

HKB

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

HBS
HISTORIC BRASS SOCIETY

The Sound of Brass

Fifth International Romantic Brass Symposium

20–22 November 2018

Biel/Bienne, Kongresshaus/Centre des Congrès, Zentralstrasse 60



Programme

Conference organised by the Bern University of the Arts – Research Area Interpretation – in collaboration with the Historic Brass Society.



Berner Fachhochschule
Haute école spécialisée bernoise
Bern University of Applied Sciences

The Fifth International Romantic Brass Symposium continues a year-long tradition at the Bern University of the Arts. Recurring on the research project "The Sound of Brass", scholars and musicians of all over the world will meet to discuss the latest research in the area of brass instruments.

www.hkb-interpretation.ch/romanticbrass5

An exhibition during the symposium by Blechblasinstrumentenbau Egger will present the German trombones built during the project as well as other Egger instruments.

An event organised by the Research Area Interpretation, Bern University of the Arts, in collaboration with the Historic Brass Society

Responsible for the conference: Adrian v. Steiger
Representative Historic Brass Society: Stewart Carter
Head Research Area Interpretation: Martin Skamletz
Scientific collaborator: Daniel Allenbach
Administration: Sabine Jud

www.hkb.bfh.ch/interpretation
www.hkb-interpretation.ch
www.historicbrass.org

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Partners

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Tuesday, 20 November 2018

- 9:00 Registration and Welcome coffee
- 9:45 **Opening** – Martin Skamletz, Adrian v. Steiger
- PANEL 1: Opening session, Chair: Trevor Herbert
- 10:00 **Stewart Carter** (Winston-Salem)
Rossini, Mayr, Pacini, and the Romantic Trombone in Italy
- 10:30 **Christian Breternitz** (München)
A Valve Trombone with a Precursor of the “Berliner Pumpen”. Brass Instrument Making in Berlin around 1830
- 11:00 Coffee break
- 11:30 **Adrian v. Steiger** (Bern)
The Sound of Brass. An Introduction to the Research Project
- 12:00 **Jean-Marie Welter** (Munich)
The Wrought Copper Industry in the Kingdom of Saxony
- 12:30 Lunch break (own arrangement)
- PANEL 2: Materiality, Chair: Jean-Marie Welter
- 14:00 **Adrian v. Steiger** (Bern) and **Martin Tuchschnid** (Dübendorf)
64 Historical Trombones – Material Analysis
- 14:45 **Bastian Asmus** (Gundelfingen)
Experimental Production of Nickel Bearing Low Zinc Brass Sheet Metal
- 15:00 **Alex Schölkopf** (Basel)
Sound Design by Deliberate Manufacturing Techniques in the Reproduction of Historical Instruments
- 15.30 Coffee break. Ticket sale for the concert of Wednesday evening (cash only)
- PANEL 3: The Music, Chair: Adrian v. Steiger
- 16.00 **Martin Skamletz** (Bern)
A New Edition of Ferdinand David’s *Concertino* op. 4
- 16.15 **Ian Bousfield** (Bern)
A Romantic Journey
- 17.00 Dinner break (own arrangement)
- PANEL 4: French Horn Sounds, Chair: Daniel Allenbach
- 19:00 **Anneke Scott** (London)
Concert Lecture: “Answer, Echoes, Answer”
- 19:45 **Tommi Hyytinen** (Helsinki)
Concert lecture: Louis-François Dauprat and the Modern-Day Natural Horn Player
- until 22:00: Ad. lib. visit of Sinfonie Orchester Biel Solothurn rehearsal

Wednesday, 21 November 2018

- PANEL 5: Contexts, Chair: Arnold Myers
- 9:00 **Trevor Herbert** (Cardiff)
The Trombone in Germany in the Long Nineteenth Century. Contexts, Idioms and Legacies
- 9:30 **Armin Zemp, Bart Van Damme, Benjamin Morin, Gwenael Hannema** (Dübendorf)
1) Experimental Determination and Artificial Reproduction of Mouthpiece Pressure Fluctuations in Brass Wind Instruments
2) Effects of Material Properties on Fluid-Structure Interactions in Brass Instruments
Part 1: Experimental Investigation
Part 2: Numerical Investigation
- 10:30 Coffee break
- PANEL 6: Brass, Bells and Sounds, Chair: Stewart Carter
- 11:00 **Rainer Egger** (Basel)
Aspects on the Mutual Interference of the Vibrating Material of a Brass Instrument and the Vibrating Air Column
- 11:30 **Round table**
The Sound of Brass – discussion of the project’s results
- 12:00 **Hannes Vereecke** (Ludwigsburg)
Flat-Pattern Sheet-Brass Development in Trombone-Bell Making. The Graslitz Method
- 12:30 Lunch break (own arrangement)
- PANEL 7: Instrumentation and its connotations, Chair: Martin Skamletz
- 14:00 **Nathaniel Wood** (Brussels)
Austrian Brass Instruments of the Early 19th Century. New Sonic Horizons
- 14:30 **Daniel Allenbach** (Bern)
Semantic connotations of the French Horn in Richard Wagner’s *Ring des Nibelungen*
- 15:00 Coffee break
- 15:30 **Ryoto Akiyama** (Osaka/Göttingen)
Johannes Kuhlo’s Conception of *Posaunenchor* and His *Kuhlohorn*. An Ideal of the Sacred Sound and Its Embodiment in the German Empire
- 16:00 **Bernhard Rainer** (Wien)
Franz Xaver Glöggel and Beethoven’s *Equale*. New Evidence for an all-Bb Trombone Section in Austria at the Beginning of the 19th Century
- 16:30 **Final discussion**
A Fresh Wind? Research into wind instruments today and tomorrow
Led by Adrian v. Steiger. Input by Arnold Myers
- 17:00 Dinner Break (own arrangement)

