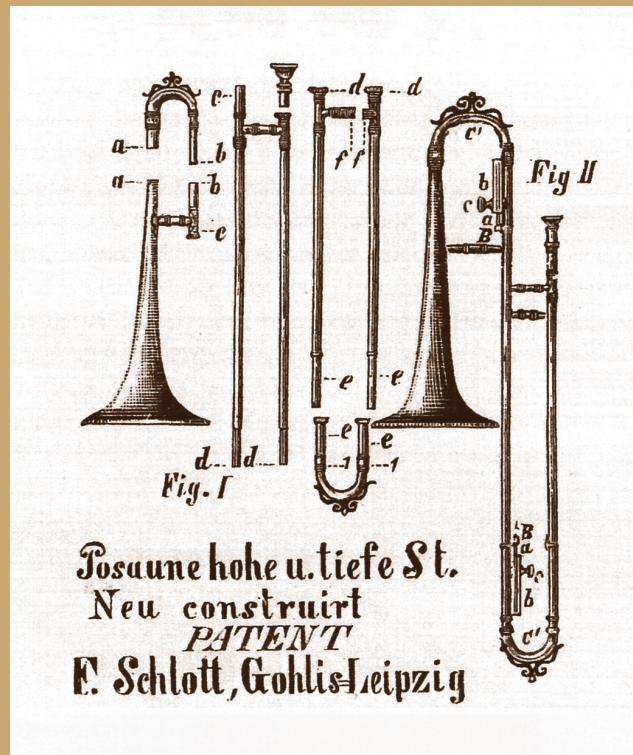




Adrian v. Steiger – Daniel Allenbach
– Martin Skamletz (Hrsg.)

The Sound of Brass

Blechblasinstrumente im 19. Jahrhundert
Brass Instruments in the Nineteenth Century

Romantic Brass Symposium 5

The Sound of Brass

herausgegeben von
Adrian von Steiger, Daniel Allenbach
und Martin Skamletz

MUSIKFORSCHUNG DER HOCHSCHULE DER KÜNSTE BERN

herausgegeben von

Martin Skamletz, Thomas Gartmann
und Daniel Allenbach

Band 21

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Vorwort

Wie tönt Blech, wie klingen die Blechblasinstrumente? Einfach nur laut? Dieses Klischee begleitet Blechbläserinnen und Blechbläser seit jeher, namentlich im Zusammenspiel im Rahmen des Sinfonie- und des Blasorchesters, aber auch in der Big Band und anderen Ensembles. Im Kontext der historisch informierten Aufführungspraxis ist dies jedoch nur die halbe Wahrheit. Auch früher standen Blechblasinstrumente für starken Sound, verglichen mit heute waren sie aber wesentlich weniger laut.

Daher ist es – auch bei Blechblasinstrumenten – ein zentrales Anliegen der historisch informierten Aufführungspraxis und der Hersteller von Nachbauten für diese, den Klang historischer Instrumente zu analysieren. Und sie finden nebst Erkenntnissen zur Lautstärke einen Reichtum unterschiedlicher Klangfarben, Artikulationen und Register bei jedem Instrument sowie stilistische und regionale Unterschiede und nationale Schulen.

Der vorliegende Band basiert auf einem Forschungsprojekt der Hochschule der Künste Bern HKB zur ›Deutschen Posaune‹,¹ deren genauere Bezeichnung ›Leipziger Posaune‹ lautet: Dortige Instrumentenbauer entwickelten um die Mitte des 19. Jahrhunderts ein Instrument, das sich von anderen Posaunen ganz grundsätzlich unterschied und zu einem prägenden klanglichen Element in Werken der deutschen Sinfonik wurde. In den 1930er-Jahren dann verliessen neu entwickelte deutsche Posaunenmodelle diese Klanglichkeit – wenn daher heutige weit mensurierte Posaunen sich auf die Leipziger Posaune berufen, vergessen sie meist, wie weit sie sich von dieser wegentwickelt haben. Das Forschungsprojekt untersuchte Fragen zu Klanglichkeit, Materialität und historisch informiertem Nachbau der Leipziger Posaunen, wobei die Resultate dieser Untersuchungen in den ersten Teil dieses Bandes eingeflossen sind. Das Fifth International Romantic Brass Symposium, das vom 20. bis 22. November 2018 in Biel stattfand,² stellte diese Forschungen dann in ihren weiteren Zusammenhang und diskutierte sie mit Expertinnen und Experten, von denen ausgewählte Texte im zweiten Teil zu finden sind. Die im Laufe des Projektes entwickelten Nachbauten der Firma Egger in Basel wurden schliesslich durch Ian Bousfield im Konzert des Bieler Sinfonie Orchesters erstmals präsentiert.³

Eröffnet wird der Reigen der Beiträge von Trevor Herbert, der einen Überblick über die Geschichte der Posaune im Deutschland des 19. Jahrhunderts gibt. Adrian v. Steiger widmet sich – insbesondere im Hinblick auf Bauform und Material – den im Projekt erfassten Charakteristika der ›Leipziger Posaune‹, worauf der leider im Verlauf der Drucklegung verstorbene Jean-Marie Welter (1944–2022) die Materialsituation in Sachsen im 19. Jahrhundert darstellt. Alex Schölkopf wiederum zeichnet aus Praxissicht nach, wie im heutigen Instrumentenbau ein am historischen Vorbild orientiertes Schallstück nachgebaut wird, während Rainer Egger sich – eben-

1 Vgl. Institut Interpretation 2018a.

2 Institut Interpretation 2018b.

3 Institut Interpretation 2018c.

falls aus praktischer Warte – der Frage widmet, inwiefern sich Instrumentenkonstruktion und Schwingungsverhalten gegenseitig beeinflussen. Als Gegenstück zu Trevor Herberts Text widmet sich Stewart Carter dem Kontext der Posaune in Italien. Hannes Vereecke wiederum weitet das Thema des Schallstückbaus ins 20. Jahrhundert, indem er die in Graslitz praktizierte Methode vorstellt. Anhand einer Ventilposaune zeichnet Christian Breternitz die Instrumentenbausituation in Berlin nach, während Bernhard Rainer den Blick nach Österreich richtet und neue Hinweise auf die Besetzung von Beethovens *Drei Equale* für vier Posaunen präsentiert. Dem historischen Einsatz des Dämpfers und dessen klanglich-musikalischen Wirkungen widmet sich Anneke Scott, während Daniel Allenbach der semantischen Bedeutung des Horns in Richard Wagners *Ring des Nibelungen* nachspürt. Ausgehend von einer von Ignaz von Seyfried für Wien arrangierten Arie aus André-Ernest-Modeste Grétrys Oper *Richard Löwenherz* forscht Martin Skamletz nach einem Wiener Stil der orchestralen Behandlung von Blechblasinstrumenten, bevor Ryoto Akiyama mit seinen Recherchen zum ›Posaunengeneral‹ Johannes Kuhlo und zu dessen Flügelhorn-ähnlichem Kuhlohorn den Band beschliesst.

Die Herausgeber danken allen Autorinnen und Autoren für ihre Beiträge, allen Mitarbeitenden des Forschungsprojekts und Gästen des Symposiums für ihre Expertise sowie dem Schweizerischen Nationalfonds für die Förderung der Konferenz und der vorliegenden Publikation. Dies alles, vereint zwischen zwei Buchdeckeln oder in einer elektronischen Datei, ergibt einen sehr konzisen Einblick in ein spezielles Kapitel der Geschichte der Blechblasinstrumente.

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Alle Weblinks zuletzt aufgerufen am 28.5.2026.

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Preface

What does brass sound like, what do brass instruments sound like? Just loud? This cliché has always accompanied brass players, namely when playing in the context of symphony and wind orchestras, but also in the big band and other ensembles. In the context of historically informed performance practice, however, this is only half the story. In the past, brass instruments also stood for strong sound, but compared to today they were much less loud.

For this reason, it is a central concern of historically informed performance practice and the manufacturers of replicas for brass instruments to analyse the sound of historical instruments. And they find, in addition to findings on loudness, a wealth of different timbres, articulations and registers for each instrument, as well as stylistic and regional differences and national schools.

The present volume is based on a research project at the Hochschule der Künste Bern HKB on the ‘German trombone’,⁴ whose more precise name is the ‘Leipzig trombone’: around the middle of the nineteenth century, instrument makers in the Leipzig area developed an instrument that was quite different from other trombones and became a defining sounding element in works of German symphonic music. In the 1930s, however, newly developed German trombone models left this sound behind – so when today’s wide-bodied trombones refer to the Leipzig trombone, they usually forget how far they have developed away from it. The research project investigated questions of sound, materiality and historically informed reproduction of the Leipzig trombones, the results of which have been incorporated into the first part of this volume. The Fifth International Romantic Brass Symposium, held in Biel, Switzerland, 20–22 November 2018,⁵ then placed this research in its broader context and discussed it with experts, selected texts from which can be found in part two. Finally, the replicas developed in the course of the project by the Egger company in Basel were presented for the first time by Ian Bousfield in a concert by the Biel Symphony Orchestra.⁶

The round of contributions is opened by Trevor Herbert, who gives an overview of the history of the trombone in nineteenth-century Germany. Adrian v. Steiger focuses on the characteristics of the ‘Leipzig trombone’ recorded in the project, especially with regard to construction form and material, followed by Jean-Marie Welter (1944–2022) who sadly passed away in the course of going to press and who describes the material situation in Saxony in the nineteenth century. Alex Schölkopf, in turn, describes from a practical point of view how a bell based on a historical model is reproduced in today’s instrument making, while Rainer Egger – also from a practical point of view – addresses the question of the extent to which instrument construction and vibration behaviour influence each other. As a counterpart to Trevor Herbert’s text, Stewart Carter devotes himself to the context of the trombone in Italy. Hannes Vereecke, in turn, expands the theme of bell making into the twentieth century by presenting the method practised in Graslitz. Using a valve trombone, Christian Breternitz traces the instrument-making situation in Berlin, while Bernhard Rainer turns his gaze to Austria and presents new clues to the scoring of Beethoven’s *Three Equali* for four trombones. Anneke Scott looks at the historical use of the mute and its sound effects, while Daniel Allenbach traces the semantic significance of the horn in Richard Wagner’s *Ring of the Nibelung*. Starting with an aria from André-Ernest-Modeste Grétry’s opera *Richard Cœur-de-lion* arranged for Vienna by Ignaz von

4 Institut Interpretation 2018a.

5 Institut Interpretation 2018b.

6 Institut Interpretation 2018c.

Seyfried, Martin Skamletz investigates a Viennese style of orchestral treatment of brass instruments, before Ryoto Akiyama concludes the volume with his research on the “trombone general” Johannes Kuhlo and his flugelhorn-like Kuhlohorn.

The editors would like to thank all the authors for their contributions, all the collaborators of the research project and guests of the symposium for their expertise and the Swiss National Science Foundation for funding the symposium as well as this publication. All this, united between two book covers or in an electronic file, results in a very concise insight into a special chapter of the history of brass instruments.

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Trevor Herbert

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

The paper provides an overview of the use of trombones in German-speaking countries between the late eighteenth century and the end of the first decade of the twentieth century. It also discusses the factors that created continuities in the period and interruptions to those continuities. It provides a broad background of the context in which trombone players worked, before discussing the supply of, and demand for instruments; the way players entered the profession and learned their trade, and the infrastructure of the music profession as it impacted on trombone players. The overall aim is to provide an understanding of matters that impinged on the working lives of players, and the idiom of the instrument in the long nineteenth century. Three short appendices are attached to the paper. The first two are extracts of primary source texts, the third is an analysis of the size of trombone sections in the orchestras of German speaking countries between 1787 and 1890.

My title needs two important caveats that concern time, place and methodology. I am extending the nineteenth century at both ends to the period the Marxist historian Eric Hobsbawm called “the long nineteenth century”. Hobsbawm’s periodisation was framed by the idea that while a chronological century is usually meaningless as an expression of an era, a period defined by events such as the revolutions of the late eighteenth century at one end and the fracturing effects that occurred in 1914 at the other, provides a more intelligent framework.¹ The long nineteenth century is also a useful concept for this paper because it allows me to briefly mention the eighteenth-century precedents as well as the emergence of sound recordings. Another caveat is that while my title refers to “the trombone in Germany in the nineteenth century”, I am side-stepping the geopolitical complexities of the period by focusing on German-speaking countries rather than the area contained by the borders of modern Germany. This, too, is pragmatic because there are valid cultural reasons for embracing countries such as Austria and Switzerland.

There are always dangers in adopting a strictly linear approach to history with the inherent assumption that common practices can be reliably assumed at each historical stage. The reality in music history is that differences have occurred with greater frequency than consistencies. Stylistic and cultural trends have seldom developed with uniform speed across different countries and regions, and there have been important, sometimes isolated, idiosyncrasies

¹ The phrase was popularised by Hobsbawm from the time of the publication of his 1962 book *The Age of Revolution*, the first of a trilogy that defined the long nineteenth century.

and contradictions that disturb what are often regarded as common trends. The truth of this is evidenced in the way understandings of historical performance practices have been moderated by the systematic study of sound recordings as sources for performance history. For the first time, this allowed parallel comparisons of the performance preferences of different countries.² The story it tells is primarily one of diversity. It was not until the later and wider social and cultural circumstances that led to what became known as globalisation that difference gave way to sameness. In modern times we can speak with some confidence about common practices in musical performance; such was not the case in the nineteenth century, neither in Germany nor elsewhere.

The study of individual musical instruments and their use presents additional challenges, even when it is confined to a country or region and a period. Each of the standard approaches has vulnerabilities as well as positive values. A study focused on instruments themselves, of the type used conventionally in organology, provides a profile of their development and, implicitly, information about relationships between makers, performers and the networks in which they operated. Information of greater value is revealed by patterns of supply and demand in the different market segments where instruments were distributed.

Contemporary repertoire has traditionally been regarded as the prime evidential source for instrumental idioms, especially when it is supplemented by data that allows the mapping of performances to places, times and performers, but even this route can create inconsistencies and contradictions. The writings of Hector Berlioz reveal some of the uncertainties that conductors experienced when confronted with incomplete or inconsistent performance standards. The instrumental line-up of many orchestras had a fluidity that was born of expediency. For example, in his encounter with the Leipzig orchestra in 1843, Berlioz discovered an ophicleide “or rather the meagre brass object masquerading under that name [that] bore no resemblance to the French variety” and had “practically no tone”, which led him to declare it “null and void” and arrange for it to be “replaced, after a fashion, by a fourth trombone”.³ Such adjustments were not unusual and prevailed into the early twentieth century. Even the fidelity of composers to their own scores was not inviolate: for example, the famous duet for double bass and trombone in Stravinsky’s *Pulcinella*, in which the melodic and programmatic interest is based on the interplay of natural glissandos between the two solo instruments, could, according to the composer, be played with equal effect on a valve trombone.⁴

It follows that my approach is multifaceted and takes account of broad cultural and aesthetic trends. I am primarily interested in the issues that impacted on the experience of being a trombone player in nineteenth-century Germany-speaking countries, with an emphasis on two themes: the factors that determined the supply and demand for the services of trombone players, and the issues that influenced the sound worlds in which they lived and worked. Four topics provide the structure of the paper

1. The broad musical, cultural and historical context.
2. The patterns of supply and demand for instruments.
3. The way players learned and conducted their trade.
4. The infrastructures within which players worked: by “infrastructures” I mean the agencies and institutions that most affected their working lives – the church, the military and the orchestras.

² See for example Philip 1992.

³ Berlioz 2002, p. 300.

⁴ Herbert 2010, p. 13.

Cultural context

The cultural and musical context in Germany at the start of the nineteenth century was emphatically different from that experienced in other European countries. Even as late as the 1770s there were more than 60 German courts that maintained orchestras of at least 20 players,⁵ The courts were one of the two main eighteenth-century agencies that created a widely distributed network of musical centres. This network ensured that the music was less centralised than elsewhere. Not every court employed trombone players, so, for example, there are many references to the “Tuba Mirum” trombone solo in Mozart’s *Requiem* being performed on the bassoon or (as in Berlin in 1805) the horn, because a trombone player of adequate skills was not available.⁶

The other significant contribution to the network was provided by civic musical patronage. This had sustained trombone players through the eighteenth century, particularly for their role in *Abblasen*: the morning and evening performances of *Stadtppfeifer*. It is to the town bands that courts and churches often looked for the supply of trombone players, before transformations in the structure of the music profession occurred in the nineteenth century.

Fractured though it was, trombone playing in German-speaking countries in the late eighteenth century could claim a continuity that was almost unique, especially in Austria. In England, the trombone, and words meaning “trombone”, were almost lost for most of the eighteenth century. Trombones were used in London in 1738 and 1739 for performances of George Frideric Handel’s dramatic oratorios *Israel in Egypt* and *Saul*, but at each of these events the players were visiting Germans. What appears to have been a more permanently settled group of players (again with German names) were in London by 1784 when the large-scale Handel Commemorations took place at Westminster Abbey.⁷ This latter group initiated the re-establishment of the trombone in England, and it was again German players who were critically important in setting up British military music in the nineteenth century.⁸ This point is evidenced not just by the career profiles of individual German musicians working in Britain, but also by the existence of flourishing agencies that acted as conduits for immigrant German performers.⁹ Early influences of German trombonists can also be seen in other countries: for example, in Paris where several players with German names were in circulation, including Jean Frédéric Braun, who had apparently been working in Paris from at least 1774, and was the author of *Gamme et Méthode pour les Trombones* (ca 1796),¹⁰ the first modern treatise for the trombone. Other trombone players working in Paris at that time were Moser, Sieber and Nau, and in 1786 a functionary of the Paris Opéra was instructed to buy German trombones for use in its orchestra.¹¹

The main aesthetic movement of the period was the transition from what became known as Classical to Romantic styles, but there were other important, and more local trends, most notably a shift from the dominance of Italian operatic style in the early decades of the century to the German operatic models that were to reach fulfilment in the works of Richard Wagner. Romanticism, with its emphasis on expression, harmonic and timbral contrasts, exploration, colour and referentialism, can be regarded as a major cause of the increased use of the trombone in the nineteenth century, especially in the Romantic orchestra. From about 1820, in both

5 Spitzer/Zaslaw 2004.

6 Carse 1948, p. 40.

7 Burney 1785, p. 7.

8 Herbert/Barlow 2013, pp. 82–103.

9 George Astor was one of the major agents. He advertised his services regularly in London newspapers. See *ibid.*, p. 101.

10 See Weiner 2019b. For further information on Braun’s method see Weiner 1993; Weiner 1999; Guilloux 2016.

11 Carse 1948, p. 41.

their concert and operatic form, German orchestras included a three-part trombone section voiced in the alto, tenor and bass registers as standard components. A parallel development was the emergence of the baton-waving conductor. This aspect of performance history has received relatively little attention in respect of the idioms of individual orchestral instruments. Composers such as Franz Schubert, Carl Maria von Weber, Felix Mendelssohn, Gaspare Spontini, Johannes Brahms, Robert Schumann and Wagner were also conductors of their own works. According to Berlioz, in Germany there was great respect for “the maestro” (the professional conductor or *Kapellmeister*), but “the composer [...] nearly always directs both rehearsals and performance of his work, without the conductor’s pride being in the least offended”.¹² The direct interplay between the creators and the executants of repertoire strengthens the idea that German repertoire in this period can be genuinely regarded as a reflection of instrumental idioms.

Instruments, supply and demand

The robust and long-standing tradition of trombone-making that prevailed in Germany at the start of the nineteenth century was set to develop, embrace new modes of production, and respond to increased demand. Early nineteenth-century manufacturing and production systems were based on technologies and skills that had been in use for centuries, but Germany was uniquely placed for the introduction of manufacturing methods that were prescient. The trombone also benefited from new production processes and modes of distribution that emerged in the light of the development of innovative valve instrument designs and the massively increased demand caused by the expansion of military music. There were about forty places in German-speaking countries where trombones were designed and manufactured in the nineteenth century.¹³ That so many manufacturers were in existence is, of course, an indicator of demand as well as supply, but while the distribution of manufacturers may reflect regional or more local demographics, there were other factors at play. Some manufacturers targeted market segments by type. For example, the firm of August Clemens Glier of Markneukirchen and, a little later, Ernst David of Bielefeld, were particularly known as suppliers of instruments to the *Posaunenchor* movement, while Griessling & Schlott, who flourished in Berlin between 1801 and 1835, were prominent suppliers to military bands in the first half of the century. In the second half of the century, Červený of Königgrätz was a major supplier to military bands, and from 1867 it was responsible for the production of the family of upward-bell valve trombones known as *Armee-Posaune*. In 1895, the same firm supplied 6,000 brass instruments to the Russian army. By the end of my period about a quarter of this cohort of German trombone makers had extended their businesses to other countries.

The *Armee-Posaune* was an important introduction because of its utility in the military bands for which it was designed, especially those of mounted regiments, but there were other yet more important innovations. Of these, the most notable and lasting was the wide-bore tenor/bass trombone developed by Christian Friedrich Sattler in Leipzig in 1838/39, which was the prototype for all subsequent thumb-attachment trombones. Equally far-reaching was the development of the valve trombone. It is generally believed to have first appeared in Vienna in the late 1820s or early 1830s. This invention has been credited to Joseph Riedl, but the claim that this was the first valve trombone has been contested. An alternative, and credible claim

¹² Berlioz 2002, p. 260.

¹³ This figure is based on data included in Waterhouse 1993; and on Herbert et al. 2019b.

cites another German maker, Joseph Caspar Gabler, who is said to have applied a box valve mechanism to a trombone as early as 1818.¹⁴

Learning the trombone

Changes in the way professional musicians learned their trade are evident from the start of the nineteenth century. The decline of civic and aristocratic patronage and the ubiquitous rise of military bands prompted a commensurate decline in the power and influence of protective agencies such as guilds and the other licensing agencies that had ensured the passing of performance skills from fathers to male offspring within narrow dynastic channels. The modes of patronage that had sustained family dynasties in Germany weakened but did not disappear. The trombone virtuosos Friedrich August Belcke (1795–1874) and Carl Traugott Queisser (1800–1846) were both alumni of the *Stadtmusiker*, and there is evidence of male members of families working in proximity or simultaneously in different centres: some continued to be recipients of nepotistic advantage.¹⁵ For example, Queisser, who was described by Schumann as “the God of the trombone”, joined the Leipzig orchestra in 1825, and was the brother of both Friedrich Benjamin Queisser (1817–1893), who played the trumpet at Dresden, and Johann Gottlieb Queisser (1807–1874), also a trombonist, who played with the Dresden Orchestra under Wagner.¹⁶

The device that was to cause the greatest and most enduring change to processes of learning across Europe was the advent of a new type of specialist institution for musical tuition. These institutions, variously called (in English) “school”, “college”, “academy” or “conservatoire”, were initiated by state, civic or military agencies. Though the impact of such institutions on the trombone specifically was relatively slight in most places, the transition from traditional to modern modes of learning is important for two reasons: firstly, and especially in respect of military schools of music, it introduced recruits to the music profession from an entirely new demographic – usually the lower social classes; and secondly, it encouraged new, and robust performance orthodoxies centred on the preferences of exemplary performer-teachers. In France, this acted powerfully at a national level, and eventually elsewhere it served to create dynasties defined not by familial relationships but by teacher/pupil associations.

In Germany it was different because professional music was less centralised and consequently more fractured aesthetically. A conservatoire was established in Bohemia early in the century and more followed, but there are grounds for scepticism about the extent to which trombonists were taught in them. The Paris Conservatoire was exceptional in that it had a trombone class almost from its foundation and maintained specialist teaching for trombonists through the new century. Most early German conservatoires were dedicated mainly or exclusively to training soloists and chamber music performers. For example, the Leipzig Conservatoire, founded by Mendelssohn in 1843, was directed at composers, singers and pianists, and this type of focus was not unusual. The way that the conservatoires presented themselves was often misleading. For example, the Royal College of Music, founded in London in 1882, advertised a full range of professors from the day it opened, but the total number of orchestral instrumentalists admitted in the forty years between 1882 and 1922 was very small.¹⁷ Performing in the

¹⁴ Herbert 2008, p. 185.

¹⁵ For biographical information on both players, see Weiner 2019a and Weiner 2019c respectively.

¹⁶ See Carse 1948, pp. 121 and 134.

¹⁷ I am grateful to David Wright, author of the history of the Royal College of Music, who has completed painstaking work on the personnel of the College since its foundation, for sharing this information, see Wright 2022.

College's concerts seems to have been the main role of many of the wind music professors, but there were some important exceptions.

Though formal processes for the training of trombone players were no more developed in Germany than in other parts of Europe, it does not follow that learning of any systematic nature was absent, and it is likely that alternative, more organic processes compensated with equal effect. Early in the century, the dynastic legacy produced a new generation of virtuoso players, in Germany to form what was effectively a widely dispersed network of mentors. Friedrich August Belcke and Carl Traugott Queisser are cited as the major virtuosos of the period, but there were more. For example, Berlioz praised Schrade (recte: Johann August Schrader), the principal trombone player in the Stuttgart orchestra, whom he regarded as

a most gifted player, a complete master of his instrument who makes light of the most formidable difficulties and produces a magnificent tone from the tenor trombone – I should rather say tones, for by some process not yet explained he can play three or four notes at the same time [...].¹⁸

Many players attached to German, Swiss and Austrian orchestras earned praise. In a letter to Liszt, Wagner recommended “the ‘trombone genius’ Thiele of Bern for a vacant post at Weimar”:

At my famous Zurich concerts he truly won my heart. By his side we had two most feeble players, yet he managed so to infect them with his energy that at their entry in the Wedding-music one might fancy oneself listening to a whole army of trombonists.¹⁹

There were also some who made their names as international soloists. Herr Nabich, a German trombone player, accompanied by William Mason, an American pianist, was a regular on the international concert circuit. After a performance at the Harmonic Union in London in 1853 he was declared “a wonder” by the *Morning Post*.²⁰

While there is abundant evidence that such players were influential, the absence of a process of learning based formally at an institution (as was the case in Paris) may well account for the relatively small quantity of didactic literature for the trombone published in Germany in the period. The small solo repertoire for trombone evidences the existence of players with the skills to execute it, but, as in other countries, the solo repertoire provides a less reliable indicator of the idiom of the instrument than does the orchestral repertoire.

Military

As was the case elsewhere in Europe, the unprecedented expansion of demand for brass instruments in Germany was a direct result of the exponential growth in the number of military bands that emerged in the first half of the century. Even early in the century, some orchestras relied on military players. In 1827, for example, the English traveller Edward Holmes remarked that the orchestra at Kassel was “half-filled with officers”.²¹ A similar impression is gained from the diaries of the English conductor Sir George Smart, who reported that the Elector of Kassel had the best military band in Germany and that its players also filled many places in the court orchestra.²²

¹⁸ Berlioz 2002, p. 276 f.

¹⁹ Ellis 1904, p. 106.

²⁰ *MP* 1853, p. 5.

²¹ Carse 1948, p. 151.

²² Cox/Cox 1907, p. 209.

The importance of military music projects to the wider infrastructure of musical life and its associated commerce was immense, and has been largely overlooked in mainstream musicology. In 1889, Jacob Kappey, a German bandmaster working in London, made the conservative estimate that there were in excess of 51,000 military band players in Western Europe.²³ In 1825 Sir George Smart, travelling in Germany, witnessed impressive performances of bands of military musicians made up of “trumpets, bugles and tromboni” which sometimes numbered 150 players.²⁴

Trombones were used in German military bands through the century, both before and after Wieprecht’s famous reconfiguration of them for the Prussian authorities. Wieprecht’s 1838 formations included two tenor and two bass trombones for infantry bands in a total of 47 players, but none were included in the smaller combination (21 players) he devised for cavalry bands. This undoubtedly reflected the practical problem faced by trombone players performing when mounted, which was consequently addressed by the introduction of the *Armee-posaune*. Kappey believed that Prussian configurations had “spread to almost all European States, and formed the basis of our present [British late nineteenth century] military music”.²⁵ There is scope to question whether it was “the basis” of European bands, but it was undoubtedly influential. Carl Florian Mandel, whose treatise on the instrumentation of military bands, is one of the most detailed works of its type in this period does not mention Wieprecht’s model.²⁶ Mandel was born in Hamburg and worked there until 1853. He then moved to England and taught music theory and arranging at the British army’s military music class (later called the Royal Military School of Music). It was there that he wrote the treatise that became the standard text for British military bandmasters. It was premised on the idea that the role of a military band, beyond its basic functions during ceremonials and marching, was to play arrangements of existing repertoire rather than original music. He paid his greatest attention to the idiomatic nature of instruments. An extract from his comments on the use of the trombone in military bands is provided as Appendix 1. Though he was based in London when he wrote the book, his experience of military bands was gained primarily in Germany, and what he describes about the utility of trombones in the military band is distinctly different from practices in most orchestras. For example, he advocates the use of three tenor trombones, a convention widespread in France, but less so elsewhere.

The military expansion also gave issue to popular music offshoots. Many military-trained trombone players found work in theatres and pleasure gardens, and superannuated military trombone and other brass players also formed the core of one of the most widely dispersed forms of street music that were known outside Germany as “German bands”. These bands were ubiquitous and travelled internationally. In urban areas of England they were regarded as an interminable nuisance, though in rural districts their arrival was greeted with pleasure, and they occupy an important place in popular music history in the UK and in colonised countries such as Australia. Henry Mayhew, the most celebrated chronicler of street life in the Victorian period, interviewed one such player and thought fit to imitate the man’s German accent in his transcription. The interview transcript is given below as Appendix 2.

23 Kappey 1889, p. 472.

24 Cox/Cox 1907, pp. 66 and 203.

25 Kappey 1894, p. 90.

26 Mandel 1859.

The church

Sacred music was one of the strongest agencies for continuity in trombone playing in Germany, and the traditions that bound the instrument to the sacred impacted powerfully on its symphonic idiom. The *ad libitum* tradition of doubling vocal lines on trombones became formalised, then gained a greater level of independence in the oratorios of Mozart, Haydn and Schubert. But strands of the older traditions prevailed, particularly in amateur sub-cultures such as Moravian communities, the *Posaunenchor* movement and those places where choral singing maintained its traditional modes of performance. The continued inclusion of trombones in devotional settings was also significant because it engaged amateurs as well as professionals. Amateur trombone playing in the nineteenth century developed as part of the wider enfranchisement of amateur brass instrument playing: it contributed to the demand for instruments and to the supply of professional players, but in the case of sacred music it also kept alive the way the trombone was popularly understood in Germany. The modern *Posaunenchor* movement is usually traced to a particular branch of evangelical Lutheranism in the 1840s, but whether that movement alone accounts for the sustenance of traditional practices is doubtful.²⁷

Recent musicological projects on how people have listened to music in the past have cast new light on such traditions.²⁸ An eye-witness account by Amy Fay, a young American woman visiting Berlin Cathedral in April 1870, is interesting in this regard. It is found in a letter that she wrote to her family back in the United States, and it tells us much about the extent to which trombones configured sacred practices in Germany at the time:

I thought of you all on Easter Sunday, and wondered what sort of music you were having. I did not go to the English church [...] but to the Dom [...]. It is an extremely ugly church [...] but they have a superb choir of two hundred men and boys [...]. After they had finished the psalm the organ burst out with a tremendous great chord, enough to make you jump, and then played a chorale, and there were also trombones which took the melody. Then all the congregation sang the chorale, and the choir kept silence. You cannot imagine how easy it is to sing when the trombones lead, and the effect is overwhelming with the organ, especially in these grand old chorales. I could scarcely bear it, it was so very exciting.²⁹

Art music institutions – the orchestras

The number of orchestras in Germany and the spread of their distribution was not matched in any other country or region. They can be divided into two broad categories: those that were and those that were not attached to theatres. Most theatres had concert rooms in which a reduced number of players from the theatre orchestra formed a symphony or concert orchestra. Information about the sizes of orchestras in which trombones were included provides an interesting profile of the experience of playing in them and the performance idioms of the time.

Data on orchestral forces is more bountiful for Germany than most other countries: some is summarised and distilled in Appendix 3 below, but it should be read with important cautions in mind. The main primary sources, which are mostly summarised in reliable secondary

²⁷ See Klaus 2019.

²⁸ See, for example, the *Listening Experience Database* at the Open University, a major project dedicated to collecting and using primary source evidence on the impact of music on ordinary listeners. The rationale for this project, along with a description of the methods it employed and an open access database containing thousands of sources, can be found online (LED n.d.).

²⁹ Fay 1880, pp. 59–61.

sources, are inventory lists, printed programmes and other documents including eye-witness accounts.³⁰ They are varied and sometimes uncorroborated, so it is important to stress that it is presented to convey only a general impression.

By about 1820 a three-part trombone section was included in most German orchestras. Mandel drew attention to the novelty of this arrangement, pointing out that every other grouping of wind instruments in the orchestra involved two or four players. This arrangement configured the orchestral idiom of the instrument as it developed in German-speaking countries. It is important because it established what became the orthodox orchestral trombone section. This configuration took shape in vocal works by composers such as Mozart, Haydn and even Handel, but was adopted in a similar character in purely instrumental setting in works such as the C major Symphony of Schubert and the symphonic works of Brahms. The impact of this configuration should be understood in the context of the relative and proportional strength of the three-part trombone section in orchestras. Data drawn from a variety of primary and secondary sources has been used to create the outline picture given in Appendix 3. Two features emerge from this with a good degree of consistency: there was a marked difference in the size of theatre and concert/symphony orchestras, with the latter initially being significantly smaller than the former; and works conceived for the symphony orchestra were typically performed with a total strength of about 40 players including trombones, with seldom more than three or four desks of 1st violins. Orchestras became larger as the century progressed, particularly so in theatres and opera houses.

The legacy

The legacy of the trombone in Germany is significant. Though the pattern was complex in the nineteenth century because of the vastness of the musical network in German-speaking countries and the changes that were incremental throughout the century, there were important legacies that reached most countries. Trombonists were regular constituents in military bands, and it was widely believed that the Prussian model of the military band that emerged mid-century had a greater or lesser influence in most European countries. More specifically, irrespective of the place in Germany where they were first introduced, the introduction of valve trombones was important in German military bands before they were introduced elsewhere, and this had a cascading effect to musical species beyond the military. Perhaps the most important legacy came from the adoption throughout German-speaking countries of what became the standard three-part orchestral trombone section, voiced in three parts – alto, tenor and bass. Irrespective of the different configurations used elsewhere (such as France), the voicing of the parts as used in nineteenth-century German orchestras became ubiquitous. This configuration has prevailed to modern times, but what we learn from the relative proportions of trombone sections to string sections in the nineteenth century is that the sound-world for which it was introduced was radically different from that of most orchestras in modern times.

Appendix 1: Carl Florian Mandel on the trombone in military bands

“Trombones are the only instruments which, to be effective, require three parts. All other instruments, when not employed for solos, are capable of being used in two or four parts.

[...] Now-a-days, every performer wishes to be as effective as possible upon his instrument; and as the alto trombone is limited in compass, besides being little adapted for solos, it is super-

30 The sources used in this article are cited in Appendix 3.

seded by valved alt-horns, or by the tenor trombone; while, again, the bass trombone, being too troublesome, is replaced by the bass valved instruments, or the tenor trombone. As composers seldom write lower than [scored E2] or higher than [scored F4] for the three trombones, both the alto and the bass may easily be represented by the tenor trombone. This explains the present use of three tenor trombones, which have a more extended compass than other trombones. Although this new plan may be inferior to the old one, which, while employing three different trombones, produced three different qualities of tone, it is better than replacing the trombones by alto, tenor, and bass valved instruments, and more characteristic; since the trombones may themselves be employed in any key [...].

Although a tenor valved trombone strikes me as more useful and dignified than a tenor horn, and might replace the latter, it could no more form one in the simple and majestic combination of three ordinary trombones than the tenor horn itself could.

In order to obtain some slight difference of tone from the three trombones in the same key, musicians employ, in France, Italy, and sometimes England, a B flat trombone of narrow calibre, for the first, – that is to say, alto-part. The higher notes of this instrument are more certain, whilst its tone more resembles that of the alto trombone; but, for solos, it wants the strength and dignity belonging to the ordinary trombone. Another sort, known principally in Germany under the name of a tenor-bass trombone, is wider in calibre than the usual trombones, whilst it resembles in sound the bass trombone. A good performer could execute upon it even a vocal bass or baryton solo, not containing too many *legatos*.

