed, and subsequent minimal conservation measures explained. A justification for this one-time use is the long-term

benefit of having a sound recording and visual representation of the instrument being played.

**Sabine K. Klaus** is the Joe R. and Joella F. Utley Curator of Brass Instruments at the National Music Museum and Professor of Music at the University of South Dakota. She is working on a multi-volume book series on the history of high-brass instruments (*Trumpets and Other High Brass*, Vol. 3: *Valves Evolve* will be published in 2017). For her publishing activities on subjects related to historic keyboard and brass instruments, she was awarded the American Musical Instrument Society's 2000 Densmore and 2014 Bessaraboff Prizes.

### **Fresh Wind – A Presentation of the Wind-Dynamic Organ**

A normal organ has different registers and a swell to offer dynamic differentiation – yet it can't be played louder or softer like a piano using just pressure on the keyboard. With the project INNOV-ORGAN-UM at the Bern University of the Arts, this has changed. Three prototypes offer new possibilities for organ-playing.

**Daniel Debrunner** is a professor for industrial controlling as well as sensor systems at the Bern University of Applied Sciences. He has collaborated on various musical instrument projects, e.g. on a Welte piano roll scanner, on the contrabass clarinet extended, CLEX, and on the wind-dynamic organ.

**Samuel Cosandey** studied – among others – with Daniel Glaus at the Bern University of the Arts. Besides his main instrument, the organ, he also studied the clavichord and Théâtre Musical. He works as an organ player in the parish of Bex.

### **The Playing Collection**

... comprises over 1000 wind instruments and drums from three centuries. There are very rare objects among them, such as classical horns and flutes, the prototype of an alto saxophone (1853) by its inventor Adolphe Sax as well as some of the first instruments of Swiss makers. Moreover, complete ensembles of wind bands are preserved in the collection. The objective of the *playing collection* is to preserve, present, explore and play the instruments. Some of them may be played by all visitors. Some have been restored for the use by professional musicians in projects of historically informed performance practice. Others are allowed to be played for research objectives only.

#### **Fourth International Romantic Brass Symposium**

This part of the conference presents and discusses a research project on the preventive conservation of played historic brass instruments. It stands in the tradition of Romantic Brass Symposia in Bern on brass topics such as saxhorns, materiality, horn tradition, the keyed trumpet and ophicleide.

Keynote Robert Barclay (Toronto)

#### **Old and New. Mediating Musical Experience**

The first part of this presentation analyses the role of the historic object in mediating aesthetic experience, especially as it is related to an appreciation of music played on early instruments.

Since the onset of the early music movement, there has been a strong desire to recapture the sounds and sensations of early musical instruments.

Bringing historical instruments back into a functioning state has resulted in a broad understanding of the music in its historical context, but it has sometimes come at the expense of the instruments themselves. Restoration to a previously understood state is very much a matter of the restorer's context and knowledge. Thus the state of knowledge at the time of intervention will be subsequently revisited and modified, but not before irreversible change to the instrument has taken place. The more that was learned of conservation and restoration processes, the more questions were raised about the wisdom of intervention, and the nature of the musical results. Two avenues of progress resulted from the reappraisal of restoration to a playable state: restorative conservation, and the making of reproductions. Restorative conservation, the mediated approach to bringing historic instruments into working condition, will be mentioned only briefly as it has reached a high level of both practical and philosophical maturity.

The second part of this presentation concentrates on the making of reproductions. The early music movement provided a huge stimulus to musical instrument makers in researching and recreating early examples. Parallel to the restoration of extant instruments was the industry of producing facsimiles, and it is true to say that much of the information that instrument-makers relied upon came from the processes of conservation and restoration, and the systematic documentation of findings. Three case studies – two recently-discovered Nuremberg trumpets and a 19<sup>th</sup>-century French horn – will be used to illustrate the ways in which musical instrument-making can enhance the musical experience while preserving historic documents.

The conclusion of this presentation will be an open discussion of conservation, restoration and reproduction approaches to the care and preservation of historic instruments.