- 18:30 **Tromboniade**
Students of the HKB playing at the foyer of the concert hall
- 19:00 Introduction to the concert for the public
- 19:30 **Concert**
Mendelssohn: Ruy Blas, David: Concertino for trombone, Schumann:
Symphony No. 3 ("Rheinische")
Ian Bousfield, Trombone
Sinfonie Orchester Biel Solothurn, Kaspar Zehnder
Tickets: Tuesday (20/11/18) afternoon during the coffee break (cash only)
- 21:30 Late night after-concert in the foyer with the HKB-Trombones

Thursday, 22 November 2018

Organised visits ad lib. (registration during the symposium)

- **Egger Workshop**, Basel/Münchenstein, Venedigstrasse 31
You can visit the manufactory individually from 10:00 onwards.
For instrument's tests please arrange a personal meeting.
Direct trains from Biel every 30 minutes. Taxi, or Tram 10 or 11 to "Dreispietz",
then 10' walking.
- **Klingende Sammlung Bern** (Kramgasse 66, close to clock tower "Zytglogge").
10:30 h Guided tour (in English). Exhibitions of wind instruments and
alphorns.
Train 9:52 from Biel central station, track 7 (RE 3734) to Bern. then 10'
walking.
- **Bern Historic Museum** (tram to Helvetiaplatz, meeting at the tramway station
Helvetiaplatz)
14:30: visit to musical instrument's storage rooms: Serpents, alphorns,
trombones and other winds

Other visits, non-organised

- Basel Music Museum: Permanent and special exhibition
- Bern, Zentrum Paul Klee: Permanent exhibition

Abstracts

Stewart Carter (Winston-Salem)

Rossini, Mayr, Pacini, and the Romantic Trombone in Italy

The role of the trombone in Italian music of the early 19th century has not been examined extensively. The objectives of my paper are to (1) establish a baseline for the employment of the trombone in large-scale Italian compositions of this period; (2) bring to light some little-known sacred works with virtuosic obbligato parts for trombone; and (3) offer some educated guesses as to how the introduction of the valve trombone may have affected compositional choices.

Trombone parts in the operas of Gioacchino Rossini (1792–1868) are typical for the period in question. Rossini uses trombones sparingly; often they merely double the cellos and contrabasses. The trombone part in the sinfonia to his *La gazza ladra* (1817) is one of very few passages by an Italian composer from this period to appear in books of orchestral excerpts, though characteristically, the instrument merely doubles the lower strings.

More elaborate parts for trombone can be found in sacred works by two north-Italian composers, Giovanni Simone Mayr (1763–1845) and Giovanni Pacini (1796–1867). Mayr's admiration for Mozart can be seen in two settings of the "Tuba mirum" – one a free-standing work, the other part of a complete Requiem mass – which, like the "Tuba mirum" in Mozart's *Requiem* (1791), Mayr set for bass voice with trombone obbligato. Pacini's *Virgam virtutis tuae* is similarly scored for bass voice, trombone obbligato, and orchestra. It begins with a lengthy, elaborate solo for trombone.

Valve trombones may have been manufactured in Milan not long after the founding of the Pelitti firm in 1828, and valve trombones made in the 1830s in Vienna could have been imported into northern Italy. Exactly how the valve trombone relates to the music described here is unclear. The works by Mayr and Pacini mentioned above are undated, so the type of instrument for which they were intended remains a matter of speculation. Considered against the backdrop of the rather mundane use of the trombone in most Italian scores of the early 19th century, however, the three works by Mayr and Pacini cast an important new light on the use of the instrument in that country.

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.

Christian Breternitz (München)

A Valve Trombone with a Precursor of the "Berliner Pumpen". Brass Instrument Making in Berlin around 1830

The patented invention of the valve system for brass instruments in 1818 by Heinrich Stölzel and Friedrich Blümel was not only limited to trumpets and horns. From the beginning, it was considered to be useful that valves were also installed on trombones, although these instruments already had the possibility to play chromatically.

In 1817 Stölzel and Blühmel came to Berlin to apply for the patent. As both were musicians, they had to cooperate with brass instrument makers in the Prussian capital to realise their ideas. That is one reason why the city of Berlin was one center in the further development of the valves from 1820 to 1840. One improvement of the “Stölzel valves” was made by Wilhelm Wieprecht around 1833 with the so called “Berliner Pumpen”. That type of valves was very famous on Prussian instruments. It was easy to maintain and therefore build in new instruments until the beginning of the 20th century. Referring to the archival materials, there has to be a precursor of that type what we in general name “Berliner Pumpen” today. That precursor-system was postulated by Herbert Heyde in a theoretical way. Until today it seems that no instrument with that “prototype” of the Berliner Pumpen survived.

In his PhD thesis (Berlin University of the Arts, submitted in July 2018) the author researched about the “Berlin brass instrument making in the 18th and 19th century”. During the research the author came across a valved trombone made in Berlin around 1830 by the manufacturer Johann Wendelin Weisse, who cooperated with Wilhelm Wieprecht. The valve system of that trombone fits perfectly to the described precursor of the “Berliner Pumpen” in the archival sources. Therefore, that instrument not just closes a gap in the history of valved instruments, but also scrutinises where the first valved trombones were made. The paper also highlights new results about the relationships between the inventors of the first valve systems and the brass instrument makers in Berlin.