Since we may conclude, as a general rule, that one at least of three trombones will be employed for solos, it is desirable, so as to have three effective trombones in every case, for the third to be strengthened at least by a G or F trombone.”³¹

Appendix 2: Henry Mayhew on “German bands”

“I am German, and have been six year in zis country. I was nearly fourteen when I come. I come from Oberfeld, eighteen miles from Hanover. I come because I would like to see how it was here. I heard zat London was a goot place for foreign music. London is as goot a place as I expect to find him. There was other six come over with me, boys and men. We come to Hull and play in ze country about half a year; we do middling. And zen we come to London. I didn’t make money at first when I come, I had much to learn; but ze band, oh! it did well. We was seven. I play ze clarionet, and so did two others; two play French horns, one ze trambone, and one ze saxhorn. Sometime we make 7s. or 8s. a-piece in a-day now, but the business is not so goot. I reckon 6s. a-day is goot now. We never play at fairs, nor for caravans. We play at private parties or public ball-rooms, and are paid so much a dance – sixpence a dance for ze seven of us. If zare is many dances, it is goot; if not, it is bad. We play sheaper zan ze English, and we don’t spent so much. Ze English players insult us, but we don’t care about that. Zey abuse us for playing sheap. I don’t know what zair terms for dances are. I have saved money in zis country, but very little of it. I want to save enough to take me back to Hanover. We all live togeder, ze seven of us. We have three rooms to sleep in, and one to eat in. We are all single men, but one; and his wife, a German woman, lives wis us, and cooks for us. She and her husband have a bedroom to themselves. Anysing does for us to eat. We all join in housekeeping and lodging, and pay alike. Our lodging costs 2s. a-week each; our board costs us about 15s. a-week each; sometime rather less. But zat include beer; and ze London beer is very goot, and sometime we drink

31 Mandel 1859, p. 67.

a goot deal of it. We drink very little gin, but we live very well, and have goot meals every day. We play in ze streets, and I zink most places are alike to us. Ladies and gentlemen are our best friends; ze working people give us very little. We play opera tunes chiefly. We don't associate with any Englishmen. Zare are three public-houses kept by Germans, where we Germans meet. Sugar-bakers and other trades are of ze number. There are now five German brass-bands, with thirty-seven performers in zem, reckoning our own, in London. Our band lives near Whitechapel. I sink zare is one or two more German bands in ze country. I sink my countrymen, some of them, save money; but I have not saved much yet.”³²

Appendix 3: Examples of trombone sections as a proportion of the total size of German and Austrian orchestras, 1787–1900

This data should be read with some caution for the reasons given in the main body of this article. Furthermore, numbers in most orchestras fluctuated: these are snapshots rather than indicators of permanent strengths. In each case, the third column gives the number of trombones against the total orchestra strength (including trombones).³³

1787	Orchestra of the King of Prussia	3/61
1807	Vienna Imperial Orchestra	2/29
1811	Berlin Court Opera	3/75
1817	Bremen Town Orchestra	1/28
1817	Mayence Court Theatre	3/39
1821	Frankfurt Opera	1/37
1821	Vienna Court Opera	3/45
1823	Nuremberg	3/63
1823	Darmstadt Court Opera	3/62
1825	Dresden Court Opera	3/35
1825	Berlin Opera	3/80
1825	Darmstadt Court Opera	3/66
1830	Warnsdorf Orchestra	3/46
1830	Dortmund Concert Orchestra	3/39
1832	Hamburg Opera Orchestra	3/36
1833	Leipzig Gewandhaus	3/34
1837	Dresden	3/57
1837	Stuttgart	3/57
1838	Rudolstadt	3/38
1841	Coburg	3/42
1842	Vienna Philharmonic	4/67
1843	Hechingen	1/29

³² Mayhew 1861, p. 164.

³³ Principal sources: Cox/Cox 1907; Carse 1948; Koury 1986.

1844	Cassel Court Opera	3/50
1844	Munich Court Opera	3/53
1846	Chemnitz	3/41
1849	Hanover Court Opera	3/44
1850	Brunswick	1/52
1851	Weimar	1/37
1867	Karlsruhe	3/49
1876	Bayreuth	5/102
1881	Leipzig	3/72
1890	Leipzig	3/98

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Adrian v. Steiger/Martin Tuchschrnid/Rainer Egger

The German Trombone. Aspects of Its Materiality

Historically informed performance is largely focused on musicological insights and period instruments. These instruments can be manufactured using both materials and manufacturing techniques from the period in question. As previous projects on brass instruments have shown, more research is needed into historical brass alloys, manufacturing procedures, wall thicknesses and technical details. For its research on German trombones of the nineteenth and early twentieth centuries, this project involved a multidisciplinary collaboration between the Bern Academy of the Arts HKB, the instrument maker Rainer Egger, Basel, and the natural scientists of Empa (the Swiss Federal Laboratories for Materials Science and Technology) in Dübendorf. In a second step, “The Sound of Brass” entered into questions of acoustics: If we build copies of period instruments using historical manufacturing techniques, what impact does this have on their playing characteristics and, ultimately, on their sound? And can we measure this impact?

If we are to acquire an understanding of the German trombone, then it is of particular importance that we understand certain aspects of its materiality. This is primarily because we cannot produce faithful replicas without such knowledge,² but also because its materiality was discussed controversially in the past.³ The present research project investigated a number of historical trombones⁴ under three aspects: 1) the chemical composition of the brass used for all their parts; 2) the wall thicknesses of all their parts; and 3) their geometry and technical features. This paper presents the conclusions drawn from those investigations.

The characteristics of the German trombone

What is a ‘German’ trombone (often referred to as a ‘Leipzig’ trombone, which is actually a more accurate name)? What are its characteristic parameters? It is our hypothesis that its principal characteristic is a dark, vocal sound. A catalogue of the period states “Conical throughout. Fabulous soft and full sound”⁵ The goal of all its features is to produce just such a sound by means of:

- a large bore, ca 13.5 mm for tenor trombones;
- conicity throughout the instrument, also in the slide (nearly 50% of the project’s historical instruments have a conical slide);

1 See also Zemp et al. 2019.

2 See the articles of Rainer Egger and Alex Schölkopf in this volume, pp. 71–78 (Egger 2026) and 65–69 (Schölkopf 2026).

3 E.g. Hachenberg 2006; Thein 2006.

4 See Appendix on pp. 39f.

5 “Durchwegs konisch gebaut. Fabelhaft weicher und voller Ton” (Kruspe 1930, characterising the “Quart-Posaune”, i.e. a tenor-bass trombone with a valve of a fourth. We are grateful to Tim Dowling for mailing us this pricelist).

- a conical bell throughout, and therefore mostly no tuning slide (period catalogues offer models with and without a tuning slide);
- a large bell, up to 260 mm maximum;
- a very light bell made of 0.35 mm sheets, hammered at the end down to around 0.20 mm;
- a large Saxon garland;
- as few stiff construction parts as possible: an open slide stay and only one bell stay; these stays made out of a tube.

Further typical features are:

- snake ornaments on the bows;
- touch springs inside the slide housing;
- a friction joint.

German trombones were mostly built as altos in E^b, tenors in B^b and tenor-basses in B^b. The last was an important innovation: it was a large-bore tenor trombone that played bass parts. It was also called the 'Baritonposaune' or 'Quartposaune' and was often equipped with an F-attachment – a solution that was invented by Sattler in Leipzig in 1839. As a consequence, the earlier bass trombones in low G, F or E^b became obsolete and then disappeared in Germany, as we can see from extant catalogues and instruments.

The research presented here focused on the era of the large-bore Leipzig trombone. The beginning of this era is marked by the Sattler trombones, developed in the 1830s and extant in the form of the well-known three instruments held by the Grassi Museum: alto, tenor and bass, made for the Leipzig churches and dated 1841.⁶ Kruspe's narrower bored Weschke model marks the end of this era. It was developed during the 1920s by Kruspe in collaboration with the Berlin solo trombonist Paul Weschke (1867–1940) and was designed for solo playing. It had a ca 11.5 mm cylindrical bore and a ca 225 mm bell, still combined with a large Saxon garland.⁷ Later, this model was adopted both for solo trombones and for all trombone parts in the orchestra. The wide-bore 'Penzel' or 'Leipzig' model then fell out of use.

We gathered together many historical trombones of that era for our research project. Sixty-three of them were played and measured. Figure 1 shows the 50 instruments signed by Saxon makers; the remaining 13 were signed by non-Saxon makers. This list begins at the left in ca 1800 and ends on the right in the 1930s. The trombone sizes are given in order of size with the discant at the top, down to the bass trombones at the bottom. The list includes five instruments by Sattler (highlighted here in green), five by Penzel (yellow), ten by Kruspe (blue) and six by Heckel (red). The majority of these instruments had an inner and outer slide that were clearly still original. For the others, some slides were of doubtful origin, some had clearly been changed (some of them chrome-plated) while others were simply missing.

These instruments were all played in either Basel or Leipzig by Ian Bousfield, a trombone professor at the Bern Academy of the Arts HKB; those in Leipzig were also played by Sebastian Krause, solo trombonist in the MDR Symphony Orchestra in Leipzig. The latter group also included the above-mentioned three Sattlers in the Grassi Museum (given in rectangular frames in Fig. 1).⁸

6 Majewski 2010, pp. 7f.

7 For the Weschke model, see Remmert 2010, pp. 67f.; and Vereecke/Krause 2015.

8 We are grateful to Ian Bousfield for this inspiring journey to the trombone, to Sebastian Krause for all his help and expertise, to the members of the Verein für mitteldeutsche Posaunengeschichte e.V. for bringing their instruments for measuring, and to Josef Focht and Thea Pawula of the Grassi Museum in Leipzig for hospitality and support.

[illegible]

Fig. 1 The 50 trombones from Saxony involved in this project, listed in chronological order from left to right (the small figure indicates the project number; see Appendix, pp. 39f.).

Historical background

We have to be aware that the above makers manufactured all types of brass instruments. With the exception of Johann Christoph Penzel, the trombone was for most of them actually a side product. Christian Friedrich Sattler's focus was on technical innovation, Eduard Kruspe's on horns and Heckel's on trumpets. Figure 2 shows the only 4 trombone models (each available in three bore variants) found in a Kruspe catalogue of the 1930s. They formed a minority group alongside 13 models of horn, 2 Wagner tubas, 7 trumpets, alto horns, tenor horns and baritone horns, plus 7 models of tuba.

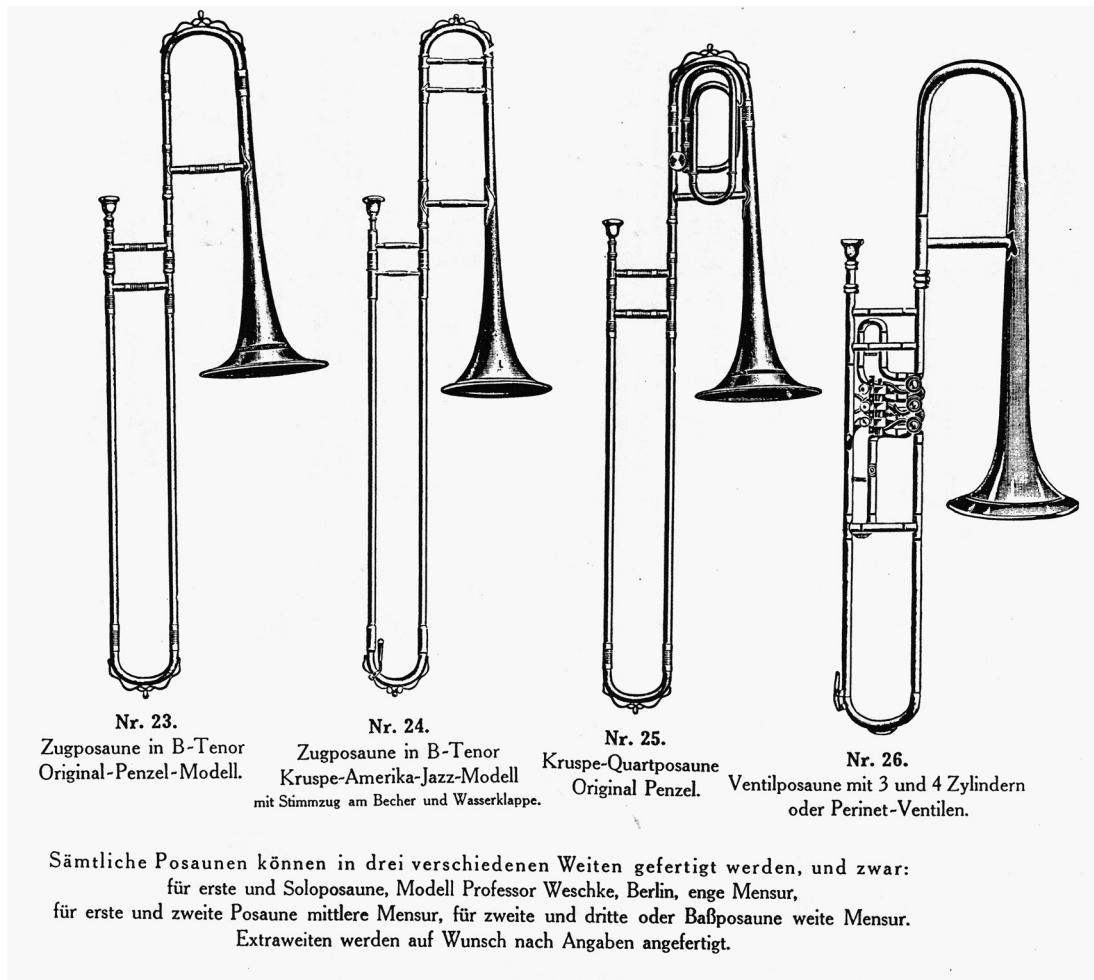
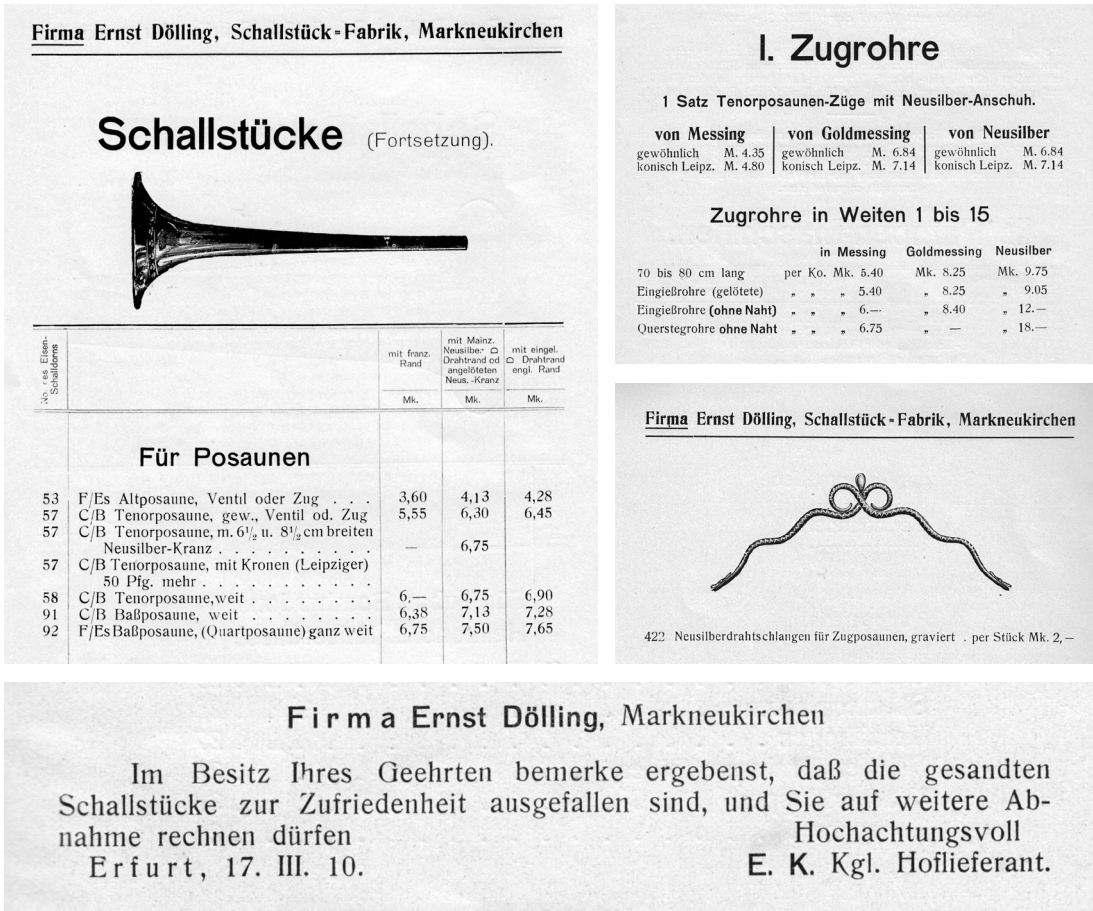


Fig. 2 Trombones in the catalogue of Eduard Kruspe, published in the 1930s (published in *Larigot* 1996, p. 24).

We also have to be aware that in the region of Leipzig and Markneukirchen, the era of the large-bore trombone was also the era of a divided labour economy. Small independent workshops manufactured mouthpieces, bells, valves and all manner of other parts, or offered engraving services. Figures 3–6 show excerpts from the 1912 catalogue of the maker Dölling in Markneukirchen. Dölling defines himself as a ‘bell-maker’ and offers bells for alto, tenor, tenor-bass and bass trombones with a variety of garlands. But he also offers all manner of other instrument parts, such as slides and snake ornaments. It seems astonishing that he did not manufacture complete instruments. At the close of his catalogue, he prints testimonials. These include one by Eduard Kruspe (E.K. at Erfurt, dated 17 March 1910) saying that the bells delivered had satisfied his requirements and that Dölling can count on further orders from him.



Figs. 3–6 Catalogue of 1912 by the bell-maker Ernst Dölling, Markneukirchen: bells (p. 18), slides (p. 26), snake ornaments (p. 40) and a testimonial by Kruspe (p. 45).⁹

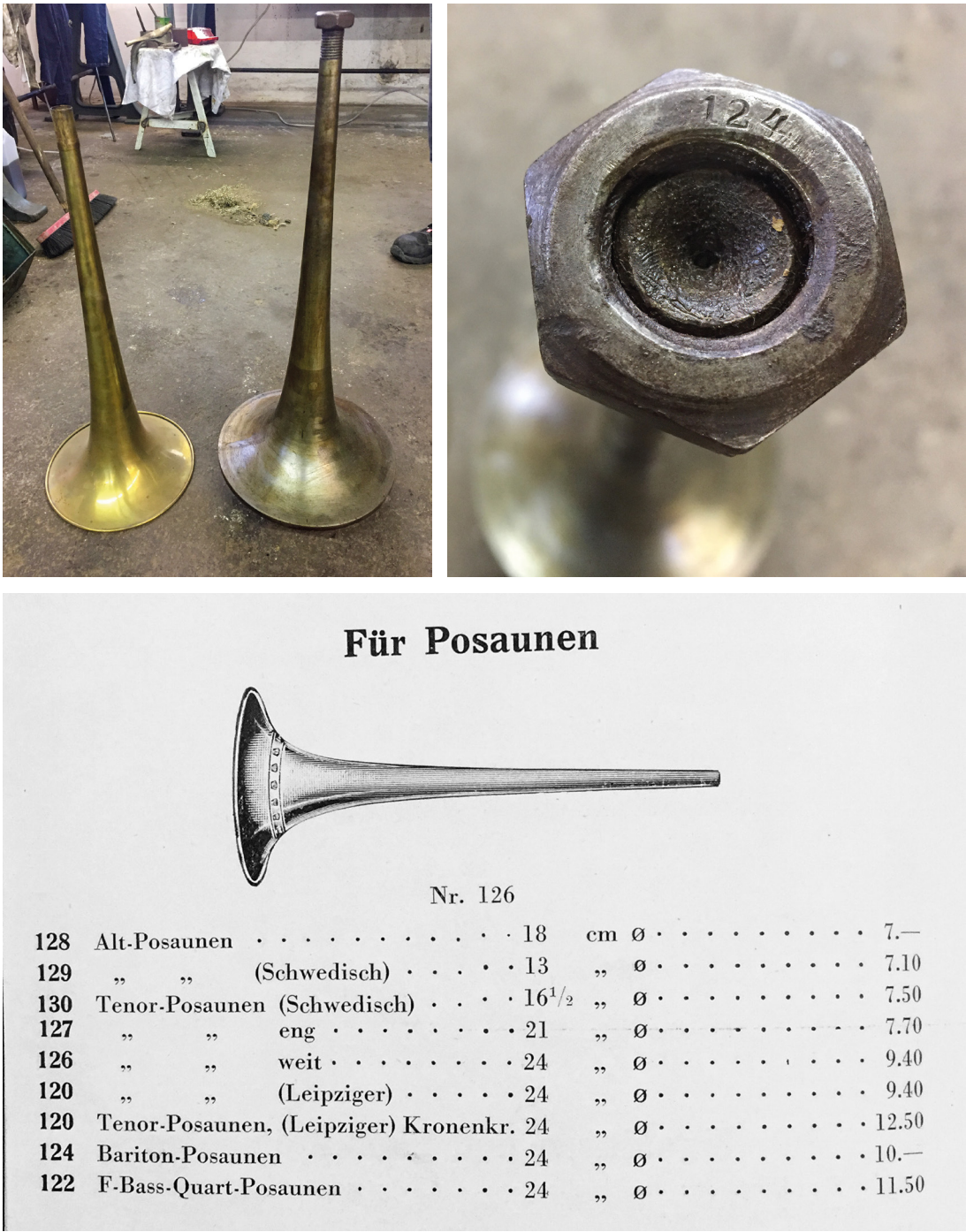
Emil Körner in Markneukirchen is known to have made bells for Heckel. Figures 7 and 8 show his mandrill number 124. According to his catalogue from the 1920s, this is the mandrill for his baritone trombone with a bell diameter of 24 cm, and it is offered for the price of 10 Reichsmarks (Fig. 9).¹⁰ Further parts were offered by other Markneukirchen makers; mouthpieces, for example, had been offered by Schmidt since 1842.¹¹

In consequence, the instrument maker (the signing company, called ‘Zusammensetzer’ i.e. ‘assembler’) had to use what they were given by the part-makers. As we can see from the catalogues, the latter had to offer a great variety of sizes and types of materials (such as red brass as well as yellow brass) in order to meet the demands of the assemblers. An instrument was thus often not designed, developed and produced as a unit by any single company, but by a regional network of independent manufacturers. One could describe this Saxon network as being similar to a large company in which every specialist department was economically independent. This region exported huge numbers of musical instruments. Export companies were called ‘Verlag’, i.e. distributors. They asked for unsigned instruments so that the customer was unable to trace his instrument back to its real maker. Often, the instruments were signed by the importing dealer.

9 Catalogue held by Musikinstrumentenmuseum Markneukirchen. I am grateful to Enrico Weller for emailing me a copy.

10 I should like to thank Timm Körner, who let me copy this catalogue. He is currently relaunching his grandfather’s company in Markneukirchen.

11 See www.schmidt-brass.de/firma-schmidt-mundstuecke-tradition.htm.



Figs. 7–9 Bell; mandrill 124, marked on the top on the screw; and the catalogue of Emil Körner, Markneukirchen (Körner 1920, p. 4). In the catalogue, bell 124 is listed second last.

In our research project, we furthermore had to bear in mind that the period of the large-bore German trombone was also the period of the valve trombone. Trombonists were just as eager as their trumpet-playing and horn-playing colleagues to get the latest technical devices and options. For a certain time, most orchestras and wind bands had either valve trombones only, or a combination of valve and slide trombones. It was only towards the end of the nineteenth century that symphony orchestras went back to having a trombone section comprising only

slide trombones. Wind bands kept both types in use together for a longer period (and they accounted for at least 80% of market demand).¹²

Finally, organological research must always consider that studying interfaces is of prime importance. In brass instruments, that means the mouthpieces. Our project first focussed on the instruments and used the same mouthpieces throughout. Later on, we compared mouthpieces using the same instrument. Thanks to Sebastian Krause and the museums, we were able to collect signed, original, period trombone mouthpieces in several sizes and incorporated them when Egger was developing his replicas. Most throats of these mouthpieces were rounded, not etched, as had previously been common. This round throat was developed for Červený in the 1860s by Schmidt in Höchstädt near Markneukirchen.¹³

Alloy

The chemical composition of the alloy for each part of the trombones was analysed by Martin Tuchschnid using X-ray fluorescence spectrometry. Figures 10 and 11 show the results for the 1841 Sattler tenor trombone. While a standard brass for instruments today is the alloy CuZn28 comprising 72% copper and 28% zinc (without any tin or lead), the brass sheets used for this instrument contained 71% copper, 27% zinc, over 1% tin and a little lead. This instrument is a very rare case in that most of the parts are made of the same alloy, even including the garland and the inner slide that are normally made of other materials. One exception on this instrument is the slide bow number 6, which was made of a different alloy containing 66% copper and 33% zinc. We may thus assume that the original bow was damaged and replaced during the lifetime of the trombone. In general, we have to be aware that slides or parts of slides in historical trombones are rarely original because they suffer wear and tear and often get replaced.

Figures 12–13 show a typical example of the alloys used in German trombones. This Kruspe trombone uses nickel-silver (or ‘German silver’) for the garland, ferrules and stockings. Nickel-silver is brass hardened with the addition of ca 10% nickel. This material, with its silver-like sheen, is much harder to manufacture than normal brass. This is why it was used for instrument parts that were simple in their geometry, but not for bells or bows.

The bell and all the tubes of this instrument are made of brass with a high level of copper (roughly 85%). This alloy is called red brass (or tombac; ‘Goldmessing’ in German) and was often used in that period by the makers in the Markneukirchen area and Leipzig.

A price list of 1930 by Kruspe in Erfurt illustrates this (Fig. 14). Kruspe here offers a “Modell Penzel” tenor trombone made of normal brass with special prices for tuning slides and for extra features made of nickel silver, such as a garland, inner slide and water key. The most expensive version of this model is in red brass with nickel-silver garniture and water key, with two extra features at 10 Reichsmarks each: a nickel-silver garland and a tuning slide. Our analyses of the alloy suggest that our instrument in Figure 13 is this version of Kruspe’s ‘Penzel’ model that cost 150 Reichsmarks, plus 10 marks extra for the garland with crowns stamped, and 10 marks extra for a tuning slide in the bell bow. Piering in Adorf near Markneukirchen was also offering bells of normal and red brass, and even whole instruments made of nickel-silver.¹⁴

12 We here rely on Weller 2024. Weller gives quantities for all types of trombones and many details of their production.

13 Oral information from Mr Schmidt, the owner of the company today.

14 A bell of nickel-silver is very hard to manufacture. During our project, we found no bells made of this material.

Blechblasinstrumente		Energiedispersive Röntgenfluoreszenzspektrometrie (ED-XRF) - Analysenprotokoll									
Posaunen Deutschland 19./20. Jhdt.		Messgerät: NITON XL2		Messmodus: ALLOYS			Messzeit / Filter: 30 sec / MAIN				
		Leipzig, 12.-14. April 2016; Dr. M. Tuchschnid				Empa-SOP: 03'850					
Tenorposaune / Sattler		Cu	Zn	Pb	Sn	Sb	Ni	Co	Fe	Mn	As
Nr. 52		%	%	%	%	%	%	%	%	%	%
[Angaben in Massen-%: Mittelwerte Doppelbestimmung ± Standardabweichung]											
Pos. 1		71.3	26.7	0.62	1.3	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Kranz		0.3	0.2	0.06	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 2		71.1	27.0	0.63	1.3	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Schall		0.4	0.3	0.06	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 3		70.3	27.8	0.52	1.2	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Bogen		0.3	0.2	0.05	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 4		71.1	27.0	0.60	1.2	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Zwinge		0.3	0.2	0.06	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 5		70.4	27.8	0.52	1.2	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Steg		0.3	0.2	0.05	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 6		66.5	33.1	0.28	n.n.	n.n.	0.07	n.n.	n.n.	n.n.	n.n.
Zugbogen		0.3	0.2	0.04			0.02				
Pos. 7		70.8	27.2	0.58	1.3	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Aussenzug		0.3	0.2	0.06	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 8		71.0	27.2	0.50	1.2	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Innenzug		0.3	0.2	0.05	0.1	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 9		71.7	27.7	0.45	n.n.	n.n.	0.16	n.n.	n.n.	n.n.	n.n.
Stiefel		0.6	0.6	0.05			0.03				

[n.n. = nicht nachweisbar (<Bestimmungsgrenze) / Bestimmungsgrenzen = 0.05 - 0.1 Massen-% (matrix- und elementabhängig)]



Figs. 10–11 Alloys of the Sattler tenor trombone, dated 1841; n.n. = not detectable.

It is noteworthy that the bell of the Kruspe tenor trombone contains 1% nickel, as does the bell stay (see Fig. 12). This might be an indication of its provenance.¹⁵ The fact that the other parts of the instrument do not have this chemical composition suggests that they were made by another maker, and the bell by a bell-maker. In our case, this might have been Dölling in Markneukirchen, who was one of Kruspe’s suppliers, as we saw above. Such small amounts of nickel in instrument parts, mostly bells, were also found in the trombones of other makers. This again illustrates the degree of collaboration of specialist companies in Saxony at that time.

Our analyses of alloy measurements reveal that a great variety of brass alloys was used for all parts of these trombones. We undertook all possible analyses of these figures. The statistic for copper versus nickel in the alloys is of particular interest (Fig. 15). We restricted our analyses to bells and bell bows, leaving out the slide and the other parts of the instrument’s construction for which we cannot know if they are original or not. On the x axis we can see two clearly distinct groups here: yellow brass with around 70% copper, and red brass with around 85–90% copper. The latter was not only used by Kruspe and Piering, as seen above, but also by the other makers. For Heckel (yellow squares), red brass seems to have been standard. Kruspe used red brass as well as yellow brass. This corresponds to his price list as given above. Sattler (red triangles) did not use red brass, while his successor Penzel (green circles) used red brass for one instrument but not for the others.

15 See Jean-Marie Welter’s article on pp. 43–64 of this volume (Welter 2026).

Tenorposaune / Kruspe Nr. 01 / Egger	Cu	Zn	Pb	Sn	Sb	Ni	Co	Fe	Mn	As
	%	%	%	%	%	%	%	%	%	%
[Angaben in Massen-%; Mittelwerte Doppelbestimmung ± Standardabweichung]										
Pos. 1 Kranz	66.3 0.4	22.1 0.2	0.24 0.04	0.15 0.02	n.n.	10.5 0.1	0.12 0.02	0.43 0.04	n.n.	n.n.
Pos. 2 Schall	86.6 0.2	11.9 0.2	0.12 0.03	0.09 0.02	n.n.	1.2 0.1	n.n.	0.05 0.02	n.n.	n.n.
Pos. 3 Bogen	83.2 0.3	16.2 0.2	0.11 0.03	0.09 0.02	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 4 Zwinge	62.4 0.4	24.2 0.2	0.16 0.03	n.n.	n.n.	12.8 0.1	n.n.	0.18 0.03	0.10 0.03	n.n.
Pos. 5 Steg	86.1 0.2	12.2 0.2	0.15 0.03	0.06 0.02	n.n.	1.3 0.1	n.n.	0.05 0.02	n.n.	n.n.
Pos. 6 Zugbogen	83.1 0.2	16.3 0.2	0.11 0.03	0.11 0.02	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 7 Aussenzug	83.4 0.3	16.3 0.2	0.09 0.03	0.15 0.02	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 8 Innenzug	83.3 0.3	16.6 0.2	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.	n.n.
Pos. 9 Stiefel	62.6 0.3	23.9 0.3	0.14 0.03	n.n.	n.n.	13.0 0.3	n.n.	0.19 0.03	0.12 0.03	n.n.

[n.n. = nicht nachweisbar (<Bestimmungsgrenze) / Bestimmungsgrenzen = 0.05 - 0.1 Massen-% (matrix- und elementabhängig)]



Figs. 12–13 The alloys of a Kruspe tenor trombone, early twentieth century.

On the y axis in Figure 15, we see that ca 1% nickel is found in some parts of these instruments (this is not to be confused with nickel-silver, which is comprised of 10% nickel and was used for garlands and other parts). It is notable that this nickel is present only in red brass. We have been unable to find any source that mentions this material, and therefore conclude that it was not consciously used by makers such as the bell-maker Dölling. This leads us to the hypothesis that the nickel entered the alloy in the factories of the brass manufacturers who delivered metal sheets to the instrument makers. Based on these results, Egger decided to use red brass for the replicas.¹⁶

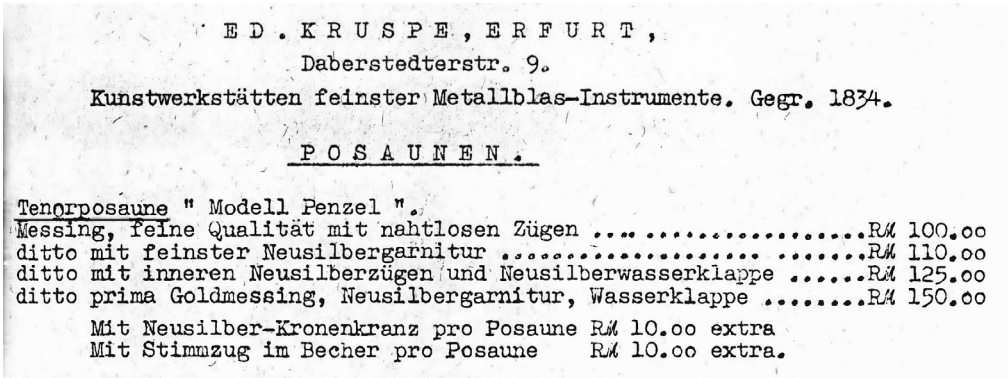


Fig. 14 Price list of Eduard Kruspe (1930).

16 See the article by Alex Schölkopf on pp. 65–69 of this volume (Schölkopf 2026).

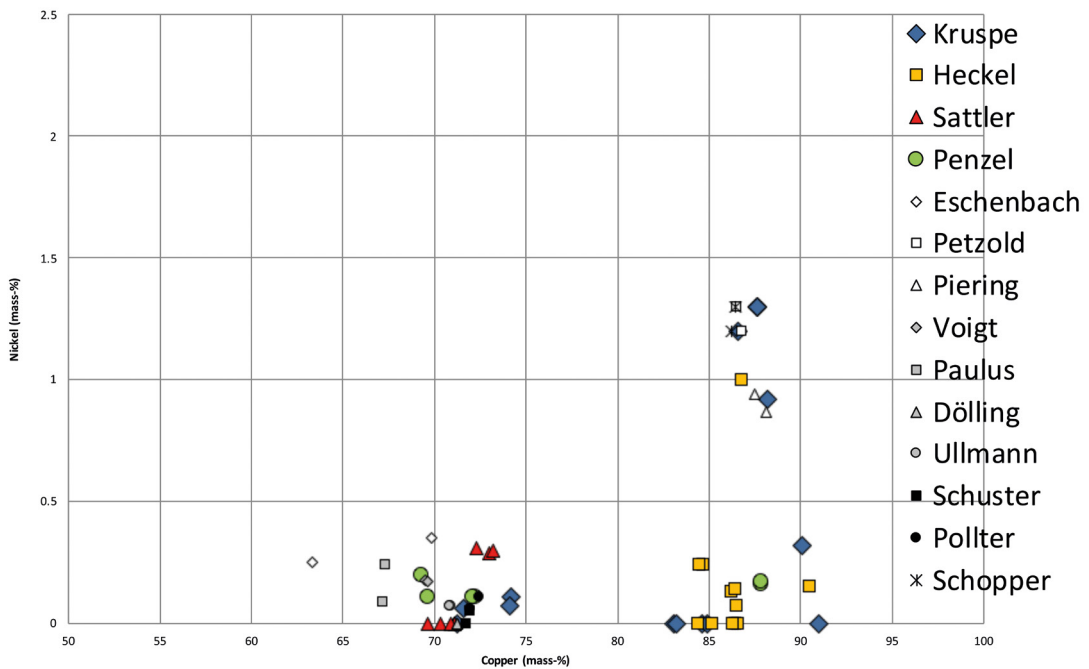


Fig. 15 Statistic copper versus nickel for bells and bell bows of 31 Saxon trombones.

Wall thickness

Adrian v. Steiger has made several thousand measurements of all types and parts of historical brass instruments. To this end, he employs an ultrasound device whose small sensor can measure wall thickness at almost any point of an instrument. This provides a basis for estimating the thickness of the original sheet metal of each part of an instrument. As a general rule, the thickest spot of an instrument part is equal to the original sheet's thickness, as is shown below. These measurements also lead to a better understanding of the manufacturing techniques utilised.¹⁷

The ultrasound device is accurate to one micrometre. This can be illustrated by measuring new brass sheets. The roll in Figure 16 is 0.4 millimetres in thickness according to its manufacturer, and our measurement confirms it with a tolerance of 1 thousandth after making 14 measurements of it. ".400" here means 0.400 millimetres. In the following, the measurements are rounded off to the next hundredth millimetre.

With the help of such measurements, we can observe the behaviour of brass during the hand-hammering manufacturing process. Figure 17 shows four bells at Egger's workshop before the shaping process. They are made of 0.4 mm sheet brass. At most points, this thickness is unchanged, ranging from 0.40 to 0.39.

These points were marked so that we would be able to locate them again, and were then measured ten more times, once after each single manufacturing step: being hammered three times, being centred four times, and after being spun on the lathe, filed and polished. Figures 18–20 show that the thickness was reduced at most of these points during these processes, as we would expect (these reductions are marked in yellow; big differences compared to previous thickness are marked in green). At some points, however, the brass became thicker during certain manufacturing steps (these are marked in pink, with major increases marked in red).

¹⁷ For the wall thicknesses of French instruments, see Steiger 2016.