**Robert L. Barclay** was born in London, England in 1946. He received a Certificate in Science Laboratory Technology from the City and Guilds of London Institute (1968). After graduating from the University of Toronto with a Bachelor's Degree in Fine Arts (1975), he went on to earn an interdisciplinary PhD at the Open University in England (1999). He worked as a museum object conservator/restorer and musical instrument maker. He teaches at the International Trumpet-Making Workshop in Europe and the United States. His publications include *The Care of Historic Musical*

*Instruments* (editor), *The Preservation and Use of Historic Musical Instruments: Display Case and Concert Hall*, and *The Art of the Trumpet-Maker*.

Adrian v. Steiger (Bern)

### **Interior Corrosion in Brass Instruments**

This introductory paper and the following specialised papers report on a multidisciplinary research project on interior corrosion in brass instruments. Its full title is: “Brass instruments of the 19th and early 20th centuries between long-term conservation and use in historically informed performance practice”.

How do brass instruments corrode on the inside?

What are the phenomena of interior corrosion? And how do they affect the instrument?

Can we protect the inside of brass instruments?

Are there concepts for the preventive conservation of the inside of brass instruments, and if so, can they be optimised?

Such questions were brought up by musicians in historical performance practice as well as in the course of past projects of the Bern University of the Arts (HKB), while playing and copying historic brass instruments. With these questions in mind, the research department of HKB contacted scientists specialised in conservation, surface analysis and corrosion. Our aim was to better understand corrosion phenomena on brass and its application to musical instruments in general, and concepts of preventive conservation for playing historical instruments in particular.

This multidisciplinary research project was then designed in collaboration with scientists from four Swiss research institutions. The hypothesis was that better protection, especially drying the inside of the instruments after playing, can contribute to preventing corrosion.

In a first step, techniques for monitoring interior corrosion in brass wind instruments and the distribution and the effects of moisture and saliva inside the instruments were studied. In a second step, a long-term study measured interior corrosion and its development in brass instruments over 14 months, applying or not applying a protocol of preventive conservation. For this, a set of 100-year-old French brass instruments in playing condition were acquired from musicians and playing collections. They are all of the type that the musicians of the Parisian orchestra of the first performance of Igor Stravinsky's *Sacre du printemps* 1913 may have played. Musicological research provided this historical context.

**Adrian v. Steiger** is a musician and musicologist. He completed his PhD in 2013 on the wind instrument collection of Karl Burri in Bern, of which he is now the curator. At the Bern University of the Arts he conducts research projects, mostly on wind instruments. This includes organology, repertoire, conservation, and the materiality of historic brass instruments, as well as facsimile editions. He has published essays in the *Journal of the Historic Brass Society*, the *Grove Dictionary of Musical Instruments*, the *Galpin Society Journal*, and elsewhere.

Martin Ledergerber (Affoltern)

### **Humidity in Regularly Played Brass Instruments. Possibilities and Limitations of Preventive Conservation**

The moisture generated in historical wind instruments during musical performances poses a serious threat to the long-term preservation of such instruments. The potential damage impact varies greatly, depending on the material. While the effects of humidity fluctuations caused by playing had previously been analysed in woodwind instruments, similar research had not yet been conducted on brass instruments. This study aims to gauge the processes and consequences occurring inside regularly played historic brass instruments as well as to provide suggestions for suitable preventive measures in order to minimise possible damage.

Climate studies should provide information about the temperature and humidity inside played brass instruments. Data loggers with small sensors allowed measurements at different points inside the investigated instruments. We were able to establish that the instruments' internal relative humidity reached very high levels after just a few minutes in use, and that these values decreased only very slowly afterwards, despite emptying the slides, which is common practice for musicians. Regularly played brass instruments therefore have a very high, permanent level of internal relative humidity, which consequently increases the risk of metal corrosion inside the instruments.

