ADOLPHE SAX, HIS INFLUENCE AND LEGACY:

A BICENTENARY CONFERENCE

Antoine-Joseph Sax, (known as Adolphe Sax), was born in Dinant (Belgium) on the 6th of November 1814. He was one of the towering figures in nineteenth century musical instrument development, especially in respect of wind instruments. On the occasion of the bicentenary of his birth, the Brussels Musical Instruments Museum is hosting a conference on Sax, his influence and legacy. It will cover his contribution to musical instrument development, the various strands of musical activity in which his instruments were used and its influence on repertoire and style.

Musical Instruments Museum, 3-5 July 2014

Venue: Hofberg 2 Montagne de la Cour

B-1000 Brussels

**Organising committee**

* Céline Bourguignon (mim)
* Anne-Emmanuelle Ceulemans (mim – Universitécatholique de Louvain)
* Géry Dumoulin (mim)
* Henri Vanhulst (Belgian Society of Musicology – Universitélibre de Bruxelles – VrijeUniversiteitBrussel)

**Scientific committee**

* Anne-Emmanuelle Ceulemans (mim)
* Mark Delaere(KatholiekeUniversiteit Leuven)
* Géry Dumoulin (mim)

#### Trevor Herbert (The Open University)

* Jeffrey Nussbaum (Historic Brass Society)
* Herman Sabbe (Universiteit Gent)
* Henri Vanhulst (Belgian Society of Musicology – Universitélibre de Bruxelles – VrijeUniversiteitBrussel)
* Philippe Vendrix (Université de Liège –Centre National de la RechercheScientifique, Tours)
* Howard Weiner (*Historic Brass Society Journal*)

**Program**

**Thursday 3 July 2014**

9.30 Opening and registration

10.00 Keynote address: D. Litt. Trevor Herbert, Professor of Music, The Open University, Honorary Professor of Music at Cardiff University, Fellow of the Leeds College of Music: *Mr Sax, his saxhorns and their international influence*

11.00-11.30 Chair: Stephen Cottrell

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| Dr.Robert Howe | *Adolphe Sax, his influence and legacy: Myths noted and debunked* |

12.15 Public concertat the Brussels Conservatory (Cuivresromantiques,   
 dir. J.-Fr. Madeuf): Joel Lahens, Pierre-Yves Madeuf, Cyrille Grenot,

Laurent Madeuf, Marc Girardot, Phillippe Genestier, Simen

Van Mechelen, Jean-Jacques Herbin

Grand Nonetto, op. 3 by Edmond Juvin (1811-?)

13-14.30 Lunch

14.30-16.00 Chair: Henri Vanhulst

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| Dr. Patrick Peronnet | *Saxons et Carafons. Adolphe Sax et le Gymnase Musical Militaire : un conflitd’esthétique* |
| José-Modesto Diago Ortega | *Legitimacy, defence and justice of the musical instruments in the nineteenth-century century: the Adolphe Sax’s pyrrhic judicial trials* |
| Dr. Walter Kreyszig | *“Cesnouvellesvoixdonnéesàl’orchestrepossèdent des qualitésrares et précieuses ...”: Reflecting on Adolphe Sax and His Invention of the Saxophone and Related Instruments in Hector Berlioz’s* Grand Traitéd’instrumentation et d’orchestrationmodernes*, op. 10 (1843, 1855),* Te Deum*, op. 22 (1849), and* Les Troyens*, op. 5 (1856-8)* |

16.00 Coffee break

16.30-17.30

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| Dr. Adrian von Steiger | *Sax figures. Can we deduce details of Adolphe Sax’s instrument production from the sources?* |
| Bruno Kampmann | *Saxophone prototypes and “pathological keywork”* |

**Friday 4 July 2014**

9.30 Registration

10.00-11.00 Chair: Trevor Herbert

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| Dr. Bradley Strauchen-Scherer | *Museum Piece: Mary Elizabeth Adams Brown and the instruments of the Sax family at the Metropolitan Museum of Art* |
| Thierry Maniguet | *The remaining instruments of the Fanfare de scène of Paris Opéra – a new survey* |

11.00 Coffee break

11.30-12.00

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| Dr. Malou Haine | *Adolphe Sax et sesdémarches pour obtenir la croixd’officier de la Légiond’honneur* |

12.00 Break

12.30 Concert: QuatuorArsys (**Paul-Hugo Chartier, Gema Fernandez   
 Arévalo, Erik Demaseure, Jérémie David: saxophones**): Joseph   
 Jongen,*Quatuor en formerhapsodiquelibre*; Jean-Baptiste Singelée,  
 *Premier Quatuor*

13.00 Lunch at the museum restaurant

14.00-15.30 Chair: Gery Dumoulin

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| Dr. Damien Sagrillo | *Adolphe Sax, Jean-Baptiste Arban etc. Pedagogical Aspects on Saxhorn Learning and Problems of Nomenclature* |
| Olivia Wanhon de Oliveira | *De l’intérêt de Fétis pour les inventions de Sax à la création de la classe de saxophone en 1867 au Conservatoire royal de Bruxelles* |
| Astrid Herman | *Adolphe Sax and the press of his time* |

15.30 Coffee break

16.00 Visit of the exhibition *SAX200* (<http://www.sax200.be/>)

19.00 Conference dinner at “Bier Circus”

**Saturday 5 July**

10.00 Registration

10.30-11.30 Chair: Anne-Emmanuelle Coulemans

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| Jeroen Billiet | *Adolphe Sax’s “histoire belge”: the introduction of independently valved instruments at Belgian conservatoires, 1869-1874* |
| Dr. Albert R. Rice | *The bass clarinets of Adolphe Sax and some examples of their musical use* |

11.30 Coffee break

12.00 Keynote address: Stephen Cottrell, Professor of Music and Head of the conjoint Departments of Music, and Culture & Creative Industries; Associate Dean (International) at the School of Arts and Social Sciences, City University of London: *Ali-Ben-Sou-Alle and his turcophone: middlebrow music, orientalism and the saxophone on the nineteenth-century concert stage*

13.00-14.30 Lunch at “Green Kitchen”

14.30-15.30 Chair: Jeffrey Nussbaum

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| Rob Woodward | *The saxophone – dark, bad and rebellious* |
| Jeffrey Siegfried | *Edison Denisov’s*Sonata for Alto Saxophone and Piano *and the development of the saxophone in Russia* |

15.30 Coffee break

16.00- 17.00

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| Dr. Ignace De Keyser | *The Introduction of the Saxophone in Urban Music in Subsaharian Africa* |
| Marten Potsma | *The parabolical cone with A. Sax* |

**Abstracts**

**Robert Howe, *Adolphe Sax, his influence and legacy: Myths noted and debunked***

Adolphe Sax, by virtue of his many accomplishments as an instrument inventor and maker, left a vast and at times confusing legacy. The literature on Sax has numerous misunderstandings and myths which continue to impede our full appreciation of his influence. These include:

*1. Inscriptions and Dates of Manufacture.* Sax was one of the first makers to place detailed inscriptions on his brass instruments. These include serial numbers, themselves a new idea at the time. Inscriptions and serial numbers provide substantial data to scholars of his instruments. They speak also of the changing social and political role of the artisan and establish Sax as the first truly modern musical instrument maker.