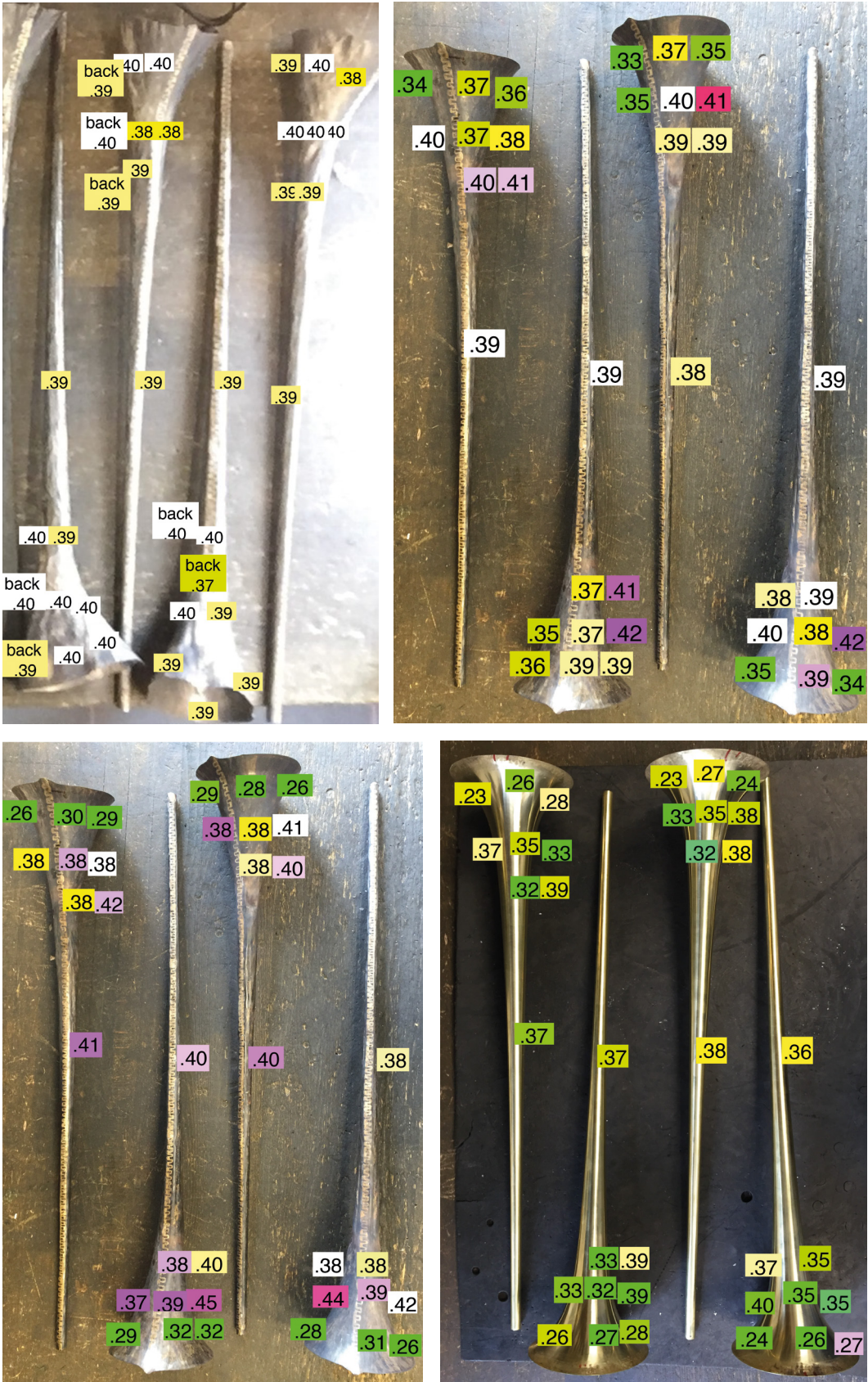


Fig. 16 A modern roll of brass at Egger's workshop. The 14 measurements show that the 0.4 mm thickness is within a tolerance of 1/1000 mm.

This allows us to observe how the material behaves almost like a liquid. At the end, after polishing, the thickest spot was equal to the initial thickness of the sheet, namely 0.40 mm.

What can we learn from this for manufacturing replicas? Copying the wall thickness at every point is impossible and cannot be our goal. But we can derive key measurements from the historical originals for both the thickness of the sheet metal and for the resulting wall thickness. On this basis, we can use historical manufacturing techniques in a way that can reproduce those key thicknesses in the replicas.

Three typical historical trombones may illustrate this. The bell of the trombone by Johann Christoph Penzel, ca 1860 (Fig. 21), was made out of a thin sheet. The thickest measurement here is 0.31 mm. The thinnest spot on the bell is 0.17 mm, below the garland. The bell is also thin at the bell bow, 0.30 mm maximum. These parts might therefore be made from a sheet of ca 0.30 mm. In contrast, the outer slide is made of thicker material, its thickest measurement being 0.38 mm.



Figs. 17–20 Wall thicknesses of the same four bells after opening (top left), after being hammered three times (top right), after being centred four times (bottom left) and after being spun on the lathe, filed and polished (bottom right).

All the bells that we measured from the Heckel company are extremely thin – such as the ca 1903 tenor-bass trombone by Friedrich Alwin Heckel (Fig. 22). The thickest spot on this bell is 0.26 mm, so the original sheet might have been thinner than 0.3 mm. At the bell, the brass has been hammered down to 0.20 mm. According to all our measurements, this 0.20 mm is typical for the bells of German trombones. As seen above, they might have been manufactured by the specialised bell-maker Körner (see Fig. 9, in contrast to the “Bariton-Posaunen” in this catalogue, the bell of the trombone in Fig. 22 measures only 23 cm in diameter). In this Heckel trombone, the outer slide is made of thin material while the inner slide is thicker, being made of ca 0.45 mm brass. In Rainer Egger’s interpretation of these facts, the typical thin bell of German trombones had to be acoustically balanced by thicker material in the slide. In the examples shown, the Penzel (Fig. 21) has a heavy outer slide (which is uncomfortable for the player) while the Heckel has a heavy inner slide with the same acoustical effect.

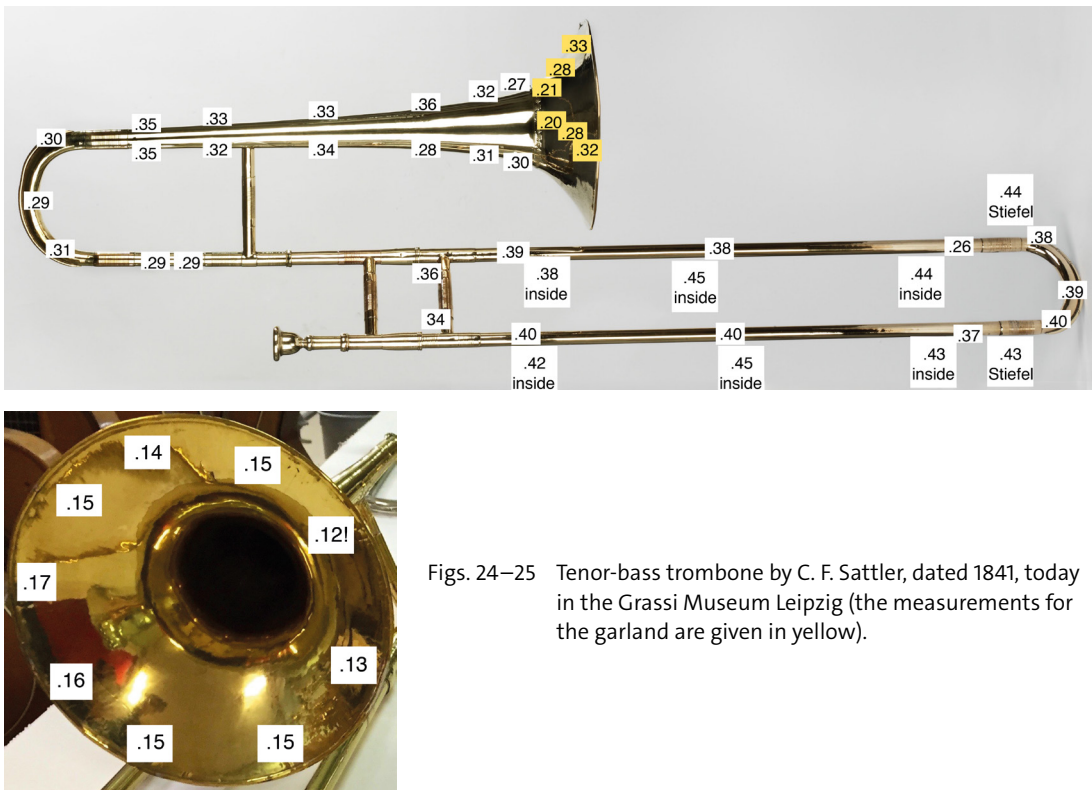
The bell of the Kruspe (Fig. 23) seems to have been made out of a sheet ca 0.3 mm in thickness; 0.30 mm is the thickest spot. It has been hammered down to ca 0.20 mm at the bell. The two tubes of the inner slide differ in size. As we can never know which parts of a slide are original and which ones might have been replaced, we can offer no interpretation of its weight balance.



Figs. 21–23 Three typical trombones by J. C. Penzel (left, private collection Sebastian Krause), F. A. Heckel (middle, private collection Jürgen Kamjunke) and Ed. Kruspe (right, private collection Rainer Egger); in green: inner slide measurements (stock = stockings), in blue: garland, in orange: bell below the garland.

The above-mentioned tenor-bass trombone by Christian Friedrich Sattler, dated 1841 and part of a set of three trombones, is an interesting instrument in many aspects (Fig. 24). The thickest measurement for the bell is 0.36 mm, meaning that it was made from a sheet of ca 0.35 mm. But at its end, underneath the garland, this bell is extremely thin. The nine measurements around the bell range from 0.17 to 0.12 mm (Fig. 25). This last measurement is the thinnest point that we have ever found on a brass instrument and is the same thickness as a single sheet of paper.

In our opinion, this special bell was made when Sattler took the usual pattern for his tenor trombone, but worked it until it was bigger in order to arrive at what we today call a tenor-bass trombone, or simply a bass trombone in B $\flat$. The material had to become thinner to attain the intended bigger bell. This instrument is a very early example of a trombone made for playing bass parts, but with the length of the tenor B $\flat$ trombone. It was the same Sattler who in 1839 presented an F-attachment for such instruments. No such valve is known to have survived, and he did not make use of it in this special case, which was intended for use in church.



Figs. 24–25 Tenor-bass trombone by C. F. Sattler, dated 1841, today in the Grassi Museum Leipzig (the measurements for the garland are given in yellow).

In conclusion, we can decide the thickness of the metal sheet for manufacturing a replica based on such analyses. In the case of the German trombones, this leads us to make bells out of brass sheets substantially thinner than the usual 0.4 mm; they have to be mostly 0.35 mm, for Heckel replicas even 0.30 mm.

Just as musicians need to be informed about historical practices when they interpret music of earlier periods, so does an instrument maker of historical brass instruments need to be informed about the materials and manufacturing techniques of the period in question. This begins with his choice of brass sheets, their alloy and thickness, as discussed in the present paper. He must then proceed to study the geometries and technical features of selected historical instruments and conclude with playing tests in order to achieve a better understanding of how each parameter influences the manufacturing process. Only then will fine instruments find their way into the hands of fine artists.

Appendix

List of the trombones chosen for the project

No.	Project inventory number (certain figures omitted)
Maker	As given on the instrument
p.c.	Private collection
CH.BE.km	Klingendes Museum Bern, formerly the Karl Burri collection
CH.BE.hkb	Bern Academy of the Arts HKB
CH.B.hm	Musikmuseum Basel
DE.LE.u	Grassimuseum Leipzig

No.	Trombone	Maker	Date	Today at
1	Tenor	Ed. Kruspe, Erfurt	early 20 th c.	p.c. Egger
11	Alto	E. L. Paulus, Berlin	1866–1899	CH.BE.km 83
12	Tenor	Oskar Ullmann, Leipzig	1906–1943	CH.BE.km 87
13	Tenor	Schuster & Cie, Markneukirchen	dated 1911	CH.BE.km 307
15	Tenor	Schediwy, Ludwigsburg	1901–1944	CH.BE.km 84
16	Tenor-bass	Max Reiner, Thun	first half 20 th c.	CH.BE.km 85
17	Tenor	Louis Dölling jr., Markneukirchen	1917–1950	CH.BE.km 1123
18	Tenor-bass	Otto Hofmann, Bern	1914–1955	CH.BE.km 86
21	Tenor	J. Riedl, Bremen	unknown	CH.BE.hkb 21431
22	Tenor	Ed. Kruspe, Erfurt	first half 20 th c.	CH.BE.hkb 21432
23	Tenor-bass	R. Schopper, Leipzig	1913–1924	CH.BE.hkb 21440
31	Tenor	Michael Saurle, München	dated 1834	CH.B.hm 1980.2139
32	Bass	C. W. Moritz, Berlin	dated 1841	CH.B.hm 1980.2340
33	Alto	C. Voigt, Neukirchen	2 nd quarter 19 th c.	CH.B.hm 1980.2023
35	Tenor	J. C. Penzel, Leipzig	3 rd quarter 19 th c.	CH.B.hm 1980.2124
36	Tenor	A. F. Kochendörfer, Stuttgart	later than 1867	CH.B.hm 1980.2700
37	Tenor	Klemm [French instrument?]	around 1900	CH.B.hm 1980.2106
38	Tenor	O. Pollter & Co, Leipzig	ca 1887–1909	CH.B.hm 1980.2527
39	Bass	Pollter & Co, Leipzig	ca 1887–1909	CH.B.hm 1944.2743
40	Tenor	Ed. Kruspe, Erfurt	early 20 th c.	CH.B.hm 2009.726
41	Alto	Kruspe, Erfurt	early 20 th c.	CH.B.hm 2009.725
42	Tenor	Norbert Wahlich, Zürich	early 20 th c.	CH.B.hm 2009.724
43	Tenor	F. A. Heckel, Dresden	early 20 th c.	CH.B.hm 2009.723
44	Alto	F. A. Heckel, Dresden	early 20 th c.	CH.B.hm 2009.722
45	Tenor	Otto Hofmann, Bern	1927–1955	CH.B.hm 1980.2587
46	Alto	Georg Müller, Mannheim	mid-19 th c.	CH.B.hm 2004.299
47	Tenor	Hug / [Anonym German]	early 20 th c.	CH.B.hm 2011.684
50	Discant	J. G. Eschenbach, Neukirchen	dated 1796	DE.LE.u 1880

No.	Trombone	Maker	Date	Today at
51	Alto	C. F. Sattler, Leipzig	dated 1841	DE.LE.u 4137
52	Tenor	C. F. Sattler, Leipzig	dated 1841	DE.LE.u 4138
53	Tenor-bass	C. F. Sattler, Leipzig	dated 1841	DE.LE.u 4139
54	Tenor	Ed. Kruspe, Erfurt	1875–1900	DE.LE.u 4892
55	Tenor	J. C. Penzel, Leipzig	ca 1855	DE.LE.u 3303
56	Tenor	J. G. Eschenbach, Neukirchen	dated 1796	DE.LE.u 1899
57	Tenor	Ernst Petzold, Leipzig	1890–1891	p.c. Brix
58	Tenor	Carl Kruspe, Leipzig	1900–1905	p.c. Brix
61	Alto	J. C. Penzel, Leipzig	ca 1850	p.c. Hett 0301-1
62	Tenor	Gustav Ullmann, Leipzig	1878–1884	p.c. Hett 1510-5
63	Tenor	J. C. Penzel, Leipzig	ca 1860	p.c. Hett 0301-2
64	Tenor	Fr. Schlott, Leipzig-Gohlis	end 19 th c.	p.c. Hett 1501-5
65	Tenor	O. Pollter & Co, Leipzig	after 1900	p.c. Kamjunke
66	Tenor-bass	O. Pollter & Co, Leipzig	after 1900	p.c. Kamjunke
67	Tenor	Gustav A. Wagner, Dresden	ca 1910	p.c. Kamjunke
68	Tenor-bass	Gustav A. Wagner, Dresden	ca 1910	p.c. Kamjunke
69	Tenor-bass	Oscar Ullmann, Leipzig	ca 1910	p.c. Hett
73	Tenor(-bass)	Ed. Kruspe, Erfurt	early 20 th c.	p.c. Majewski
77	Tenor	Ed. Kruspe, Erfurt	early 20 th c.	p.c. Majewski
78	Tenor	Ed. Kruspe, Erfurt	ca 1935	p.c. Majewski
81	Tenor	R. Schopper, Leipzig	ca 1895	p.c. Krause
83	Tenor(-bass)	F. A. Heckel, Dresden	after 1919	p.c. Krause
85	Tenor	J. C. Penzel, Leipzig	ca 1860	p.c. Krause
86	Alto	C. F. Sattler, Leipzig	first half 19 th c.	p.c. Krause
88	Tenor	Ernst Petzold, Leipzig	1890–1891	p.c. Krause
89	Tenor	C. F. Sattler, Leipzig	first half 19 th c.	p.c. Krause
90	Alto	Kruspe, Erfurt	ca 1950	p.c. Krause
91	Tenor	Firma Ed. Kruspe, Erfurt	ca 1905	p.c. Kamjunke
92	Tenor	F. A. Heckel, Dresden	ca 1880	p.c. Kamjunke
94	Tenor-bass	F. A. Heckel, Dresden	ca 1910	p.c. Kamjunke
95	Tenor-bass	F. A. Heckel, Dresden	dated 1903	p.c. Kamjunke
96	Tenor	W. Leonhardt, Erfurt	first half 20 th c.	p.c. Kamjunke
97	Tenor-bass	Robert Piering, Adorf	first half 20 th c.	p.c. Kamjunke
98	Tenor	R. Schopper, Leipzig	ca 1920	p.c. Kamjunke
99	Tenor	Oscar Ullmann, Leipzig	ca 1920	p.c. Kamjunke

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As a young instrument maker, **Rainer Egger** experienced first-hand the pioneering era of replicas of historical brass instruments in the workshop of his father, Adolf Egger. Since then, he has been passionate about the constant improvement of brass instruments, especially with regard to richness of sound and the musical functionality of reproductions of historical trumpets, trombones and horns. In order to satisfy the growing, increasingly demanding needs of performers, he is constantly experimenting with different work techniques, scales, materials and wall thicknesses.

Jean-Marie Welter

Copper and Copper-Alloy Sheets for Musical Brass Instruments, Made in the Kingdom of Saxony

The Kingdom of Saxony, more specifically its southern part, the Vogtland, used to be one of the biggest manufacturers of brass instruments in the world. As brass sheets are the most important basic material for manufacturing such instruments, their procurement was a major concern to the makers.¹ The aim of the present article is to provide an overview of the possibilities on offer to them in those days. Unfortunately, no commercial archives have survived that might allow us to get insights into the demand side. The little information found in contemporaneous publications about the musical instrument industry in the Vogtland only lets us locate some suppliers. Nevertheless, it appears worthwhile to give a broader view of the manufacturers of semi-finished copper products, both in the Kingdom of Saxony and in the other states in nineteenth-century Germany. We shall also describe certain major innovations that were introduced in the copper industry at the end of the eighteenth century and at the beginning of the nineteenth that proved profitable for brass instrument makers. To begin, we shall offer some facts about the Kingdom of Saxony and its musical brass-instrument industry in the Vogtland.

The political and economic background

The Kingdom of Saxony was home to the ruling family of the Wettiner (the name derives from the castle of Wettin near Halle in central Germany). Although some members of the family played an important political role in the Holy Roman Empire during the Middle Ages, the history of modern Saxony only really starts in the fifteenth century. This family, whose territories included the Margraviate of Meissen, was granted the Duchy and Electorate of Saxony. In 1485, the family divided up its possessions: the younger branch (the Albertiner) kept the Duchy/Electorate and its capital Dresden, whereas the elder branch (the Ernestiner) obtained the territories west of Meissen and Leipzig. During the ensuing centuries, the Albertiner succeeded in strengthening the influence of Saxony, even becoming the Kings of Poland in the eighteenth century under the reign of the Prince Electors Frederick August I, the famous August the Strong (1670–1733) and his son Frederick August II (1696–1763). Squeezed between Prussia and Austria, Saxony derived its importance not so much from military strength, but from its cultural aura and from economic assets such as its rich silver mines. Saxony converted to

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1 See Hachenberg 1990.

Lutheranism in the sixteenth century, which entailed a major upheaval that proved of crucial importance for the emergence of the musical instrument industry.

In 1806, after the conquest of Germany by the French armies, Napoleon elevated the Electorate of Saxony to a Kingdom, just as he did with Bavaria, Württemberg and Westphalia. But unlike the Kings of Bavaria and Württemberg, the Saxon King Frederick August I (1750–1827) remained an ally of Napoleon during the battle of Leipzig. The consequence was that Saxony had to cede its northern, highly agrarian regions to Prussia. Although this was painful, it had the advantage that during the following century conservative landowners had little opportunity to hinder the process of industrialisation in the Kingdom. In the Austro-Prussian War of 1866, Saxony was an Austrian ally. After their defeat at the Battle of Königgrätz, Saxony was controlled more and more by Prussia, and it was integrated in the German Empire in 1871. In November 1918, at the end of World War I (WWI), Frederick August III (1865–1932) abdicated, and the Kingdom became the ‘Free State’ of Saxony, which it still is today.

During the nineteenth century, Saxony joined the Ruhr region as one of the most industrialised parts of Germany.² The roots for this had already been laid by the old Electors, who had promoted the development of the mining industry in the Erzgebirge, a range of mountains rich in ores (mainly silver, lead and tin) along the border with Bohemia. They also encouraged the downstream production of porcelain and cobalt-based blue colours.³

The Electors’ economic policies were founded in mercantilism, however, and they exerted strong control over these proto-industrial activities. For example, the export of copper and copper-alloy scrap was carefully regimented, as was the import of semi-finished products, and they were also heavily taxed. In contrast, exporting finished goods was promoted. This explains the importance of trade fairs. The best known of these was that of Leipzig, which during the eighteenth century became the ‘marketplace of all Europe’. New, smaller manufacturing sectors also developed as a consequence of seasonal mining activity. When the miners were out of work, they started to make knitted wares and toys. Such developments were favoured by the fact that they took place mainly in the countryside and were thus beyond the control of the guild system. This system was abolished in Saxony as late as 1861, though the Kingdom’s economy had begun a process of liberalisation already at the beginning of the century under the influence of the French. Saxony was also one of the founding members of the German Customs Union in 1834. This helped Saxon industry to undergo a boom and opened up sectors such as heavy machinery and textiles that were heavily export-oriented.⁴ The monetary system in Germany was then unified in 1871 when the German Empire was created. The new currency was the mark, and all local currencies had to be converted; the thaler that had been used up to now was set at the equivalent of three marks.

The making of brass musical instruments in the Vogtland

Another manufacturing activity that began in Saxony in the mid-seventeenth century was musical instrument-making.⁵ Its origins were not related to mining, but to the fact that Saxony was a Protestant state. After the Thirty Years’ War, the Bohemian rulers in the surrounding regions enforced the Catholic Counter-Reformation. This also had an impact on Kraslice, a city already famous for its production of musical instruments. Many Protestant instrument makers sup-

2 See Karlsch/Schäfer 2006.

3 See Hermann 2016; Hermann 2015; Hammer 2004; Arnold et al. 1978.

4 See Schäfer/Töpel 2014.

5 See e.g. Weller 2004; Dullat 2010.

posedly refused to abandon their Protestant faith and preferred to go into exile across the border into the neighbouring Saxon region of the Vogtland. They settled in around 1650 in the small towns of Markneukirchen, Klingenthal and Adorf, and began making string instruments. These three towns formed what would later be known as the *Musikwinkel* (the ‘music corner’).

Just a century later, the first brass instruments were produced in Saxony. Isaak Eschenbach, who had learned his trade with Gottlieb Krone in Leipzig, is credited with having initiated this new business in around 1755. It rapidly gained in importance and in 1795 the brass instrument makers (the so-called *Waldhornmacher*, the French horn makers) incorporated a guild. The little information that we have suggests that their activities underwent considerable developments during the nineteenth century. In the Vogtland, the centre of brass instrument production was Markneukirchen (until 1858 known solely as Neukirchen). The expansion of the musical instrument business is reflected in the rise in the local population. During the years following the Napoleonic period, some 1,600 people lived in Markneukirchen.⁶ The population thereafter increased continuously, numbering 9,500 inhabitants on the eve of WWI.⁷ The yearly turnover of musical instruments fabricated in Markneukirchen was worth around 250,000 thalers in the years 1872/1873. The procurement of the raw materials – metals and wood – represented the largest proportion of this sum, being worth 140,000 thalers. Salaries accounted for 105,000 thalers.⁸ The importance of musical instrument production is illustrated not least by the 22,800 bells that were manufactured annually in Markneukirchen, 10% of which were directly exported. A further figure relates to the yearly consumption of metal sheets: in 1795 this was around one ton, whereas 63 tons of brass and 13 tons of nickel silver were needed in 1876. For assembling the instruments by brazing, 700 cords of good-quality wood were needed (approximately 2,300 m³).⁹ The brass instrument industry in the Vogtland was notable in that it relied first of all on highly specialised craftsmen working in their own workshops, with just one or two aids. The practice of specialisation went so far as to mean that some workshops only made parts of instruments – such as the bells, valves or mouthpieces. Some workshops also produced metallic parts (keys) for woodwind instruments. Only a few factory-based companies existed. Here, we have to mention Schuster & Co. in Markneukirchen, which started its activities in 1861. Half a century later, this company claimed to be the largest musical instrument manufactory in Germany. In contrast to craftsmen, factories had a much larger portfolio. They produced both string and wind instruments, and were commercially more independent. At the beginning of the 1870s, solely 105 workmen were active in the factories in Markneukirchen. In the shops, the workforce consisted of 144 master craftsmen working with 127 assistants and 45 apprentices.¹⁰ Furthermore, an unknown number of female workers was employed for polishing the brass instruments. The commercial activity of the shops was in the hands of merchants using a putting-out system. Thanks to their networks, they achieved a high export rate. They were also responsible for the procurement of the raw materials. One consequence of this system was that the income of the craftsmen remained very low, which led to emigration and a loss of know-how. The profits remained with the merchants, and some of their mansions have survived as a testament to their wealth. One of the best-known of these is the Paulus-Schlössel (‘small castle of Paulus’), which today houses the Museum of Musical Instruments in Markneukirchen.

6 Bein 1884, Tab. 1.

7 Wild 1960, p. 11.

8 Berthold/Fürstenau 1876, p. 30.

9 Ibid., pp. 28–30.

10 Ibid., p. 27.



Fig. 1 Paulus-Schlössel in Markneukirchen (© Musikinstrumenten-Museum Markneukirchen/Frank Fickelscherer-Faßl).

Who were the customers for these brass instruments? The most important ones were the military bands,¹¹ who were keen to source the highest quality instruments, both in terms of sound and design. At this time, the number of regiments was increasing, as was the number of players in a band. A further reason for high demand among military bands was the relatively short shelf life of their instruments, which were typically replaced every five years. Band leaders also argued for the need to improve the quality of their bands, and it is likely that a certain amount of corruption was involved. Church bands, like the brass bands of the Salvation Army or the *Posaunenchor* (literally ‘trombone choirs’) that were mostly affiliated to the Protestant Church, were also important customers. Further clients were the orchestras of opera houses and concert halls, along with street bands and itinerant bands – and, last but not least, the many conservatories and amateur performers who made music in their family circle or in band associations. An important number of instruments was exported, and the *Musikwinkel* became a major player for providing musical instruments to the rest of the world. It is said that in around 1900, some 50% of the worldwide production of musical instruments and parts originated in the Vogtland. As has already been mentioned above, ‘technology transfer’ also occurred through emigration, mainly to the Americas. The importance of business relations with the USA led to the opening of a consular agency in Markneukirchen in 1893, which lasted until 1916.

In around 1900, the price of brass musical instruments varied between a few marks for simple post horns and hunting horns to more than one hundred marks for high-quality helicons and bombardons. To satisfy the demands of the various categories of customer, instrument makers produced different quality brands. The best and most expensive were produced for military bands. Their quality relied on forging mechanical and supporting parts from higher gauge wire rather than casting them, on using a lot of nickel silver for reinforcements, tub-

11 See e.g. Nex 2019, p. 254.

ing and ornamentation, and on assembling parts by hard brazing. Instruments that were of high quality but much cheaper were also manufactured for soloists. In 1845, Georg & August Klemm sold a chromatic F horn with “the most recent mechanics” for 38 thalers and its case for 6 thalers (114 and 18 marks respectively). M. Schuster jun. asked 13 thalers for a chromatic trumpet and 24 thalers for a clarinet made of brass (39 and 72 marks respectively). Both manufacturers had their shops in Markneukirchen.¹² At the end of the nineteenth century, a long G or F trumpet of military quality would cost 60 marks, one of solo quality 35 marks.¹³ As another example, the factory Schuster & Co. offered four brands – *Artist*, *Extra*, *Solist* and *Courant* – with descending prices. In ca 1893, they asked for 45, 42, 36 and 33 marks respectively for a “Quart-Bass-Zug-Posaune in F” in these four categories. The price also depended to some extent on the materials used for making the instrument. If the same instruments were made with red brass or nickel silver instead of yellow brass, the prices increased to 57, 54 and 48 marks for the three higher categories. *Courant* brand trombones were produced only with yellow brass.¹⁴

New metallurgical technologies relevant to brass musical instruments

The years 1780–1840 were a period of path-breaking innovations in the copper industry. They did not so much concern the production of copper, but mainly sheet production, alloys and alloying practices, and surface enhancement technologies.¹⁵ New processes in mining, smelting and electrolytic refining emerged only at the end of the nineteenth century and greatly improved the purity of copper. In comparison to the copper production routes of the nineteenth century (predominantly based on sulphide ores), it was now possible to eliminate minor elements like lead, silver, arsenic, antimony, bismuth, iron, nickel, etc. almost completely. However, we should note that purer copper had already been available during the second half of the eighteenth century, when copper was shipped to Europe from the Lake Superior region in North America.

In England, large sheets of copper started to be rolled instead of hammered as early as 1760.¹⁶ Rolling mills were installed in France on the very eve of the 1789 Revolution. Rolling brass was a somewhat more demanding process and only came into use at the end of the Napoleonic era. In Saxony and the rest of Germany, rolling mills appeared in around 1800. Even if the homogeneity of sheet thickness was still not optimal, rolling sheets instead of hammering them allowed for much better control of their thickness. The main flat semi-finished products of the mills were rectangular plates and sheets. During the nineteenth century, rolling mills predominantly used waterpower in combination with fly wheels. Occasionally, steam engines were installed. The first rolling mills driven by electric motors were built during the first decade of the twentieth century. The continuous rolling of long strips and foils also started in around 1900 with the appearance of electrically actuated coilers.

In Silesia and Belgium, the years 1800–1810 saw the beginnings of the industrial production of metallic zinc in Europe.¹⁷ One consequence of this was a change in brass making. It was now possible to co-melt copper and zinc, instead of reducing zinc oxide-rich ores (calamine) with charcoal in a crucible in the presence of copper pieces or granules. The zinc vapour generated reacted with copper to form brass. By the middle of the nineteenth century, this so-called

12 SGA 1845, pp. 79f.

13 Kaden 1898.

14 Schuster & Co. 1893, p. 97.

15 Bischoff 1865; Neumann 1904.

16 Welter 2017.

17 Welter 2016; Garçon 1999.

calamine or cementation process had almost completely disappeared in Europe. Co-melting copper and zinc allowed for much greater flexibility and reproducibility in alloying practices. It was also cheaper. In 1818, the Saxon brass mill of Niederauerbach (see below) made a comparative profitability calculation. The costs for producing 100 cwt of brass ingots were 3,476 and 3,208 thalers for the calamine and zinc processes respectively. It is interesting to note that brass now began to become cheaper than copper: for 100 cwt of copper, the mill had to pay 3,650 thalers (including transportation).

At about the same time, metallurgists were learning to extract metallic nickel, an element that had been identified in around 1750 by Alex Fredrik Cronstedt (1722–1765).¹⁸ This led to the production of a new brass alloy – nickel silver. Alloying brass with nickel increases the mechanical strength of the material. It also shifts the colour from yellow to greyish white. This evolution started during the eighteenth century with the import of *paktong* from China ('white copper' in Chinese, but also called *pakfong* in Europe). It was a casting alloy; for production reasons, the alloy had high amounts of zinc and nickel and was thus too brittle for wroughting. By reducing the zinc content to 25% and the nickel content to 20% in 1823, the Saxon chemist Ernst August Gleitner (1783–1852) was able to develop a more ductile alloy that could be hammered and rolled. He marketed it as *Argentan*. Gleitner extracted the nickel from the slag that was a by-product of smelting cobalt-containing ores in the Erzgebirge. To produce sheets, he acquired parts of an old iron hammer located in Aue, the Auerhammer.¹⁹ His business flourished. In 1852, Gleitner's son-in-law Franz Adolph Lange (1815–1898) became the head of the company and continued its expansion. Nickel silver became a popular alloy known under a large number of names all over the world. Within less than 15 years, musical instruments in the Vogtland were being made with *Argentan*. The metallurgical trend was to still reduce the content of nickel in order to increase ductility without losing too much mechanical resistance and while maintaining the silver-like colour. Many companies started producing this alloy. Their aim was mainly to serve the market for tableware and cutlery. Another German company that we should mention here was that of the Henninger brothers, which they established in Berlin in 1824 after having developed a nickel silver alloy similar to that of Gleitner. They called it *Neusilber* (i.e. 'new silver'), a name that is still used in Germany to designate nickel silver.

The prices of these metals accurately reflect the evolution of the mining and processing methods for the ores, both in terms of availability and productivity. Table 1 gives an overview of the prices asked in Germany for copper, zinc and nickel during the second half of the nineteenth century. The price of zinc remained fairly constant, but the price of copper and nickel decreased until the 1880s and then stabilised until WWI.

The discovery in 1800 of the copper-zinc battery as a source of electrical current by Alessandro Volta (1745–1827) led five years later to the invention of gold electroplating by Luigi Valentino Brugnatelli (1761–1818).²⁰ This opened up new possibilities for colouring and preserving the surfaces of objects made, for example, of copper, brass and nickel silver. The industrial breakthrough came in 1840, when the cousins George Richards (1801–1865) and Henry Elkington (1810–1852) developed cyanide solutions for silver and gold electroplating. At the same time, recipes appeared for electroplating objects with copper and nickel. Electroplating became even more accessible in 1872 with the development of the direct current dynamo by Zénobe Gramme (1826–1901). The old gilding techniques, like fragile leaf gilding or fire gilding with

18 Auer et al. 2001; Grant 2015.

19 See Hermann 2015; and Auerhammer 1973.

20 Jelinek/Lausmann 2014.

	Copper			Zinc		Nickel
	Mansfeld	Engl. & USA brands Berlin	Chilean bars London	good quality Silesia	ordinary brand London	99%
1846–1850	172					
1851–1855	209			39		
1856–1860		234		49	44	
1861–1865		202		40	39	
1866–1870		164		43	41	
1871–1875		181		48	46	2235
1876–1880		148	131	41	39	1138
1881–1885		132	114	33	29	1075
1886–1890		119	107	40	36	763
1891–1895		111	88		37	769

Table 1 Evolution of the prices asked in Germany for various brands of copper, zinc and nickel during the years 1846 to 1895, in marks/100 kg, compiled from Rössing 1901, p. 159.

the noxious mercury-gold amalgam, were increasingly abandoned. Nevertheless, it took many years to find the right electrolytes for plating with more complex metals. Thus it was not until 1924 that George J. Sargent (1885–1965) found ways of depositing chromium. In around 1930, Max Schlötter (1878–1946) developed galvanic baths for brilliant coatings of tin, nickel and silver. Although none of the basic electroplating techniques was invented in Saxony, it was a Saxon chemist, Georg Ernst Langbein (1849–1909), who played an important role in the diffusion of the new technology and established a factory in Leipzig in 1881. He was one of the first entrepreneurs – besides Wilhelm Pfanhauser (1843–1923) in Vienna, with whom he later collaborated – to offer electroplating workshops a whole package of chemicals, equipment and know-how.

Saxon manufacturers of copper, brass and nickel silver semi-finished products

The hammering of copper and brass sheets and the drawing of wire had already started in Saxony during the sixteenth century. Two such plants deserve a mention here – Grünthal and Niederauerbach, which formed the backbone of metallurgical copper activities in Saxony until the beginning of the twentieth century. It was extremely advantageous for these two plants that the Prince Electors awarded them a monopoly for their business when they set out on their activities.

Grünthal's origins lay in a technology – the liquation process – that had been developed during the fifteenth century with the aim of extracting silver from silver-bearing copper.²¹ This technology was rapidly taken up in Saxony. Liquation plants began treating black copper (i.e. unrefined copper) from the Erzgebirge, but worked more and more with copper from Bohemia and Upper Hungary. These plants had short lifetimes. The real breakthrough came about in 1537 when Hans Leonhardt, a master miner ('Bergmeister') from Annaberg, set up a new liquation plant in Grünthal next to Olbernhau.²² This plant was ideally located in the Erzgebirge, next to the Bohemian border in an area rich in wood and waterpower from the river Flöha.