Christian Breternitz studied Musicology, Education Sciences and Psychology at the Hochschule für Musik “Franz List” Weimar and the Friedrich-Schiller-Universität Jena. During his studies he specialised on historical keyboard instruments and organ building in Thuringia. As a research assistant at the Musikinstrumenten-Museum des Staatlichen Instituts für Musikforschung Preußischer Kulturbesitz in Berlin 2012–2014 his research fields moved on the brass instruments, co-curating the exhibition “Valve.Brass.Music. 200 Jahre Ventilblasinstrumente” and co-editing the catalogue of the same. After two years as a curator of the Music instrument collection in Stuttgart (Haus der Musik im Fruchtkasten) he works at the Deutsches Museum München. In July 2018 he submitted his PhD on “Berliner Metallblasinstrumentenbau im 18. und 19. Jahrhundert“ at the UdK Berlin.

Adrian v. Steiger (Bern)

The Sound of Brass. An Introduction to the Research Project

Historically informed performance is mainly based on musicological insights and period instruments. The latter may be manufactured using period materials and maker’s techniques. Here, as former projects showed, more research is needed into historic brass alloys, manufacturing procedures, wall thicknesses and technical details. For the research on German trombones of the 19th and early 20th centuries, the project entered this field in a multidisciplinary collaboration of the Bern University of the Arts HKB, the instrument maker Rainer Egger, Basel, and the natural scientists of the Empa (Swiss Federal Laboratories for Materials Science and Technology), Dübendorf.

“The Sound of Brass” entered in a second step questions of acoustics: If we build copies of period instruments using historical manufacturing techniques, what impact does this have on their playing characteristics and finally on their resulting sound? And can we measure this?

This introductory paper gives the outline of the project and the following special papers of the involved researchers, makers and musicians.

Adrian v. Steiger is a Swiss musicologist. He has completed his PhD in 2013 on the wind instrument collection of Karl Burri in Bern, of which he is the curator. He is head of the research field musical instruments of the Bern University of the Arts HKB and contributed to a set of research projects on wind instruments as a scientist and as a project leader. His research includes organology, repertoire, conservation and materiality of historical wind instruments.

Jean-Marie Welter (Munich)

The Wrought Copper Industry in the Kingdom of Saxony

Sheets of copper, brass and to a lesser extent nickel silver are the basic materials for manufacturing brass wind instruments. The present presentation will firstly describe various innovations made at the beginning of the 19th century in Europe, like the use of metallic zinc for brass production, the development of nickel silver, of sheet rolling and of gold and silver electro-plating. The second part will be devoted to the copper industry in the Kingdom of Saxony (which lasted from 1806 until 1918) during the 19th century. The production of copper and brass sheets has a long tradition in Saxony, but the two leading plants in Grünthal and Niederauerbach were acquired during the 19th century by entrepreneurs who wanted to develop nickel silver. Further aspects to be discussed are the provenience of the raw materials copper, zinc (which were mainly imported from Prussia) and nickel (which came to a large extent from Saxonian mines), as well as the start of the electro-plating industry in Leipzig. Some considerations have also to be given to the overall German situation, as Saxony joined in 1834 the Zollverein and became part of the German Empire in 1871.

Luxembourg citizen **Jean-Marie Welter** is a leading expert in the field of the history of copper and its industry. After studies in Paris (Ingenieur) and Munich (Dr. rer. nat.) he worked at the Kernforschungsanlage Jülich/Nuclear Research Center Jülich (Germany) and as a Director of the research center of the copper industry KME, France/R&D in Europe. Presently he is a consultant to European and international professional associations of the copper industry. He was President of the Société française de métallurgie et de matériaux/French Association for Metallurgy and Materials.

Adrian v. Steiger (Bern) and Martin Tuchschnid (Dübendorf)

64 Historical Trombones – Material Analysis

Sattler, Penzel, Petzold, Ullmann, Schopper, Schlott, Kruspe, Heckel, Piering, etc. – the list of makers of the German trombone is illustrious. 64 instruments out of museums and private collections in Switzerland and Germany were selected by the project for a set of investigations: Geometrical measurements and general description, XRF-measurements of chemical compositions, wall thickness measurements, acoustical measurements with the help of BIAS as well as of a newly developed tool, and finally sound and playing characteristics, as all instruments were allowed to be played. The results give an idea of historical manufacturing procedures. Saxonian workshops of different sizes as well as specialised makers of bells and other parts were involved with the aim of a “dark” sounding trombone for the use in the orchestra and the wind band.

Adrian v. Steiger (see above)

Martin Tuchschnid, Dr. sc. nat. ETH Zurich, since 1995 engaged as a technical specialist and project manager in the field of failure management and corrosion management in building construction and civil engineering at the Swiss Federal Laboratories for Materials Science and Technology (Empa). His main field of work is damage analysis, management and prevention of corrosion in civil engineering. A very valuable tool for these activities is the alloy analysis by means of X-ray fluorescence. This mobile and non-destructive analysis method of alloys is also successfully applied for research in the field of materiality of historical brass instruments.

Bastian Asmus (Gundelfingen)

Experimental Production of Nickel Bearing Low Zinc Brass Sheet Metal

Analytical work on romantic brass instruments has shown that the utilised red brass sheet metal contained a nickel in the region up to 2wt%. It is not known as to whether this Nickel component has an influence on the acoustic properties of said metal. Within a series of experiments, we tried to reproduce Nickel bearing red brass sheet metal for the making of brass instruments, for acoustic analysis.

A nickel bearing red brass was alloyed and cast into slabs in sand moulds. These slabs were heat treated and cold rolled in a duo roll-stand. Sheet metal of thicknesses between 0.45mm and 0.8mm were produced. These sheets were then made into tubes by Blechblasinstrumentenbau Egger in preparation for acoustic analysis. This paper presents the design, challenges and results of these experiments.