*2. The families of Saxhorns, Sax-trombas, Sax-tubas and Saxophones.* Biographies of Sax describe four families of brass instruments named after the inventor. Specimens of some of these instruments are remarkable rare; so rare that recent research has substantially demonstrated that they never existed.

*3. Families of Band and Orchestral saxophones.* Early manufacture of the saxophone, before it had established a role in musical culture, was indeterminate in the matter of nominal pitch. In his patent applications, Sax described saxophones pitched in C, Eb, F, G, Ab and Bb, half of the twelve possible pitches. His admirers’ writings describe saxophones in Bb, C, Eb, and F only. Twentieth century writers treated these as if they were two distinct families of instruments, with Bb and Eb saxophones intended for bands, and C and F saxophones intended for orchestral use in a manner analogous to the exclusive use of the A clarinet by the orchestra. Only seven specimens of the C saxophones and two F saxophones survive from Sax’s workshop, however, and there are few by rival makers. The truth is that Sax’s early lack of focus in this matter was a matter of musical selection rather than of two deliberately parallel families of instruments.

*4. The Parabolic Bore of Early Saxophones.* Sax described the bore of his saxophones as being a “parabolic cone”. This expression conflates two similar but distinct mathematical forms, the parabola and the cone. It has caused a great deal of confusion to music historians and organologists. To clarify this I measured the bores of several saxophones made by Sax. Tabulation and analysis of these data permit us to understand Sax’s meaning.

*5. The Ophicleide-shaped Saxophones.* Sax’s patent drawing of 1846 shows instruments modelled after the ophicleide. No such instrument has been demonstrated. Evidence for the existence of a baritone saxophone in ophicleide form, created by a rival maker after 1870, will be presented.

Each of these matters will be briefly described, current dogma reviewed and more correct understandings, based upon current research, introduced.

Robert Howe, who is trained as a chemist, musician and physician, is a frequent contributor to Anglophone organology journals. His 2003 JAMIS paper, “The Invention and Early Development of the Saxophone, 1840-55” was an important spark that ignited much interest in Sax’s work. The recipient of research awards from the AMIS, H&A Selmer and the Galpin Society and of the 2006 Francis Densmore Prize, Dr Howe is a PhD candidate in Music Theory and History at the University of Connecticut, Storrs. His ongoing research focuses on the dating of woodwinds by the French maker Triebert and on the application of medical imaging technology to the study of woodwinds. An accomplished community musician, he performs on saxophone, clarinet, modern and historical oboes and heckelphone.

**Patrick Peronnet, *Saxons et Carafons. Adolphe Sax et le Gymnase Musical Militaire : un conflit d’esthétique***

Institution musicale française absente des études en musicologie, le *Gymnase musical militaire* fut célébré lors de sa création (1836) comme la plus heureuse initiative prise pour rénover les musiques militaires françaises décadentes.

Doté d’un encadrement réunissant une bonne part de l’élite française des instrumentistes à vent issue du Conservatoire de Paris, son crédit est fortement contesté par les conceptions et les innovations d’Adolphe Sax dès 1842. Après la fameuse « bataille des Saxons et des Carafons » (1845) et malgré les revers que subit la réforme des musiques militaires lors de la Révolution libérale de 1848, le « système Sax » s’impose temporairement sous le Second Empire et contribue fortement à la disparition du *Gymnase* en 1856.

L’image caricaturale et manichéenne qui résulte de ce conflit est la victoire des modernes sur les anciens, des progressistes sur les conservateurs, du génie solitaire (Sax) sur la masse comploteuse des ignorants, du créateur désargenté face à la masse cupide des imitateurs et des *agioteurs*, d’une guerre personnelle épique et sociale entre l’aristocrate Michele Carafa prince de Colobrano (le directeur du *Gymnase* depuis 1838) et le besogneux artisan Adolphe Sax. Cette image d’Épinal, typique du Romantisme littéraire ou artistique, entretenue par les musicographes, biographes et hagiographes d’Adolphe Sax, brouille les véritables raisons de ce conflit.

En réalité, il y a, pour les musiques militaires françaises, des enjeux esthétiques peu explorés, escamotés par les faits politiques et les intérêts socio-économiques privés de cette nouvelle ère industrielle. Si, à première vue, la réforme globale initiée par le « système Sax » sort triomphatrice de cette lutte, la réalité se rapproche plus d’une demi-victoire. Sax dut faire bien des concessions à ses adversaires et son orchestre type ne fut pas réellement plus prodigue en créations musicales que les harmonies ou fanfares militaires qui l’avaient précédé.

**Patrick Péronnet** **est d**octeur en musicologie à l’Université Paris-Sorbonne et professeur certifié d’histoire et spécialiste des ensembles d’instruments à vent aux XVIIIe, XIXe et XXe siècles, sujet de sa thèse. Chercheur associé à l’*Observatoire musicalfrançais* (Université Paris IV – Sorbonne), chef d’orchestre, arrangeur, orchestrateur et compositeur, il est également co-fondateur de *l’Académie Française pour l’Essor des Ensembles à Vent*. Il a publié de nombreux articles concernant le répertoire et la sociologie des orchestres d’harmonie dans des revues spécialisées (Journal de la CMF, WASBE Journal, Observatoire musical français...). Il est responsable de publication aux Éditions du Petit Page (Pantin), spécialisées dans l’édition ou la réédition de partitions et livres du XIXe siècle, destinés aux instruments à vent. Il est l’auteur de la présentation et des annotations d’*Histoire d’un inventeur au dix-neuvième siècle, Adolphe Sax ses ouvrages et ses luttes*, réédition de l’ouvrage d’Oscar Comettant -1860- (Pantin, Petit Page, 2014). Son dernier ouvrage (à paraître) est consacré à *Prosper Sain-d’Arod, musique liturgique au temps des Romantiques*.