21 Suhling 1976.

22 Kasper 1993; Morgenstern 2010.

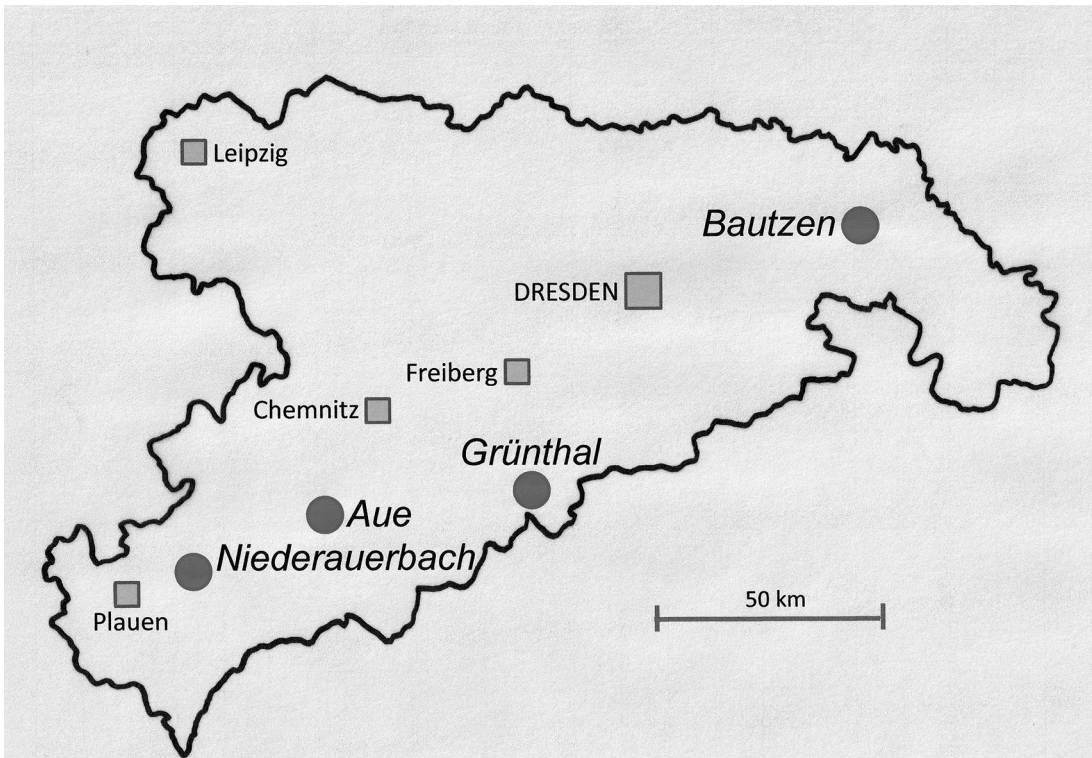


Fig. 2 Saxon manufacturers of copper, brass & nickel silver semi-finished products.

This plant worked well during the following three decades, but it was overshadowed by ownership conflicts between Leonhardt, his partners and successors and even the Prince Elector. In 1567, the plant was acquired by the Saxon state. It was expanded during the seventeenth century. A shop for refining the de-silvered copper was installed, as well as a hammer mill for the production of copper sheets for boiler makers and roofers. Decrees gave the plant a monopoly for liquating copper and, to a large extent, for producing copper sheets. It accordingly enjoyed prosperity over the course of the years. Serious problems appeared at the beginning of the nineteenth century, however. The liquation of copper started to be wound down in the years 1846/1847 and was completely given up in 1853. As the final operation of the liquation process consisted of refining the de-silvered copper to make it forgeable (*Garkupfer*), refining impure copper was now subjected to intense development. Sheet rolling was introduced with a considerable delay when compared to competitors: the first rolling mill was only commissioned in 1850, a second one in 1858. During the ensuing years, two further rolling mills were installed. The business flourished again and Grünthal produced some 5% of the copper sheets made in the German Empire.

Of course, new competitors appeared, also in Saxony near Grünthal. First there was a plant owned by the Tietzen/Reinhardt family in Bautzen.²³ At the end of the eighteenth century, Christian Gotthelf Tietzen (1747–1816) purchased a small local craft shop where a few workers produced copper sheets with a hydraulic hammer driven by the waters of the river Spree. Such shops existed in various cities including Bautzen. At Tietzen's death, his two sons continued the plant until 1837. In that year, Tietzen's son-in-law (in old German: 'Eidam') Johann Georg Reinhardt (1788–1841), who had already entered the business in 1820, became the sole owner and renamed the company "C. G. Tietzens Eidam". A first rolling mill was installed short-

23 Marquardt 2015.

ly thereafter, and in 1845 a second was commissioned. Reinhardt and his descendants rapidly turned the shop into a large, globally active factory producing copper sheets and wires. It saw its glory years during the second half of the nineteenth century and the beginning of the twentieth. One success of Tietzens Eidam was to break the monopoly of Grünthal for the production of copper roofing sheets. Nevertheless, after WWI the company slid into insolvency and was closed in 1928. The buildings of the plant were recently transformed into condominiums.

In 1870, the Saxon parliament decided that the state should disengage from commercial enterprises. Consequently, after 300 years of state ownership, the Grünthal plant was offered up at auction in 1873. It was bought by Franz Adolph Lange, the owner of the Auerhammer. Lange was joined by his son in the business in 1885, and together they expanded it despite enduring difficult economic conditions and harsh competition. Grünthal was operated as a copper plant in parallel with the Auerhammer, where nickel silver, brass and bronze semi-finished products were manufactured. The situation deteriorated considerably during the 1920s. In 1931, the two companies were merged. Grünthal continued production until the end of WWII. Most of its equipment was then transferred to the Soviet Union. During the GDR era, steel strips were rolled on the remaining mills, though the Auerhammer continued producing copper products and also other metallurgical specialities for the electronic industry. Shortly after German reunification, both plants were closed. Grünthal became a museum that aims to preserve the old liquation and hammering technologies. At the Auerhammer, some minor activity was restarted more recently for rolling predominantly nickel-based alloys.

In Niederauerbach, brass production using the calamine process began during the years 1593–1601. It is now a part of Rodewisch, a town located on the river Göltzsch, some 30 km north of Markneukirchen.²⁴ The new plant was established on the premises of an iron hammer that had existed since the Middle Ages. In 1603, the Prince Elector Christian II (1583–1611) granted the mill the exclusive prerogative for producing brass in his territory. Import and transit taxes were only levied as of 1677, however, and this state of affairs continued until 1802. The first rolling mill was installed in 1812/1813, though it did not meet expectations and so a new, more powerful mill was commissioned in 1816. It took another 18 years before sheet hammering was abandoned. A further change involved replacing the discontinuous coarse wire drawing using a tong by continuous coiling on a slowly rotating drum. Also in 1816, brass began to be produced using metallic zinc instead of calamine. Notwithstanding those innovations, the production tools of the plant had fallen behind those of its competitors. Further handicaps were that the plant had no access to the railroad network that was developed in the mid-century and that the financial resources of the owning family were limited. Turnover thus diminished steadily, leading to its stepwise transformation into a stock company after 1860. This did not stop its decline, however, and in 1886 the company was wound up. Two years later, what remained of it was acquired by the Wellner family, who since 1854 had owned part of the Auerhammer for producing nickel silver for tableware manufacturing. The Wellners could not stop the decline of the brass mill, and the plant was finally closed in 1926 and the factory dismantled. Today, a supermarket exists on the site. All that remains of the factory are the base of a chimney and a memorial plaque showing the presentation of the 1603 decree granting the exclusive right to produce brass in Saxony.

24 Gericke 2008.



Fig. 3 Memorial plaque on the former site of the brass mill in Rodewisch (© J.-M. Welter).

Where did the Saxon brass musical instrument makers buy their semi-finished products?

In the previous chapter, we have shown that the Kingdom of Saxony had a functioning industry for manufacturing semi-finished products of copper and its alloys. They thus ought to have been the natural suppliers for the Vogtland brass instrument industry. As long as the mercantilist system was in effect, the instrument makers and the merchants bought brass sheets in Niederauerbach and copper sheets in Grünthal. But when the customs frontiers between Saxony and the other German states were abolished during the 1830s, manufacturers located outside Saxony became the major suppliers for semi-finished products of copper and copper alloys.²⁵ Niederauerbach continued to provide only higher gauge brass wire. The Grünthal plant and the Auerhammer still supplied copper and high-quality nickel silver sheets respectively. But the most important material for making brass instruments – brass sheets – was no longer purchased in Saxony. Thin, high-quality brass strips were acquired in southern Germany, predominantly in Augsburg, but also in Ulm. Thick sheets came from Westphalia and Berlin (which was also a source of low-quality nickel silver, possibly from the Henninger works). Goslar supplied the lead needed for bending tubes. It is unclear why the large historical copper and brass districts of Aachen/Stolberg and Nuremberg were apparently not considered as procurement centres.²⁶

Nor do we know why Niederauerbach was no longer the supplier for brass sheets. It is possible that the plant did not produce the necessary quality, which was a situation that the Vogtland brass instrument makers had faced at the end of the previous century.²⁷ They had found that the brass sheets produced in the mill in nearby Bohemian Kraslice could be strained to a higher level without tearing than the sheets made in Niederauerbach. Brass production had been established in Kraslice in 1675/1676 by Count Johann Hartwig Nostitz-Rieneck (1610–1683) in order to take advantage of the copper mined near the town. Because Saxon import taxes were high, the instrument makers of Markneukirchen asked for a tax exemption. The government

²⁵ Bein 1884.

²⁶ Schleicher 1974; Hachenberg 2002.

²⁷ Hachenberg 1998.

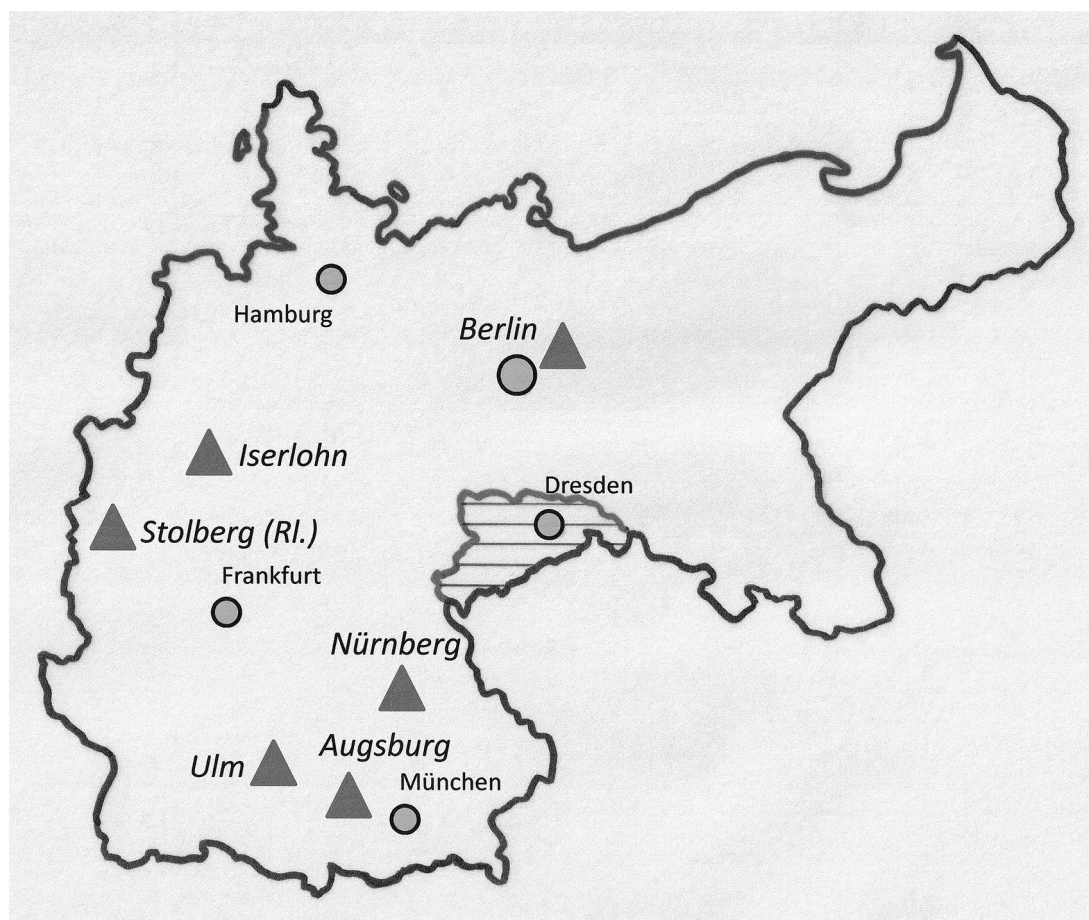


Fig. 4 Copper & copper alloy sheet manufacturers in the German Empire outside Saxony.

thereupon initiated an investigation. It turned out that the brass from Niederauerbach had a lower forming capacity due to a higher content of deleterious lead and sulphur. The higher impurity level resulted from the use of lower quality raw materials, which allowed for cost savings. Coal was substituted for charcoal to a large extent: it was half as expensive but had a higher sulphur content. Much of the calamine needed for the production of brass in Kraslice and Niederauerbach came from the territory around the Altenberg (Vieille Montagne) in the old duchy of Limbourg.²⁸ Whereas Kraslice also used calamine from the Tyrol, Niederauerbach imported large amounts of calamine from (southern) Poland.²⁹ It was cheaper but was much richer in lead. After years of negotiation between 1787 and 1795, the government agreed that the instrument makers could import one ton of brass sheets per year. Unfortunately, shortly after the agreement had been reached, the mill in Kraslice discontinued its production of high-quality brass sheets.

High-quality brass sheets were purchased by the Vogtland brass instrument makers during the nineteenth century from two companies established in Southern Germany. They can be easily identified because they were the sole ones in Augsburg and Ulm: Beck & Company and Wieland & Company respectively. We are less fortunate when it comes to identifying the individual brass mills of Westphalia and Berlin, where many were active.

²⁸ Ladeuze et al. 1991.

²⁹ Jars 1781, p. 101.

A short history of the two brass mills in southern Germany

The founders of these two companies were craftsmen whose initial trade was casting guns, bells and pipes. Shortly after metallic zinc became available and rolling mills were constructed, they saw the advantage of using these new technologies for producing brass semi-finished products. As we shall see, our two pioneers acquired rolling mills two to three decades before their Saxon competitors adopted the new technology.

The founder of the Wieland Company in Ulm (or the Wieland-Werke as it is known nowadays) was Philipp Jakob Wieland (1793–1873).³⁰ He was the son of a local inn and brewery owner, but his uncle, Thomas Frauenlob (1756–1822), was a metal caster. In 1805, he had acquired the city bell and gun foundry located in downtown Ulm. Wieland started his apprenticeship there as a foundry-man at the age of 14. After his three years of military service, Wieland left in 1816 to travel across Europe to improve his knowledge of casting copper and its alloys. He came back to Ulm in 1820 and took over the foundry from his uncle. Wieland soon saw the necessity of diversifying production with new products such as brass wires and sheets. The advantage of these products was that they were not subjected to guild regulations; their drawback was that Wieland needed waterpower to operate the drawing drums and rolling mills. In late 1823, he tried to lease an old water wheel on the river Kleine Blau outside the city wall. In 1827, after many clashes with the town council because of his machinery's water consumption and the possible impact on the city's water supply, he was given permission to install a rolling mill. Two years later, Wieland bought a sawmill where the Blau flows into the Danube and in 1831 transferred his brass mill to the new location. Throughout his life, Wieland kept the foundry and the rolling mill as two separate legal units. As for the brass alloys produced in the early 1830s, we know for sure of CuZn32 (grade 1), CuZn38 (grade 2, also for rods and wire) and CuZn31 (for rolled-in thin strips). During the subsequent years, Wieland's portfolio increased. New alloys had a higher zinc content of up to 43%, but also small amounts of tin of around 1%. He also produced tombak CuZn11Sn0.5. Trials to add lead in the 1% range were unsuccessful. Wieland's business flourished, and he continued looking for water wheels in the immediate vicinity of Ulm. In 1859, he acquired the Spital mill that was located just outside the city wall. This gave him enough space to transfer his foundry from downtown Ulm to the new premises in 1861. The success of his activities was not so much due to his brass semi-finished products, but rather to the fact that he used them to manufacture many metal articles that were needed in everyday life. Nevertheless, the waterpower available in and around Ulm was no longer sufficient. In 1864, Wieland bought a mill in Vöhringen that used the water of the river Iller as well as a lot 16 ha in size. Vöhringen is located some 17 km south of Ulm. This also had political consequences, because it meant that Wieland moved from the Kingdom of Württemberg to the Kingdom of Bavaria. He soon transferred his rolling activities to Vöhringen too, though it was not until 1891 that the slab foundry followed. Over the years, new buildings were constructed and new equipment was installed. In 1901, the company commissioned the first rolling mills for continuously rolling strips as well as installing the first extrusion press for profiles and tubes. These efforts made the Vöhringen factory one of the largest brass mills worldwide. To this day, its headquarters remain in Ulm.

Wieland supervised the technical and commercial activities of his company for over 50 years. He died in 1873, which was the first year of the long economic depression that hit Europe and the USA and whose impact was felt throughout the final decades of the nineteenth cen-

30 The following paragraphs are based on archival documents kindly provided by the Wieland Werke.

tury. Wieland's second wife, Mathilda, managed the company during that difficult period. In 1887, her eldest son Philipp (1863–1949) joined the company, and she retired in 1892. Philipp was now in charge of technical matters, while his younger brother Max was made responsible for the commercial and financial aspects of the company. Philipp was also active in politics, and from 1920 to 1928 was a left-liberal member of the Reichstag. His brother was more involved in the activities of the association of German brass mills (see below). In 1919, the company became a stock corporation. Over the next hundred years, the Wieland Werke expanded steadily through technical innovations, internal growth and world-wide acquisitions. Its technical innovations included its pioneering work to introduce the continuous casting of brass slabs and billets in 1936. Today, Wieland is one of the largest manufacturers of semi-finished copper and copper-alloy products in the world – if not the largest. The rolling activity that was the company's starting point still dominates the business. Wieland is thus the sole survivor of all the brass mills presented in this overview that were active in the nineteenth century as providers of copper-based products to the Vogtland musical brass instrument makers.

Unlike the success story of the Wieland Werke, Beck & Company took a different direction and no longer existed by the end of the nineteenth century. The differences in their fate might have been because the members of the Wieland family considered themselves primarily as industrialists, while the Beck family were predominantly merchants and investors who also became heavily involved in agricultural activities, as we shall see below.

The Augsburg brass mill was established by Ignaz Reiser (also Reisser, Reißer, 1774–1837) on the river Lech outside the Jakober town gate in 1817, thus not long after the fall of the Napoleonic Empire. He was a gun founder and had moved to Augsburg from Munich in 1806, following the transfer there of the royal field ordnance foundry. Augsburg had lost its status as an imperial free city in 1805 and was incorporated into the Kingdom of Bavaria. Reiser was the technical director of the foundry and introduced the casting of guns in sand moulds.³¹ He is credited for having cast some 295 guns between 1801 and 1830. It seems that he then left the foundry, which was undergoing a major change involving plans to start casting heavy ordnance. Reiser was a versatile metallurgical man. Besides managing the brass mill and the bronze gun foundry, he also developed and produced flax crushers using cast iron in 1819.

By 1818, this brass mill had already gained a reputation for its rolled sheets made of brass, copper, semilor (a copper alloy with roughly 10% zinc and some tin), white copper and for roofing spiauter (zinc that has to be rolled at temperatures of circa 120°C). The brass sheets were known for their exceptional width. Interestingly, the plant in its early years was designated a “stretching work” (*Streckwerk*). Installing such a rolling mill required major financial resources. By 1827 the plant was already equipped with four rolling mills and a wire-drawing line.³² Reiser's partner was Ignaz Ducrue (†1825), who became the joint owner of the mill together with the tobacco manufacturer Carl Schmid. Ducrue was a member of a wealthy Catholic family of merchants, bankers and landowners. His ancestors had arrived in Augsburg in around 1700 from the French side of the Duchy of Savoy and soon became very rich. They acquired a palace in Augsburg in 1750; Anton Graff (1736–1813) painted Bernard François Ducrue (1730–1796) in 1761, and Ducrue's wife Marie Anne Josèphe (*1739) in 1766, posing in expensive dresses.

The mill soon faced the problem of how to procure sufficient zinc. As the north-eastern Alps have many zinc ore deposits, Ducrue and Schmid secured a mine near Mittenwald in the Bavarian district of Werdenfels. In 1824 they also obtained a ten-year monopoly on operating

31 Anonymous 1826, col. 557.

32 Rudhart 1827, pp. 140f.

a zinc production plant in Hammersbach, east of Garmisch.³³ But the Bavarian mine was rapidly exhausted, and calamine had to be imported from the nearby Tyrol. In circa 1835, their plant was producing some 60 to 75 tons of metallic zinc.³⁴ Ducrue died in 1825; the following year, Joseph Anton Beck (1765–1833) stepped in as a new partner, becoming the sole owner of the mill in 1832 after Schmid left the company. Besides producing semi-finished products, the plant also manufactured iron wood screws according to the recently invented French method of pressing the blanks of the screwheads. Beck and Schmid had already obtained a ten-year privilege for producing such screws back in 1826. They nevertheless abandoned production because they needed the space to expand their core business.

The Beck family were also Catholic immigrants, though they came from the Italian side of the Savoy. Their origins lay in the valley of Gressoney at the foot of the Monte Rosa massif³⁵ and they came to Germany during the second half of the eighteenth century, earning their living as travelling traders. In 1785, the Beck brothers Johann Christoph (1759–1825) and Joseph Anton established a trading house in Augsburg together with the Castell family. This marked the beginning of the economic and social rise of the Becks. After the death of Joseph Anton Beck, his sons Joseph Anton Junior (1808–1882) and Carl (1812–1867) took over the company, which continued to bear the name of their father. The brothers also had other interests, especially Carl, so their mill continued to be managed by Ignaz Reiser, then after his death in 1837 by his son. Carl Beck diversified the family business by installing a machine factory outside Munich in 1841, and the most modern Bavarian paper mill of its time in 1843. Other acquisitions that Carl made in Munich included a brewery and a factory that made candles and soap. In terms of the family's future, their most important acquisitions were not these industrial assets, but the estates bought by the brothers early in the second half of the nineteenth century. In 1861, Joseph Anton acquired the estate of Kühbach, including a castle and a brewery. At the same time Carl acquired an estate in Au in the Hallertau, a region known for its outstanding hops. This was a logical step to cement the newly achieved social rank of the family. In 1840, the King of Bavaria ennobled the brothers as the hereditary Barons ("Freiherren") of Beck. It is interesting to note that this distinction was awarded not only for their entrepreneurial skills, but also for their charitable activities. In fact, their father (Joseph Anton Beck Senior) had already set up a health insurance fund for the workers of their brass mill in 1826. This was a novelty in Augsburg at the time (after several struggles with his workers, Wieland set up a similar fund in 1834). In 1842, the King of Sardinia conferred the title of Barons of Peccoz on the brothers, which is a French version of their original name. Since 1890, the family bears the title of Barons of Beck-Peccoz.

The Becks' brass mill developed very positively in the mid-nineteenth century.³⁶ Their reputation for high-quality products grew and was acknowledged by various gold and silver medals at industrial fairs.³⁷ The certificates that they were awarded provide us with some information about their products. We learn that their plant had immediately begun rolling brass plates and sheets to what at the time were extraordinary widths of 75 and 50 cm respectively. Wires were drawn to diameters as thin as human hairs. The high malleability of their brass products was always emphasised. These were made by selecting high-purity copper and zinc,

33 *RIB* 1824, col. 41.

34 Leuchs 1836, p. 712.

35 Beck-Peccoz 2012; Raab 2012.

36 See Wirth 1837, p. 162; Wirth 1846, p. 158; Anonymous 1834, paragraph "Messing- und Drahtfabrikate", pp. 407f.

37 Central-Industrie-Ausstellungs-Commission 1842, pp. 59f.

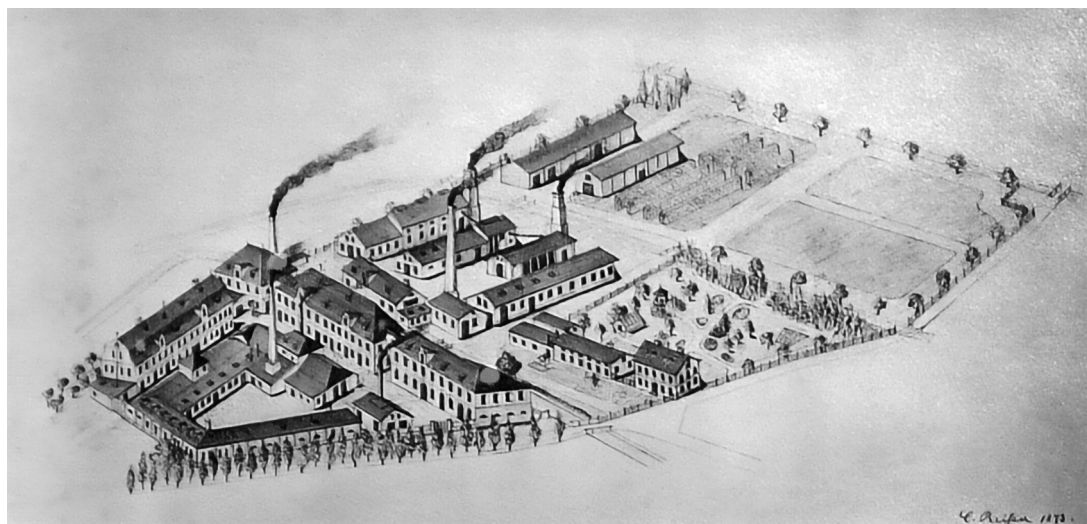


Fig. 5 Brass mill of Beck & Company, copperplate engraving by C. Reisen (1873) (© Freiherren von Beck-Peccoz).

which led to the virtual absence of lead ($< 0.2\%$).³⁸ Copper imports from as far away as Sweden are documented for the years after 1840. The company was thus able to compete successfully with English brass products, and was even able to export its goods to France, despite its high import duties. This could explain why the brass instrument makers of the Vogtland preferred using sheets from the Becks' brass mill.

Their situation began to deteriorate during the 1870s, however. After the death of Joseph Anton Beck (Junior) in 1882, his son Carl Maximilian Anton (1832–1901) inherited the brass mill and the estate of Kühbach. He could not prevent the further decline of the plant, and in 1893 decided to sell it to the Wieland brothers. Philipp and Max Wieland wanted to get the plant afloat again and maintain its name, though it soon became apparent that it was an impossible task. In 1894, the workforce was laid off and the plant was closed. Some workers and equipment were transferred to Vöhringen. But even during the last years of its existence, the quality of products made by the brass mill was still high. After it closed, some customers even complained that Wieland was unable to match it.

The cartelisation of the German brass industry

Apart from the brass mills mentioned here in connection with the Vogtland brass instrument business, there were naturally other mills producing brass plates, strips and wires. Indeed, the industrialisation of the German states and their increase in prosperity – at least until the Franco-Prussian war – led to a strong demand for such products. In 1848, there were already eighteen brass mills in Germany, with thirty-three mills in operation just nine years later. This number remained almost constant until WWI. Developments such as the introduction of steam engines, then of electric motors in around 1900, provided for a considerable increase in productivity at the mills. The consequence was overproduction and a collapse in prices. The above-mentioned, long depression in the late nineteenth century was a disaster for the brass industry. Most brass mills were confident that eliminating price competition could ensure their survival, so they attempted to install price controls through forming associations and syndicates.³⁹

³⁸ Anonymous 1836, esp. p. 355.

³⁹ See Jutzi 1925.

It was not just quality considerations that limited the choice of suppliers for brass instrument makers (and other trades), but also the difficulties involved in negotiating prices. Beck & Company and Wieland & Company, the two firms which supplied the best thin brass sheets to the Vogtland brass instrument industry, are suspected of having been the first to coordinate their prices during the 1870s. Their price lists were indeed almost identical. At the end of that decade, the brass mills from the western Prussian provinces, Westphalia and the Rhineland, set up the first association for their industry. Further mills rapidly joined. In 1881, the Association of German Brass Mills (Verein Deutscher Messingwerke) was incorporated with 19 members. During the subsequent decades, the number of its members increased, though with some fluctuations. By 1898, the Saxon mills of Grünthal, Rodewisch and Auerhammer had joined the Association. One major problem, which also depended on the general economic situation, was that the members more or less scrupulously followed the pricing and selling conditions agreed. Much of the Association's work was therefore devoted to ensuring that members kept to their covenants. In this context, the leading figure was Gustav Selve (1842–1909), the head of Basse & Selve in Altena (Westphalia).⁴⁰ His efforts culminated in 1907 with the constitution of a syndicate with 42 members (the Verband deutscher Messingwerke). Its largest member was Wieland & Company in Ulm, followed by the Westfälische Kupfer- und Messingwerke in Lüdenscheid. It is interesting to note that the three next-largest companies were located in Berlin. The syndicate's agreements did not only cover sheets and wires, but also brass rods and sheet coils. This was a consequence of the development of the hot extrusion press by George Alexander Dick (1837–1903) at the very end of the nineteenth century, and the production of motorised coiler systems for the rolling mills. This syndicate only survived until 1911, but its activities continued both before and after WWI in the form of a renewed association of brass mills.

Agreements were also sought by the copper mills, which also often functioned as brass mills. In 1887, a gentlemen's agreement was made among copper manufacturers who aimed to fix a minimum price for copper sheets. This led to the official incorporation of a syndicate in 1904.⁴¹

Price lists published by the brass associations in 1881 and 1907 allow us to follow their pricing policies for sheets. The unit quantity was 100 kg, a convention that is still followed today in Germany. Then the reference price was set for black, that is oxidised, brass sheets with a thickness of one mm. Brass (*Messing*) was defined as a copper-zinc alloy with zinc at 37.5% and 37% of the overall weight in 1881 and 1907 respectively. This content ensured that the sheets were free of hard β -phase inclusions. Tombak was the trade name for brass with a higher copper content. The different brands were identified by their colour, which depends on the copper/zinc ratio. In 1881, the reference price for brass was 165 marks. At a metal price of roughly 100 marks, fabricating costs accounted for 65 marks. A premium had to be paid for a higher copper content, thinner gauges and cleaner surfaces. Let us take as an example a 0.4 mm thick sheet of yellow tombak (CuZn28) with both sides finely polished. The surcharges were 5, 25 and 60 marks respectively. The brass instrument makers thus had to pay 255 marks/100 kg. The price increased by a further 15 marks when middle-red tombak (CuZn16,5) was needed. Prices remained fairly stable until WWI. A slight increase in fabricating costs was compensated for by a minor decrease in metal prices. In 1907, the same semi-finished products of yellow and middle-red tombak (now CuZn15) cost 242 and 257 marks for 100 kg respectively.

40 Stremmel 2009.

41 See Landsberg 1930.

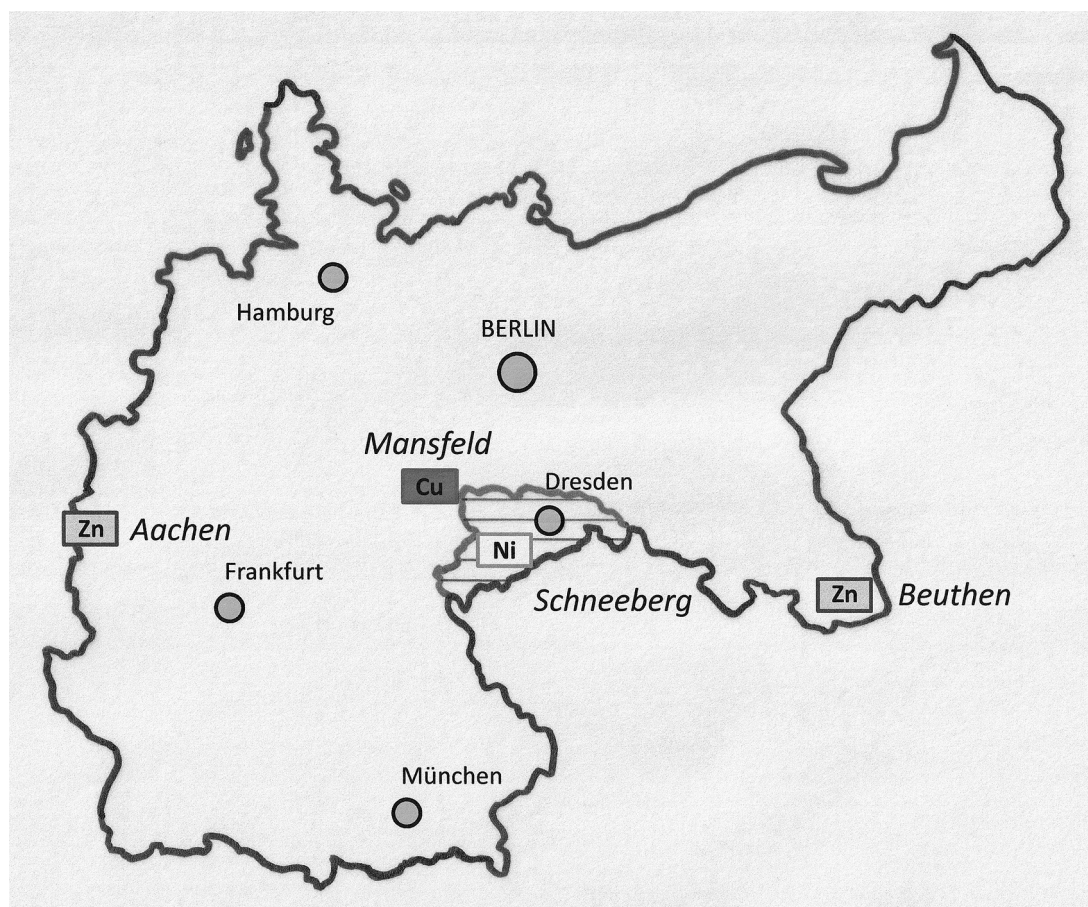


Fig. 6 German mining districts for copper, zinc and nickel ores.

Where did the copper, zinc and nickel come from?

Procuring raw materials, especially copper, posed a further problem to the brass mills. This concerned more the volume than the price. As we can see in Table 1, the prices for copper, zinc and nickel decreased during the second half of the nineteenth century and remained stable from the end of the century until WWI. One problem was import taxes, especially for copper, which had to be imported in large quantities. These taxes were a thorn in their flesh of the copper and brass mills.

Zinc was less of a problem. During the nineteenth century, Germany produced far more zinc than was needed to satisfy internal demand. In 1880, production and consumption were 99,600 t and 63,000 t respectively. By 1910, these figures had increased to 227,800 t and 184,500 t respectively. Germany remained the world's largest producer of metallic zinc until the last third of the nineteenth century, after which it was surpassed by the USA. One third of German zinc came from the ores mined in the Prussian provinces of the Rhineland and Westphalia, and two thirds from the deposits of Upper Silesia. The zinc ores of Upper Silesia are notable for being rich in cadmium, which could amount to as much as 1% of the zinc content. The high volatility of cadmium means that its concentration could reach 0.1% in metallic zinc obtained by the retort process. The presence of a few hundred ppm of cadmium in brass can be an indicator that Silesian zinc may have been used to produce the alloy. Cadmium has no longer been a major impurity in zinc brands since electrowinning began in the early twentieth century.

To some extent, Germany was also self-sufficient in nickel until the end of the nineteenth century because internal demand could be satisfied with the arsenic-rich nickel ores found predominantly in Saxony. However, demand for nickel increased considerably with the development of stainless steel and coinage, which led to large imports of Caledonian and Canadian nickel ores. From 1870 to 1889, the annual Prussian production of nickel was some 240 t, rising to 800 t in the subsequent decade.

For copper, the situation was completely different.⁴² Some red metal always had to be imported,⁴³ but the situation worsened dramatically at the end of the nineteenth century. At the beginning of that century, most demand was covered by the copper obtained from the shale ores in the Prussian mines of Mansfeld and, to lesser extent, of nearby Sangerhausen (though that source decreased in importance during the nineteenth century). By the end of the century, the requirements of on-going industrialisation meant that Mansfeld was able to provide no more than 10% of the copper needed. Productivity had nevertheless improved greatly throughout the nineteenth century, especially during the decades after privatisation in 1852. The second half of the century saw an increase in annual output from less than 2,000 t to roughly 20,000 t, and this figure remained constant until the 1920s. However, we have to compare these figures with the amount of copper required in Germany. In 1902, consumption was already at 109,000 t and by 1912 it had increased to 253,000 t.⁴⁴ From 1903 onwards, the German Empire was the largest European consumer of copper, followed by Great Britain and France. Worldwide, it was second only to the USA. The most important consumers were the electrical industries and the brass mills. In 1900, the mills needed some 30,000 t of copper per annum. By 1913, that figure had more than doubled to 62,000 t. The mills also produced or refined some copper.

To satisfy demand, Germany had already started importing copper ores during the 1880s – mostly pyritic ones from the southern Iberian Peninsula – which resulted in some 23,000 t of copper by 1912. An important by-product obtained during the extraction of copper was sulphuric acid. Furthermore, black copper with a copper content between 94% and 99% was imported from Great Britain. By the end of the nineteenth century, more and more was being imported from the USA to be refined in Germany. Fire refining was the prevalent technique. Although the Norddeutsche Affinerie in Hamburg was one of the first companies to use electrolytic refining as early as 1875 (mainly to draw off silver and gold), this process did not become very popular in Germany. In around 1910, the annual output using this method was only a few thousand tons. The third most important import was electrolytic copper from the USA, a country which had strongly invested in this new technology. In 1912, American copper represented almost 90% of German copper imports, with most of it used in electrical applications. Refined copper also came from Australia (some 5%) and from countries like Japan, Great Britain and others, though with less than 1% each. Last but not least, recycled copper was also used. However, as might be expected in a boom, the share of recycled copper was rather low. It is estimated that recycled copper covered only 15 to 20% of demand. Procuring copper in the right quantities and at ‘fair’ prices was thus a major preoccupation of the brass mills, with import taxes on copper a major problem. They protested vehemently against these taxes, as in 1879, when 25 brass mills (together with the copper mills) wrote a petition to the imperial government asking for the abolition of these duties.

42 Reinhardt 1913.

43 Roelevink 2016.

44 Franke 1920.

For the fabrication of brass (and copper) semi-finished products, the purity of fire-refined copper was adequate. The brass mills bought their copper mainly from German copper producers. They used also most of the imported Australian and Japanese copper. Furthermore, they increasingly preferred electrolytic copper. The brass mills thus relied on many copper sources for manufacturing sheets and wires. Consequently, it is a hopeless task to try and make definitive statements about the origins of the copper used to make musical brass instruments. Only two situations allow us to formulate educated guesses. Very pure brass should be an indicator that electrolytic copper was used, either of American or, to a much lesser extent, of German origin. A high nickel content of around 0.4% points to shale copper, as was mined and processed in Mansfeld.