Bastian Asmus is specialised in the reconstruction of ancient and historic metal production and craft processes. After working as Bronze art founder journeyman for several years, he studied Prehistory, Geology and Anthropology in Tübingen and Cape Town. In 2011, he completed his PhD on the production of copper in high medieval times in the Harz Mountains. Since 2011, he is running the lab for Archaeometallurgy.

Alexander Schölkopf (Basel)

Sound Design by Deliberate Manufacturing Techniques in the Reproduction of Historical Instruments

Since the wall vibration has an influence on the character of an instrument, the instrument maker's desire is to design it according to his own ideas. Different wall vibrations, e.g. of the bell, can be strongly influenced by the processing and type of transformation. Still, some factors must be considered: the alloy, the homogeneity of the alloy, the thickness of the material, the size and shape of the bell must allow the desired transformation – or the instrument maker has to adapt to these conditions. From my experience as a bell maker, it seems to make sense to "listen" to the material during the forming, or to transform it as gently as possible. Nevertheless, the gentle transformation may have different reasons. From the instrument maker's point of view, one could call it the signature of an instrument. On contrast, it was also imperative for former instrument makers to adapt to the material in order to get it into shape without cracks and overlaps. Through the development of pure and homogeneous alloys, as well as better tools/machines/soldering processes, the way was cleared for faster, more effective forming.

The paper deals with the influence of different forming processes on the wall vibration and thus on the character and playing style of the instrument.

Alexander Schölkopf was born in 1977 in Ludwigsburg/Germany and started his first education as a carpenter in 1993. With the passion of an amateur musician, he began his second education in 1999 as an instrument maker for brass instruments in Ludwigsburg/Germany and became a master craftsman in 2012. Since 2008, Alexander makes part of the famous workshop of Rainer Egger in Basel, responsible for sackbuts and the bell making.

Martin Skamletz (Bern)

A New Edition of Ferdinand David's *Concertino* op. 4

Many concerto-like pieces until late in the 19th century were published in parts only, in some cases together with a piano reduction, but without score – to be directed by the Musikdirektor or Konzertmeister. In the case of Ferdinand David's *Concertino for trombone*, the composer was also the concertmaster of Leipzig's Gewandhausorchester. Basically, the original edition of the *Concertino's* parts by Kistner works fine and is generally used until today. However, I produced a new score for the performance with the Sinfonie Orchester Biel Solothurn, correcting some minor printing mistakes, unifying dynamics and articulation and glimpsing into a version of the piece for cello and piano prepared by the composer.

Martin Skamletz is head of the HKB research area Interpretation. He did his studies in Vienna and Brussels (music theory, flute, traverso). Apart a vast teaching experience, he appears in concerts and recordings and publishes articles and editions.

Ian Bousfield (Bern)

A Romantic Journey

Having been at first skeptical, Ian Bousfield discusses how he fell in love with the German Romantic Trombone. Starting with the first steps in the museum in Basel, moving on to Leipzig, trying tens of examples and moving on to the development process from the view of a test pilot! He also discusses the different technical and mental approach required to play the historic model compared to the new one.

Born in York, England in 1964, **Ian Bousfield** is one of the most influential and successful trombonists of our time. After posts in the Hallé Orchestra, the London Symphony Orchestra and the Vienna Philharmonic, he now concentrates on his great passion for pedagogy and built a class at the Bern University of the Arts HKB. Besides, he is still active as a soloist and as a conductor.

Anneke Scott (London)

"Answer, Echoes, Answer"

The right hand in the bell of a horn serves several functions. On a mundane level the hand assists in the instrument being in a position in which it can be played, but the soft flesh of the hand also aids the timbre of the instrument and the exact position of the hand is essential for fine tuning. With historical instruments and their associated techniques, the right hand can have a greater or lesser importance. For some early works the instrument is played without the insertion of the hand into the bell and for others the musician manipulates their right hand in the bell in order to create notes

("hand technique").

The position of the hand (or even the absence of the hand) greatly affects the timbre. Another way of changing the timbre is to use a mute, however this requires the musician to break off from playing in order to insert the mute. Whilst composers normally accommodate this in the music (writing an adequate number of bars preceding and following the *con sordino* passage) a significant number of 19th-century compositions exist where no such allowances have been made. Some of these later ones can be "accommodated" as it is possible to almost create the effect of a mute on valved instruments by using the right hand in lieu of a mute but this option is not available to the earlier natural instruments.

In this paper I propose to illustrate the problems inherent in these works, suggest solutions based on ideas that many 19th century HIP practitioners are currently exploring concerning tempo flexibility and dislocation, and discuss how the solutions may themselves suggest further ideas about the tempo flexibility composer/performers had in mind.

One of the leading period performers of her generation, **Anneke Scott** has been described as "one of the finest horn soloists" (Early Music Review). Anneke is principal horn of many internationally renowned period instrument ensembles including Sir John Eliot Gardiner's *Orchestre Révolutionnaire et Romantique* and *The English Baroque Soloists*, ensemble *Pygmalion*, *Dunedin Consort and Players*, *The Orchestra of the Sixteen* and *The King's Consort*. Her solo and chamber music discography is extensive. Recent solo recordings have included sonatas for horn and fortepiano with fortepianist Kathryn Cok (*Challenge Classics*), the solo works of Jacques-François Gallay (*Resonus Classics*) and the first volume of a series of discs featuring instruments from the Bate Collection, Oxford. Other recordings include a disc of works by Mozart with the Australian ensemble *Ironwood* and the Danzi horn sonatas with ensemble *F2*. She is a founder member of harmoniemusik group *Boxwood & Brass* and period instrument brass ensemble *The Prince Regent's Band*. In 2018 Anneke was elected a Fellow of the Royal Academy of Music, an honour awarded to past students of the Academy who have distinguished themselves in the music profession and made a significant contribution to their field. She is also a Fellow of the Royal Society of Arts, a member of the Royal Society of Musicians and teaches at the Royal Welsh College of Music and Drama, Cardiff.