**José-Modesto Diago Ortega, *Legitimacy, defence and justice of the musical instruments in the nineteenth-century century: the Adolphe Sax’s pyrrhic judicial trials***

Adolphe Sax was not only one of the best inventors of musical instruments in the nineteenth-century, but also an authentic ‘lawsuit dependent’ that saw himself involved in bloody judicial trials for more than 20 years. In a first phase, he behaved defending himself from the relentless manufacturers’ attacks, partially because those counterparts considered disproportional Sax’s acquired rights over the industrial propriety and regulations related to the patents of invention. However, later on, Sax followed to offensive positions, also in a very aggressive way, defying almost all brass aerophones makers in Paris and some other French.

Nevertheless, the application of those laws leaves space to the interpretation and a Magistrate’s decision, and also in his case, we can see that his procedural fate was coming in favour or against him depending on the politic regime in power at that time. That lets us think that there were evident interferences and meddling between the executive power and the judicial one, to which we may also add the pressure which other factual powers exercised such as the army or the press.

Besides, Adolphe Sax and his contestants did not scrimp in means and strategies to defend his positions so they hired the best attorneys in France, some of them former ministers like Pierre Marie de Saint Georges or Jules-Armand Dufaure. The recruitment of those excellent lawyers, especially bearing in mind that it consisted of a simple case of questioned brass aerophones gives an idea of the disputes’ intensity and the high degree of competition for the control of some ideas and a growing market.

Adolphe Sax’s zeal over his instruments took him to fight simultaneously against almost twenty manufacturers. Among them, we highlight Pierre-Louis Gautrot, who had to accept the premeditating raids that the Belgian entrepreneur caused him, some of them in the Exposition 1855 itself or one day before the patent of the saxotromba expired.

Nevertheless, one of more important aspects of those judicial battles was the extension, in five more years of the patents, of the saxotromba and saxophone. Such consent was very exceptional and that permission must be considered as a law in terms of bureaucracy, which actually implied, to be at a par with all the system regulating the French patents. But, Adolphe Sax’s circle counted on the explicit support of the Council of State, The Ministry of Commerce and on the Emperor’s approval, which made that both French chambers voted in favour and consequently the law became official in august of 1860. Up to that date, there was an only precedent and Adolphe Sax would be the second exception since 1791, when the French provided themselves with regulations about the intellectual and industrial property.

Those more five years were not an exception and they were marked with many judicial battles against other ‘heavy-weights’ of the instrumental manufacturing field, such as Gustave-Auguste Besson, who, by the way, had to move to London to avoid jail and other pressures to which the Walloon maker subdued him.

Nevertheless, and even though Adolphe Sax won the most of those battles, we have a feeling that he ended up more damaged than the defeated, especially in proportion to his effort.

This paper aims at drawing a key line of those battles according to the judicial chronicles and minutes, taking into consideration the current rules at that moment and the political context in which they were developed.

José-Modesto Diago Ortega is member of the research group of Historia Actual of the Universidad de Cádiz (GEHA-HUM315), Graduated on Advanced Studies in the Program of Geography and History of the same University, Professor of Saxophone at the Real Conservatorio Superior de Música deMadrid and teacher of English as Foreign Language at the Universidad Complutense de Madrid. He has performed as soloist and he has made lectures about the history of music and organology in several European countries and the USA. He has published several researching articles. Nowadays he is teacher of saxophone in the Real ConservatorioProfesional de Música “Manuel de Falla” de Cádiz (Spain) and he is carrying out doctoral studies related to the historical survival of the saxophone.

**Walter Kreyszig, *“Cesnouvellesvoixdonnées à l’orchestrepossèdent des qualitésrares et précieuses ...”: Reflecting on Adolphe Sax and His Invention of the Saxophone and Related Instruments in Hector Berlioz’s* Grand Traitéd’instrumentation et d’orchestrationmodernes*, op. 10 (1843, 1855),* Te Deum*, op. 22 (1849), and* Les Troyens*, op. 5 (1856-8)***

In 1838, Adolphe Sax received his first patent for a *nouveau système de clarinettebasse* ― an invention that launched his career as one of the most eminent builders of musical instruments, gaining notoriety especially for his invention of a new family of musical instruments, the saxophone and a number related instruments (saxhorns, saxtrombas and saxtubas). He was awarded a total of twenty-nine patents, that is, six Belgian patents between 1838 and 1842 and twenty-four patents between 1843 and 1881. This new family of instruments was featured in a number of exhibitions, beginning with the Brussels Exhibition in 1841. Sax’s invention attracted many composers, with Hector Berlioz undoubtedly the most outspoken supporter of Adolphe Sax. In his *Grand traitéd’instrumentation et d’orchestrationmodernes*, at the opening of his discussion of this new family of instruments beginning in Chapter 57, Berlioz, hailed the arrival of the new family of instruments with his comment “Cesnouvellesvoixdonnées à l’orchestrepossèdent des qualitésrares et précieuses …” ― thereby underscoring his own interest with an obvious focus on the special sound qualities of each instrument, resulting from the blend of the tapered bore, ancillary passages of cylindrical construction, conically constructed valve channels, and a bell moderately flared.

Given the comprehensive coverage of the saxophones (sopranino, soprano, alto, tenor, baritone, bass), saxhorns (sopranino, soprano, alto, tenor, baritone/bass, contrabass, bourdon), saxtrombas and saxtubas in his treatise, it is perhaps somewhat surprising that within his large oeuvre Berlioz made rather sparing use of specimens from this family of instruments on only two occasions. Following Sax’s addition of the smallest member of the saxhorn, the sopranino in 1851, Berlioz, in a letter to Sax from the period 1851-1853, disclosed his interest in the resonance of the tube (cf. Jacques Barzun, ed., *Nouvelles letters de Berlioz*, New York, 1954, p. 50) ― a facet which led him to an extension of the *Te Deum* by adding of a *Marche* with the sopranino saxhorn accorded special prominence, with the first rendition of this movement in 1855 described as a sensation (cf. Théodore de Lajarte, *Instruments-Sax et fanfares civiles, etude pratique*, Paris, 1867, p. 13n). Berlioz continued his experimentation with the saxhorn in his scoring of *Les Troyens*, featuring a carefully balanced ensemble of nine saxhorns (sopranino in Eb; two sopranos in Eb; two altos in Bb; two tenors in Eb; and two contrabasses in Eb) offstage for a most special moment in the finale of Act I, and that in the moving of the Trojan Horse into the city to the accompaniment of the *Marche troyenne*. Here, in the scoring for the ensemble of saxhorns, one is reminded of Berlioz’s moving review of Sax’s invention in the issue of April 13, 1851 of the *Journal des débats*, where he captures the manifold tone colours when he writes that “it [the saxhorn] weeps, it sighs, it dreams, it can crescendo, it can fade gradually to the echo of an echo of an echo, to the very twilight of sound” ― comments which in a nutshell capture Berlioz’s preoccupation with the sound qualities of Sax’s invention.