Conclusion

The production of musical brass instruments represented an important metalworking activity in the kingdom of Saxony. Because of the specificities of the trade, instrument makers were very demanding in terms of quality and price. The innovations made by the copper industry during the nineteenth century – primarily in the field of semi-finished products – were thus very beneficial to them. The instrument makers' requirements meant that they purchased their most important raw materials – brass strips and sheets – outside Saxony in Germany, using the advantages of the German Custom Union.

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Luxembourg citizen **Jean-Marie Welter** (1944–2022) was 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. He was a consultant to European and international professional associations of the copper industry and President of the *Société française de métallurgie et de matériaux*/French Association for Metallurgy and Materials.

Alex Schölkopf

Romantic Bell Making

This paper explores the challenges and methodologies involved in recreating a tenor trombone bell from the Romantic era, focusing on the influence of material properties and craftsmanship techniques. The author emphasises a “gentle transformation” approach, advocating for careful shaping and multiple annealing processes to maintain the brass’s integrity and achieve the desired tonal qualities. By examining historical practices, such as the use of wooden hammers and specific alloy compositions, this study highlights the complexities of replicating instruments that are both visually and sonically faithful to their originals. Ultimately, this paper acknowledges that while exact replication is unattainable due to variations in material and craftsmanship, a respectful, informed approach can yield approximations that honour the spirit and sound of the original Romantic-era trombones.

Our initial situation is this: How can we reproduce a tenor trombone gold brass bell from the Romantic era today? What do we have to know, and why in the end it will only be an approximation? How much does the material we use influence the production possibilities?

At this point, it is important to know that sheet brass is reshaped when cold, and becomes harder in the process. If it gets too hard, it has to be made more ductile again. This is done by stress-relief annealing at approximately 600 degrees Celsius. To make a bell the right size for a trombone, the metal has to be annealed about thirty times between the different shaping steps. But learning to anneal brass perfectly is another story!

This article discusses my idea of gentle transformation in order to determine the wall vibrations in brass instruments. But why should I want to be gentle to the material? This is because I believe I can influence a mechanical process by means of an amiable act. In my opinion, it is necessary to be gentle to the material that I want to transform, because if I am compelling it into a new shape, it will be impossible to work against its own will. To be gentle is my first principle as an instrument maker. Otherwise, I will stress the material too much, which will result in micro-cracks. My second principle is to transform the metal over several small steps, thereby finding the right heat treatment. There are many other ideas about how to create a bell with ‘perfect’ wall vibrations such as we can find in some Romantic instruments. We can see in Rainer Egger’s article that we can measure how we influence and transform the material.¹ For this reason, I do not want to leave any stone unturned in gaining a direct influence over it.

This is the basic idea. However, the initial challenge is to get the material into a shape that nearly looks like a bell.² All the other ideas of how to transform the material and the process involved depend on your skills of craftsmanship, because every bell is a little different from

1 See Egger 2016.

2 See Fresh Wind 2019.



Fig. 1 The steps of bell-making from left to right: the sheet metal, after soldering, the symmetrical shape, the opened bell, after shaping on the mandrel, and the finished Egger Romantic tenor trombone bell (Foto: AS).

the next, just as the materials can differ slightly. The instrument maker needs experience to deal with this.

When reproducing the approximate form and sound of a tenor trombone gold brass bell from the Romantic era, first I have to be aware of the makers who made the original historical instrument. What tools did they have, and what materials? What were the homogeneity of the alloy, the shape and the size of the bell, and the other parameters? In our case here, we are dealing with a tenor trombone by Eduard Kruspe from circa 1910–1920. The instrument has a lovely warm sound, and just ‘works’. The bell has a diameter of 23 cm, and the wall thickness after polishing is around 0.3 to 0.15 mm. It is very thin, but sounds big. How could they achieve such thin bells?

In what follows here, we shall only discuss the different steps of shaping the bell. Figure 1 shows the transformation from the flat sheet to the final bell. There are three important steps I want to look at more closely, concerning the symmetry, the size and the exact form of the bell.

After cutting, bending and soldering the originally flat sheet, we encounter our first problem: the bell is not yet symmetrical. The material has to be hammered into a symmetrical shape, for which I have to choose which hammer is most suitable (Fig. 2). This big bell needs a lot of reshaping. If I want to have a thin bell, and start out with thin material, then I use a wooden hammer for this work. The alloy in the Romantic period was good and the soldering was strong enough not to burst. A bell with a small diameter and an almost straight shape, such as we find in sackbuts, does not require major reshaping, so I could achieve a symmetrical bell in just a few steps. For this I would use a steel hammer, because the alloy is brittle, the seam might not be perfect, and so it is better to work with many small blows. For a modern bell, I



Fig. 2 The hammers (Foto: AS).

could use all kinds of hammers, because the diameter is a bit smaller than Romantic bells, and the material and the seam are almost perfect. The material is also thicker, and I can use even a plastic hammer. This is gentle on my wrist, but not necessarily gentle to the material structure. I might transform it too quickly, simply because I can. But when I resist the temptation to work too quickly, I can be just as gentle with a plastic hammer as with a rubber hammer. It is a pleasant tool and the benefit of it is that one gets a smooth surface (which is important today). However, in the present case, I shall use the wooden hammer, not least because it is more authentic for making a replica of a Romantic bell.

I have to choose how fast I want to form the metal, and how strong my hammer blows should be. This is another moment when I can choose to engage in ‘gentle transformation’ or not. In principle, it is always gentler to transform the metal slowly, in many little steps. But this is not always practicable, because the material and the seam could endure fatigue. So I have to find a good balance between speed and effect when shaping the metal. To my mind, the early brass instrument makers might have had more time, but they needed it because their alloys needed to be treated differently (which often took more time).³ The newer the alloy, the better and more homogeneous it became, and they could work faster and make bigger bells out of it. The late-Romantic alloys were good, and in our case they did not include any lead. This helps a lot, and allows me to make a thin, large bell.

Another fact is that material costs have reduced greatly since the days of the early brass instrument makers, though the salary of a worker today is much higher than it was back then.⁴ Nowadays, the time invested makes up most of the price of an instrument. Nobody willingly works

³ See Egger 2016, p. 469.

⁴ See also the contribution by Jean-Marie Welter in this volume, pp. 43–64 (Welter 2026).

slowly if the work itself can be done faster, and I can't travel back in time. Nevertheless, I should try to work in the same way as instrument makers in the period in question. But if my respect for the material means I work slower than I could with a modern alloy, how slow should that be?

To find out, I listen to the material while I'm hammering it. That way, I can hear how far I can go. The tinnier and lighter the sound, the harder the material. I will stop right away if it sounds unpleasant. Then I have to anneal again and 'waste' time. But is this really wasting time, or am I instead investing time in a better wall vibration and a better sound?

It might be enough just to check for mistakes with your eyes without listening. To be sure, this will not result in cracks or overlaps, but the structure of the material can be damaged if I go too far. You might not see this on the surface with your eyes, but you might well hear it. When modern instruments are shaped too quickly, the sound isn't necessarily bad, but it is sometimes boring. If I try to compress the material instead of stretching it too much, I will get a more colourful, warm sound.

But now we come to the second step, where we want to 'open up' the bell and bring it to the size we need. What tool can I use for this transformation? It depends on the thickness of the material. For a Romantic bell, we use material of 0.4 mm thickness. Given the large size of the bell, the material will thin down to 0.2 mm at the end of it. You have to use different hammers to open the material up to this size, though it is not easy to keep the metal thick enough and even, which is also important for the sound. It is also possible to open it up using a hollow spindle. This means using a pole of wood or polished steel, or different rolls that enable you to pull out the material from the inside and enlarge it. This technique was already known during the Romantic period. Without revealing all the 'Egger secrets', you have to be careful and gentle when using any combination of these different methods.

In the third step, bringing the bell into the correct form, I press the material on a steel mould. Here, I can influence the material characteristics for the last time. If I use a wooden pole, for example, the material stays softer. If I use a hard tool with a lot of pressure, I will get a hard material; the longer I press on the material, the harder it gets, too. We have here a gold brass bell with a big diameter. Gold brass is rather soft, but hardens very quickly when it is formed, and the large diameter takes a lot of time to be pressed.

The tool I use for this remains a trade secret. But it guarantees that the surface will be even, close to the required shape, and stable. This gives me the result I wanted: a gently formed, thin bell with good vibration properties.

It is difficult to say to what extent the process is ultimately dictated by the material, or determined by the instrument maker. You have to delve into the physical properties and characteristics of an alloy, and learn to assess how gently you should shape it. The taste of the musician who wants to play the historical replica is also decisive. The extent to which today's players can implement their sound ideas on a replica can be a selling point, and we, the instrument makers, have to be able to work with this.

It is a Romantic notion that one might be able to reproduce instruments identically. There are numerous parameters that influence each other, especially the material, its treatment and shape. It is impossible for a replica to match the original in all its parameters, so we have to be clear about the primary goal of such a replica. Should it be as identical as possible to the original in its manner of production, visually, or in its sound?⁵ For us as instrument makers, it is vital that we create instruments that musicians can work with, and that they like. But we do our best.⁶

5 See also Kirnbauer 2017.

6 Editor's note: See also the video *The Trumpet Maker* (Fresh Wind 2019), which documents Alex Schölkopf ma-

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king a bell, and includes an interview. This video was produced for the research communication project “Fresh Wind” at HKB (2018–2020) that included a website (Fresh Wind n.d.) as well as a touring exhibition (shown in Bern, Willisau, Bad-Säckingen, Interlaken and elsewhere).

Rainer Egger

Der gegenseitige Einfluss von schwingender Luftsäule und Instrumentenkonstruktion

Im Zentrum des Projekts »The Sound of Brass« stand der Nachbau einer romantischen deutschen Posaune mit dem Ziel, deren klangliche Feinheiten möglichst authentisch wiederzugeben. Da sich die feinsten klanglichen Unterschiede innerhalb einer Instrumentenfamilie weniger durch die Mensur als vielmehr durch die Schwingeigenschaften der Konstruktion erklären lassen, wurde der Fokus auf die komplexe Wechselwirkung dreier Schwingungssysteme gelegt: der Lippen des Spielers, der schwingenden Luftsäule und des vibrierenden Rohrmaterials. Zur gezielten Analyse dieser Zusammenhänge kamen drei Messmethoden zum Einsatz: die Impedanzmessung zur Bestimmung der Resonanzstruktur der Luftsäule, die Admittanzmessung zur Erfassung der Eigenvibrationen des Instrumentenkörpers und die Transfermessung zur Quantifizierung der Dämpfung im realen Spielverlauf. Diese objektiven Verfahren ermöglichen Rückschlüsse auf Klangfarbe, Ansprache und Modulationsfähigkeit – zentrale Faktoren für die musikalische Ausdruckskraft historischer Blasinstrumente.

The Mutual Influence of Oscillating Air Column and Instrument Design

At the heart of the project "The Sound of Brass" was the reconstruction of a Romantic-era German trombone with the goal of authentically reproducing its subtle tonal characteristics. The finest sound differences within a family of instruments are less a result of the bore profile and more closely linked to the vibrational behaviour of the instrument's construction. Therefore, the focus was placed on the complex interaction of three oscillating systems: the player's lips, the vibrating air column, and the resonating tubing material. To analyse these interactions precisely, three measurement methods were utilised: impedance measurement to determine the resonance structure of the air column; admittance measurement to capture the inherent vibrations of the instrument body; and transfer measurement to quantify damping under realistic playing conditions. These objective approaches allow conclusions to be drawn about tone colour, response and modulation capabilities – key elements of the musical expressiveness of historical brass instruments.

Einleitung

Das Forschungsprojekt »The Sound of Brass« beabsichtigte, eine frühe deutsche, romantische Posaune zu bauen, die den Posaunen, welche in der Zeit von circa 1850 bis etwa zum Beginn des Zweiten Weltkriegs in Deutschland gebaut worden sind, klanglich möglichst nahe kommt.¹ Einen Klang zu beschreiben, ist jedoch etwas sehr Heikles. Ein Teil der Klangfarbe wird durch die Mensur geprägt, nämlich der Teil, an dem wir unterschiedliche Instrumententypen, also

1 Vgl. Projektwebsite (Institut Interpretation 2015).

zum Beispiel Trompeten, Hörner, Posaunen oder Tuben, unterscheiden können. Geht es aber um Klangfeinheiten einer einzelnen Instrumentengruppe, dann spielt die Schwingeigenschaft des Instruments, seiner Konstruktion, eine große Rolle – darauf haben wir uns konzentriert.

Man kann den Klang auf wissenschaftliche Art definieren: Dann müsste das Instrument in einem schalltoten Raum angespielt werden, damit bei der Klangaufnahme keine Raumbeeinflussung mitgemessen wird. Auf diesem Weg bekämen wir Informationen darüber, wie stark jeder Teilton im geblasenen Spektrum vorhanden ist. In der Musizierpraxis nehmen wir den Klang aber subjektiv wahr, wir können sagen, ob er sich gut mit demjenigen anderer Instrumente mischt, ob die abgestrahlte Klangfarbe beispielsweise grundtönig oder farbenreich ist et cetera – all dies, ohne zu wissen, wie stark die einzelnen Teiltöne vertreten sind. Für das erwähnte Projekt haben wir uns entschieden, auf die wissenschaftliche Beurteilung mittels Klanganalyse zu verzichten. Stattdessen hat man sich in Bezug auf die Klangabstrahlung auf die Resultate der unten beschriebenen akustischen Messungen abgestützt. Die erhaltenen Messergebnisse wurden in der Folge mit Spieltests durch Musiker und der Beurteilung durch Zuhörer verglichen.

Die drei Schwingungssysteme eines Blechblasinstruments

Wenn wir die komplexe Wirkungsweise eines Blechblasinstruments einigermaßen verstehen wollen, müssen wir die Schwingung der Luftsäule und die Vibration der Rohrkonstruktion je für sich sowie deren gegenseitige Beeinflussung beobachten und verstehen lernen. Dies bildet die Basis, um beim Konzipieren eines Instruments Einfluss auf die Feinheiten des Klangs nehmen zu können.²

Die Funktionsweise eines Blasinstruments ergibt sich aus drei Schwingungssystemen, die sich gegenseitig beeinflussen, und aus der Tatsache, dass – wo schwingungsfähige Elemente einander berühren – eine Energieübertragung stattfindet. So regt das Öffnen und Schließen beziehungsweise Schwingen der Bläserlippen die Luftsäule im Instrument an, wobei diese die Energie an verschiedenen Stellen auf die Rohrkonstruktion überträgt. Umgekehrt wirkt das vibrierende Material auf die schwingende Luftsäule und diese auch wieder zurück auf die Bläserlippen (Abb. 1).

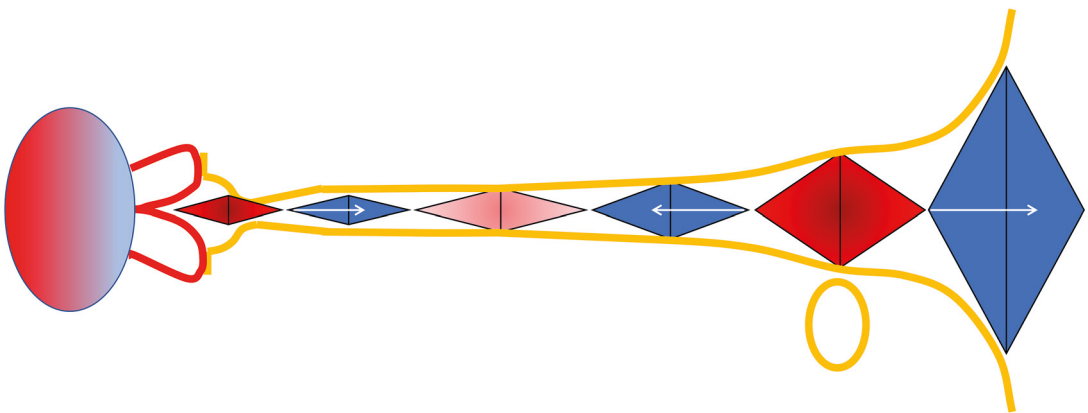


Abb. 1 Die drei sich gegenseitig beeinflussenden Schwingungssysteme Lippen, Luftsäule und Rohrkonstruktion. Die Minima und Maxima der Rohrvibrationen sind deutlich überspitzt dargestellt. Die Formänderungen werden durch die schwingende Luftsäule verursacht. Diese sind zwar in der Realität geometrisch minimal, haben aber doch einen Einfluss auf das innenliegende Schallfeld.

2 Vgl. z. B. Campbell et al. 2021, insb. Kap. 4.2: Measuring input impedance (ab S. 120) und Kap. 6.6.2: Experimental studies of Brass instrument wall vibrations (ab S. 312).

Während der Energiestrom von den Bläserlippen zum Schallstückausgang und wieder zurück wandert, werden primär die Luftsäule und sekundär die Rohrkonstruktion in Schwingung versetzt, wobei sich alle drei Schwingungssysteme gegenseitig beeinflussen.

Drei Messmethoden

Um die Schwingungen der Luftsäule und des Instrumentenkörpus möglichst isoliert und objektiv erfassen zu können sowie um die gegenseitige Beeinflussung zu eruieren, haben wir drei unterschiedliche Messmethoden angewendet:

1. Impedanzmessung für die Messung der Resonanzeigenschaften, die das Instrument dem Spieler vorgibt;
2. Admittanzmessung zum Erfassen der Vibrationsstruktur des Instrumentenkörpus;
3. Transfermessung für die Bestimmung des Dämpfungsgrads der schwingenden Luftsäule.

Wenn man charakteristische Eigenschaften eines Instruments durch eine Messung bestimmen kann, wenn sich also die gemessenen Unterschiede in Zahlen bzw. in Diagrammen darstellen lassen, haben wir im Vergleich zu reinen Spieltests objektivere Beurteilungsmöglichkeiten.

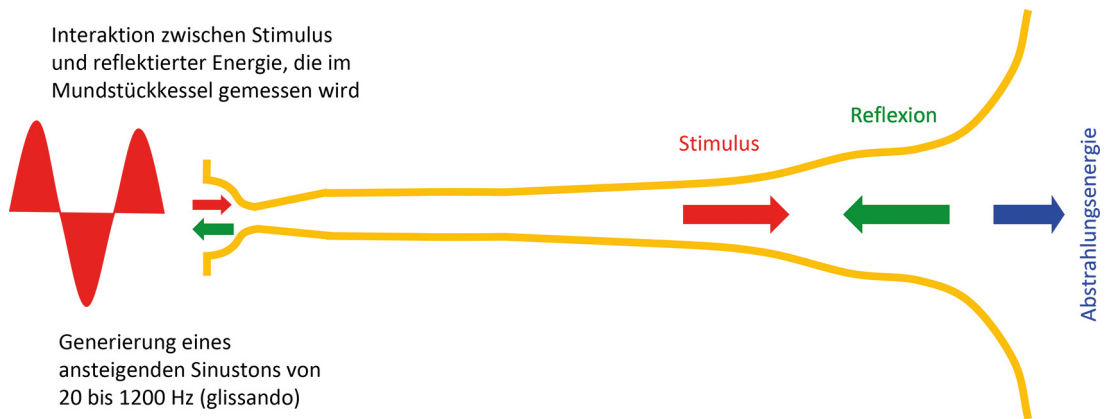


Abb. 2 Die Impedanzmessung gibt Auskunft darüber, wie viel von der Energie, die in das Instrument hineinfließt, zum Mundstück zurückkommt. Das schwache Anregesignal gewährleistet, dass der Einfluss der Materialschwingung auf die Luftsäule weitestgehend ausgeschaltet wird.

Unsere erste Messmethode bezieht sich darauf, was innerhalb des Instrumentenrohrs geschieht (Abb. 2). Damit die Schwingung der Rohrwand praktisch ausgeklammert werden kann, geschieht die Anregung der Luftsäule bei der Impedanzmessung mit einem leisen Ton bzw. Signal.³ Die Ergebnisse dieser Messungen werden deshalb hauptsächlich durch den Mensurverlauf beeinflusst. Die Form der Luftsäule, die durch die Rohrmensur vorgegeben ist, bestimmt den Tonumfang, die Grundtonhöhe, die Stimmung in sich, die Ansprache und bis zu einem gewissen Grad die Klangabstrahlung des Instruments. Im Mundstückkessel werden dabei die Eingangs- und Ausgangswerte der stehenden Welle gemessen, die sich aus der Überlagerung der vorwärts und rückwärts fließenden Energie im Instrument ergibt.

3 Vgl. auch Preisl 2024.

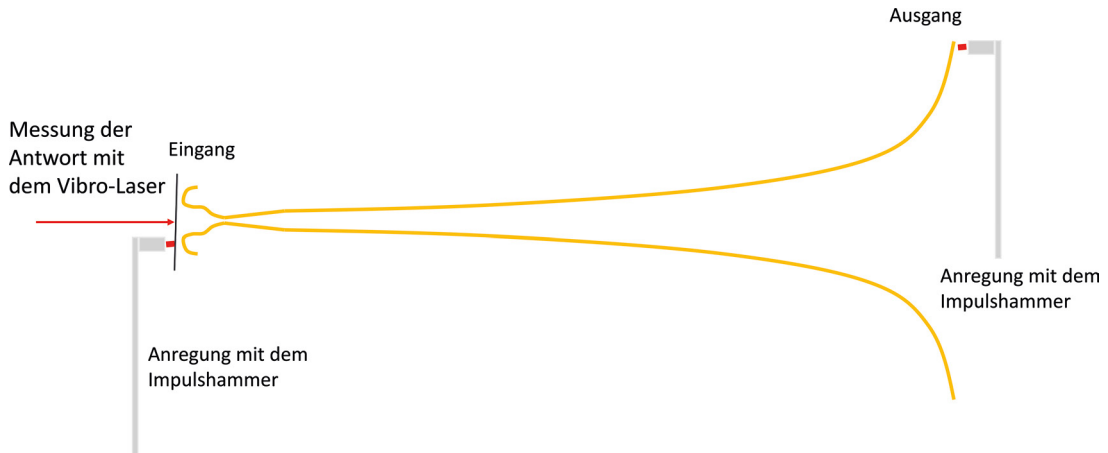


Abb. 3 Mit der Admittanzmessung wird die Schwingungsstruktur eines Instruments eruiert.

Die Admittanzmessung dient der Bestimmung der Vibration der Rohrkonstruktion (Abb. 3). Die direkte Anregung mittels Impulshammer ermöglicht es, die Eigenschaften des Schallfelds auszuschließen. Würden wir die schwingende Luftsäule anregen, so würde ihre akustische Eigenschaft die Messung beeinflussen. Mit den Informationen des Eingangs- und Ausgangssignals lässt sich das Schwingungsverhalten der Rohrkonstruktion in eine gezielte Richtung optimieren, zum Beispiel in Bezug auf die Ortsposition von Stützen. Zudem dient die Messung zur Bestimmung der Schwingungsstruktur des Instrumentenkörpus. Wird die Anregung am Mundstück vorgenommen, so ergibt das Messresultat schwerpunktmäßig Aussagen über den Eingangsbereich des Instruments. Das Umgekehrte ist der Fall, wenn man am Schallstückrand anregt.

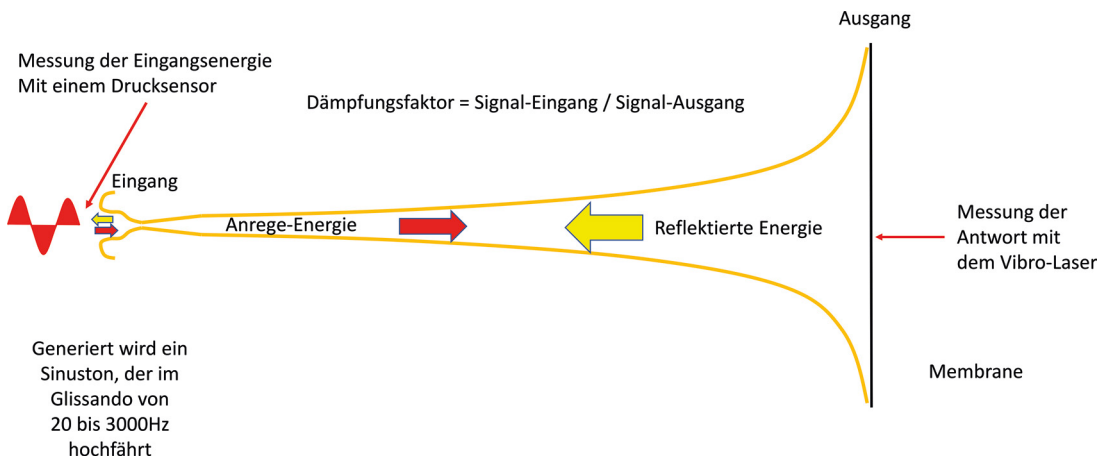


Abb. 4 Die Transfermessung ermöglicht es, die Dämpfung zu bestimmen: die Energiemenge, die der Luftsäule bei Anregung im Instrumentenrohr zwischen Eingang und Ausgang entzogen wird.

Bei der Transfermessung – so bezeichnet, da sich der Ort der Anregung und Ort der Messung unterscheiden – ist die Anregung grundsätzlich gleich wie bei der Impedanzmessung, allerdings wird das Anregesignal hier in verschiedenen Lautstärken generiert: je lauter die Anregung, desto stärker wird das Messergebnis durch die Wandschwingung beeinflusst.

Mit der Transfermessung beurteilen wir somit, wieviel Energie der Luftsäule von der Anrege-stelle bis zum Instrumentenausgang verlorengeht. Man spricht dabei von Dämpfung. Sie hat starken Einfluss auf die Spielcharakteristik eines Instruments, zum Beispiel auf die Bindungs-fähigkeit zwischen Tönen und auf das sogenannte Einrasten der Töne.

Die Idee war ursprünglich, das Ausgangssignal mit einem Mikrofon zu messen. Dabei ergab sich allerdings ein Problem: Da der akustische Abschluss des Instruments in diesem Fall nicht genau definiert ist, war es nicht eindeutig, wo das Mikrofon platziert werden sollte. Aus diesem Grund haben wir uns entschlossen, das Schallstückende mit einer Membrane abzudecken. Die Antwort auf das Anregesignal wird als Messergebnis von einem Laser-Vibrometer an der Membrane abgetastet. So ergibt sich der Dämpfungsfaktor, indem man das Spektrum der Eingangsenergie durch den Wert der Ausgangsenergie dividiert.

Abbildung 5 zeigt die Messdaten dreier Instrumente: der Tenorposaune von Kruspe (circa 1930), deren Nachbau von Egger und einer modernen Posaune von King. Das historische Instrument von Kruspe zeigt einen deutlichen Unterschied der Dynamik zwischen Piano und Forte. Der Dämpfungsfaktor wird bei zunehmender Frequenz tendenziell größer. Somit ergeben sich die deutlichsten Unterschiede im Obertonbereich. Im Spielbereich unter 500 Hz ist der Dämpfungsfaktor gering. Was wir beim Forte-Spielen an Klangfarben wahrnehmen, hängt größtenteils vom Obertonspektrum ab.

Die Posaune King ist im heutigen amerikanischen Stil gebaut und repräsentiert eine Dämpfung eines gut funktionierenden modernen Instruments, was sich im Diagramm in einem gleichmäßigeren Kurvenverlauf zeigt. Die Energieübertragung auf die Rohrkonstruktion ist bei dieser Posaune geringer, sie reagiert auf die Anregung träger. Folglich liegen die Messergebnisse des Dämpfungsfaktors vom Piano bis ins Forte fast in demselben Bereich.

Der Vergleich zwischen der historischen Kruspe-Posaune und deren Nachbau lässt erkennen, dass die beiden Instrumente eine ähnliche Tendenz aufweisen. Dies, obwohl zu bedenken ist, dass das Vorbild alt ist. Es ist jahrzehntelang zum Einsatz gekommen, repariert und maschinell poliert worden, das Original hat eine andere Vergangenheit als die Kopie. Ich kann mir gut vorstellen, dass sich durch die Jahre vieles an der Materialstruktur geändert hat. Ian Bousfield kann in der Tat beim Spiel-Vergleich einen deutlichen Unterschied zwischen den beiden feststellen, wenn auch einen wesentlich geringeren als im Vergleich mit einer heute üblichen modernen Posaune. Die Gegenüberstellung von historischem Original und Kopie zeigt große Ähnlichkeiten im Dämpfungsverhalten bis 5000 Hz und oberhalb 16000 Hz. Im Bereich dazwischen sind etwas größere Unterschiede vorhanden, die auf die beschriebenen Erfahrungen im Spiel-Vergleich schließen lassen.

Nun stellt sich die Frage, wie sich die Dämpfung des Instruments auf den Spieler auswirkt, und zwar aus dem Blickwinkel der Akustik gesehen. Gehen wir von einem Duett aus, bei dem ein dünnwandiges und ein dickwandiges Instrument gespielt werden: Da beim dünnwandigen durch die verstärkte Dämpfung die Anregung lauter sein muss, um die gleiche abgestrahlte Lautstärke zu erzielen, wird bei diesem die Klangfarbe obertöniger. Umgekehrt ist es beim dickwandigen: Durch den geringeren Energieverlust des Schallfelds im Instrument genügt für dasselbe Dynamikergebnis eine schwächere Anregung. Weil sich der mezzopiano-Klang, der durch die forte-Anregung entsteht, vom mezzopiano-Klang, der durch die mezzoforte-Anregung entsteht, unterscheidet, produzieren die beiden Instrumente nicht dieselbe Klangfarbe. Sie unterscheiden sich in ihren Obertonkomponenten.

Ein weiterer Unterschied, der von der Schwingungsfähigkeit des Materials herrührt, zeigt sich in der Stabilität von gehaltenen Tönen und der Modulierung von Tönen. Die rote Spur in Abbildung 6 repräsentiert ein Instrument mit schwacher Dämpfung, was zum Beispiel einem eher dickwandigen Instrument entspricht. Die schwache Dämpfung zeigt sich hier durch die schlanke hohe Spitze bei der Resonanzfrequenz. Das Schallfeld im Rohr wird hier kaum gedämpft. Da sich das Anspracheverhalten bei einem schwach gedämpften Instrument – der

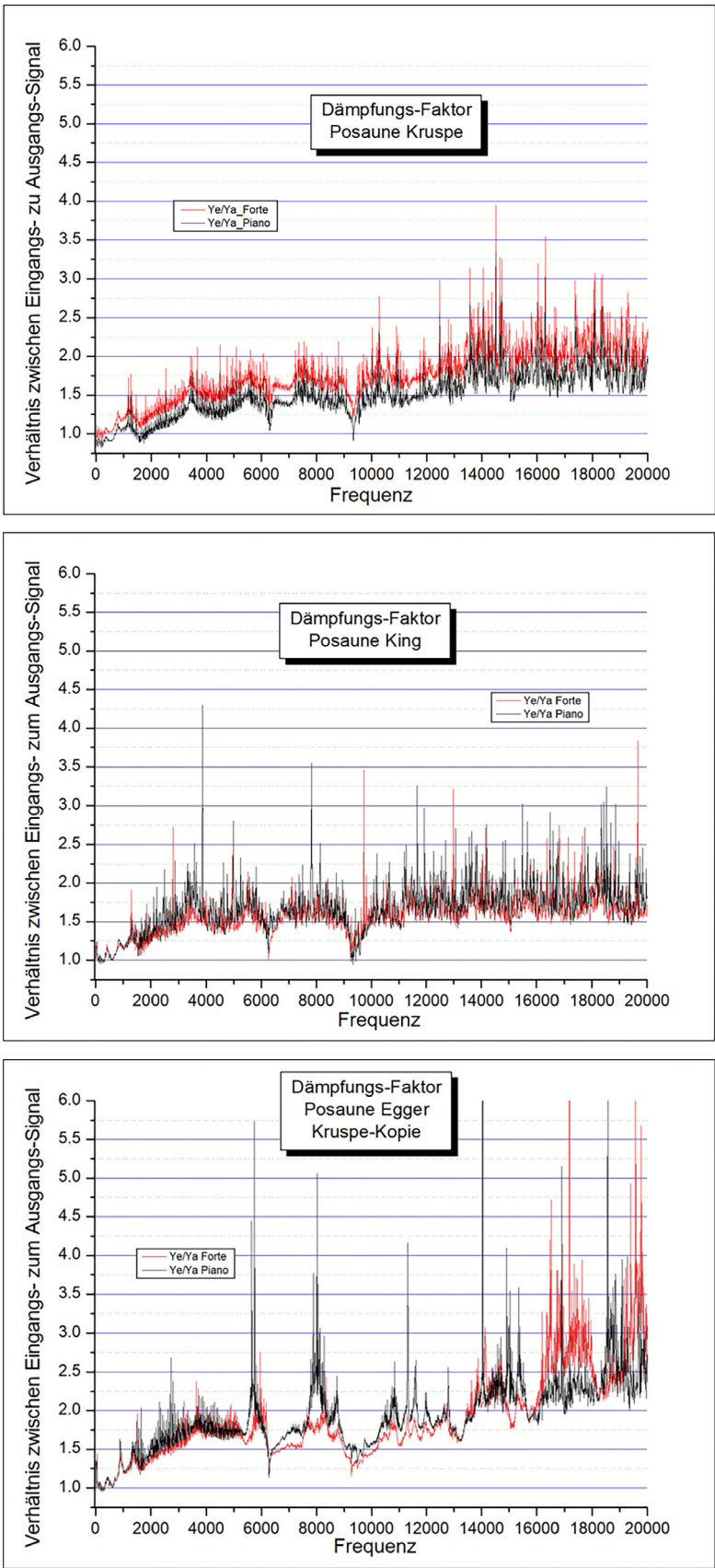


Abb. 5 Das Dämpfungsverhalten dreier Instrumente: Historisches Instrument, moderne Posaune und Egger-Nachbau. Die rote Spur zeigt die Dämpfung im Forte, die schwarze im Piano.

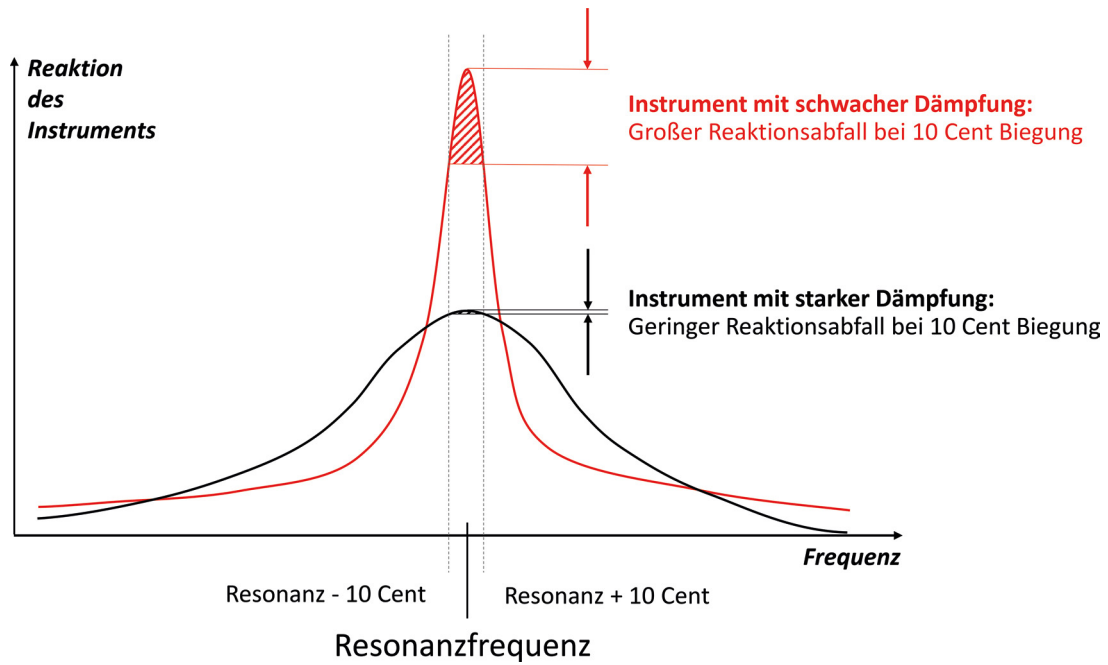


Abb. 6 Die charakteristische Auswirkung des Dämpfungsgrades auf die Spieleigenschaften eines Instruments, bezogen auf das Einrasten von Tönen bzw. die Modulationsmöglichkeiten.

Resonanzwert – aber schon bei einer geringen Tonbiegung (etwa zugunsten der Intonation) stark ändert, ist das Anpassen der Tonhöhe durch Lippenspannung nur mit einem höheren Energieaufwand möglich. Die bei so steil abfallenden Spitzen schnell deutlich abnehmenden Resonanzwerte führen dazu, dass auch die Obertonklangspektren sich wesentlich reduzieren. Dabei ändert sich die Klangfarbe in Richtung mehr Grundtönigkeit, die auch mit dem höheren Energieaufwand bei der Anregung nicht kompensiert wird. Versucht man diese Veränderung der Klangfarbe zu vermeiden, so erfordert dies noch einen zusätzlichen Energieaufwand. Diese Charakteristik verlangt deshalb ein gut stimmendes Instrument, das im Gegenzug mehr Spielraum zur lauterer Dynamikstufe hat.