Tommi Hyytinen (Helsinki)

Louis-François Dauprat and the Modern-day Natural Horn Player

Louis-François Dauprat (1781–1868) was the founder of the French natural horn school and one of the most important natural horn pedagogues of the 19th century. In my research I have studied what he has to offer for the modern-day natural horn player. One of Louis-François Dauprat's main works was his vast and versatile horn method *Méthode de Cor-Alto et Cor-Basse* (1824). In my previous research I have studied how to apply Dauprat's method in natural horn playing and natural horn teaching. *Méthode de Cor-Alto et Cor-Basse* gives very precise technical instructions for natural horn playing. The method consists also instructions for stylistic interpretation of music of late classicism and early romanticism. Furthermore, Dauprat also discusses the qualities of a good performer and depicts French music life of the early 19th century. Dauprat has also written numerous études for natural horn, which develop the playing skills very progressively.

In addition to the instructions for performers Dauprat gives specific instructions for composers in how to write for the natural horn in a more comprehensive way. Louis-

François Dauprat's own compositions for horn are an important part of horn literature of the early romanticism. His compositions are very well written for the instrument. Technically the pieces challenge the player's abilities to the limits. Dauprat's compositions range from pieces for natural horn ensemble to concertos for horn. Dauprat developed the horn pedagogy to a new level and enriched the horn literature to a more complex and varied writing for the instrument. His horn method and compositions are an excellent guide to stylistic and well controlled natural horn playing for the modern-day natural horn player. The *Méthode de Cor-Alto et Cor-Basse* can also be applied as a guide in writing modern music for the natural horn. Natural horn and its special hand technique have not yet been used in all possible ways in modern music. The natural horn, its different crooks and timbres, and the microtonality of the natural harmonic series offer yet new possibilities for the composer of today. In my lecture recital I will show with examples and through my own playing the significance of Dauprat's method for the modern-day natural horn player.

Tommi Hyytinen (b. 1977) is Finnish horn soloist, chamber musician and pedagogue. He works in Finnish Radio Symphony Orchestra as a horn player and in Sibelius Academy of the University of the Arts Helsinki as a horn and natural horn teacher. He is also a member of the Finnish Baroque Orchestra. He has studied at the Sibelius Academy, at the Universität für Musik und Darstellende Kunst Wien and at the Universität Mozarteum Salzburg. Hyytinen graduated as Doctor of Music from the Sibelius Academy in 2009. The topic of his artistic doctorate was the horn music of the Romantic period. Hyytinen is also active in the contemporary music scene and has premiered several pieces for horn. His horn method *Playing from the Core* was released in 2016 and his method for all musicians *Sounding body* was released in 2018.

Trevor Herbert (Cardiff)

The Trombone in Germany in the Long Nineteenth Century. Contexts, Idioms and Legacies

This paper looks at the way the trombone idiom was deployed in Germany in the long 19th century, the musical environments that caused such developments and the influence they had beyond Germany. The presentation also touches on methodology: it suggests a method for telling the story of an instrument. The way it has been written for and played in a given period can be told by reference to key factors about how it has been understood in different musical, social and design contexts.

Trevor Herbert was a trombone player with various London orchestras and period instrument groups. He is now Emeritus Professor of Music at the Open University and Professor of Music Research at the Royal College of Music in London. He is the author of several books and articles on brass instruments including *The Trombone* (Yale 2006). His latest book is the imminent *Cambridge Encyclopedia of Brass Instruments* which he has edited with Arnold Myers and John Wallace.

Armin Zemp, Bart Van Damme, Benjamin Morin, Gwenael Hannema (Dübendorf)

Experimental Determination and Artificial Reproduction of Mouthpiece Pressure Fluctuations in Brass Wind Instruments

Many questions related to the influence of the manufacturing techniques and the material selection on the acoustic properties of historically informed reconstructions

of brass instruments remain unanswered today. The experimental investigation of the above-mentioned aspects on the acoustic properties requires a representative, controlled, and reproducible artificial excitation of the brass instruments. The basis for the development of the excitation system is the experimental determination of the pressure fluctuations in the mouthpiece of the brass instruments during playing. Results from unsteady mouthpiece pressure measurements in a variety of instruments and the quality of the reproduction by the artificial excitation system will be presented.

Armin Zemp is the leader of the Materials & Systems Group at the Laboratory for Acoustics/Noise Control at Empa, the Swiss Federal Laboratories for Materials Science and Technology. Following his Bachelor's and Master's degrees in Mechanical Engineering, he received his PhD degree from the ETH Zurich for his experimental and numerical research on turbomachinery forced response and the development and validation of high cycle fatigue design systems for centrifugal compressors. Current activities in his group at the Laboratory for Acoustics/Noise Control focus on wave propagation in solids, sound transmission in complex structures, fluid-structure interactions and the development of novel materials with superior acoustic properties.