Walter Kreyszig is currently professor of musicology at the University of Saskatchewan, a member of the Center for Canadian Studies at the University of Vienna; a Deputy Director General of the International Biographical Centre (Cambridge, England) and a Fellow of the American Biographical Institute (Raleigh, North Carolina). His papers on nineteenth and early twentieth-century music have been widely published, including *StudienzurMusikwissenschaft: Beihefte der Denkmäler der Tonkunst in Österreich* (1985); *Musiktheorie* (1989); *Kanada-Studien* (Hagen, 2000); *MusicologicaAustriaca* (2000), *Music and Globalization* (Tokyo, 2004); *MusikgeschichtealsVerstehensgeschichte: Festschrift Gernot Gruber* (Tutzing, 2004); *Schriften der OthmarSchoeckGesellschaft* (2004); and *JahrbuchfürInternationaleGermanistik* (Frankfurt am Main, 2007). His paper on Hector Berlioz’s *Le chef d’orchestre: Théorie de son art* has been accepted for publication in the series *Speculum musicae* (Brepols, 2014). On the occasion of the 2001 Conference of the North American Saxophone Alliance held in Saskatoon, he presented the keynote address on Anton Webern’s Quartet for Violin, Clarinet, Tenor Saxophone and Piano, op. 22.

**Adrian von Steiger, *Sax figures. Can we deduce details of Adolphe Sax’s instrument production from the sources?***

Sax signed and numbered most of his instruments. This allows us an insight into the volume of his production. Although no production or selling lists by him are known, the sources allow us to deduce the dates of his extant instruments (which comprise only some 1.1% of Sax’s total production) and his production rate per year. This is possible thanks to the research and different publications of Malou Haine and Ignace De Keyser, Eugenia Mitroulia and Arnold Myers (as an online list).

Another source has been recently explored: CyrilleGrenot has transcribed Sax’s “faillites”, the inventories of his three bankruptcies in 1852, 1873 and 1877. They register Sax’s instrument stock at the bankruptcy dates in question.

Further figures of his production can be estimated from the demand of the army, given the number of the French army bands and of their instrumentation, relying on the respective decrees.

Survival of the fittest?

Through cross comparison and synopsis, these sources leads us to several puzzling questions: What do we actually see when we look at the surviving instruments? The historical reality or the other side of the coin? What represents the actually played music of the time, Sax’s surviving 21 Aida-trumpets or his 6 cavalry-trumpets?

Dr. Adrian v. Steiger is a Swiss musicologist and musician. He has studied trumpet, musicology and music management in Bern, Basel and Malmö. His dissertation, published in 2013, deals with the wind instrument collection of Karl Burri in Bern. At present he is conducting research projects at the Bern University of the Arts, primarily on wind instruments. One of them deals with Sax and the saxhorn in opera and military music, presented at the Third International Romantic Brass Symposium in Bern in February 2014.

**Bruno Kampmann, *Saxophone prototypes and “pathological keywork”***

Since the saxophone was invented, many changes in the keywork have been proposed, however in most cases with no change in the basic fingering invented by Sax. As soon as the patent expired, the first patents for those were filed, and suggestions for improvements continue to this day. The need to offer new developments at the numerous universal exhibitions has also been a powerful stimulus for instrument makers.

Few among those inventions had any success, and many survived through the patent file or only one known instrument. A number of extraordinary instruments have been discovered in singleton, in most cases without any maker marking, and were never described in the literature.

The aim of the present lecture is to introduce several little-known or yet unknown key systems, along with their patents if they are extant, and to expose their good and bad points, while comparing them to similar inventions. Indeed, most discovered prototypes have not been described in detail yet.

The changes suggested may bear on key additions, key distribution and transmission, monitoring of treble notes by the right hand (such as in the Romero system for the clarinet), broadening of tessiture in the bass or treble, application of the complete Boehm system, etc...

For unsigned prototypes, several hypotheses will be made as to the date of their making and potential makers.

Several instruments may be shown during the lecture as an illustration.

Bruno Kampmann is expert in musical instruments in Paris. Always interested in music, he has collected extensively wind instruments for more than forty years, owning now nearly 600 instruments. He plays also euphonium and serpent in amateur bands. His special interests are the unusual valve systems and compensating devices, and more generally all the inventions and patents that flourished during the 19th century. In 1988 he founded the ACIMV (association of musical wind instruments collectors), editing and publishing the journal *Larigot*. In this journal he wrote many papers about wind instruments and published several catalogues of private collections. He gives regularly lectures during the GS, AMIS, or HBS congress.

**Dr. Bradley Strauchen-Scherer, *Museum Piece: Mary Elizabeth Adams Brown and the instruments of the Sax family at the Metropolitan Museum of Art***

At the turn of the twentieth century, the pioneering American musical instrument collector and scholar Mary Elizabeth Adams Brown donated over 3,000 instruments to the Metropolitan Museum of Art in New York, including a number of instruments by members of the Sax family. This gift established the Met as a leader in instrument collecting and display amongst museums in the United States.