Bei der schwarzen Spur handelt es sich um ein Schwingungssystem mit stärkerer Dämpfung. Die Resonanz wird hier im Spitzenbereich nicht so stark unterstützt, der Ton rastet weniger ein. Wird bei einem stärker gedämpften Instrument die Tonhöhe leicht angepasst, so ist die Reaktionsminderung – die Änderung des Resonanzwerts – geringer als bei einem schwächer gedämpften Instrument. Dadurch sind gehaltene Töne im Verhältnis instabiler. Der Biegebereich – die Möglichkeit, Töne etwas höher oder tiefer zu spielen – wird durch den geringeren Reaktionsabfall größer, wobei auch die Klangqualität beim Biegen länger erhalten bleibt. Diese Eigenschaft ermöglicht es dem Musiker, das Instrument mit geringerem Zungenimpuls anzuregen. Die Freiheit zu leiseren Dynamikstufen ist hier gegeben. Diese beiden Charakteristiken beschreiben den Unterschied zwischen einem üblichen modernen und einem historischen Instrument. Ersteres ist durch die Entwicklung moderner Fertigungstechniken auf Sicherheit und Präzision angelegt, hat dadurch allerdings an Flexibilität verloren. Das flexiblere und farbigere historische Instrument ermöglicht viel musikalische Freiheit, bringt aber auch höhere Risiken mit sich.

Folgerungen

Instrumentenbau ist primär Handwerk. Wenn jedoch Instrumente nach einer gezielten Spielcharakteristik gebaut werden sollten, braucht es Engineering, wie es die bekannten Instrumentenbauer Theobald Böhm, Vincent Bach, Renold Schilke etc. hatten.

Die oben diskutierten drei Messmethoden tragen dazu bei, das Schwingungsverhalten eines Instruments zu verstehen. Da die Natur der Schwingungen sehr sensibel reagiert, können schon kleinste Veränderungen eine große Auswirkung haben. Mit diesen Forschungen sind wir einen Schritt weitergekommen, die Resonanzqualität eines Instruments nicht ganz dem Zufall zu überlassen. Die Impedanzmessung wird in unserem Betrieb schon seit vielen Jahren zur Mensurbestimmung eingesetzt. Um die Schwingeeigenschaften des Instrumentenkörpers zu beeinflussen, arbeiten wir, angeregt durch dieses Forschungsprojekt, nun intensiver mit der Admittanzmessung. Das Ziel ist immer noch, auch die Transfermessung vermehrt in der Instrumentenentwicklung einzusetzen, da diese den realen Spielbedingungen eines Musikers am nächsten kommt. Allerdings wären dabei noch Verfeinerungen im Messaufbau anzustreben. Das oberste Ziel ist es, ein Instrument so zu designen, dass dessen Qualitätsmerkmale den Anforderungen der Musiker und Musikerinnen entsprechen. Es braucht also ebenso die Anblastests erfahrener Bläserinnen und Bläser, wie sie uns bei diesem Entwicklungsprozess beratend zur Seite standen.

Literatur

Alle Weblinks in diesem Beitrag wurden zuletzt am 28.5.2026 aufgerufen.

Campbell et al. 2021 | Murray Campbell/Joël Gilbert/Arnold Myers: *The Science of Brass Instruments*, Cham: Springer 2021.

Institut Interpretation 2015 | Institut Interpretation, Hochschule der Künste Bern: *The Sound of Brass*, online, 2015, www.hkb-interpretation.ch/projekte/the-sound-of-brass.

Preis 2024 | Hermann Preis: *Stimmung und Intonation bei Blechblasinstrumenten. Mensuränderungen und deren Auswirkung bei Trompeten*, Teil 5: Kalibrierung Impedanzmesskopf und Messung realer Instrumente [Stand 24. November 2024], online, 2024, www.preisl.at/brassissima/.

Rainer Egger hat als junger Instrumentenbauer die Pionierzeit der Nachbauten historischer Blechblasinstrumente im Atelier seines Vaters Adolf Egger hautnah miterlebt. Seine Leidenschaft gilt seither der ständigen Verbesserung der Blechblasinstrumente, vor allem was den Klangreichtum und die musikalische Funktionalität von Reproduktionen historischer Trompeten, Posaunen und Hörner betrifft. Um dem wachsenden und immer differenzierteren Interesse der Bläser gerecht zu werden, experimentiert er immer wieder mit Arbeitstechniken, Messuren, Materialien und Wandstärken. Er hat sich ein reiches akustisches Wissen angeeignet, steht in regem Austausch mit Fachleuten der musikalischen Akustik und konnte wichtige Erfahrungen sammeln als Partner in verschiedenen Forschungsprojekten am Institut für Wiener Klangstil, Wien, sowie an den Hochschulen in Bern und Lugano. Seit einigen Jahren widmet er sich auch vermehrt der akustischen Optimierung von Ventiltrompeten.

Stewart Carter

The Romantic Trombone in Italy. Music, Treatises, Instruments

The development of the trombone and trombone playing in nineteenth-century Italy – less well-known than in German-speaking lands and France – deserves more attention. While Italian instrument makers were not leaders in the development of the valve trombone, Italian pedagogues churned out numerous method books for the instrument, many of which clearly demonstrate the transition from slide to valves. Italian composers such as Giovanni Simone Mayr and Giovanni Pacini produced compositions, both sacred and secular, that feature the trombone as an obbligato instrument, often in virtuoso fashion, while Giuseppe Verdi broke new ground in orchestral writing for the instrument. Verdi, working with the Pelitti firm of Milan, helped to develop a new valve instrument, the trombone contrabbasso Verdi, which essentially banished the tuba from the Italian orchestra until well into the twentieth century.

This ancient instrument [i.e., the trombone], neglected for many centuries, has retaken its place in the realm of music, and can be effective if employed with considerable caution. It reinforces the entire orchestra when doubling the bass line.¹

With these words, the Polish-Italian composer and music theorist Francesco Mirecki, writing around 1824, summed up the general opinion of Italian composers towards the trombone in the early nineteenth century. In that time, attitudes towards the trombone were beginning to change south of the Alps, and trombones ultimately became essential to the Italian orchestra. Italy could boast no famous trombone virtuoso of the likes of Friedrich August Belcke (1795–1874) or Carl Traugott Queisser (1800–1846) in Leipzig, or Antoine Dieppo (1808–1878) in Paris. The objectives of the present paper are (1) to describe the customary practices for the use of the trombone by Italian composers in the early nineteenth century; (2) to bring to light certain little-known Italian works that feature soloistic writing for the trombone; and (3) to offer evidence on the introduction of the valve trombone into Italy.

Gioachino Rossini

The compositions of Gioachino Rossini (1792–1868), the best-known composer of Italian opera in the first two decades of the nineteenth century, are an obvious choice for a baseline in determining the use of the trombone in Italy during that time. Rossini employed it only sparingly. The trombone part in the sinfonia to *La gazza ladra* (1817) is one of very few passages by an Italian composer from this period to appear in modern books of orchestral excerpts. It is an

¹ “Questo antico stromento negletto da tanti secoli ha ripreso il suo seggio nel regno dell’armonia, e riesce d’effetto quando con gran precauzione s’impieghi. Serve di rinforzo ad un’intera Orchestra raddoppiando le note del basso.” (Mirecki 1824, p. 14).



Fig. 1 Slight differences between the trombone (l. 5 from below) and cello/bass part (last line) in the sinfonia of Gioachino Rossini's opera *La gazza ladra* (Rossini 1817; Courtesy of Archivio Storico Ricordi, Milano).

interesting part of moderate difficulty, though it is typical in that the trombone merely doubles the cellos and basses. At the beginning of each phrase of the excerpt given in Figure 1 (sourced from Rossini's autograph), the triplets appear only in the strings, while the trombone has a rest. Some later editions of the score add the missing triplets to the trombone part, and this is how it appears in most books of orchestral excerpts for trombone that include this work.² Rossini wrote more demanding parts for the trombone in *Guillaume Tell* (1829), though it is notable that this opera was written for Paris, not for Italy.

Soloistic writing for the trombone

In general, composers rarely wrote soloistic parts for the orchestral trombone in the nineteenth century. Two Italian exceptions were the German-born Giovanni Simone Mayr (1763–1845) in Bergamo and Giovanni Pacini (1796–1867) in Lucca, though their works featuring the trombone are little known today.

Giovanni Simone Mayr's settings of *Tuba mirum*

Mayr was born Johann Simon Mayr in Bavaria. He moved to Bergamo in 1787, then moved on to Venice where he established himself as a rising young opera composer. In 1802 he returned

² This figure and its variants appear ten times in the sinfonia. The Eulenburg edition adds the triplets to the trombone part in four of these ten instances. See Rossini n.d., pp. 19–21, 39–41, and 57f.

to Bergamo, taking up the position of *maestro di cappella* at the city's leading church, the basilica of Santa Maria Maggiore. In the mid-1820s he gave up opera composition altogether, concentrating instead on sacred music and teaching. In around 1815 he founded a music school in Bergamo, the *Lezioni caritatevoli*. He translated several treatises on music into Italian for the students of the school and also wrote a few of his own. Among his didactic works is a manuscript entitled *Trattatello sopra agli stromenti ed istromentazione* ("Short treatise on Instruments and Instrumentation"),³ which includes a brief section on the trombone. His remarks are not particularly informative, though they do offer an indication of contemporary thinking about the trombone in Italy. He says:

If in [Rossini's] *Semiramide* the trombone part fills 20 pages; if this strong imposing instrument must, like a second violin, imitate the bass in eighth-notes; if every solo in the ballet must be accompanied by three trombones; then this very instrument has lost every importance, and we can only restore that to it by employing it rarely, and never solely as a means to generate noise. Rather, I would permit one bass trombone to reinforce the bass line, and mark it, since the majestic perfect chord should only appear thus and proceed slowly. Otherwise, how could the spirit of the Commendatore in *Don Giovanni* speak, [or] how should we make heard the voice of Thanatos [in Gluck's *Alceste*]?⁴

Mayr composed at least seven complete settings of the Requiem Mass, as well as some 100 settings of individual movements from it.⁵ Most of these were written late in his life, between 1824 and his death in 1845. Both of the obbligato parts he wrote for solo trombone in settings of the *Tuba mirum* clearly reveal the influence of Wolfgang Amadeus Mozart's (1756–1791) writing for trombone in the *Tuba mirum* of his own *Requiem* K.626. Mayr knew Mozart's *Requiem* well; he organised a performance of it in Bergamo in 1835.

The text of the Tuba mirum as set by most composers comprises five verses of the sequence Dies irae. Mozart's *Requiem* sets all the verses of the Tuba mirum (in the key of B-flat major), but uses an obbligato tenor trombone only in its first verse (Fig. 2). The first of Mayr's two settings of this text (Bergamo, Biblioteca Civica Angelo Mai, ms. fald. 41/11) uses just the first two verses of the Tuba mirum. This version, in the key of E^b major, combines obbligato trombone with solo bass voice, just as in Mozart's setting, accompanied by an orchestra consisting of flute, clarinets, oboe, horns, trumpet, timpani and strings. The trombone plays throughout both verses, but soloistic passages are confined to the first verse. Figure 3 shows Mayr's setting of this verse in a reduced score showing only the parts for trombone, bass voice and violone. His obbligato part bears a certain similarity to Mozart's solo for tenor trombone, particularly in its outlines of triads and seventh chords (see, *inter alia*, Fig. 2, mm. 1–8). The range of the trombone part is quite modest, ascending no higher than *eb*¹.

Mayr's second setting of this text (Bergamo, Biblioteca Civica Angelo Mai, ms fald. 36/5) is a single movement from a complete Requiem mass, accompanied by wind instruments only. It is also in the key of E^b major, though the Tuba mirum is in g minor/G major. In addition to

3 Transcribed by Arrigo Gazzaniga in Mayr 1977, pp. 71–82.

4 “Se nella Semiramide la parte de’ Tromboni importa 20 fogli, se questo forte, imponente strumento, al pari d’un secondo Violino deve imitarsi il Basso colle crome, se ne’ balli ogni *a solo* viene accompagnato da tre tromboni, allora quest’istromento stesso ha perduto ogni importanza, e non si può ridargliela se non adoperandolo assai di rado, e giammai come solo mezzo di fare dello strepito. Piuttosto permetterei che un Trombone di Basso rinforzasse il basso, e lo marcasse, poichè il maestoso accordo perfetto non deve comparire se non che come tale e progredire lentamente. Come potrebbe altrimenti parlar lo spirito del Commendatore col Don Giovanni, come farsi sentire la voce del Tanato ad Alcesti.” (Ibid., p. 80. Transl. in Sisk 1986, p. 289).

5 See Calvi 1848.

The musical score is presented in three systems. The first system shows the solo trombone, basso solo, and violoncello and bass parts. The solo trombone part is in the treble clef, while the basso solo and violoncello and bass parts are in the bass clef. The lyrics are: Tu - ba mi-rum spar-gens so - num per se - pul - chra re-gi- o - num co-get om - nes an - te thro-num co-get om - nes an - te thro - num.

Fig. 2 Wolfgang Amadeus Mozart: *Requiem*, beginning of Tuba mirum (reduced), mm. 1–18.

the solo trombone obbligato in the Tuba mirum (see Fig. 4), there are obbligato parts for other wind instruments, including bassoon and horns. The trombone has the longest and arguably most significant obbligato part in this piece. It does not play at all in the movements preceding the Tuba mirum, but in contrast to Mayr's other setting of this text, the trombone obbligato here continues through to the fourth verse. It is also given an accompanying role throughout the remainder of the Requiem.

Mozart's writing for the trombone is generally more ambitious than Mayr's. He takes the trombone up to ab^b , whereas Mayr never exceeds eb^b in either of these two compositions. These two works, together with his writings on orchestration, suggest that Mayr did not have a great deal of confidence in his trombone players. His parts for this instrument are active and relatively interesting, but not virtuosic. To the best of my knowledge, these two settings of the Tuba mirum contain (with just one exception) the only obbligato parts for trombone that Mayr wrote in any of his more than 550 sacred compositions.⁶

Giovanni Pacini

Like Mayr, Giovanni Pacini is best known for his operas. He composed more than seventy of them, though they are largely unknown today. Originally from Sicily, he accepted an offer from Maria Luisa, Duchess of Lucca, to serve as her *maestro di cappella* from 1821 onwards. His operatic career thereafter took him to various parts of Italy, but he maintained close ties to Lucca for the rest of his life. In 1839 the Duke of Lucca appointed him Director of the ducal music school.

6 Ibid.

The Romantic Trombone in Italy

Trombone

Basso solo

Violone

8

14

19

26

33

40

44

Tu-ba mi-rum Mi-rum spar-gens

so-num per se-pul-chra re-gi-o-num

co-get om-nes an-te thro-num co-get om-nes an-te thro-num Tu-ba

mi-rum spar-gens so-num per se-pul-cra re-gi-o-num

per se-pul-cra re-gi-o-nem co-get om-nes an-te thro-num

Fig. 3 Giovanni Simone Mayr: *Tuba mirum* in E^b major (beginning, reduced), mm. 1–48.

The image displays three pages of handwritten musical notation for Giovanni Simone Mayr's *Requiem*, specifically the *Tuba mirum* section, folios 27r-28r. The notation is written in Italian and features various instruments including Trumpets, Cornets, Trombones, and Organ. The first page (top) shows the initial measures with instruments like Trumpets, Cornets, Trombones, and Organ. The second page (middle) continues the notation with more instruments like Trumpets, Cornets, Trombones, and Organ. The third page (bottom) shows the final measures with instruments like Trumpets, Cornets, Trombones, and Organ. The notation is written in a clear, legible hand, with various musical symbols and notes.

Fig. 4 Giovanni Simone Mayr: *Requiem*, *Tuba mirum*, fols. 27r–28r (Bergamo, Biblioteca Civica Angelo Mai, ms fald. 36/5, www.internetculturale.it).

Table 1 Giovanni Pacini's compositions with soloistic parts for trombone (all in manuscript in Lucca, Biblioteca Diocesana "Mons. G. Agresti").

- B. 114. *Concertone* per Oboe, Clarinetto, Tromba e Trombone, E $\flat$ major (1855)
- B. 46. *Gran Concertone* per Flauto, Clarino [i.e., clarinet], Corno, Tromba e Trombone, B $\flat$ major
- B. 72. *Qui tollis* per Tenore, Clarino [clarinet] e Trombone obbligati, with orchestra, d minor
- B. 116. *Tre Domine* per due Bassi con Corni, Trombe e Tromboni obbligati, with orchestra, in e $\flat$ minor (1859)
- B. 123. *Virgam virtutis* per Basso e Trombone obbligato, with orchestra, F major (1861)

Five of Pacini's compositions – three sacred vocal works and two instrumental works – contain obbligato or soloistic parts for trombone (see Table 1). Three of these works bear dates between 1855 and 1861. If the two undated compositions fall in the same period, the trombonist for whom Pacini wrote them must have been Luigi Giorgi, who joined the orchestra of the Cappella Comunale di Lucca as first trombonist in 1847 and was still on the payroll in 1878.⁷ Two of these five works will be examined closely. Pacini's *Gran Concertone* in B $\flat$ major, scored for flute, clarinet, horn, trumpet and trombone, survives as a set of parts and in a short score featuring the bass line and the solo voices. This piece consists of twelve brief sections, with the solo trombone appearing in sections 4, 5, 6 and 12. Pacini's writing for the trombone is more ambitious than Mayr's. The trombone part for this piece has occasional trills, is replete with sixteenth notes, and ascends as high as ab^1 (Fig. 5).

Pacini's setting of *Qui tollis*, whose text is taken from the Gloria of the Latin Mass, survives in a manuscript full score.⁸ It is scored for tenor voice with obbligato clarinet and trombone, accompanied by an orchestra. The opening 58 measures of the piece, before the tenor voice enters, comprise what could be described as a miniature double concerto for clarinet and trombone. The clarinet part is particularly elaborate, but the trombone often matches it. With its rapid chromatic passages, arpeggios and wide leaps of up to two octaves, this is probably the most virtuosic part for trombone in any of Pacini's works (Fig. 6). The chromatic run in thirty-second notes on the first page of this excerpt would be challenging on a slide trombone, though if this piece was composed in the late 1850s or 1860s, it was probably intended for a valve instrument.

Italian didactic works for trombone

The Italian works of Rossini were certainly written with the slide trombone in mind. The same probably applies to Mayr's settings of the Tuba mirum, but since these two works of his are undated, the situation is less certain. Method books and orchestration treatises offer some clues to the type of trombone that composers wanted. At some point before his death in 1832, probably around 1828, Bonifazio Asioli published a short method for the trombone. The cover of his book bears the title *Transunto dei principj elementari di musica & breve metodo per trombone*, but the word "trombone" has been added by hand at the bottom of the page (Fig. 7). The book begins with three pages of basic information on music (notation, musical terms, etc.), then continues with six pages of instruction, with a heading on page 4 that reads, "Scale o metodo per il

⁷ Nerici 1879, pp. 252f.

⁸ Pacini *QuiT*.

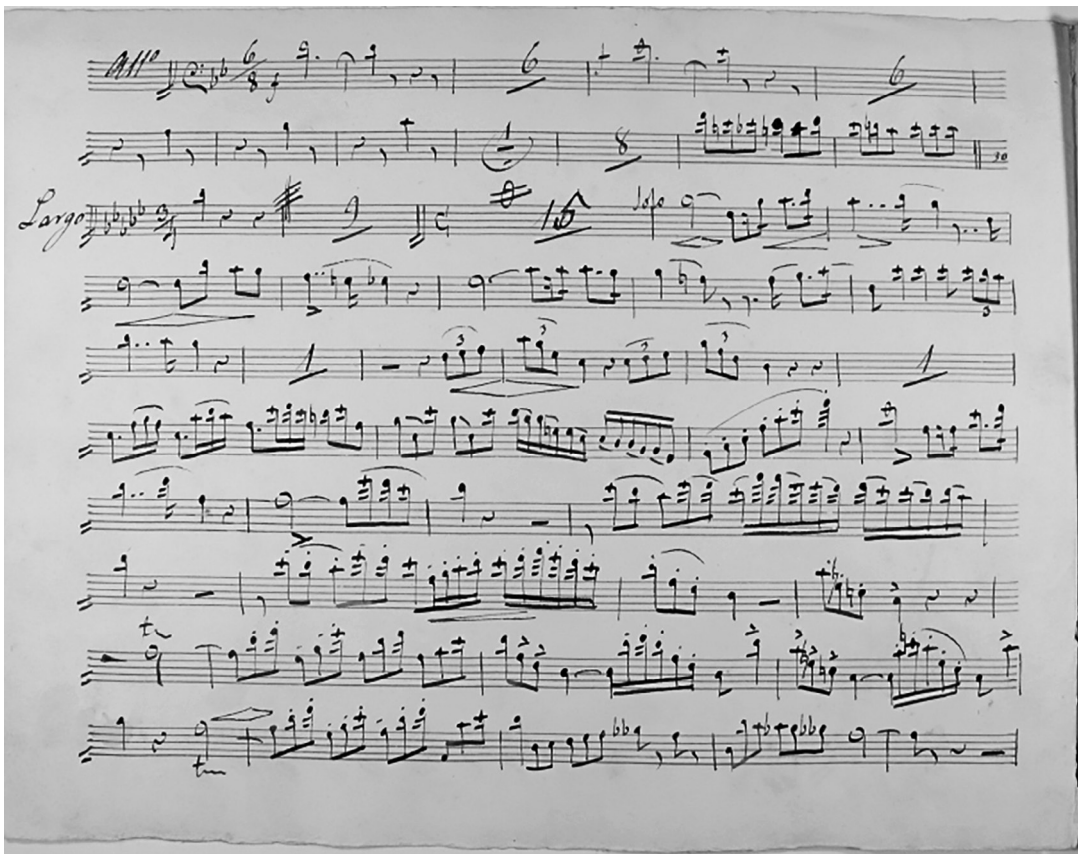


Fig. 5 Giovanni Pacini: *Gran Concertone*, trombone part, p. [2] (Lucca, Biblioteca diocesana, B. 46).

Fig. 6 Giovanni Pacini: *Qui tollis*, p. [14] (Lucca, Biblioteca diocesana, B. 72).

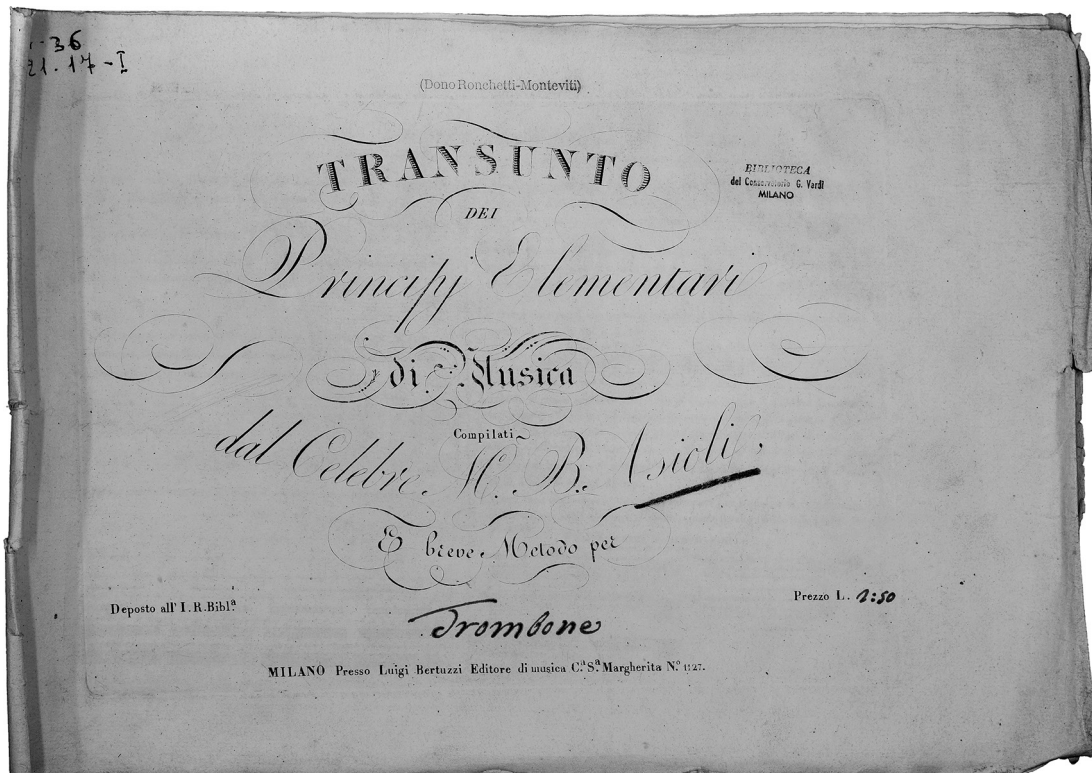


Fig. 7 Cover of Bonifazio Asioli's trombone method (Asioli 1828).

basso trombone.”⁹ The diagram on page 5, however, clearly reveals that the trombone in question is actually an instrument that we would call a tenor, with a range of $E-g^1$ (Fig. 8), though in this period the instrument that played the lowest trombone part was sometimes called a bass, even if its ambitus was identical to that of the tenor. In some instances, this so-called bass trombone may have had a somewhat larger bore and a larger mouthpiece.¹⁰ Asioli's trombone is an over-the-shoulder slide instrument in B^b . Interestingly, three of the six pages of Asioli's tutor that pertain specifically to technical aspects of the trombone (the structure of the instrument, slide positions, range, etc.) were cribbed from the Italian translation of [Jean-Frédéric] Braun's trombone method, originally published by Scotti of Milan in ca 1828.¹¹

In 1841 or thereabouts, the violinist, trombonist and orchestral conductor Fermo Bellini (1804–1865) published two slightly different versions of a method book for trombone.¹² One is entitled *Metodo per trombone* (Milan: Ricordi, n.d.);¹³ the other, *Metodo per trombone si duttile che a piston* (Milan: F. Lucca, n.d.). The former provides a position chart for a slide trom-

9 Asioli produced elementary method books for several different instruments, each beginning with identical material relating to basic instruction in music, then proceeding to technical material particular to each specific instrument and concluding with simple exercises. Asioli apparently used the same title page for each tutor, entering by hand the name of the specific instrument. I am grateful to Albert R. Rice for sharing this information with me, personal communication, November 2018.

10 Weiner 2005.

11 Weiner 1999. All four pages of the Scotti edition of *Scale et metodo per il trombone* are reprinted in Figs. 1–4 of Weiner's article.

12 There are some references in the literature to an earlier edition of Bellini's *Metodo per trombone si duttile che a piston*, published in Milan in 1833, but I have been unable to locate a copy. See, for example, Herbert 2006, p. 331. Herbert cites the author himself as the publisher of this version of the treatise.

13 The plate number for Bellini's *Metodo per trombone*, 12346, indicates that it was published in 1841. See Zecca Laterza 1984, p. 420. However, Zecca Laterza gives the title as *Metodo per Trombone tenore a piston con seguito di Lezioni ed Esercizi utilissimi* (nuova edizione).

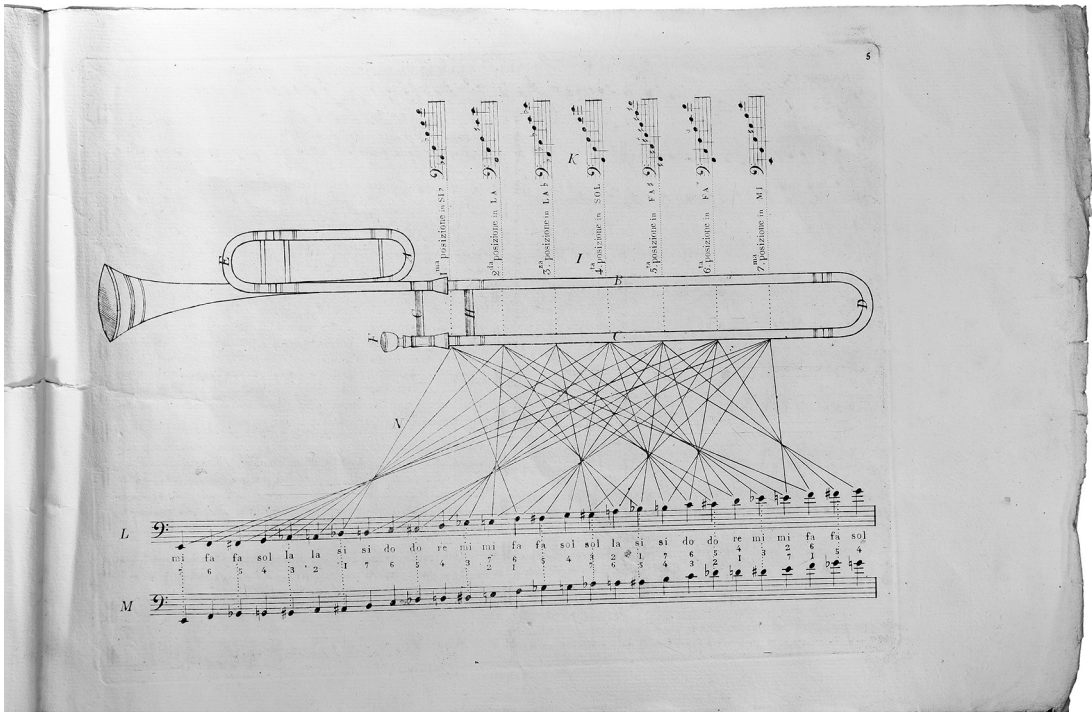


Fig. 8 “Bass” trombone in Asiola’s method (Asiola 1828, p. 5).

bone, a fingering chart for a trombone with three double-piston valves and illustrations of both instruments (Figs. 9, 10), while the latter duplicates the drawing and fingering chart for the valve trombone but does not provide a drawing for the slide trombone.¹⁴ The *Metodo per trombone si duttile che a piston*, however, does have slide positions marked in some of its illustrative materials. It is almost twice as long as Bellini’s other trombone method book, though much of the text is the same in both volumes, as are many of the etudes. Bellini must have known Asiola’s treatise, for his drawing of an over-the-shoulder slide trombone (Fig. 9) is quite similar to Asiola’s, as is his manner of indicating pitches corresponding to specific slide positions.

In his orchestration treatise, *Teoriche musicali su gli istromenti e sull’istrumentazione* (1844),¹⁵ Bellini discusses soprano, alto, tenor and bass forms of the instrument. The lowest note given for Bellini’s alto trombone is *E* below the bass staff, identical with the lowest note of his tenor trombone, though the alto’s range ascends higher, to *d*². The bass trombone in this book is not a tenor trombone with a larger bore, nor even a *B*^b trombone that plays the lowest part, as appears to be the case with Asiola’s bass trombone. Bellini gives *BB*^b–*f* as the range for the bass trombone¹⁶ and further states that the valve trombone has greater agility in fast passages than the slide instrument, though the latter is superior in intonation and sounds better in cantabile passages.¹⁷ Bellini’s bass trombone could have been either a valve or a slide bass instrument, probably in the key of *E*^b, since sixth position on a slide instrument would yield *BB*^b, as would the combination of valves 1 and 3 on a valve instrument. Slide bass trombones made around this time were more common-

14 In both versions of Bellini’s treatise for trombone, drawings of instruments appear on unnumbered pages at the beginning of the book. It is possible that an unnumbered page containing a drawing of a slide trombone is missing from the copy that I have consulted.

15 Bellini 1844.

16 Ibid., pp. 70f.

17 Ibid., p. 72.

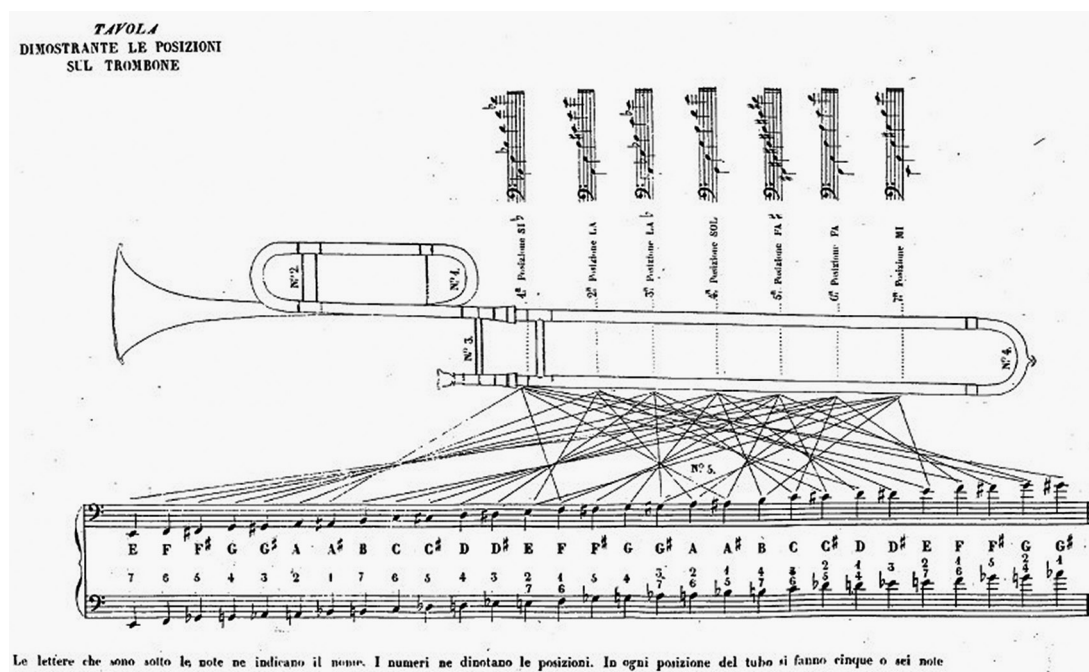


Fig. 9 Slide trombone chart from Bellini: *Metodo per trombone* (Ricordi version), p. [ii].

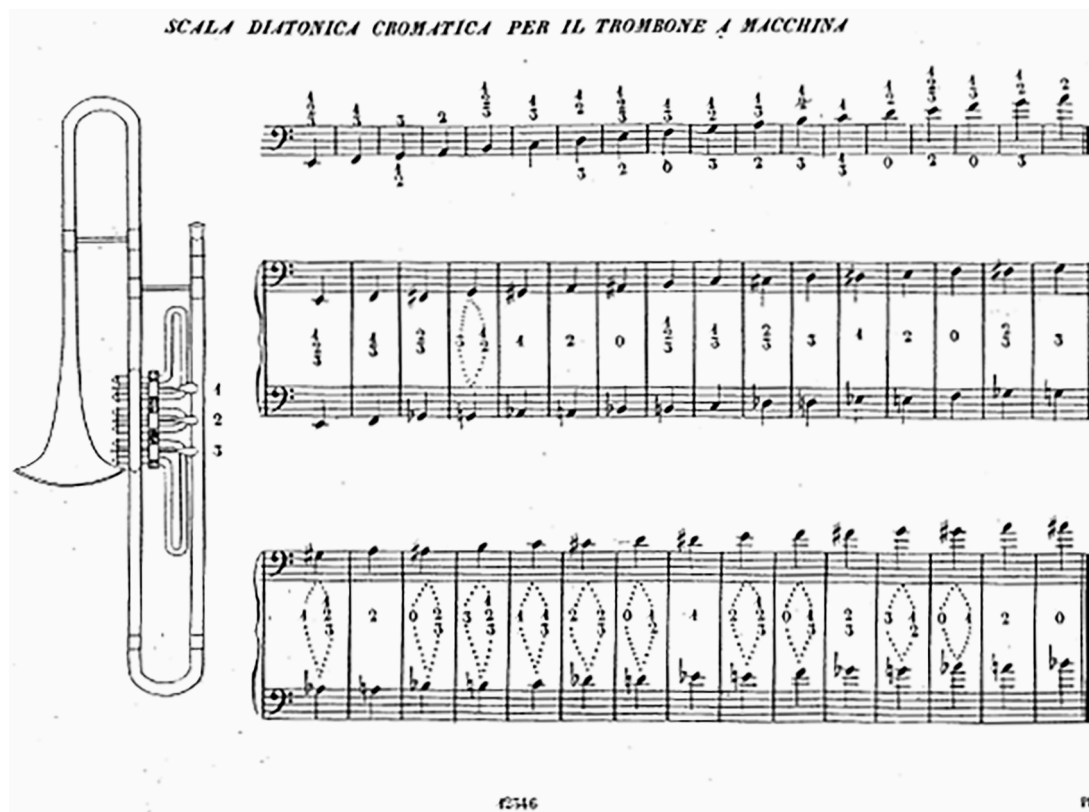


Fig. 10 Valve trombone chart from Bellini: *Metodo per trombone* (Ricordi version), p. [iii].

ly in the key of F, but the original French version of Berlioz's well-known orchestration treatise identifies E^b as the key of the bass trombone, as does the Italian version.¹⁸

18 Berlioz 1844, pp. 200–202; Berlioz 1847, pp. 213f.



Fig. 11 Early Italian valve trombone by Carlo Bernardi, Milan (1838) (Courtesy of Francesco Carreras).

Exactly when the valve trombone came into common use in Italy is unclear, but it is unlikely to have occurred before the early 1830s, when Johann Tobias Uhlmann in Vienna became the first instrument maker to produce valve trombones in quantity.¹⁹ Northern Italy was under Austrian rule in the 1830s, so it is not surprising that the earliest Italian-made valve trombone known to me is an instrument with four double-piston valves. It was made by Carlo Bernardi of Milan in 1838 and now resides in Milan's Castello Sforzesca (Fig. 11).²⁰ The only other Italian maker of trombones known to have been active in the 1830s and '40s, Antonio Apparuti of Modena (fl. 1831–1849), produced at least a few valved brasses, but the only trombone of his that survives is a slide instrument.²¹

By the mid-1840s the valve trombone had probably largely supplanted the slide instrument in Italian orchestras. The original French edition of Hector Berlioz's *Grand traité d'instrumentation et d'orchestration modernes* (ca 1844) concentrates on the slide trombone, mentioning only the alto version of the valve instrument,²² but in the Italian translation of this treatise (ca 1846/47), Alberto Mazzucato added a footnote to the article on the trombone, stating that the valve trombone was in use in most orchestras in Italy.²³ The 1873 catalogue of the Pelitti firm of Milan provides illustrations of fifteen different trombones, all with valves (Fig. 12); nine of

19 An instrument by Uhlmann with three double-piston valves is illustrated in Nemetz n.d. [after 1830], p. 20. See Herbert 2006, pp. 184f. and Illustration 50. See also Weiner 2011.