Effects of Material Properties on Fluid-Structure Interactions in Brass Instruments – Part 1: Experimental Investigation

In brass wind instruments, the energy exchange between the vibrating air column and the surrounding structure has several effects. The interaction defines the sound colour of the instrument, but it can also influence the ease of playing and the quality of the radiated sound. We investigated the influence of materials, tube construction and geometry on the fluid-structure interaction. In a first stage, a set of straight tubes made out of different materials and with or without seams were excited by a vibrating air column. An artificial excitation system was used to ensure realistic and controllable air vibration amplitudes. The influence on the structural response in each tube could be measured by a scanning laser vibrometer. The second step involved the investigation of U-shaped tubes with a moveable support, and how it influences the vibrations and sound radiation.

Bart Van Damme has a Master's degree in physical engineering. He got his PhD in physics at Leuven University in 2011, investigating nonlinear elastic waves for nondestructive testing. He is currently a member of the Laboratory for Acoustics/Noise Control at Empa, the Swiss Federal Laboratories for Materials Science and Technology. He investigates dynamic properties and elastic wave propagation in complex materials and structures. Examples are engineered wood materials for musical instruments or lightweight construction, or the design and practical implementation of metamaterials with optimised isolating and absorbing properties.

Effects of Material Properties on Fluid-Structure Interactions in Brass Instruments – Part 2: Numerical Investigation

The interactions of the vibrating internal air column and the surrounding components of a brass wind instrument have been investigated experimentally in "Part 1: Experimental Investigation". This presentation is about the numerical investigation of such interactions that aim at reproducing the experiments. The simulations predict pressure fluctuations of the internal air column, vibrations of the surrounding

material and the interactions between air column and structure. The pressure fluctuations gathered from the experiments are used as inlet boundary conditions. Results will be presented for cylindrical tubes made from different materials and for a U-shaped tube with a movable strut. The numerical predictions allow quantifying the fluid-structure interactions, e.g. the energy transferred from the air column into the surrounding material and vice versa, and offer the possibility for cost effective parametric studies and ultimately for the development of optimised designs.

Benjamin Morin is a French Post-Doctorate active in the field of complex damping material modelling and application. He studied in the Paris area and did his PhD on the modelling of elastomeric dampers used in the aerospace industry. He then worked as professor for one year at the University Paris-Est Marne-la-Vallée, where he investigated the effects of microstructure elasticity in porous materials applied to noise absorption. He is currently working at Empa, mainly in the field of rail track dynamics and noise control.

Rainer Egger (Basel)

Aspects on the Mutual Interference of the Vibrating Material of a Brass Instrument and the Vibrating Air Column

Recent scientific research has proven the interdependence between the structure and intensity of the vibrating air column and the induced vibration of the encasing material. This vibration of the material causes an absorption of energy of the air, the value of which determines the acoustical characteristics of an instrument. In order to evaluate the reliability of the measuring methods for the absorption values, we have experimented with various methods. The set-ups of the experiments and the results will be shared in this paper.

As a young instrument maker, **Rainer Egger** witnessed the pioneering time of the replicas of historical brass instruments in the studio of his father Adolf Egger. His passion has since been the constant improvement of the brass instruments, especially in terms of richness of sound and musical functionality. His focus is primarily on the reproduction of historical trumpets, trombones and horns as well as the optimisation of modern valve trumpets. In order to do justice to the increasingly differentiated concerns of the wind players, he and his team repeatedly experiment with working techniques, scale lengths, materials and wall thicknesses. He has acquired a rich expertise in musical acoustics and is in constant exchange with professionals in this field.

Hannes Vereecke (Ludwigsburg)

Flat-Pattern Sheet-Brass Development in Trombone-Bell Making. The Graslitz Method

The musical characteristics of a trombone bell are defined by its shape and vibrational behaviour. As a consequence, the study of the parameters that impact the vibrational behaviour is an integral part of historically informed brass wind instrument making. In addition to the chemical composition and metallurgical characteristics of the raw materials used, other parameters – such as wall thickness, applied annealing temperature, annealing time, rate of deformation and the spinning tools used – will influence the vibrational behaviour. From a practical point of view,

the degree to which the soldered flat sheet-metal pattern has to be deformed in order to bring it into a 3D-shape on the mandrel is of particular relevance. This in turn depends on how accurately the flat patterning is conducted. Unfolding a flat sheet-brass pattern from a known mandrel shape presents an obstacle for brass wind instrument makers, and unfortunately very few sources offer any insight into this procedure.

In his book *Metallblasinstrumentenbau* (1970) the brass wind instrument maker Carl Nödl describes a methodological approach known as the Graslitz Method, that was taught at the Imperial and Royal Musical Instrument making school in Graslitz (now Kraslice, Czech Republic). However, this source lacks both sufficient detail and examples of practical application, thereby leaving a gap between theory and praxis. Still, the recent discovery of a set of drawings made in Graslitz by Max Rölz, dating from the 1920s, allows deeper insight into this method. The information extracted from these drawings was applied and incorporated into a geometrical analysis of twenty-three functional bell patterns. This enabled me to implement the Graslitz method successfully in the development of a flat sheet-brass pattern for a given trombone bell mandrel at the workshop of the Ludwigsburg School of Master Craftmanship in Musical Instrument Making.

My paper reconstructs the Graslitz method for the flat-pattern sheet-brass development in the manufacture of trombone bells. It presents results of geometrical analyses of well-designed pre-cut bell forms and describes the limitations of this method.

Hannes Vereecke teaches at the Bundesfachschule für Musikinstrumentenbau in Ludwigsburg and at the Hochschule für Musik Stuttgart. After his studies in Music Instrument Making at the Royal Conservatory in Gent he did a PhD in the field of musical acoustics on Reconstruction of 16th-century trombones at the Universität für Musik und darstellende Kunst Wien. His research interests go mainly into the technical aspects of musical instruments between repertoire, influence of the musician, and technical conception of the musical instrument.