Although the wide scope of the Crosby Brown Collection of Musical Instruments achieved Brown’s goal of illustrating the breadth of musical traditions around the world, closer inspection reveals that the focus of her collecting was uneven, particularly with regard to European instruments. While she acquired a large number of important keyboard instruments, wind instruments were comparatively neglected. Fewer valuable or important historical examples were among those that Brown donated to the Met. The inclusion of multiple wind instruments by the same maker is rare. In this light, it is significant that she collected 10 of the 13 instruments by the Sax family held in the Met’s collections today. These include a rare bass sax-tuba by Adolphe Sax and an omnitonic horn attributed to Charles Sax. The instruments appear to have been acquired through different sources at different times, which suggests a sustained interest in the work of the Sax family. The prominence accorded to Sax instruments by Brown presents a number of questions about her particular interests and objectives as a collector and scholar of organology: Why is Sax’s output so well represented amongst Brown’s collection when older instruments such as sackbuts by the distinguished Nuremberg makers attracted less attention? Did the comparative proximity of Sax’s work to her own life afford a vantage point not accessible to later collectors? Brown’s work as a collector also invites exploration of broader considerations such as the early reception of Sax instruments in museums and amongst collectors, the status of wind instruments in collections and the issues attendant in collecting contemporary culture. In addressing the questions raised by Brown’s Sax instruments, this paper will draw on the extensive archives compiled by Brown and others involved with the early history of musical instrument collecting at the Met.

Bradley Strauchen-Scherer is Associate Curator of Musical Instruments at the Metropolitan Museum of Art. She studied music history and organology at the University of Oxford, where she received her PhD. In addition to organology, her research interests include historical performance, the music business and nineteenth-century concert life. Publications include contributions to the Grove dictionaries, various journals and conference proceedings.

**Thierry Maniguet, *The remaining instruments of the Fanfare de scène of Paris Opéra – a new survey***

Among several activities – other than instrument maker – Adolphe Sax conducted the *Fanfare de scène* of Paris Opera from 1847 to 1892. The position was then taken over by his son Adolphe-Édouard Sax until the year of 1934, date of his retirement. From them, some 70 instruments belonging to this band remained in the Opera house until the end of 1960’s, when they were entrusted to the *Musée du Conservatoire de Paris*. The conditions of this deposit (3 lots in 10 years, the remaining instruments being entrusted only in 2010) have left this ensemble hardly identifiable for a long time. A recent study has permitted to reconsider entirely the chronology of the donation and to identify precisely the instruments. This survey sheds new light on this band which constituted a testing ground for Adolphe Sax and his son. The presentation will describe the main results of this study, focusing particularly on the evocation of instruments created specifically for the first nights of operas from Halévy, Verdi or Wagner.

Thierry Maniguet, curator, Musée de la musique, Paris. After studies of sciences, musicology and musical acoustics at the Paris universities of Pierre-et-Marie-Curie and Sorbonne and at the Conservatoire National Supérieur de Musique de Paris, Thierry Maniguet teaches piano and theory in academy during ten years. Specialised in organology, he is, during eight years, a representative for the musical instrumental heritage. Curator at the Musée de la musique since 2000, he conceived the new exhibition of the rooms devoted to 19th and 20th centuries. He teaches at the University of Paris Sorbonne and is a lecturer in several French academic institutions. He has been one of the curators of the exhibition « Chopin à Paris, l’atelier du compositeur » held in Paris at the Musée de la musique during spring 2010.

**Damien Sagrillo, *Adolphe Sax, Jean-Baptiste Arban etc. Pedagogical Aspects on Saxhorn Learning and Problems of Nomenclature***

Adolphe Sax was eleven years older than Jean-Baptiste Arban. At the time when Jean-Baptiste Arban edited his famous method *Grande méthodecomplète de cornet à piston et de saxhorn* for valved brass instruments in 1864, Adolphe Sax had invented his saxhorns already about twenty years ago. Arban’s major work served as a model for subsequent brass instrument studies with valves. These studies came (and come) mostly from the francophone world and still are in use in conservatoires and music schools in France, Wallonie, Romandie and Luxembourg and also elsewhere, since they are not reserved only for these instruments, but can apply for any other brass instrument with valves.

In my lecture I will first present a historic and critical overview of the literature for saxhorns, propose a categorization according largely to the structuration of Arban's method and adapted to the technique of playing a saxhorn. Due to the further development of saxhorns, the training requirements had to be adapted. An example is the enhancement of the bass saxhorn to the *tuba français* in C with six valves. Another aspect I will deal with is the pedagogically graded concert repertoire that was developed for saxhorn instruments.

Then I will discuss the problem of designation of several instrument categories in relation to the saxhorn family and this in different languages, as for instance: French, Italian, German, English and others, if needed. I will enumerate examples with the help of treatises of instrumentation and of pedagogical literature in considering the problems caused by this babel, amongst others, a correct assignment. I would just like to give an example at this place. The *saxhorn basse* in B-flat (was) is called tuba in Dutch or in my country (Luxembourg). (Today, the euphonium, which has a slightly different form, has replaced the saxhorn basse in most wind bands. But the literature of the latter is still played on the former.) In German this instrument is called Bariton (with an "i", an instrument with rotary valves and a curved corpus). In contrast, the saxhorn baryton in B-flat (with a "y"), which has the same length than a saxhorn basse with a narrower bore, is called Tenorhorn in German, while a tenorhorn in a brass band is nothing else than a saxhorn alto in E-flat. Supplementary confusion is caused by the baryton saxophone in E-flat; this bass instrument of the saxophone family is equivalent to a saxhorn contrebasse in E-flat.

Damien Sagrillo, Université du Luxembourg. General secretary of the International Society for the Promotion and Research of Wind Music (IGEB, cf. www.igeb.net)

**Olivia Wahnon de Oliveira, *De l’intérêt de Fétis pour les inventions de Sax à la création de la classe de saxophone en 1867 au Conservatoire royal de Bruxelles***

L’intérêt de François-Joseph Fétis, directeur du Conservatoire royal de Bruxelles, pour les inventions d’Adolphe Sax est certain. Il signe plusieurs articles sur ce sujet qui paraissent notamment dans la *Revue et Gazette musicale de Paris* et le *Bulletin de l’Académie royale de Belgique* et il échange également quelques courriers à ce propos.

En effet, les archives administratives du Conservatoire royal de Bruxelles dévoilent la correspondance entre le Ministre de l’Intérieur et le Directeur de l’institution à propos de demandes de subsides d’A. Sax et des demandes de rapports sur les instruments Sax, vers 1850. Ces archives démontrent en outre l’intérêt de Fétis pour les nouveautés en matière d’instruments à vent : depuis la flûte Boehm jusqu’à la famille des saxophones en passant par la trompette et le trombone à pistons. Vers 1852, Fétis et Sax ont d’ailleurs des contacts qui aboutissent à la livraison d’une famille complète de saxophones au Conservatoire.