Since moisture was identified as a major risk, the aim of preventive preservation was primarily to find an efficient drying method. The method had to be simple for the convenience of musicians in their daily use of the instruments. Climatic measurements showed that the moisture levels can be reduced within a short time using simple fans. The results of these studies led to specific guidelines and recommendations to the musicians in the handling and maintenance of the instruments they borrowed.

**Martin Ledergerber** studied the conservation of archaeological and ethnographic artefacts at the Haute Ecole Arc Conservation-Restauration Neuchâtel from 1999 to 2002. From 2003 to 2008 he was Conservator at the Museum zu Allerheiligen in Schaffhausen. Since 2008 he has been the head of the conservation department of inorganic objects at the Swiss National Museum, Collection Centre. He specialises in preventive conservation and in the conservation of scientific and metal objects.

Emilie Cornet, Martin Mürner (Bern)

### **Aspects of Corrosion Prevention on Historical Brass Instruments**

This presentation is part of the interdisciplinary project "Brass instruments of the 19th and early 20th centuries between long-term conservation and use in historically informed practice", which focuses specifically on the instruments. The question as to play or not to play historical instruments in concerts and presentations is a major problem for the museum and private collection. In order to understand the impact of playing a brass instrument, a long-term study was carried out on 16 historical brass instruments. 5 trumpets, 8 horns, 1 trombone, 1 Wagner tuba and 1 tuba were chosen to represent the

instruments used in *Le Sacre du Printemps*, the musical part of this project. Most of these instruments will also be used for the concert.

To understand the impact of playing a brass instrument, the instruments have been divided into two groups, and given to volunteer musicians. The protocol required them to play them every day for at least five minutes. Half of the instruments were just put away after use, while the other instruments were dried with a small fan. One trumpet was never played and was used as a reference. Before the study, all the instruments were checked to ensure their playability.

This long-term study ran from January 2015 to April 2016; different analyses were performed before, during and at the end in order to evaluate the state inside the pipe (see the following presentations). A condition report was made for each instrument at every stage of the project.

Parallel to this, some of the most common oils and greases were controlled with an immersion test so we might observe the impact of the product on a brass sample. Furthermore, the corrosive impact of the traditional velvet case is well known. So the modern music instrument protector Dimbath® has been tested to ensure optimal protection of the instrument.

**Emilie Cornet** is a restorer who graduated in conservation-restoration at the University of Applied Sciences in Neuchâtel. After obtaining a Master specialising in scientific, technical and horological objects, she worked for different museums. She also played cornet in the local brass band in her childhood.

**Martin Mürner** studied the French horn in Zurich and the natural horn at the Schola Cantorum Basiliensis. Since 1983 he has played with various international orchestras such as the Freiburg Baroque Orchestra, the Akademie für Alte Musik Berlin, the Concerto Köln and Anima Eterna Bruges. After an apprenticeship with the instrument-maker Karl Burri in Bern, he started specialising in restoring historical brass instruments by applying methods corresponding to the instrument's own era. He oversees the instruments in the Karl Burri collection in Bern and since 2009 has also worked as a research assistant at the Bern University of the Arts.

Stefaan Verdegem (Ghent)

### **Stravinsky's *Sacre du Printemps* from the Musicians' Point of View**

The world premiere of Stravinsky's *Le Sacre du Printemps* in Paris in 1913 was somewhat overshadowed by the scandal caused by Nijinsky's choreography and the openly sexual content of the piece: the composition itself in a way faded into the background around the time of the production. While the original choreography has not survived the ravages of time, the music has turned out to be one of the greatest pieces of the 20<sup>th</sup> century. A whole library has been written about it, but strangely enough the performance practice around the time of its initial performance has barely been discussed. Fortunately some sources, amongst them the earliest recordings by Pierre Monteux and Stravinsky himself, give some idea of how it differed from today's interpretations.

**Stefaan Verdegem** is a researcher and English horn teacher at the Koninklijk Conservatorium Brussel. Besides his job as the English horn soloist in the Royal Flanders Philharmonic Orchestra, he has focussed mainly on historical instruments and is a regular member of, among others B'Rock, Il Gardellino, Anima Eterna, Les Musiciens du Louvre and Concerto Köln. A specialist on the 19<sup>th</sup>-century English horn and oboe, he not only performs and records, but also lectures and publishes regularly about these instruments. In 2011 he was awarded the "Darche" prize for his research activities.