Nathaniel Wood (Brussels)

Austrian Brass Instruments of the Early 19th Century. New Sonic Horizons

This researcher-maker will show how performers can use the untapped diversity of instrument traditions to open new timbral horizons for effective performance of early Romantic Austrian repertoire. Over the past decades, the instruments used in historically oriented performances of music in the distinct tradition of early Romantic composers (Beethoven, Schubert, Mendelssohn, Schumann ...) have become essentially standardised, with “classical” trumpets and trombones becoming the customary arsenal. These instruments fail to reflect the immense spectrum of period brasswinds – which were anything but standardised. Today’s “classical” instruments generally reflect only one of the several distinct instrument-making traditions which emerged around 1800; the Austrian Catholic school on which this study focuses is largely missing from the trombone market. In the case of trombones, the Saxon Protestant school exemplified by Eschenbach (Markneukirchen) and Schmied (Pfaffendorf) is prevalent; as for natural trumpets, on the relatively rare occasions standard Baroque models are not used, models after Sauerle (Munich) and Raoux (Paris) are prevalent. The Austrian Catholic school is represented by both extremely conservative instruments, such as those by Huschauer and the elder Anton Kerner, and the wider, larger-belled instruments of makers such as Georg Simon Kuntzel (Graz), Johann Adam Bauer (Prague), Anton II and Ignaz Kerner (Vienna) and Huschauer’s successor Josef Riedl (Vienna), with potential parallels with instruments

by Sauerle (Munich) and Riedlocker (Linz/Paris). Inspired by my recent experience studying and testing a significant collection of instruments from Graz, this paper will examine a selection of early 19th-century instruments in order to outline the distinctive character of early 19th-century Austrian trombones and trumpets according to various technical methods, playing characteristics, and influence in a performing context.

Born in upstate New York to a musical family, **Nathaniel Wood** discovered his passion for ancient music during his studies with James DeSano at the Oberlin Conservatory. He went on to earn Masters' degrees in historical performance practice at Case-Western Reserve University and as a Fulbright/Ratner Scholar at the Schola Cantorum Basiliensis, studying respectively with Greg Ingles and Charles Toet. A multifaceted performer on trombones and slide trumpets of all eras and sizes, he is a founding member of the Renaissance wind band Mandragora and the chamber ensemble Habsburger Camerata, and appears regularly across Europe with ensembles including Concerto Palatino, Les Haulz et les Bas, Concerto Scirocco, La Chapelle Rhénane, Chordae Freybergensis, Cantar Lontano, L'Arpa Festante, Il Desiderio and Mediva. He is a former member of the Washington (DC) Cornett and Sackbut Ensemble, which he has also directed. Tangent to his performance practice interests, he is also a maker and restorer of historical brass instruments, and recently completed a replica of a Viennese tenor trombone by Hanns Geyer, Vienna, 1676.

Daniel Allenbach (Bern)

Semantic connotations of the French Horn in Richard Wagner's *Der Ring des Nibelungen*

With his delicacy in combining the various timbres of the orchestra's instruments, Richard Wagner set new standards for instrumentation. But besides the sound of the orchestra itself, Wagner's orchestration comprises also semantic connotations – based on topoi spread in the instrumentation tutors of the 19th century. Beginning on a variety of these tutors and concentrating on Wagner's tetralogy *Der Ring des Nibelungen* and its Leitmotifs, this paper will focus on the semantic qualities of the French Horn sound.

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.

Ryoto Akiyama (Osaka/Göttingen)

Johannes Kuhlo's Conception of *Posaunenchor* and his *Kuhlohorn*. An Ideal of the Sacred Sound and Its Embodiment in the German Empire

Within the socio-cultural conditions of the 19th century, the invention and spread of modern brass instruments gave rise to several local band traditions, which, in turn, encouraged the production of new instruments. One significant example of this phenomenon from late 19th century Germany was the *Posaunenchor*. Young men of the Lutheran working-class organised themselves into brass bands called *Posaunenchor* to praise the God and to promote missionary work. Till around 1920, approximately 1400 *Posaunenchor*s were established in Germany. Johannes Kuhlo (1856–1941), a devout Lutheran pastor who was called “The General

of the *Posaune* (Posaunengeneral)”, was the key figure who oriented the musical practice and theological ideas of the *Posaunenchor*. Based on archival research and close reading of his writings, this paper investigates his conception of *Posaunenchor*. It examines how Kuhlo imagined the sound of brass instruments through the concept of “*Posaune*”, inspired from the Lutheran Bible. Further, the paper examines how he embodied his ideas, framing *Posaunenchor* as a sacred musical practice, particularly through instrumentation, notation, and the construction of the repertoire. In the literal sense, *Posaunenchor* refers to a trombone choir. However, Kuhlo preferred valved brass instruments with a conical bore, belonging to the *Bügelhorn* family. This was because he sought to express the mild and solemn sound of an a cappella chorus, which he thought was the ultimate embodiment of the word of God, in the brass ensemble of the *Posaunenchor*. To accomplish his ideal brass performance, Kuhlo collaborated with Ernst David, an instrument maker in Bielefeld, to develop a specific type of flugelhorn called the *Kuhlohorn*. As part of my presentation, I will demonstrate the restored *Kuhlohorn*, which was used in Kuhlo’s own *Posaunenchor* in Bethel.