Fétis est convaincu qu’il doit développer l’enseignement des classes des instruments à vent et organiser l’enseignement des nouveaux instruments : ainsi après avoir créé des classes de trombone et de bugle et cornet à pistons, il persuade en 1866 le Ministre de l’Intérieur d’autoriser la création de la classe de saxophone après lui avoir rapporté son expérience :

*J’ai prié M. Beeckman, ancien élève du Conservatoire et clarinettiste du Théâtre royal [de la Monnaie], de se livrer à l’étude de ces instruments, ce qu’il a fait immédiatement, puis à ma demande, il a commencé, comme essai, l’éducation de plusieurs élèves pour le jeu des saxophones ; Mr Beeckman a aujourd’hui sept élèves déjà parvenus à un degré satisfaisant d’habileté et les effets nouveaux que produisent ces instruments m’ont déterminé à écrire des morceaux qui seront entendus dans les concerts du Conservatoire avec grand plaisir, suivant mon opinion.*

Ainsi Nazaire Beeckman devient le premier professeur de saxophone au Conservatoire de Bruxelles et se met à composer quelques études pour cet instrument. Des morceaux de concours sont également écrits pour les examens, y compris pour des trios et quintettes de saxophones.

La présente communication a pour objectif de présenter l’intérêt de Fétis pour les inventions d’Adolphe Sax, les courriers inédits échangés à ce propos et conservés dans les archives administratives du Conservatoire, le développement des classes d’instruments à vent jusqu’à la création de la classe de saxophone en 1867 ainsi que l’évolution de celle-ci jusqu’au décès de Fétis avec présentation des différents élèves inscrits dans cette classe et des morceaux de concours composés pour les examens entre 1867 et 1871.

Olivia Wahnon de Oliveira est Bibliothécaire du Conservatoire royal de Bruxelles depuis 2008. 2002-2004 : recherche sur Franz André, chef d’orchestre de la radio I.N.R. ; ca 2000 : recherche sur les éditeurs de musique à Liège de la 2e moitié du XVIIIe siècle. Publication de plusieurs articles sur ce sujet.

**Astrid Herman *Adolphe Sax and the press of his time***

Studying the phenomenon Adolphe Sax through the press of his time provides insight into various aspects of his activities. From the time he improved the bass-clarinet to his burial, the name of Sax appeared hundreds of times in music magazines but also in the daily press. Often praised, sometimes mocked, Adolphe Sax also used the press to promote his inventions or to assert himself.

Adolphe Sax did not only receive support from composers and the military but many journalists were also his trustworthy allies. Some friends of his were so zealous that his competitors claimed that the inventor had bribed the press. The most prominent examples are Berlioz and his praising article in *Le Journal des Débats* in 1842, the influential newspaper *Le Figaro* whoorganised a subscription in his favour when he encountered economic difficulties in 1873 and his biographer Oscar Comettant who wrote articles for the musical magazine *le Ménestrel* but also for the daily newspaper *Le Siècle*.

The systematic search through a selection of digitalized magazines and newspapers, thanks to the use of optical character recognition, allows to gather many little pieces of information that are less well known like: the programs of the various events held in the Sax Hall, were his instruments were used, his advertisements, details about his health, and even some literary expressions he and his instruments inspired.

Astrid Herman has obtained a master’s degree in Modern Languages and Literatures (French-English) and in musicology. Since April 2013, she works at the Musical Instruments Musuem of Brussels (Scientific assistant for the SAX200 exhibition, focusing on iconography and 19th century newspapers).

**Jeroen Billiet, *Adolphe Sax’s “histoire belge”: the introduction of independently valved instruments at Belgian conservatoires, 1869-1874***

During the 1850’s, Adolphe Sax worked on a range of brass instruments equipped with an independent ascending valve system. The goal was to produce valved instruments that could play every note in its perfect harmonic and the system was soon applied to trumpets, cornets, trombones, saxhorns and saxotromba’s. Only in the middle of the 1860’s was the system was applied to the the horn, and by 1867 Sax had created a 4-valve version of the Cor Sax à Pistons Indépendants.

Despite negative reactions from the conservative French horn world, Sax continued developing the independent valve system on the horn and perfected his version, the Cor Sax à 6 Pistons, in the years following. Sax's novelties drew the attention of brass players all over Europe. In 1872, he was called to his homeland to present his new inventions to the brass department of the Brussels Conservatoire and found important enthousiasts in trumpet teacher Jean-HyppolyteDuhem (1828-1911), horn teacher Louis-Henri Merck (1831-1900), and notably in the new director of the Conservatoire, François-Auguste Gevaert (1828-1908). All of them were thoroughly impressed with the instruments' design, playing capacities and acoustical characteristics, as well as their versatility.

Although the use of the system was heavily promoted by several prominent musicians, the use of independently valved trumpets and horns would fade out a few years later. Correspondence between Sax and the direction of the Ghent conservatoire and documents from the period such as Merck's Méthode pour le Cor Sax à 6 Pistons Indépendants reveal many interesting details about the history, construction and everyday use of the instruments delivered from the early 1870's to the Ghent and Brussels conservatoires: most notably the three cor à 6 pistons indépendants, acquired by the Brussels conservatoire in 1872, of which one specimen remains in the MIM collection.

This lecture will focus on the history, design, use, and legacy, as well as other aspects of independently-valved brass instruments in 1870’s Belgium.

Jeroen Billiet (°Tielt, Belgium 1977) is a horn player specialised in an historical repertoire. He is solo horn with several orchestras including le Concert d’Astrée, Il Fondamento and B’rock. He also teaches horn at the conservatoires of Tielt and Bruges and is a faculty member in the teaching department of the Artesis-Plantijn institute in Antwerp. In 2008 he graduated magna cum laude from the Orpheus Institute, Ghent with his thesis “200 Years of Belgian Horn School, a comprehensive study of the Horn in Belgium, 1789-1960.” In January 2014, he will begin a fellowship in artistic research at the Royal Flemish Conservatory of the Artesis-PlantijnHogeschool in Antwerp.