Daniel Allenbach (Bern)

**A View into the Orchestra Pit at the Théâtre des Champs-Élysées, Paris, 29 May 1913**

This interdisciplinary project on corrosion is not just a project of the natural sciences, but also has a musicological (and musical) starting point. Its reference for instrument selection is one of the most famous world premieres that has ever taken place: that of Igor Stravinsky's *Sacre du Printemps*. Composed for the Paris performance series of the famous troupe of the Ballet Russes, its first performance of 29 May 1913 was a unique outrage. From today's point of view, it is not quite clear what the reason was for this: perhaps it was the rhythmical, rough sounds that Stravinsky demanded from the orchestra (conducted by Pierre Monteux), or the primitive scenario, stage sets and costume design by Nicolas Roerich, or the choreography by Vaclav Nijinsky that went against every classical rule. It is even possible that the scandal was intentional and pre-planned by the impresario Sergei Diaghilev. Our task now is to see beyond the screams and boos of that evening, which have fascinated many, and instead to focus on the pit in order to know more about the musicians in it and their instruments. The score gives us general indications about the latter, but what form did the tuba have, where did the trumpet in D come from, and what sort of tenor tuba did the horn players use on this occasion?

**Daniel Allenbach** graduated in musicology, performance and media studies at the Universities of Bern and Munich. He also did a Performance Master in French Horn with Thomas Müller, Markus Oesch and Raimund Zell at the Bern University of the Arts (HKB). Besides orchestral and ensemble playing on modern and historical horns, he writes and corrects programme notes for various concert venues and works as a scientific collaborator in the research department of the HKB.

Bernhard Elsener, Tiziana Lombardo, Federica Cocco, Marzia Fantauzzi, Marie Wörle, Antonella Rossi (Zurich/Cagliari)

**Breathing New Life into Historical Instruments. How to Monitor Corrosion**

Brass instruments of the 19<sup>th</sup> and early 20<sup>th</sup> centuries are getting more and more used to being played in historically informed performance practice. In the case of a brass instrument, a musician's hot, wet breath could worsen the instrument's interior corrosion, but little is known about this danger. Monitoring the corrosion state inside these historical brass instruments

before and after being played is essential for checking the efficiency of preventive conservation protocols. As corrosion of metal artefacts is an electrochemical process, electrochemical techniques are the method of choice, especially since these measurements can be carried out in situ and are non-destructive.

In this research, open circuit potential (OCP) and polarisation resistance ( $R_p$ ) measurements were carried out inside the tuning slides of brass wind instruments in order to monitor the corrosion state and its evolution. The principle and measurement procedure will be described. The initial characterisation of the tuning slides showed a great variation among different tuning slides and also for different positions in a single tuning slide. Thus the surface condition at the (small) point of measurement is more important than the bulk alloy composition. The instruments were then played for several minutes each day: one group dried the inside afterwards each time with a fan, while the control group applied conventional practices. A special electrochemical sensor was developed for the in-situ measurements, combining an Ag/AgCl (pseudo) reference electrode and a small platinum grid as a counter electrode, both embedded in a thin cylindrical sponge mounted on a flexible tube. The sensor had a surface of about 2 cm<sup>2</sup> and could be pressed against the inside of the brass tuning slides by a small balloon that could be pumped or emptied.

It has been found that the polarisation resistance ( $\log R_p$ ) versus open circuit potential (OCP) plot is a very promising representation for diagnostic purposes that allows us to assign groups of OCP/ $R_p$  data from the tuning slides to different surface conditions that have been established in laboratory experiments. Comparing the measurements performed at the beginning, after 7 months and after 14 months of playing, the tuning slides of the instruments without drying showed a constant or increasing corrosion rate over time. On the other hand, preventive conservation, i.e. drying the instruments with the fan, showed constant or slightly lower corrosion rates. This overall positive result has been confirmed with endoscope measurements taken on the inside of the same tuning slides. Note that this result holds as an average on a statistical basis comparing all the tuning slides at the different control times.