To differentiate *Posaunenchor* radically from profane formations of brass ensembles, Kuhlo insisted that *Posaunenchor*s exclusively play chorales, and introduced the specific piano-score notation written in C. He executed his ideas through instructions to *Posaunenchor*s, his editing of songbooks – the most famous of which was named *Posaunenbuch* –, and his own playing of the *Kuhlohorn*. It is remarkable that he committed himself to the political movement of Christian conservatism in eastern Westphalia, and his Christian ideas might be so closely intertwined with the patriotic beliefs of the German Empire, as was clearly expressed in his conducting the festive mass ensemble of the *Posaunenchor* for the homage to Wilhelm II.

This study will contribute to the discussion on how people in Germany in the second half of the “long 19th century”, especially of the working class, conceptualised music with brass instruments.

Ryoto Akiyama is a PhD candidate in the Musicology Division at the Osaka University Graduate School of Letters, receiving a research fellowship from the Japan Society for the Promotion of Science. His major field of research is music of the brass instruments in the German speaking area. Currently he does research on the *Posaunenchor*. Since 2014 he has carried out his ethnomusicological fieldwork in Göttingen and joined as a trombonist in the *Posaunenchor*s. His doctoral project focuses on community music making, religious experience through participatory music making, and relation between Protestantism and nationalism in the current *Posaunenchor*.

Bernhard Rainer (Wien)

Franz Xaver Glöggel and Beethoven’s *Equale*. New Evidence for an all-Bb Trombone Section in Austria at the Beginning of the 19th Century

In a series of translations and commentaries on the trombone methods of Fröhlich (1811), Braun (ca 1800) and Nemetz (1827), beginning around 30 years ago, David M. Guion and Howard Weiner were the first to point out that trombone sections of professional orchestras around 1800 predominantly consisted of tenor trombones in Bb. In 2005, Howard Weiner convincingly argued that trombonists in Vienna in the 18th and early 19th centuries did not use the Eb alto trombone or the bass trombone in Eb or F, but the Bb trombone only. More recently, slide-position charts and additional markings in orchestral parts have provided evidence to show that also in the mid-19th century in Austria, trombone parts in alto clef were performed on (valve) trombones in Bb.

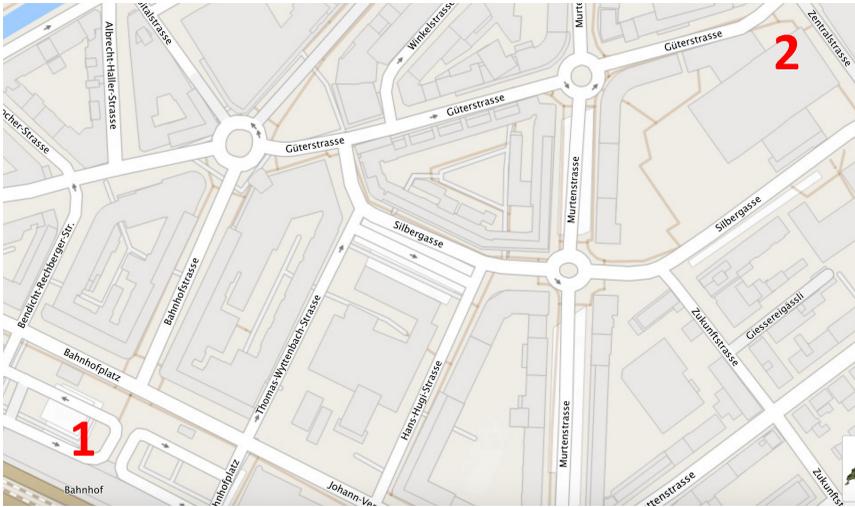
Although over the last few decades several articles have appeared which suggest that our picture of the historical trombone section using a different instrument for each voice needs to be more carefully investigated, there has been very little discourse on this topic in the historical performance practice scene. Even in musicological publications, doubt continues to be cast on e.g. the (in the meantime clearly evidenced) practice of using an “alto” trombone in Bb.

Therefore, in the proposed paper, a few well-known sources that provide information on the performance practice in Vienna (such an important city in the history of music) around 1800 will be revisited. In particular, the depiction of the trombone in Johann Georg Albrechtsberger’s *Anweisung zur Komposition* (1790) and its revised versions by Ignaz Seyfried (1825 and 1837), which even now are still a source of confusion, will be examined.

Using comparisons, it can be shown that rather than describing the performance practice situation in his home town of Vienna, Seyfried has instead used a significantly shortened plagiarism of the trombone methods of Fröhlich and Braun. Furthermore, a newly-found source, relevant for terminological and organological reasons, suggests that Beethoven’s *Equali* (composed for Franz Xaver Glöggl in Linz in 1812) were intended for four tenor trombones in Bb. As a result of these findings relating to performance practice, in which the son of Glöggl (shown to be trombone teacher) also plays a role, new light can be thrown on the early history and reception of these well-known chamber works for trombone.

Bernhard Rainer studied music at the universities for music in Graz and Vienna, Austria, with the former principal trombonist of the Vienna Philharmonic, Rudolf Josel. In the year 2000/01 he studied trombone in London at the Royal Academy of Music with Robert Hughes and from 2002–2005 historic trombone at the Schola Cantorum Basiliensis in Basel, Switzerland, with Charles Toet. Bernhard now lives as a freelance musician in Vienna, specialising in period trombones from the Renaissance to the Romantic era. He teaches Period Trombone Techniques at the Universität für Musik und darstellende Kunst in Graz and Historical Performance Practice at IES abroad Vienna. Furthermore, he has recently finished his PhD dissertation in musicology on “Instrumentalists and instrumental practice at the court of Albrecht V. of Bavaria (1550–1579)”.

Biel/Bienne



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