**Albert R. Rice, *The bass clarinets of Adolphe Sax and some examples of their musical use***

This presentation discusses the development and construction of Adolphe Sax’s bass clarinets based on his Belgian patent of 1838; notes specific design innovations; and gives an overview of the eleven extant examples. Sax’s brilliantly designed bass clarinet is compared to bass clarinets made by his contemporaries, Louis-Auguste Buffet, Buffet-Crampon, and Marzoli. Also discussed is the impact of Sax’s bass clarinets on performances of Berlioz’ *Grande SymphonieFunèbre et Triomphale*of 1842; a concert performance of Berlioz’ *La Damnation de Faust* in 1846; and a performance of Meyerbeer’s *Le Prophète*in 1849.

Adolphe Sax worked on constructing his bass clarinet in his father’s Brussels shop between 1835 and 1837, and in 1838 was awarded a Belgian patent. At first glance, it appears similar to Buffet’s bass clarinet made during the 1830s. However, it differs in several aspects of construction such as, bore size, key design, and mouthpiece design. Sax’s eleven extant instruments are made in C or Bb with thirteen or fourteen brass keys, seven plateau keys, a straight wooden bell, or curved metal bell. His key pattern and selection is the same as the 13-key soprano clarinet, but Sax added a second register key covering a small hole in a brass protrusion placed high on the front or back side of the brass crook. With its use, the upper register was greatly improved in sound projection and tuning. Other design innovations that contributed to a better instrument are a wide bore to create a resonant sound; large finger holes covered by wide plateau keys with indentations for ease of fingering; the first register key mounted on a raised wooden platform; a large brass, rounded saddle to secure the long levers of the F#/C# and E/B keys; a mouthpiece with a socket and a brass ferrule at its end; a crook with a large metal ring at its end designed for use with the mouthpiece; a flat and rounded key head design; and a large, metal curved thumb rest with a ring attached to its upper end for a neck strap. This instrument was carefully conceived and easy to play in all registers.

Although Sax’s production of his expensive bass clarinets was limited, his ideas produced a superior bass clarinet essential for its later development. Many of his innovations and ideas were quickly adopted by subsequent makers who developed a standardized bass clarinet during the late nineteenth century.

Bio lacking

**Rob Woodward, *The saxophone – dark, bad and rebellious***

This paper will examine whether the temptation to be portrayed as ‘bad’, ‘rebellious,’ and ‘dark’, due to the saxophone’s non‐acceptance by certain bodies, including the Vatican in 1903, increased the instrument’s use within popular musics of and following the 1970s. Originally designed as a cross‐over instrument between ‘feminine’ woodwinds and ‘masculine’ brass, the saxes’ shapes (the phallic soprano saxophone and more feminine‐curved family members) highlight transgendering. This was arguably an aspect of the androgyny of the glam performers of the 1970s and could also be viewed as an aspect of ‘bling’ to appear in the 1980s era of sensationalised fashion. David Bowie, whose output traverses these decades, played his own saxophone solos on early recordings, and is known for his flamboyant alter egos and open bisexuality. The paper will argue that saxophone players’ behaviours on stage with the instrument is often highly reflective of a rebellion against morality. The physical actions of performers have clear overtones of flaunting activities considered to be against good taste in a time of ethical revolution. Stephen Cottrell describes the consumption of the saxophone during the music video years (1980s) as ‘Chic materialism.’ The saxophone’s use in the pop culture of this time was an amplifying symbol of cool in advertising for major drinks retailers, tobacco companies and was ‘instrumental’ in the 1992 American Presidential Campaign. Saxophone solos within popular music also frequently occur at key changes and evoke the sensation of a sexual high. The overly smooth, bright or alternatively husky sounds employed suggest a dialectic of charm pre‐empting aspects of performance such as honking and growling symbolising the climax. The look, sound and feel of the saxophone combine to create what was viewed by some as a deleterious effect on society yet this negative in turn arguably became a more powerful positive in establishing the instrument’s status today as ‘cool

Rob Woodward is a multi-talented multi-instrumentalist full of passion and drive. As a saxophonist Rob performs with his own band, ‘The Big Band Theory.’ He is also a classical recitalist who has premiered many new works including the Basford Saxophone Concerto, Barbara Thompson’s Bass Saxophone Concerto and an assortment of new works for saxophone in combination with other instruments. He is also a flautist and clarinetist who performs jazz, pop, classical and contemporary (new) music. At 17, Rob became principal saxophone in the National Youth Wind Orchestra of Great Britain before spending four years studying both classical and jazz saxophone at the Royal Northern College of Music with Rob Buckland and Andy Scott of the Apollo Saxophone Quartet. During this time he performed in masterclasses for classical artists such as John Harle, Claude DeLangle and in concert with jazz greats including Andy Sheppard, Julian Arguelles and JiggsWhigham. Just before graduating Rob received the Terence Greaves prize for jazz composition for his big band work, Quake Town City Limits. After working for three years at sea with Princess Cruises, Rob moved to Sydney in 2008 where he now resides with his family. His versatile performing career includes recently working as musical director for the Barry White experience performed by Ash Puriri and he regularly MD’s performances of numerous other shows around Sydney. Since the age of fifteen, Rob has loved being a arranger since he started preparing music for his high school jazzband. He has arranged for the Sydney International Orchestra, the Adelaide Cabaret Festival and for various entertainers who perform his arrangements all round the world. As a freelance performer he has accompanied established names such as Human Nature, Ricki-Lee and Todd McKenny. Aside from this, Rob has academic lecturing commitments and is pursuing his PHD studies within the music department of the University of Western Sydney. He also maintains an number of private students. www.robwoodwardsax.com

**Jeffrey Siegfried, *Edison Denisov’s*Sonata for Alto Saxophone and Piano *and the development of the saxophone in Russia***