**Bernhard Elsener** was awarded the title of professor at ETH Zurich in 2007. He is head of the research group Durability and Corrosion at the Institute of Building Materials at ETH Zurich. Born in 1952, he studied Materials Science at the Department of Chemistry at ETH Zurich. After graduating in 1976 he also studied pedagogics and didactics for chemistry. In 1998, Bernhard Elsener was elected professor for Materials Science at the University of Cagliari, Italy. In his corrosion research he combines electrochemical and surface analytical methods.

Federica Cocco, Marzia Fantauzzi, Bernhard Elsener, Antonella Rossi (Cagliari/Zurich)

### **How Surface Analysis can Contribute to an Understanding of the Preventive Conservation of Brass Instruments**

Brass instruments of the 19<sup>th</sup> and early 20<sup>th</sup> centuries are getting more and

more used to being played in historically informed performance practice. Monitoring the corrosion state inside these historical brass instruments before and after being played is essential for checking the efficiency of preventive conservation protocols. The measurements inside the tuning slides, however, lack any information on the surface state and composition at the point of measurement (except for endoscope images). In order to correlate the results of electrochemical measurements with the surface state and composition, information from surface analytical experiments on model alloys in controlled environments is required.

In this research, we report on the results of an x-ray photoelectron spectroscopy (XPS/XAES) surface analysis of brass (Cu-Zn alloy) model samples exposed to a mild environment (phosphate buffer pH 7) and to a quite aggressive solution (artificial saliva) that represent the two extremes regarding liquids possibly present in the tuning slides after playing. Brass alloys exposed to the phosphate buffer solution showed a rapid formation of a thin film composed of copper and zinc oxide that limits the corrosion rate but is not protective. In the artificial saliva solution, the corrosion rate of brass was initially very high but decreased rapidly to values below 1  $\mu\text{m}/\text{year}$ . XPS surface analysis has shown the formation of a thick protective film of CuSCN (thiocyanate) and zinc phosphate.

Combining electrochemical and surface analytical data obtained on model brass alloys allows us to rationalise the different corrosion behaviour found in the tuning slides of the brass wind instruments. The direct link between electrochemical behaviour and the surface composition of brass alloys exposed to the atmosphere or to the environment present in the tuning slides is under investigation.

**Federica Cocco** completed her Master in Chemistry at the University of Cagliari (Sardinia), dealing with the electrochemical behaviour and the surface analysis of brass alloys. Since 2014 she has been a PhD student at the Laboratory of Electrochemistry and Surface Analysis in the Department of Chemical and Geological Science in Cagliari under the supervision of Prof. Antonella Rossi and Prof. Bernhard Elsener, with a thesis entitled “Sustainability in cultural heritage: from diagnosis to the development of innovative systems for monitoring and understanding corrosion inside ancient brass wind instruments”.

David Mannes (Villigen)

### **Monitoring the Condition of Played Historical Brass Wind Instruments by Means of Neutron Imaging**

Neutron imaging is a non-destructive testing method that works according to principles similar to X-ray imaging. In contrast to X-rays, neutrons can penetrate metals in general rather well, but at the same time have a high sensitivity for hydrogen. This makes neutron imaging (which includes both radiography [investigations in 2D] and tomography [3D]) an ideal method to study the impact of playing historical brass wind instruments. Playing a brass wind instrument induces an accumulation of moisture inside the instrument, which can eventually lead to the generation and expansion of corroded

areas. The induced moisture as well as many corrosion products contain hydrogen and hence demonstrate a high contrast for neutron imaging. In this paper, we show how neutron imaging was used to monitor the condition, i.e. the dimensional changes of corroded areas inside historical brass wind instruments by comparing 3D CT-data sets acquired before and after the instruments had been played on a regular basis over the period of one year. Furthermore, an in-situ experiment will be presented in which the playing of a cornet and the subsequent drying-off under varying conditions (with and without a fan) will be simulated.