20 I am grateful to Francesco Carreras, former owner of this instrument, for this information (personal communication, November 2018). See also Carreras/Meroni 2015.

21 Apparuti's slide trombone survives in Modena, Museo Civico di Storia e di Arte Medievale e Moderna, SM 56-1981. See Museo 1982, pl. 5. Regarding Apparuti's other brass instruments, see Waterhouse 1993, p. 10.

22 Berlioz 1844, pp. 199–224. See p. 224 for the *trombone alto à pistons, ou à cylindres*.

23 See Berlioz 1847, p. 212, n. 2: "In parecchie delle nostre orchestre trovansi i tromboni così detti *a macchina*, i quali mediante un meccanismo particolare offrono maggiore facilità d'esecuzione, e risparmiano la necessità dell'allungare ed accorciare del corpo dello strumento; ed in conseguenza l'incomodo movimento del braccio." ("In many of our orchestras one finds trombones called *a macchina* [i.e., mechanised, valved], which by means of a particular mechanism offer great facility of execution and obviate the necessity of elongating and shortening the body of the instrument, and in consequence the uncomfortable arm movement.") Translation by the present author; see also Meucci 2010, p. 28.

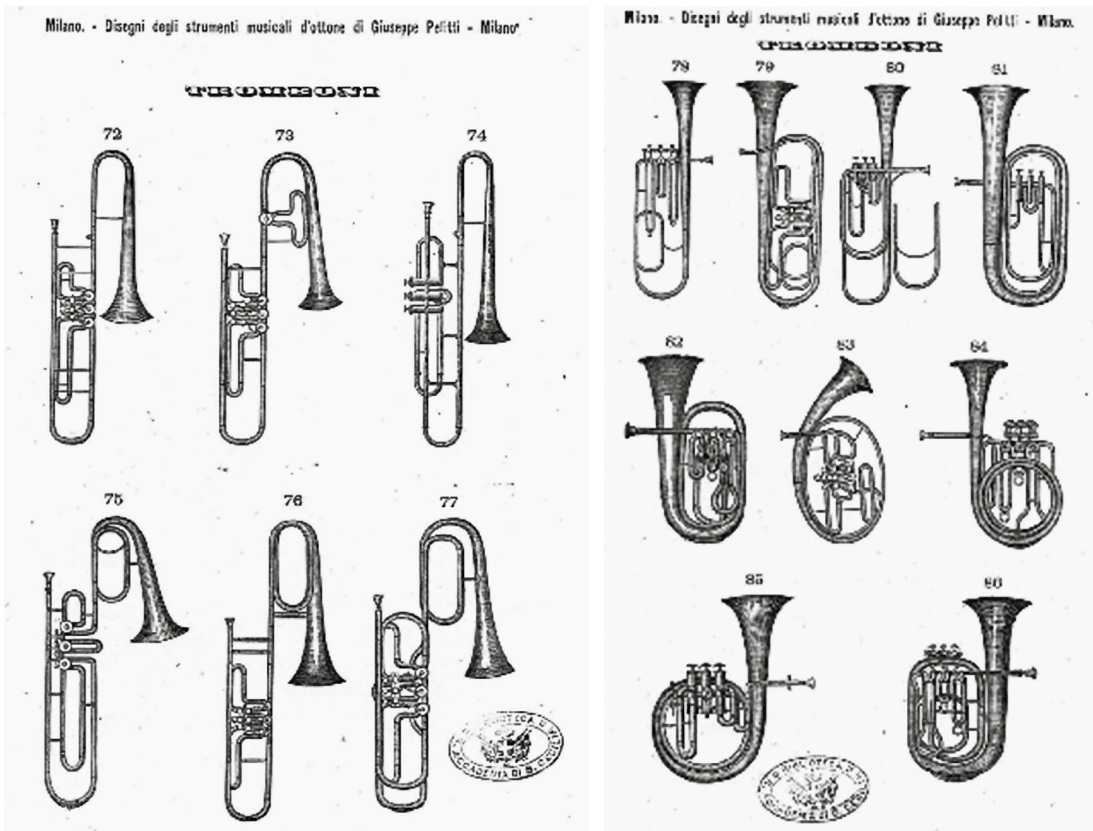


Fig. 12 Trombone models from the Pelitti catalogue of 1873.

these are upright models; there are no slide instruments.²⁴ Significantly, not one of Pelitti's trombones has double-piston valves; all are equipped either with rotary or single-piston valves. As Table 2 shows, Italian method books for trombone published in the second half of the nineteenth century clearly favour the valve instrument, though Giovacchino Bimboni's *Metodo per trombone* (ca 1885) discusses both models.²⁵

Table 2 Nineteenth-century Italian didactic sources relating to the trombone.
OTS = over-the-shoulder; S = soprano; A = alto; T = tenor; B = bass

Author	Title	Place of publication	Date	Remarks
Francesco Mirecki	<i>Trattato intorno agli istrumenti ed all'istrumentazione</i>	Milan/Florence	[1824]	slide; A/T/B*
[Jean-Frédéric] Braun	<i>Scale e metodo per il trombone</i>	Milan	[ca 1828]	slide (OTS); B*
Bonifazio Asioli	<i>Transunto dei principj elementari di musica e breve metodo per trombone</i>	Milan	[ca 1828]	slide (OTS); B*

24 Ibid., p. 29.
25 Bimboni n.d.

Giuseppe Pilotti	<i>Breve insegnamento ... per tutti gli strumenti d'orchestra</i>	Bologna/Milan	[ca 1836]	?slide; A/T/B
Fermo Bellini	<i>Metodo per trombone</i>	Milan	[ca 1841]	slide (OTS), valve; T
Fermo Bellini	<i>Metodo per trombone si duttile che a piston, Op. 28</i>	Milan	[ca 1841]	valve; T
Fermo Bellini	<i>Teoriche musicali su gli istromenti e sull'istrumentazione</i>	Milan	1844	slide, valve; S**/A/T/B
Hector Berlioz	<i>Trattato d'istromentazione e d'orchestrazione</i>	Milan/London/ Florence/Mendrisio	[ca 1846/47]	slide, valve
Georges Kastner	<i>Metodo elementare per trombone</i>	Milan	[ca 1849]	valve; A/T/B
Gustavo Rossari	<i>Metodo per trombone e bombardino in si bemol</i>	Milan	[before 1881]	valve
Giovacchino Bimboni	<i>Metodo per trombone</i>	Florence	[1880/89]	slide, valve; T
Domenico Gatti	<i>Gran metodo teorico pratico ... per trombone tenore a cilindri e congeneri</i>	Milan	[before 1891]	valve; T
Giuseppe Sianesi	<i>Metodo per duplex bombardino-trombone (S♭) di invenzione Pelitti</i>	Milan	[before 1892]	valve; T

* signifies a "bass" trombone with essentially the same range as a tenor trombone.

** Bellini indicates that the soprano trombone is very rare.

Giuseppe Verdi and the trombone

The giant among Italian composers in the mid-to-late nineteenth century was of course Giuseppe Verdi (1813–1901). By the time of Verdi's maturity, valve trombones were in common use in Italian opera orchestras. Circumstantial evidence for the use of valve trombones in his mature operas may be seen in Figure 13, an excerpt from Verdi's *La forza del destino* (1862). It may have been intended for one trombone or for all three trombones,²⁶ but a performer on a tenor slide trombone would be faced with many instances of seventh-position B[♭]. If played on a slide bass trombone in F, no notes in seventh position would be required, but the passage would still be quite challenging. In any case, there can be little question that the valve trombone prevailed in Italian opera orchestras at this time.

By the 1880s, Verdi had become dissatisfied with the sound of the ophicleide as the foundation of the brass section; he sought an instrument with a more focused sound that would blend well with the other trombones. As reported in the *Gazetta musicale di Milano* for 4 Septem-

26 Douglas Yeo, personal communication, April 2019. I am grateful to Yeo for sharing this excerpt with me.

Fig. 13 Giuseppe Verdi: *La forza del destino*, Overture, trombone part, mm. 68–86.

ber 1881, the composer visited the establishment of instrument-maker Giuseppe Clemente Pelitti (1837–1905) on two occasions that summer for the purpose of examining Pelitti’s low brass instruments.²⁷ On his second visit, Verdi heard Pelitti’s new contrabass trombone in B $\flat$, pitched an octave below the tenor, which won his enthusiastic approval. Pelitti manufactured such an instrument and the maestro wrote parts for the *trombone contrabbasso Verdi* in his last two operas, *Otello* (1887) and *Falstaff* (1893). This instrument provided the foundation for a four-part low-brass section consisting of two tenor trombones in B $\flat$, a bass trombone in F and the *trombone contrabbasso Verdi* in B $\flat$, one octave lower than the tenor trombones. Soon, this instrument was being used in revivals of the composer’s earlier operas, often to cover the part labelled *cimbasso*.²⁸ No examples of the *trombone contrabbasso Verdi* by the Pelitti firm survive, but an undated instrument with three rotary valves by the firm of Maino & Orsi of Milan that survives in a private collection may be the closest thing we have to Pelitti’s original design (Fig. 14). The inscription on the instrument reads “MAINO E ORSI / PROF R. ORSI SUCC / PREMIAT.^A E PRIV.^A FABB^A / INSTRUM.^I MUSICALI / MILANO”. The instrument’s owner suggests 1902/1918 as its date of manufacture.²⁹

27 Anonymous 1881.

28 See Meucci 1996, pp. 158f.

29 Private communication, 1 May 2018.



Fig. 14 *Trombone contrabbasso Verdi*, 3 valves, Romeo Orsi, Milan, 1902–1918. Collection of Arnold Myers. Currently on loan to the Edinburgh University Collection of Historical Musical Instruments, No. 660 (Photo courtesy of Arnold Myers).

Conclusion

Rossini and his contemporaries in the early nineteenth century did not hold trombonists in high regard. Judging from treatises by Asioli and Bellini, both Mayr and Rossini may have had an over-the-shoulder slide trombone in mind for their works. Italian treatises from the 1840s demonstrate that the valve instrument was gaining the upper hand at that time. Later in the century, as the valve trombone became more and more popular, composers such as Pacini and Verdi wrote more demanding parts for the instrument. Clearly, the valve trombone was in the ascendancy in late-nineteenth-century Italy.

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Hannes Vereecke

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

This paper takes a practical approach to developing 2D, flat, sheet brass bell patterns for brasswind instruments, as taught at the Imperial and Royal Musical Instrument-Making School in Graslitz. This study includes a geometric analysis of 23 functional flat sheet brass bell patterns and their corresponding mandrels from the collection at the Bundesfachschule für Musikinstrumentenbau Ludwigsburg. These results were compared with two 1920s drawings by Max Rölz, which provided essential insights into the method used. Our analysis demonstrates that the Graslitz Method offers a reliable framework for creating bell patterns. However, it still requires empirical work and trial-and-error adjustments. Despite its limitations, the Graslitz Method remains a valuable tool in contemporary brasswind instrument-making.

Introduction

The musical characteristics of a trombone bell are defined by its shape, surface conditions and vibrational behaviour. Consequently, the study of the parameters that have an impact on these aspects is an integral part of historically informed brasswind instrument-making. In addition to the chemical composition and metallurgical characteristics of the raw materials used, other parameters – such as wall thickness, the annealing temperature applied, the annealing time, rate of deformation and the metal spinning tools used – will influence the vibrational behaviour. From a practical point of view, the degree to which the brazed flat sheet metal pattern has to be deformed in order to bring it into a 3D shape on the mandrel is of particular relevance for the eventual vibrational behaviour of the bell. This in turn depends on how accurately the flat pattern is prepared. Since very few sources offer any insight into this procedure, unfolding a flat sheet brass pattern from a known mandrel shape presents a considerable obstacle to brasswind instrument makers. In his book *Metallblasinstrumentenbau* (1970),¹ the brasswind instrument maker Carl Nödl describes a methodological approach that was taught at the Imperial and Royal Musical Instrument-Making School in Graslitz (now Kraslice, Czech Republic).² This method is referred to in this paper as the ‘Graslitz Method’. Unfortunately, Nödl’s description is lacking in both adequate detail and practical examples, which leaves a gap between theory and praxis. In 2017, two drawings made in Graslitz by Max Rölz in the 1920s were discovered at the workshop of the brasswind instrument maker Walter Nirschl in Geretsried. These two drawings (Figs. 1 and 2) provide all the information needed to decrypt Nödl’s description.

1 Nödl 1970, tables 99–99a. This book is based on Nödl’s handwritten manuscript, edited by the South-Bavarian Guild of Brasswind Instrument Makers and published posthumously.

2 Dullat 1997, p. 146. See also Dullat 2010, pp. 349f.

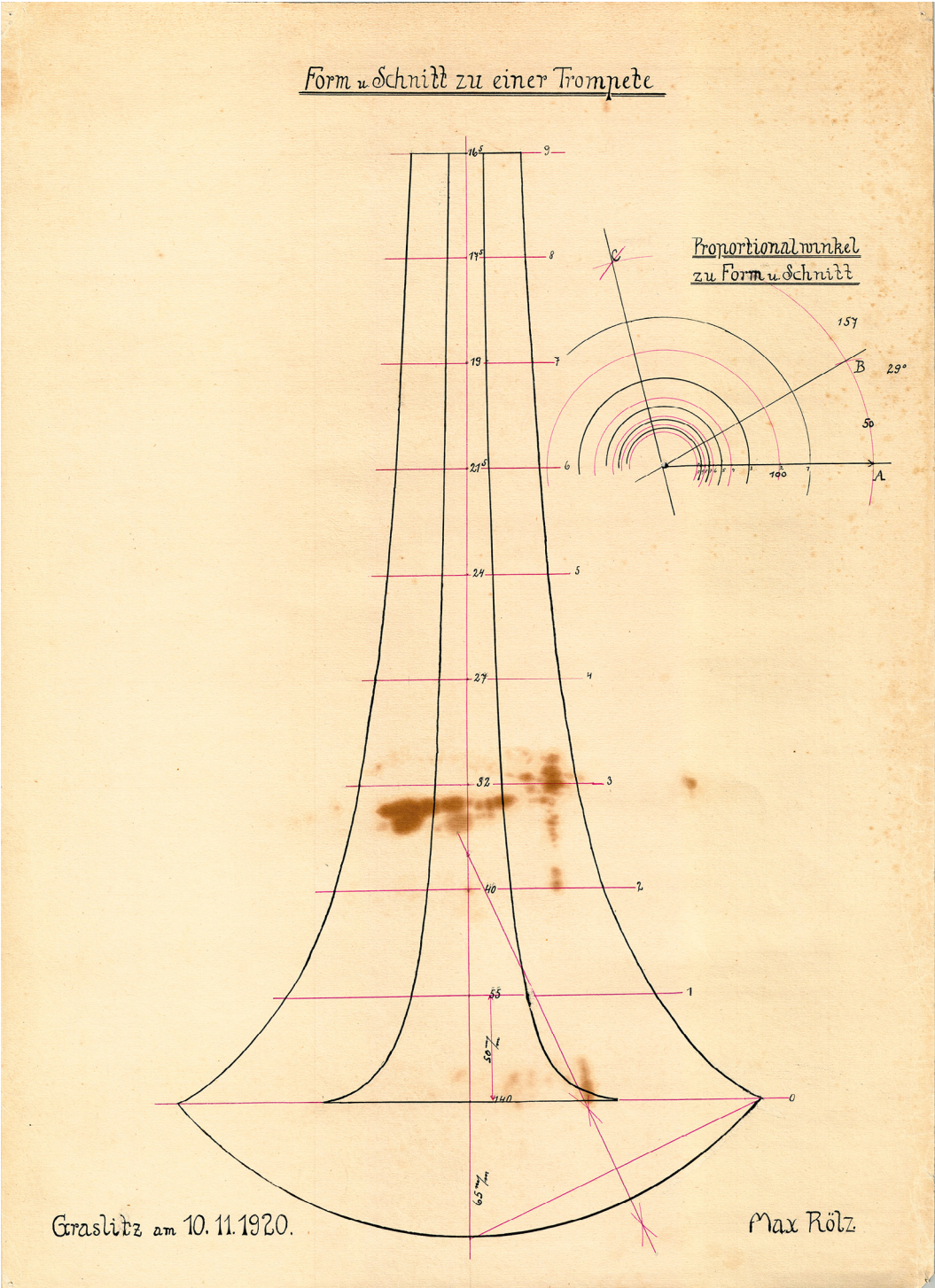


Fig. 1 Drawing of a trumpet bell pattern by Max Rölz (Graslitz, 10 November 1920).

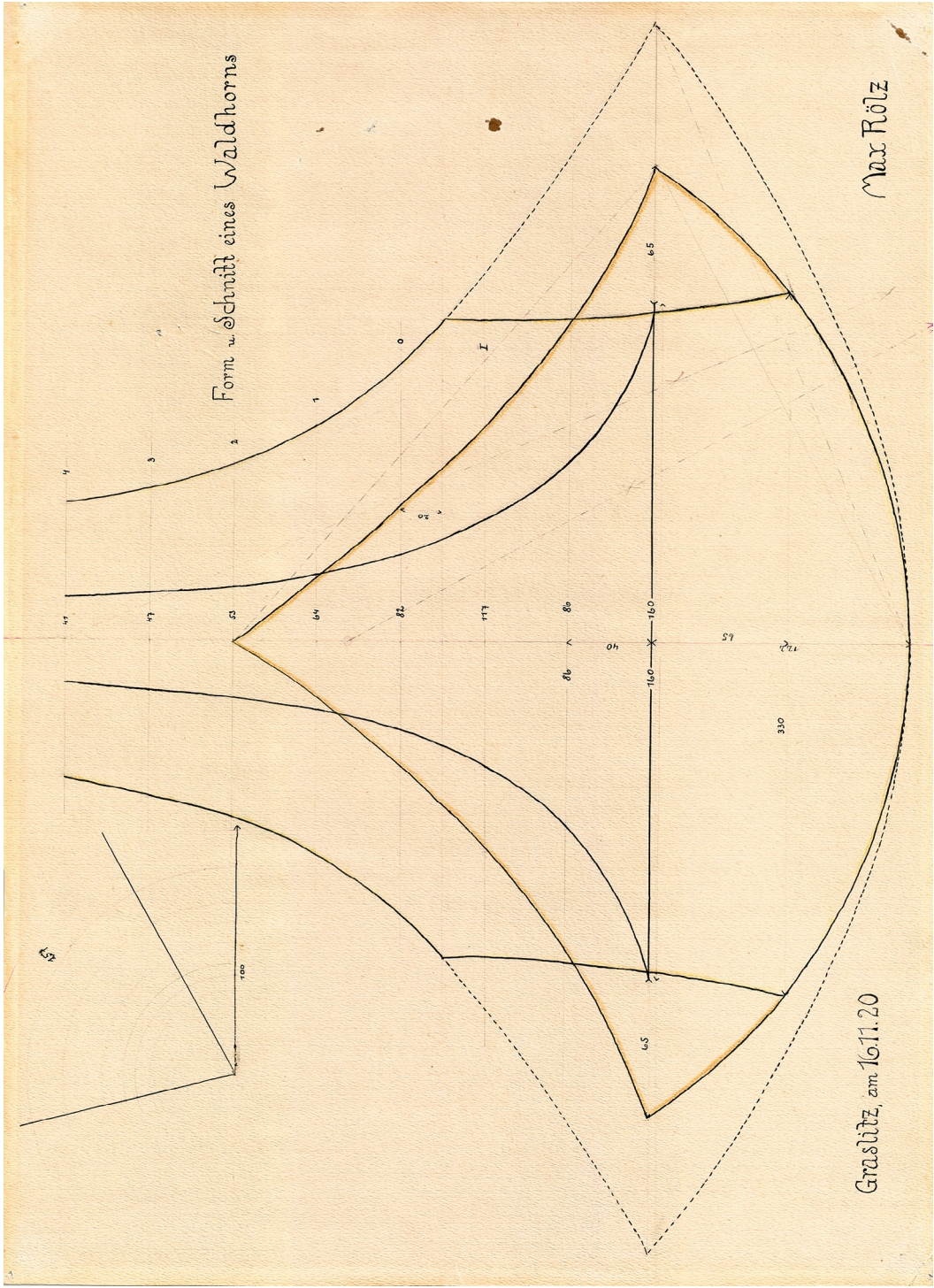


Fig. 2 Drawing of a horn bell pattern by Max Rölz (Graslitz, 16 November 1920).

The main purpose of this article is to provide both a deeper theoretical and practical understanding of the principles of the Graslitz Method as they were taught at the Musical Instrument-Making School and used in the workshops of the town and region. To this end, a geometrical analysis of twenty-three functional flat sheet brass bell patterns was conducted. These, and the associated mandrels, belong to the collection of the Bundesfachschule für Musikinstrumentenbau Ludwigsburg. The results of this analysis were checked against Rölz's drawings. Furthermore, in order to investigate the significance of the Method for the praxis of brasswind instrument-making today, it was applied in the development of a flat sheet brass pattern for a given trombone bell mandrel.

The rest of this article will discuss the following topics: (1) the geometrical analysis of a functional flat bell pattern; (2) the working principles of the proportional compass as used in the Graslitz Method; and (3) a step-by-step application of the Graslitz Method using a practical example. We shall conclude with a summary, highlighting the advantages and limitations of the Graslitz Method for brasswind instrument-making today.

Geometrical analysis of a functional flat bell pattern

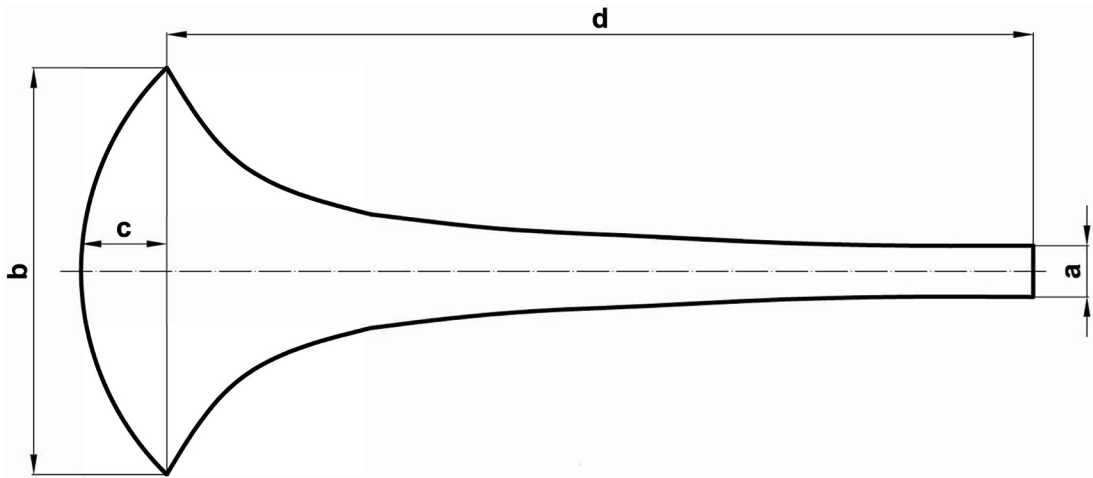


Fig. 3 Core dimensions of a flat bell pattern.

Figure 3 shows the four core dimensions of a flat bell pattern: the minimal pattern width (a), the maximal pattern width (b), the arch rise (c) and the length of the pattern without the arch rise (d). In order to gain insight into how the shape of the bell correlates with a flat sheet pattern, the geometry of the aforementioned 23 functional bell patterns and associated bell mandrels of different kinds of brasswind instruments were analysed. This analysis demonstrated that the maximum pattern width exhibits a proportional relationship to the circumference of the largest bell diameter. Furthermore, the arch rise of the pattern is similarly proportional to the maximum pattern width. It was noted that the total length of the pattern, excluding the arch rise, did not correspond to the surface line of the bell. Our most important insight was perhaps that the width of the pattern appeared to be smaller in the significantly flaring part of the bell than the associated circumference of the bell diameter.

A statistical analysis of the geometrical data showed that the proportional relationship between the maximum pattern width and the circumference of the largest diameter reaches a value of between 58% and 68%. Figure 4 shows that 50% of the measured data exhibits val-

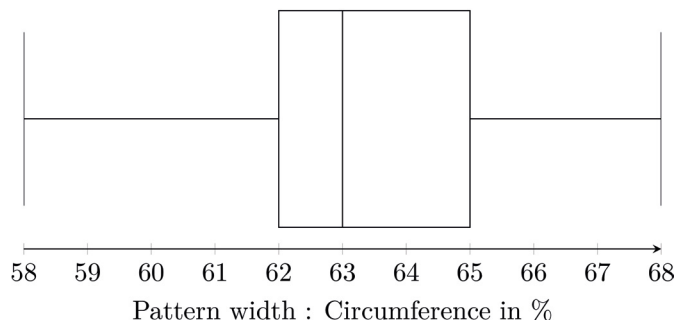


Fig. 4 Ratio of pattern width to circumference of the largest bell diameter.

ues between 62% and 65%, with a median of 63%. However, flügelhorns and trumpets feature somewhat higher values when compared to the bell patterns for horns.

The proportion between the arch rise and the maximum pattern width shows values measured between 19% and 29%, with a median of 22%. 50% of the values fall between 20% and 25%. Bell patterns for horns and trombones feature rather higher values than those for trumpets.



Fig. 5 Ratio of arch rise to pattern width.

The proportional compass

A proportional compass is a geometrical calculation aid that was known to craftsmen as early as the sixteenth century.³ In graphic design, a proportional compass is applied to scale drawings.⁴ It can be used in musical instrument making, for example, to design a violin-scroll or to lay out the labium of an organ pipe. The working principle of the proportional compass is based on the first theorem of intersecting lines. It is used in the bell-patterning process to determine half of the circumference of the bell mandrel at a specific point. Using the law of cosines, the aperture angle of an isosceles triangle with a leg-length equal to the diameter and a base of half the circumference can be calculated as 103.51°.

Assuming that one wants to determine half of the circumference of a circle with a diameter of 60 (or 100) mm, one could draw, in such an isosceles triangle with an angle of 103.51°, a circle with its centre at the intersection point of the two legs, with a radius that equals 60 (or 100) mm (see Fig. 6). This circle will intersect both legs of the isosceles triangle. If one connects these points, the length of this line will be exactly half of the circumference (thus 94.24 or 157.07 mm respectively for a diameter of 60 or 100 mm). This length can be easily transferred to a flat brass sheet using a pair of compasses. Today, the use of the proportional compass can be

³ See Galilei 1606.

⁴ See Meyer 1890, p. 18.

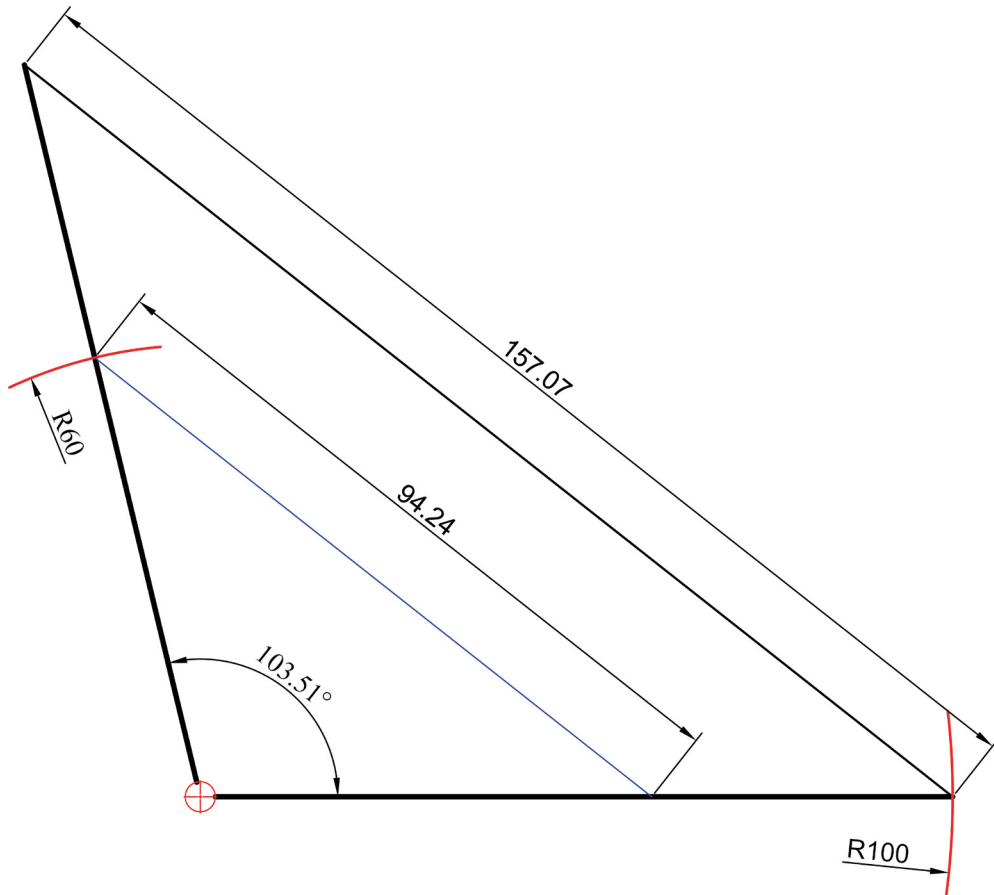


Fig. 6 Principles of the proportional compass as applied in the Graslitz Method.

replaced by a spreadsheet. From a practical point of view, the advantage of the proportional compass method is that it is easy to handle, fast and reliable. Furthermore, it requires only compass, ruler and pencil.

Trombone bell patterning using the Graslitz Method

In order to verify the Method in praxis, it was employed for the flat patterning of a trombone bell, using a spreadsheet, software designed for numerical computations and a 2D-CAD program. The spreadsheet was used to process the data measured and to calculate the circumference and arch rise. Computational software was used for the cubic spline interpolation, while the 2D-CAD program was used to draw the bell pattern. The drawing was then printed at a scale of 1:1 and used as a template to cut the pattern out of the sheet brass.

The initial starting point of the Graslitz Method is the measured bore profile, given as a list of x and y coordinates. Here the x-value represents the distance from the zero-point in mm, while the y-value represents the diameter in mm at point x. It is important to smooth the measured data, in order to filter out potential measurement errors.

The principal challenge in designing a flat pattern for a trombone bell is that the bell is composed of a developable part and a non-developable part. A developable surface is one that can be flattened into a plane without stretching or compressing. Cylindrical and conical surfaces are developable because their outline curves are straight-lined from all viewing angles.⁵ The

5 Köhlert/Strohmaier 2002.

quasi-conical stem of the bell is developable, and as such, the circumference can be supposed as the pattern width. Seaming the pattern together, both sides overlap, which makes the pattern a few millimetres smaller. However, this is equalised since the forging of the brazing seam makes it wider again. The flare of the bell is non-developable because it exhibits a double curvature. It is curved along the longitudinal axis and also towards the bell end. The point at which the shape of the bore profile is not developable can be found by trial and error. In the non-developable part of the bell, the pattern width should be somewhat smaller than the circumference. Nödl indicates that half of the maximum pattern width is double the value of half of the bell; in other words, the pattern width equates to about 64% of the circumference of the maximum bell diameter. This value could also be observed during the analysis of the functional flat pattern.

In the next step, the profile should be divided into a variable number of equal sections. Nödl notes that “the division of the pattern into n-number of equal sections depends on the shape of the bell”.⁶ By means of trial and error, usable results were achieved for a trombone bell pattern by a division into eight equal sections (see Table 1). Dividing the pattern into fewer sections will result in a narrower bell flare. Nödl provides two examples of a pattern divided into ten equal sections and one into seven equal sections. As can be seen in Figure 1, Rölz divides his trumpet bell pattern into nine equal sections. Furthermore, as can be seen in Figure 2, he divides his horn bell pattern into seven equal sections. For our example, however, the x and y coordinates were sought for eight equal sections. The total length of the bell is 566 mm, and the maximum bell diameter is 235 mm before flanging. Subsequently, one section equals $\frac{566}{8} = 70.75$ mm. The x-y coordinates at each part can be found by using a cubic spline interpolation, setting the interpolation interval at 70.75 mm. This list will provide ten coordinates. The circumference of the first nine diameters equals the pattern width. Half of the maximum pattern width is found by calculating $\frac{\pi \times \varnothing}{2} \times 236.13 \text{ mm} = 98.39 \text{ mm}$. Nödl indicates in his drawings an arch rise of 5/24 or rounded 21% as a value for the ratio of the pattern width.⁷ Consequently, in our case having a pattern width of 236.13 mm results in an arch rise of $\frac{5}{24} \times 236.13 \text{ mm} = 98.39 \text{ mm}$. Using this data, shown in Table 1, the pattern can be drawn by means of connecting a spline through all y-points. In Table 1, “x” represents the distance from the zero-point and “y” the associated diameter of the bell at this specific point. The “width” indicated in Table 1 is thus half of the maximal pattern width calculated at this point.

point	x	y	width
1	0.00	16.55	25.98
2	70.75	18.21	28.59
3	141.50	21.39	33.58
4	212.25	24.98	39.22
5	283.00	29.23	45.89
6	353.75	34.49	54.15
7	424.50	43.97	69.03
8	495.25	67.16	105.44
9	566.00	235.00	236.13
arch =			98.39

Table 1 Cornerstone data of the exemplary trombone bell patterning using the Graslitz Method.

6 “Die Einteilung der Zuschnitte hängt von der Form des Instrumentes ab” (Nödl 1970, table 99).
7 Ibid., table 99a.

The result was a functional pattern that fit well on the stem of the bell mandrel. It was possible to spin it on the mandrel without an excessive amount of annealing. This first pattern provided a good basis, though in order to turn it into a very good pattern a certain amount of empirical research still had to be done. During this process, it could be observed that the thickness of the raw materials has a considerable effect on how well a pattern fits, as does the distance a bell maker can reach with his metal spinning tools into the flare of the bell. Subsequently, since each workshop has its own specific tools and practices for the use of raw materials, a good functional flat pattern does not automatically work well for another workshop. This depends on the settings of the workshop and on the bellmaker himself. As Tuells and Painter point out in their book on metal spinning: “The distance that metal can be drawn without annealing, can only be learned by experience.”⁸

Conclusions

The Graslitz Method is a tried and tested method to develop 2D flat sheet brass bell patterns. It is based on the assumption that a bell profile is to be divided into a variable number of sections whereby all except for the largest can be flat patterned just by calculating the circumference of the associated diameter. The pattern width of the point of the largest bell diameter will be somewhat smaller than the circumference, with a mean value of 63%. The arch rise is proportionally related to the pattern width. A good trombone bell pattern was found by dividing the model into eight parts. This Method provides the maker with a good framework, but further empirical work is needed to derive a very good flat-sheet pattern. As such, it is a method that still requires some trial and error. Furthermore, how well a pattern fits involves several other parameters, including technical skill and a good deal of experience.

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8 Tuells/Painter 1912, p. 17.

Christian Breternitz

Eine Ventilposaune mit einem Vorläufer der ›Berliner Pumpen‹. Blechblasinstrumentenbau in Berlin um 1830

Dieser Essay beschäftigt sich mit dem Berliner Blechblasinstrumentenbau zwischen 1818 und 1835. Hierbei stehen zunächst die Kooperationen zwischen Musikern wie Heinrich Stölzel, Friedrich Blühmel sowie Wilhelm Wieprecht mit Instrumentenmachern wie Johann Wendelin Weisse, Joseph Caspar Gabler sowie Johann Gottfried Moritz im Vordergrund. Darauf aufbauend wird durch die Analyse einer Ventilposaune von Johann Wendelin Weisse, die mit einem Vorläufer der Berliner Pumpenventile ausgestattet ist, eine Lücke in der Entwicklungsgeschichte der Ventile geschlossen.

A Valve Trombone with a Precursor of the 'Berliner Pumpen'. Brass Instrument-Making in Berlin in Around 1830

This essay deals with brass instrument-making in Berlin between 1818 and 1835. Initially, the focus is on the cooperation between musicians such as Heinrich Stölzel, Friedrich Blühmel and Wilhelm Wieprecht and instrument makers such as Johann Wendelin Weisse, Joseph Caspar Gabler and Johann Gottfried Moritz. We are then able to close a hitherto 'gap' in the history of valve development through analysing a Johann Wendelin Weisse valve trombone equipped with a precursor of the Berliner Pumpen valves.

Einführung

Dieser Essay beschäftigt sich mit dem Berliner Blechblasinstrumentenbau zwischen 1818 und 1835. In dieser Zeit war die preußische Hauptstadt eines der Innovationszentren des Metallblasinstrumentenbaus, vor allem im Hinblick auf die Erfindung der Ventile. Obwohl das Thema gut erforscht ist – zu nennen sind hier vor allem die wegweisenden Arbeiten von Herbert Heyde¹ sowie insbesondere der dritte Teil aus der Reihe *Trumpets and Other High Brass* von Sabine Klaus² – konnten durch Forschungen des Autors im Rahmen seiner Dissertation zum »Berliner Blechblasinstrumentenbau im 18. und 19. Jahrhundert« neue Entdeckungen gemacht und Zusammenhänge aufgezeigt werden, die im Folgenden in Ausschnitten Ausführung finden.³ Der Aufsatz beschäftigt sich mit den Beziehungen zwischen Musikern, Entwicklern und Metallblasinstrumentenmachern in Berlin zu Beginn des 19. Jahrhunderts sowie ausgewählten Instrumenten als Ergebnissen dieser Kooperationen.