The 1990s witnessed the creation of the Associate of Modern Music (AMM.) These two organizations were largely piloted by two respective figures: the theorist musicologist, Boris Asafiev, and the composer, Edison Denisov. In spite of their strikingly analogous roles, scholarly consensus in North America tends to hold very different views of these two individuals. Most literature on the subject has portrayed Asafiev as a weak willed crony to the apparatchiks. Conversely, a good deal of writing on Denisov casts him as a heroic rebel who found himself in a constricting political environment and who resisted by rejecting the theories and practices of his immediate forbears. These accounts, often taken for granted, are incomplete. In this paper, I endeavor to lend the discussions regarding Asafiev and Denisov additional nuance. Asafiev’s theoretical writings, especially those contained in his Musical Form as a Process, suggest a strong support for, and compatibility with, precisely the sort of musical modernism that the Soviet censors attempted to suppress. Denisov’s own writings, some of which find their first reference in this document, suggest that he intended to comply with precisely those principles that Asafiev advocated regarding intonatsia, or the socially contextual process of music making and hearing. I will juxtapose these two figures by applying Asafiev’s theories to Denisov’s “Sonata for Alto Saxophone and Piano,” in a detailed theoreticalEspecially interesting is the place of the saxophone between these two figures. It experienced an early vogue in the work of Prokofiev, but was banned for a time in 1948. Following Stalin’s death, it experienced something of a resurgence but it was certainly not sanctioned during Denisov’s formative years or early career. By casting an instrument whose history was so fraught with conflict and meaning, Denisov both embraced the intonational principle of injecting dynamic play in form by whatever means available, but rejected the establishment for which the mature Asafiev had been so important. I will also endeavor to explore how the use of the saxophone can be mapped in an intonational reading of the piece. Jeff Siegfried pursues, with success, a diverse array of areas in music. He has performed with the New World Symphony on multiple occasions under the baton of Michael Tilson Thomas. In May of 2012, he delivered the Pacific Northwest premier of Luis Cardoso’s *Concertino for Saxophone, Tuba, and Wind Ensemble* with JáTtik Clark and the University of Portland Wind Ensemble. He recorded the same piece with the Oregon State University Wind Ensemble in November of 2013. He will be performing it again in February with the U.S. Army Band in Washington D.C. His saxophone quartet, the *Estrella Consort,* recently toured Ecuador as part of a goodwill tour organized by officials in both countries. As a jazz artist, Jeff performs throughout the city of Chicago both as a headliner and as a sideman.

**Ignace De Keyser, *The Introduction of the Saxophone in Urban Music in Subsaharian Africa The Introduction of the Saxophone in Urban Music in Subsaharian Africa***

Adolphe Sax’ legacy evidently came to Africa through the musical and political influence of colonizing powers. In this paper, I will try to give a comprehensive overview of the introduction of saxhorns, and, more in depth, of saxophones in urban music in subsaharian Africa and I will try to answer some more general questions.

During the Interbellum, brass bands – and thus saxhorns - were omnipresent in English speaking countries of West Africa such as Ghana or Nigeria, while saxophones could be found in the so called *Highlife* music. An indirect influence of Western brass bands is evident, but did there exist any direct contacts e.g. with Western saxophone players as well? After the II World War, Jazz music – and thus saxophone playing – came to West and East Africa through the contact with American army bands or Jazz bands following the Western troops. The influence sometimes happened in a direct way: the well-known Cameroon saxophone player Manu Dibango was sent to France by his father and started to practise saxophone on an instrument borrowed to him by a fellow student from Yaoundé. As a matter of fact, which learning processes can be distinguished with regard to African saxophone players? In French speaking Africans countries, the fresh influence from the US was Afro-Cuban music, a languid style more suited to small combos than big bands. This style was called “rumba” in Congo. Although Congolese musicians mostly embraced the guitar in the context of this rumba music, it is precisely there that the first saxophones appeared. From the start, there was a mix of Western and African elements - e.g. African polyphony - in this saxophone music, but what kind of hybridization did happen in saxophone playing by those African musicians?

Ignace De Keyser holds a Ph. D. in Musicology from the University of Ghent. He subsequently teached music in high schools and film music in a Film Academy. He entered the Musical Instrument Museum in Brussels in 1975 as a part-time scientific assistant. He became Head of the section “Ancient Music” under Prof. Malou Haine in 1995 and realized with her the new display in the “Old England” building. Between 2007 and 2011, he has been Head of the Ethnomusicological Section of the Royal Museum for Central Africa in Tervuren (Belgium) that contains the largest collections worldwide of musical instruments and sound archives related to Central Africa. Now retired, he gives conferences on music and musical instruments on a freelance basis. His publications cover the famous wind-instrument makers Adolphe Sax and Charles Mahillon, the role of Victor Mahillon in the development of organology in the West and cross cultural items. He is co-author of several exhibition catalogues on musical instruments and author of numerous concert reviews. He appeared many times as an interview partner for radio and TV emissions.

**Marten Potsma, *The parabolical cone with A. Sax***

Knowing that a wind instrument with a truncated cone-shaped bore and a reed excitation calls for quite a special set-up in order to achieve correct intonation, the aim of this paper is retrace Sax’s footsteps to solve these problems and to construct a musically viable instrument. Assuming that Sax did indeed start out, as the story goes, with fitting a bass clarinet’s mouthpiece onto an ophicleid, it is, in retrospect, not difficult to see what problems he encountered: to wide octaves, especially in the higher range of the instrument. On the other hand, there must have an instant realisation of the possibilities of the newset-up, which made it more than worthwhile to do further experiments. In his first patent of 1846 Sax mentions a “parabolical cone bore” as one of the three features of his new invention, along with a description of the mouthpiece's interior and the fact that these instruments are made out of “copper”. This already indicates that the parabolical cone bore is not just a feature, but that it is an essential one. We can justly assume that both features are part of Sax's solution to the problem. At this point I must make a small detour into the physics of the truncated cone in order to illustrate its basic acoustical behaviour:

* the truncated length is replaced by the volume of the mouthpiece’s interior
* widening or narrowing the bore has an effect on the sharpness of the tone produced relative to the place where this perturbation is placed.

Both these features are used by Sax in order to achieve his goal and both these features he mentions in the patent. As for the mouthpieces, I can show dimensioned sketches of a couple of early saxophone mouthpieces (SATB), one of which, a soprano mouthpiece, is indeed stamped A.SAX BREVETE. These mouthpieces do show the mentioned inner proportions. But as for the bore profile the matter is not open to observation by the naked eye and as a result some peculiar notions have obtained a footing. I propose to show the bore profiles that I have taken from a quartet of early Sax-instruments (also SATB), all of which stem from the period of the first patent and a fifth one, which stems from shortly after this period and to illustrate with these profiles the way in which Sax succeeded to solve the intonational problems to an acceptable degree. What he did in fact was to relatively diminish the wideness of the bore in the upper part of the instrument as compared to the standard cone. This Sax called the “parabolical cone bore”, as it, just as a parabola does, changes conicity when reaching its apex. As there was criticism in already quite an early stage on the intonation of Sax’s instruments, other makers tried different variants of bore profiles. This can be shown by profiles of newer instruments. This opens the discussion as to whether or not a modern saxophone still has a “parabolical cone bore”.

Marten Potsma, VIDI-researcher, University of Amsterdam