**David Mannes** is a member of the Laboratory for Neutron Scattering and Imaging at the Paul Scherrer Institute, Villingen.

Martin Ledergerber (Affoltern)

### **Endoscopy as an Examination Method**

Endoscopy is one of the investigation methods used in this project to examine the interior of the instruments. A rigid borescope with an angle of view of 90° and a viewing direction of 30° was used to examine 32 sliding tubes from 16 brass instruments. The endoscope was connected with a digital camera and photos were taken in five-millimetre steps from the inside of the sliding tubes. This allowed us to examine 64 areas in detail over a distance from 40mm up to 200mm, from both tube openings to the curves of the tuning slides. The same areas were observed in their initial state, after seven months of playing, and at the end of the playing period. Over 3000 photos were taken that allowed us to compare the initial, the intermediate and the final state of the same areas inside the sliding tubes.

The endoscopy confirmed that the initial state inside the tuning slides varies greatly depending on the history of each instrument. Recently cleaned instruments, for example, showed almost blank inner walls, whereas other instruments had thick deposits of corrosion products. What was surprising was the large variety of deposits and surface states inside the tuning slides. The changes between the initial, intermediate and final states were classified into three groups: tuning slides with no change, slight changes and significant change. Overall it seems that the tuning slides of the instruments that have been maintained according to the preventive conservation concept show fewer changes. Inside regularly played brass instruments, the formation of corrosion deposits can be observed in many cases. Whether it comes to the formation of corrosion obviously also depends on the initial state. It appears that existing corrosion deposits can have a protective function and that active drying reduces the risk of corrosion.

Endoscopy is a suitable method for observing and documenting changes inside regularly played brass instruments. Endoscopy is a non-destructive and easy to apply, optical investigation method. However, the rigid borescope used for our project is not capable of examining the entire instruments. For this reason, we have only been able to examine a small part of the interior walls of the entire instrument. A full investigation of a single instrument using a flexible endoscope would be interesting.

Bio see p. 30

**Sunday, 26 February 2017**

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Optional excursions (at own cost):

**Visit to the Musikinstrumentensammlung Willisau**

12:30: Guided tour with the director Adrian Steger

14:15: 30' concert, lute of the 16<sup>th</sup> century

[www.musikinstrumentensammlung.ch](http://www.musikinstrumentensammlung.ch)

Train from Bern, main station (direction: Lucerne): 10:36 h; change to S6 in Wolhusen; arrival at Willisau station 11:57 h

**Visit to the Musée d'art et d'histoire Neuchâtel**

12:00: Visit to the depot with conservator Christian Hörack

14:00: 30' concert on the Ruckers cembalo

[www.mahn.ch](http://www.mahn.ch)

Train from Bern, main station (direction: Neuenburg/Neuchâtel – be careful, because the train splits up in Kerzers): 10:53; arrival in Neuchâtel: 11:27

**Visit to the Musée d'art et d'histoire Genève**

12:15: Guided tour through the exhibition and the depot

<http://institutions.ville-geneve.ch/fr/mah/>

Train from Bern, main station (direction: Geneva Airport): 10:04; arrival in Geneva Main Station: 11:48

**Individual visit to the Museum für Musikautomaten Seewen**

No organised program

[www.bundesmuseen.ch/musikautomaten](http://www.bundesmuseen.ch/musikautomaten)

Train from Bern, main station (direction: Basel): 11:04; change to bus 111 in Liestal; arrival at bus stop "Seewen Musikautomaten": 12:08



**HKB**  
Hochschule der Künste Bern  
Haute école des arts de Berne  
Bern University of the Arts



**bmb** Museum für Musik  
IM LOHNHOF / BASEL

**n|w** Fachhochschule Nordwestschweiz  
Schola Cantorum Basiliensis



klingende sammlung  
zentrum für historische  
musikinstrumente

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