1 Heyde 1987; Heyde 1994.

2 Klaus 2017.

3 Breternitz 2020. Dort finden sich auch ausführliche Biografien der Berliner Metallblasinstrumentenmacher, weshalb an dieser Stelle darauf verzichtet wird.

Die Protagonisten

Zu Beginn des 19. Jahrhunderts kamen mehrere Personen nach Berlin, die zur Entwicklung des Blechblasinstrumentenbaus, insbesondere zur Erfindung der Ventile, maßgeblich beitrugen. Allen voran seien an dieser Stelle die Namen von Heinrich Stölzel (1777–1844), Friedrich Blühmel (1777–1845) und Wilhelm Wieprecht (1802–1872) genannt. Ihnen ist gemein, dass sie aktive Musiker waren, jedoch keine (Metallblas-)Instrumentenbauer. Somit stellt sich die Frage, mit welchen Herstellern diese Erfinder kooperierten, um ihre Innovationen umzusetzen und zu verbreiten. Anhand der archivalischen Überlieferungen sollen hierauf im Folgenden Antworten gefunden werden.

1. Friedrich Blühmel

Der aus Pless in Oberschlesien stammende und als Berghautboist wirkende Friedrich Blühmel ist uns heute als Erfinder der Kastenventile und der ersten Drehventile bekannt. Mit Heinrich Stölzel stritt er darüber, wer das Funktionsprinzip der Ventile zuerst erfunden hatte. Beide versuchten hierfür ein Patent zu erlangen. Diese Auseinandersetzung ist in den Akten des Geheimen Staatsarchivs Preußischer Kulturbesitz gut dokumentiert. Die überlieferten Schriftstücke geben auch Auskunft darüber, mit welchem Instrumentenmacher Blühmel in Kontakt stand, nachdem er nach Berlin kam. Der Erfinder wurde nämlich vom für die Patenterteilung zuständigen Ministerium für Handel und Gewerbe damit beauftragt, ein Instrument mit den neuen Ventilen – oder zumindest eine technische Zeichnung derselben – zur Prüfung vorzulegen. In diesem Zusammenhang schrieb Blühmel am 18. Februar 1818 Folgendes:

Wegen Mangel an Zeit ist es unmöglich, eine Trompete oder Posaune nach der neuern Form zugleich mit einzureichen, welches aber in einigen Tagen geschehen wird, da diese beiden Instrumente zugleich hier an Ort und Stelle in Arbeit genommen sind [...].⁴

Mit dem Oberberghauptmann Gerhard hatte Blühmel einen Vorgesetzten, der für seine Belange eintrat und ausführliche Schreiben an das Ministerium richtete, in denen er beteuerte, dass Friedrich Blühmel das Primat der Erfindung der Ventile zustand, und nicht Heinrich Stölzel. In diesem Zusammenhang schrieb Gerhard am 3. April 1818:

Blümel [sic] ist mit allen Schwierigkeiten und Vortheilen dieser Arbeit aufs genaueste vertraut, und giebt gegenwärtig des [sic] Werkmeister des Gabler bey Anfertigung der neuen Instrumente darin Unterricht.⁵

Friedrich Blühmel kooperierte also mit Joseph Caspar Gabler (1770–1818), der seine Lehre bei August Friedrich Krause (1753–1806) absolviert hatte, danach bei ihm als Geselle tätig war und 1802 seine eigene Werkstatt eröffnete. Er war es demnach, der erste Hörner und Trompeten mit Kastenventilen für Blühmel fertigte. Auch über den Bau einer Posaune mit dieser Ventilform wurde nachgedacht.⁶ Blühmel und Stölzel wurde das Patent letztendlich am 12. April 1818 gemeinsam zugesprochen. Da Blühmel jedoch seinen Anteil am Patent an Stölzel verkaufte und Joseph Caspar Gabler kurze Zeit später noch im Jahr 1818 verstarb, kam die Produktion von Instrumenten mit Kastenventilen in Berlin schnell zum Erliegen.

⁴ HA Rep 120, fol. 13r.

⁵ Ebd., fol. 19v.

⁶ Vgl. ebd., fol. 41r–42v.

2. Heinrich Stölzel

Der bereits erwähnte Oberberghauptmann Gerhard äußerte sich nicht nur über Friedrich Blümel, sondern auch über Heinrich Stölzel, dessen ›Röhrenschiebeventile‹ eine weitaus größere Verbreitung fanden.

Vereinigt sich Stölzel mit Blümel, wegen Erfüllung eines gemeinschaftlichen Patents, so muß Gabler nothwendig dabey mit zuerst berücksichtigt werden, weil er ihm, wenn auch aus Eigennutz, zur Anfertigung der neuen Instrumente behülflich ist, und die Auslagen dafür von Gablern bestritten werden. Hierdurch entstehen nur Verwicklungen, die freilich nicht Sache der Behörde sind, die aber den kostspieligen Aufenthalt des Blümel noch mehr verlängern können, da Weiss für Stölzel arbeitet, wodurch also der zu hoffende Vortheil ganz absorbiert werden würde.⁷

Der angesprochene »Weiss«, der »für Stölzel arbeitet«, kann nur Johann Wendelin Weisse (1780–nach 1839) sein, ein Holzblasinstrumentenmacher, der 1813/1814 nach Berlin kam. An dieser Stelle stellt sich die berechtigte Frage, warum sich Stölzel für die Anfertigung seiner Ventilsysteme einen Holzblasinstrumentenmacher als Partner suchte. Weisse war jedoch nicht nur Hersteller, sondern auch Händler von Musikinstrumenten. Hierbei kooperierte er mit einer Vielzahl von Musikinstrumentenmachern vor Ort in Berlin. Unter diesen befand sich auch ein Metallblasinstrumentenmacher, der später größere Bekanntheit erlangen sollte: Johann Gottfried Moritz (1777–1840), Hofinstrumentenmacher seit 1819.

Als sich Johann Gottfried Moritz um den Titel des Hofinstrumentenmachers bewarb, wurde – wie in solchen Fällen üblich – sein Gewerbe gründlich untersucht. Hierzu gehörten in der Regel eine Auskunft der zuständigen Polizeibehörde sowie gegebenenfalls Einschätzungen von Fachexperten. Im Fall von Moritz gab der Polizeiobermeister Le Coq darüber Auskunft, dass der Metallblasinstrumentenmacher seine Frau verloren und zwei Kinder zu ernähren hatte, auch die wirtschaftliche Lage der Werkstatt war nicht optimal. Vonseiten des Ministeriums wurde darüber hinaus der angesehene Hornist und Komponist Georg Abraham Schneider (1770–1839) beauftragt, die Instrumente und die ›Kunstfertigkeit‹ von Johann Gottfried Moritz zu überprüfen. Schneider schrieb daraufhin am 14. September 1819 folgendes Ergebnis seiner Erkundungen:

Zufolge des Befehls Ew. pp. bin ich bei dem Instrumentenmacher Moritz in der Gipsgasse gewesen, habe aber nichts als fertige Trompeten und Posthörner, welche recht gut gearbeitet waren, gefunden. Darauf bin ich nach der Judengasse zu dem Instrumentenhändler Weisse gegangen, welcher fertige Waldhörner von diesem Instrumentenmacher Moritz zum Verkauf hat, habe diese Waldhörner selbst probirt, sie rein und gut gearbeitet gefunden, so daß ich diese Instrumente mit Recht empfehlen kann. Auch habe ich bei diesem Instrumentenhändler Weisse erfahren, daß dieser Instrumentenmacher Moritz aus Armuth, um einen gewissen Absatz zu haben, seine Instrumente weit billiger als alle anderen hiesigen Instrumentenmacher verkauft. Dieses ist alles, was ich Ew. pp von diesem Instrumentenmacher Moritz berichten kann.⁸

Johann Gottfried Moritz verkaufte also in dieser Zeit seine Instrumente auch über den oben angesprochenen Johann Wendelin Weisse, wenn nicht gar eine weitergehende Zusammenarbeit bestand. Nach der Ernennung zum Hofinstrumentenmacher am 25. November 1819 scheint Moritz diese Geschäftsbeziehung jedoch gelöst zu haben. Im Hinblick auf die eingangs dieses Abschnitts gestellte Frage, wer Heinrich Stölzel bei der Anfertigung seiner Ventilblasinstrumente unterstützte, kann die Antwort nur Johann Gottfried Moritz lauten (wenn auch

⁷ Ebd., fol. 19v.

⁸ *HA Rep* 100, fol. 10.

vermittelnd über Johann Wendelin Weisse), denn nur ein Jahr später, am 13. November 1820, schrieb Moritz an das Ministerium:

Ew. Excellenz bittend anzutreten, erlaube ich mir hiermit unterthänigst.
Ich bin meßing Blase=Instrumentenmacher; Der Königl[iche]. Kammermusikus Herr Stölzel hat eine chromatische Vorrichtung zu meßingene Blase=Instrumenten erfunden, und auf die alleinige Anfertigung derselben ein Patent auf 10 Jahre erhalten; Ich habe schon für S[eine]r. Hochgebohren, Herrn Grafen v[on]: Brühl so wie auch selbst für den p:p: Stölzel chromatische Waldhörner angefertigt, welche nach einliegenden Zeugnissen, die ich mir gnädigst zurückzusenden erbitte allen Beifall gefunden haben. Es kommen mehrere Anfragen nach chromatischen Instrumenten bei mir, allein d[er] Herr Erfinder dieser Vorrichtung scheint mir nicht immer dieselben anfertigen zu wollen, weshalb ich meine Kundschaft verlieren würde, wenn ich nicht auch chromatische Instrumente liefern könnte. Ich erlaube mir daher die ganz unterthänigste Frage? ob wenn der p:p: Stölzel während der Dauer seines Patents mir die chromatischen Vorrichtungen zu liefern verweigern sollte, ich nicht ermächtigt sei, sie mir selbst anzufertigen, so viel ich für meine Kunden bedarf.⁹

Das Ministerium antwortete, dass Stölzel als Patentinhaber allein entscheiden könne, mit wem er kooperiere. Ein weiterer interessanter Punkt an Moritz' Eingabe ist jedoch der Umstand, dass Stölzel den inneren Ventilmechanismus selbst herstellte. Stölzel selbst beschrieb noch im Jahr 1827, dass er

die Instrumente von den Instrumentenmachern entnehme, und nur die mechanische[n] Vorrichtungen dazu selbst anfertige, welche ohnehin keine Gegenstände sind, die von den Instrumentenmachern gut hergestellt werden können, da sie die geübte Hand eines Mechanikusses [sic] erfordern [...].¹⁰

Die mit zwei Stölzelventilen ausgestattete Trompete von Griessling & Schlott (Abbildung 1)¹¹ ist eines der frühen erhaltenen Instrumente mit diesem Ventiltyp. Der eigentümlich mit zwei Schrauben befestigte Ventildeckel unterstützt die Aussagen Stölzels, dass er den inneren Ventilmechanismus selbst gefertigt und anschließend mit dem Instrument verbunden habe.

Von Johann Gottfried Moritz sind nach Kenntnisstand des Autors keine Instrumente mit Stölzelventilen erhalten. Ein Waldhorn mit zwei Ventilen dieses Typs (Musikinstrumenten-Museum Berlin, Kat.-Nr. 978) ist als Kriegsverlust zu verbuchen. Curt Sachs schien sich aber der Bedeutung dieses Instruments bewusst und nahm in seinem 1922 publizierten Katalog zur Sammlung alter Musikinstrumente der Berliner Musikhochschule eine Abbildung des Waldhorns auf (Abbildung 2). Es ist das älteste überlieferte Instrument von Johann Gottfried Moritz und mit der Signatur »No 84 / J. G. Moritz / Königl. Hof / Instrumentenmacher / in Berlin«¹² versehen. Während die signierte Nummer 84 auf ein frühes Instrument Moritz' hindeutet, weist die Form des Ventildeckels eher auf die Zeit zwischen 1828 und 1833: Die von Stölzel entworfenen Ventile in frühen Versionen sind, wie oben bei der Ventiltrompete von Griessling & Schlott beschrieben, mit einem separaten und durch zwei kleine Schrauben befestigten Deckel von oben verschlossen. Das in Abbildung 2 dargestellte Ventilhorn besitzt jedoch bereits Gewinde-deckel, die trotz des Alters des Fotos gut zu erkennen sind. Möglicherweise ist dies sogar eine

9 *HA Rep 120*, fol. 44.

10 Ebd., fol. 49r.

11 Heinrich Stölzel kooperierte mit der Firma Griessling & Schlott seit 1821.

12 Sachs 1922, Sp. 218.



Abb. 1 Ventiltrompete in B mit 2 Stölzelventilen, Griessling & Schlott, Berlin, ca. 1826–1830, Gesamtansicht linke Seite (Musée de la musique Paris, Inv.-Nr. E.1542, Foto: Thierry Ollivier).

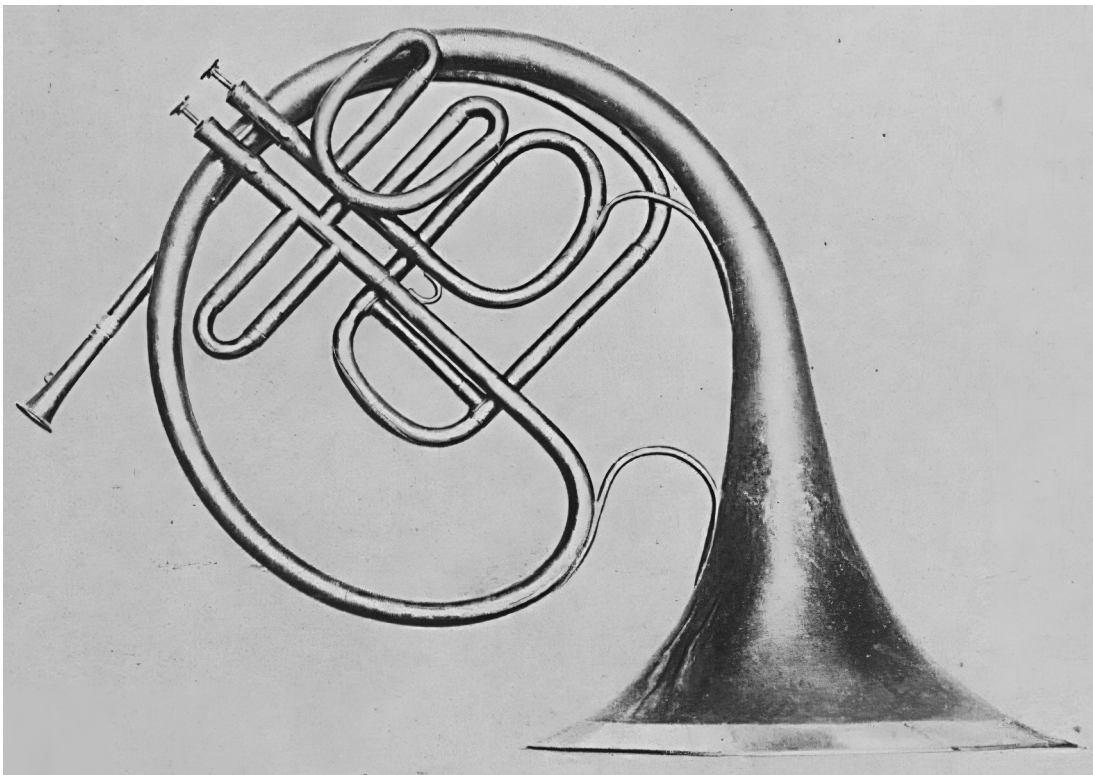


Abb. 2 Ventilhorn in F mit zwei Stölzelventilen und Halbtonzug von Johann Gottfried Moritz, Berlin, 1820–1833, MIM Kat.-Nr. 978 (Kriegsverlust) (Sachs 1922, Tafel 21).

Entwicklung Johann Gottfried Moritz, die er erst nach Ablauf der Patentschutzfrist für Stölzel umsetzen konnte. Solche Gewindedeckel wurden später bei nahezu sämtlichen Pumpventilen Standard, da sich hierdurch die Wartung der Ventile entscheidend vereinfachte. War bis dahin ein Schraubenzieher zum Herausnehmen und Reinigen des Ventilkolbens nötig, genügte nun das einfache Aufschrauben des Deckels.

Stölzels Antrag im Jahr 1827 auf Erneuerung des Patents wurde vom Ministerium abgelehnt. Ab 1828 gab es damit in Preußen keinen Patentschutz mehr für die Idee der Ventile an Blechblasinstrumenten. Somit waren die Tore für weitere neue Erfindungen und Verbesserungen geöffnet.

3. Wilhelm Wieprecht

Im Jahr 1824 kam ein 22 Jahre junger Mann nach Berlin: Wilhelm Wieprecht. Er trat in der königlichen Kapelle eine Stelle als Kammermusiker an. Der gleichen Profession ging Heinrich Stölzel nach, sodass davon auszugehen ist, dass beide Musiker in Kontakt und Austausch standen. Die von Kalkbrenner verfasste Biografie über Wilhelm Wieprecht gibt uns Auskunft, dass der spätere Direktor sämtlicher Musikchöre des Garde-Corps oft die Werkstatt von Griessling & Schlott besuchte und dort alles über die neuartigen Ventilinstrumente erfuhr.¹³

Am 12. August 1833 stellte Wieprecht einen Patentantrag für ein neues Ventilsystem, das uns heute unter dem Namen ›Berliner Pumpen‹ oder ›Berliner Pumpventile‹ bekannt ist. Sein Antrag wurde zwar abgelehnt, doch ist das zugehörige Aktenmaterial mehr als interessant: Das Ministerium schrieb unter anderem, »daß er [Wieprecht] bereits vor 5 Jahren verbesserte Ventile [...] in die praktische Anwendung überführt habe.«¹⁴ Über diesen Vorläufer der Berliner Pumpen aus der Zeit um 1827/1828 gab Wieprecht in seinem Patentantrag ebenfalls ausführlich Auskunft.

[...] eine mit den, von mir vor 5 Jahren erfundenen Ventilen gebaute Tenor=Posaune, bei welcher (wie auch die beiliegende Zeichnung derselben beweiset) der Luftgang nur Wellen und Schneckenbogen passiert und also nicht durch scharfe Winkel gebrochen wird. Mit diesen Ventilen ließ ich auch die übrigen chromatischen Blech=Instrumente herstellen.¹⁵

Die Zeichnungen von Wieprecht sind leider nicht in den Akten erhalten. Herbert Heyde entwickelte aus den vorliegenden Informationen bereits 1987 einen möglichen Windverlauf dieses Ventilsystems (siehe Abbildung 3). Ebenso vermutete er, dass Wieprecht mit dem bereits erwähnten Holzblasinstrumentenmacher und Musikinstrumentenhändler Johann Wendelin Weisse zusammenarbeitete.¹⁶ Die Kooperation zwischen Wieprecht und Weisse stand jedoch unter keinem guten Stern. Weisse versuchte daraus einseitig Profit zu schlagen, indem er bereits am 4. März 1833 (also noch vor Wieprecht) einen eigenen Patentantrag stellte. Diesem legte er eine dreiventilige Posaune bei, die er ›Tromba ferme‹ nannte. Er hielt dieses Instrument vor allem für die Militärmusik für zweckmäßig, da es sich über die Ventile vor allem für den marschierenden Infanteristen beziehungsweise reitenden Kavalleristen gegenüber der Zugposaune einfacher spielen ließe.¹⁷ Bereits Heyde vermutete, dass Weisses Posaune mit Stölzels oder Wieprechts Pumpenventilen versehen war.¹⁸

Zwei Zeitungsartikel untermauern die Zusammenarbeit zwischen Wieprecht und Weisse. Letzterer stellte seine Posaune bereits vor dem Patentantrag in einer Anzeige in der *Berliner Spenerschen Zeitung* vom 26. Februar 1833 vor.¹⁹ Wieprecht war laut eigener Aussage an dieser Entwicklung beteiligt, fühlte sich von Weisse übergangen, der das Instrument als seine alleinige

13 Kalkbrenner 1882.

14 *HA Rep 120*, fol. 89r–90v.

15 Ebd., fol. 86v.

16 Heyde 1987, S. 240.

17 Vgl. *HA Rep 120*, fol. 79r–80r.

18 Heyde 1987, S. 287.

19 *Musikfreunde* 1833, S. [9].

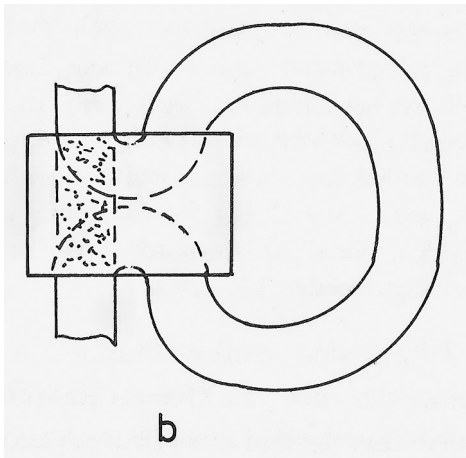


Abb. 3 Von Heyde aus den Patentakten abgeleiteter möglicher Rohrverlauf des Ventils von Wilhelm Wieprecht aus dem Jahr 1827/1828 (Heyde 1987, S. 23).

Erfindung ausgab, und stellte daraufhin in der *Königlich privilegierten Berlinischen Zeitung von Staats- und gelehrten Sachen* vom 2. März 1833 klar:

Irrtümern vorzubeugen, zeige ich hiermit an, daß die Einrichtung der in Rede stehenden Posaune von mir ausgegangen, nach meinen Angaben und Modellen von dem Herrn Weisse angefertigt worden ist; welches die auf dem von mir in Händen habenden Probe=Instrument, von dem Hrn. Weisse selbst eingestochene Worte bezeugen.²⁰

In der Sammlung des Szenkonstmuseet Stockholm befindet sich eine bisher nicht beachtete Ventilposaune von Johann Wendelin Weisse (Inv.-Nr. F133), auf die genau diese Merkmale zutreffen.²¹ Der beschriebene Luftgang, der »nur Wellen [...] passiert« – zu den Schneckenbogen siehe weiter unten –, lässt zweierlei Deutung zu: Zum einen können darunter – unter der Definition einer mechanischen Hohlwelle – die geraden Stücke des Instrumentenrohrs verstanden werden. Zum anderen lässt aber auch der in Abbildung 4a ersichtliche wellenförmige Zugang des Rohrs zum ersten Ventil beziehungsweise Ausgang vom dritten Ventil diese Interpretation zu. Wichtig ist Wieprecht vor allem die Vermeidung rechter Winkel, da sich diese beim Stölzelventil akustisch negativ auf das Klangbild auswirken. Sobald der Spieler das Ventil betätigt, wird die Luft durch sehr enge, abgerundete Bohrungen im Ventilkolben – die beschriebene Schneckenbogenform – in die Ventilbögen geleitet. Die Abstammung dieses Ventiltyps von den Stölzelventilen ist noch an den seitlich am Ventilgehäuse angebrachten kleinen Schrauben zu erkennen, die auch hier als Führung für die Ventilkolben dienen. Ein etwas vergrößerter Durchmesser ermöglichte es, die Ein- und Ausgänge der Ventilschleifen auf eine Ebene zu legen. Im Gegensatz zum Stölzelventil, bei dem die Luft grundsätzlich von unten in das Ventilgehäuse einfließt und scharfe Winkel passieren muss, kann bei der hier vorliegenden Bauweise bei nicht betätigtem Ventil der Luftstrom unbeeinträchtigt durch eine gerade Bohrung im Ventilkolben fließen. Hierdurch wird das Problem der scharfen Winkel im Rohrverlauf und der dadurch nachteiligen Akustik minimiert. Die Anordnung des Hauptrohrs und der Ventilschleifen auf verschiedenen Ebenen führt jedoch weiterhin zu einem vergleichsweise langen Hub der Ventilkolben, sodass das Umschalten relativ lange dauert.

20 Wieprecht 1833, o. S. Eine nahezu wortgleiche Gegendarstellung Wieprechts erschien am selben Tag auch in der *Spenerschen Zeitung*.

21 Ein großer Dank geht an Nicholas Eastop vom Szenkonstmuseet Stockholm für die Bereitstellung der Fotos und Informationen zu diesem Instrument.



Abb. 4a–d Ventilposaune mit 3 Pumpventilen nach Wieprecht und Weisse von Johann Wendelin Weisse, Berlin, 1828–1833. Gesamtansicht sowie Detailansichten der Signatur, der Ventilmaschine und des Ventilkolbens des 3. Ventils (Scenkonstmuseet – The Swedish Museum of Performing Arts, Inv.-Nr. F133).

Aufgrund des Streits zwischen Wilhelm Wieprecht und Johann Wendelin Weisse über die Urheberschaft ihrer Ventilposaune gab Wieprecht bereits vor den unabhängigen Patentanträgen in der *Vossischen Zeitung* bekannt, dass »die Einrichtung dieser Posaune noch manchen Mängeln unterliegt, welche ich durch Hülfe des Königl[ichen]. Hof-Instrumentenmakers Herrn Moritz beseitigen werde.«²²

Gemeinsam mit Johann Gottfried Moritz arbeitete Wieprecht in den Folgemonaten an der Behebung dieser Mängel. Nach etwa fünf Monaten Entwicklungsarbeit war das Ventilsystem ausgereift, sodass Wieprecht am 12. August 1833 einen Patentantrag einreichen konnte. Er beschrieb die Innovationen wie folgt:

22 Wieprecht 1833, o. S.

Nach 5jährigen Versuchen ist es mir nun gelungen, alle hier vorstehend aufgeführten Uebelstände ganz zu beseitigen: die Ventile halb so klein, viel leichter und deren Spielbarkeit völlig so bequem, wie z. B. bei der Clarinette zu machen; indem sie zugleich, durch 3maliges Herumdrehen des Deckels sogleich geöffnet und gereinigt werden können. Der Luftgang bewegt sich hier nur in Cirkeln und dadurch ist die eigenthümliche Wirkung des Tons wieder hervor gehoben, zugleich aber auch das Ansprechen und die schnelle und gleichmäßige Verbindung der Töne ganz erreicht [...].²³

Die hier beschriebenen Ventile entsprechen zweifelsohne dem Typ, der heute unter dem Namen ›Berliner Pumpenventile‹ bekannt ist. Wieprecht versuchte, die Vorteile der Drehventile in die Pumpenventile einzubeziehen. Hierzu zählt vor allem die Anordnung sämtlicher Rohrein- und -ausgänge in das Ventilgehäuse aus einer Ebene. Dadurch konnten die Drückwege verkürzt werden, was wiederum eine kleinere Bauhöhe des Ventilgehäuses ermöglichte (die von Wieprecht angegebene Halbierung erscheint jedoch übertrieben). Wieprecht verglich 1845 in der *Berliner Musikalischen Zeitung* die Stölzelventile, Drehventile und Berliner Pumpenventile wie folgt:

Vergleichen wir beide Erfindungen untereinander so verdienen die Blühmelschen Drehbüchsen-Ventile insofern den Vorzug, als sie auf die Verstärkung und Gleichmässigkeit der Töne dadurch einwirkten, dass bei ihnen die Kanalaröhre in Kreisbogen ungestört fortläuft und die Schallwellen ununterbrochen im Instrumente bleiben, was bei den Stölzelschen Schieberöhren-Ventilen, die rechte Winkel abschneiden, nicht der Fall ist, dagegen boten die Letzteren wieder viele Vorzüge in der Spielbarkeit. Um beide Eigenschaften, schönen Ton und leichte Spielart zu verbinden, veränderte ich die Drehbüchsen in Stecherbüchsen-Ventile und so gewannen nun endlich die chromatischen Blech-Instrumente in unserer Militair-Musik, besonders bei der Cavallerie, eine schnellere Verbreitung.²⁴

Die einfache Wartungs- und Reinigungsmöglichkeit durch simples Aufschrauben des Deckels war einer der Hauptgründe, warum sich dieser Ventiltyp vor allem an Instrumenten in der preußischen Militärmusik durchsetzen sollte. Die Fertigungsgenauigkeit sämtlicher Ventiltypen war in der Entstehungszeit der Ventile noch nicht so hoch, sodass vor allem während des Einsatzes im Feld die einfache Reparaturmöglichkeit eine wichtige Eigenschaft war. Aus diesen Gründen und aufgrund des starken Einflusses von Wilhelm Wieprecht auf die preußische Militärmusik waren die Berliner Pumpenventile bis zur Mitte des 19. Jahrhunderts die dominierende Ventilform an Metallblasinstrumenten Berliner Hersteller, ehe sie nach und nach von den Périnetventilen und Drehventilen verdrängt wurden. Sowohl bei Militärinstrumenten als auch bei Instrumenten der unteren Preisklassen verbauten die Hersteller die Berliner Pumpenventile auch noch Anfang des 20. Jahrhunderts.

Zusammenfassung

Dieser Essay stellt einen kurzen Überblick über die Beziehungen zwischen Musikern, Erfindern und Instrumentenmachern in Berlin zu Beginn des 19. Jahrhunderts dar. Vor allem der bisher in der Fachliteratur kaum beachtete Johann Wendelin Weisse nahm als etablierter (Holz-) Blasinstrumentenmacher und Musikinstrumentenhändler eine zentrale Rolle als Mittelsmann zwischen Heinrich Stölzel und Johann Gottfried Moritz ein, einige Jahre später war er an der

23 *HA Rep 120*, fol. 86v–87r.

24 Wieprecht 1845, S. [3].

Umsetzung eines von Wilhelm Wieprecht entwickelten Vorläufers der Berliner Pumpenventile beteiligt.

Die von Weisse signierte Ventilposaune in der Sammlung des Szenkonstmuseet schließt eine Lücke in der Geschichte der Entwicklung der Ventile an Blechblasinstrumenten. Die an diesem Instrument verbauten Ventile sind ein Vorläufer der späteren Berliner Pumpventile. An dieser Zwischenstufe ist auch zu sehen, dass Wilhelm Wieprecht seine Überlegungen zunächst vor allem auf Basis der Stölzelventile vornahm. Leider ist völlig unklar, wie viele Instrumente mit diesem Ventiltyp Johann Wendelin Weisse baute. Wahrscheinlich waren es nur sehr wenige, wenn es sich bei der Ventilposaune nicht gar um einen Prototyp handeln sollte.

Zu guter Letzt soll noch einmal daran erinnert werden, dass Johann Wendelin Weisse ein Holzblasinstrumentenmacher war. Seine Zusammenarbeit mit Johann Gottfried Moritz endete spätestens 1820. Wer also stellte für Weisse die Ventilposaune her? Einen interessanten Anhaltspunkt bilden die Berliner Adressbücher. Die Werkstatt von Johann Wendelin Weisse befand sich in der Wilhelmstraße 52 in Berlin. Seit 1823 war unter exakt der gleichen Adresse ein Metallblasinstrumentenmacher aufgeführt: Carl Friedrich Zetsche (1794–1856). War er der Erbauer der Ventilposaune? Eine Frage, die es zukünftig zu beantworten gilt.

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Seine Forschungsschwerpunkte liegen auf Metallblasinstrumenten und dem Berliner Musikinstrumentenbau. Er ist u. a. Mitherausgeber des Ausstellungskatalogs Valve. Brass. Music. 200 Jahre Ventilblasinstrumente (Nicolai 2013) und Autor der Artikel »Export von (Militär-)Musikinstrumenten von Berlin nach Zentral- und Südamerika um 1900« (Die Musikforschung 4/2021, S. 308–317) sowie »Wagner Tuba & Co. A Story of Musical Networking?« (Musical Networking in the ›Long 19th Century‹, Zagreb 2023, S. 567–578).

Bernhard Rainer

Franz Xaver Glögg and Beethoven's *Equali*. New Evidence Indicating the Formation of an all-B $\flat$ Trombone Section in Austria

*Several articles in recent decades have suggested that we need to take a closer look at our previous notions that the historical trombone section used a different instrument for each part. As new evidence presented here and a terminological discussion can confirm, a performance tradition developed in Austria in which tenor trombones in B $\flat$ played all the alto parts (from the sixteenth century onwards) and even the bass parts (as of the late eighteenth century). The context in which Beethoven composed his *Equali* for four trombones confirms this scenario.*

Several articles over the last few decades have suggested that we need to look more closely at our previous notions that the historical trombone section used a different instrument for each part. As Howard Weiner has shown, around 1800 professional trombonists were familiar with the alto trombone in E $\flat$, but trombone parts in alto clef were predominantly played on the tenor trombone in B $\flat$.¹ In eighteenth- and early nineteenth-century Vienna, trombonists did not use the E $\flat$ alto at all – only tenors in B $\flat$. The rest of the eighteenth-century solo repertoire for the instrument (especially works associated with the Salzburg court) was probably played most often on B $\flat$ trombones, as Weiner has also shown.² Also in Austria in the middle of the nineteenth century, trombone parts in alto clef were played on (valve) trombones in B $\flat$, as can be seen from slide position charts and additional markings in the orchestral parts.³ However, there has been very little discussion of this subject in the historical performance practice community. In particular, although there is now clear evidence for the historical use of virtually identical instruments for tenor and alto parts, the practice of using an alto trombone in B $\flat$ continues to be doubted, as has been argued for example by Richard Raum and more recently by Jason L. Oliver.⁴ Because of the ongoing discussion on this topic, I would like to re-exam-

1 See Weiner 1993; Weiner 1995.

2 See Weiner 2005, pp. 59–66; Weiner 2018.

3 See Rainer 2016; Rainer 2017; Rainer 2023.

4 Richard Raum, e.g., stated: “Whether or not the [Albrechtsberger] concerto can be performed on the tenor trombone is not in question. Any serious accomplished 20th century trombonist can perform the concerto on the tenor. In Albrechtsberger’s mind, however, there could be one possibility – the alto trombone.” (Raum 1995, p. 103). And in a dissertation by Jason F. Oliver we read: “[Some authors have] written articles that obfuscate conventional wisdom and put forth the notion that if works like the [Wagenseil] concerto were performed on a B $\flat$ Trombone, then all of the tessitura of the trills would be in places on a high enough partial where a lip trill could be performed as a major second instead of the minor third. Although this new approach to eighteenth-century music offers possible insights and solutions to older performance problems, it does not address the abundance of historical information that the E $\flat$ alto trombone, not the B $\flat$ tenor trombone, was the conventional solo

ine several relevant sources and introduce some newly discovered evidence that supports the dual thesis that in Austria in the eighteenth and nineteenth centuries, the alto trombone in B $\flat$ was the preferred instrument for the highest trombone part, and that in circa 1800, the entire trombone section consisted of B $\flat$ trombones. Furthermore, I shall conclude by proposing why I believe that Ludwig van Beethoven's three *Equali* commissioned by Franz Xaver Glöggel in Linz in 1812, were intended for four tenor trombones in B $\flat$.

The alto trombone in B $\flat$ – a new evaluation of the sources

Musicological investigations suggest that the alto trombone in E $\flat$ was not used in Vienna in the eighteenth and nineteenth centuries, at least not until 1883.⁵ But Ignaz Seyfried's revised version of Johann Georg Albrechtsberger's *Gründliche Anweisung zur Composition* (1790, Seyfried's update published in 1825, with a second edition in 1837) causes some confusion in this context.⁶ Seyfried, who like Albrechtsberger was employed in Vienna, describes an alto trombone in E $\flat$, recognisable from the depiction of its slide positions. Weiner has already noted that Seyfried could have obtained his information about such an instrument from the methods of André Braun and Joseph Fröhlich, to whom Seyfried refers.⁷ A closer examination of the three sources reveals, however, that Seyfried had obviously copied from Fröhlich (1811), who in turn had copied from Braun (1800).⁸ In addition to the same arrangement of the chromatic scale (sharps ascending, flats descending) as in the earlier publications, the arrangement of the slide positions shown (alto trombone: 6th to 1st position, tenor/bass trombone: 7th to 1st position) and the notation of the scales indicating the positions are identical in all three sources.⁹

Seyfried's work is obviously an abridged version of Braun/Fröhlich – in his version the diatonic and "enharmonic" scales and the pictures of the instruments are omitted. The particular ordering of the slide positions from the 6th or 7th upwards to the 1st instead of the natural direction of slide movement (going downwards from 1st position) makes sense in Braun/Fröhlich due to their connection to the illustrations of the instruments. But as these illustrations are not reproduced in Seyfried, this rather unusual ordering seems illogical. In addition, in Seyfried's depiction of the tenor trombone slide positions, the fundamental tone is missing for positions 2 to 7, as we also see in Fröhlich (Figs. 1 and 2). This clearly demonstrates that Seyfried's text is a significantly shortened version of Fröhlich, and only indirectly stems from Braun.

In any case it seems extremely doubtful that Seyfried based his very brief description of the trombone on his own knowledge, or reflected on the performance practices of his Viennese contemporaries. Although the instrument is described in his publication, we may assume that

brass instrument in the Habsburg Court and surrounding abbeys and monasteries." (Oliver 2010, pp. 52f.). As well as the fact that it is doubtful that "conventional wisdom" can be considered a scientifically relevant method, the argument "that the E $\flat$ alto trombone, not the B $\flat$ tenor trombone, was the conventional solo brass instrument at the Habsburg Court and surrounding abbeys and monasteries" is not supported by sources on performance practice from the time. In the source given by Oliver which purportedly supports his claim, no information relating to the E $\flat$ alto trombone at the Habsburg court or surrounding monasteries is to be found. See Saeki 2001.

5 Weiner 2005, p. 71 and footnote 1. An extant alto trombone in E $\flat$ by the Viennese instrument-maker Hanns Geyer is dated 1702 (see Herbert 2016, p. 315). However, this instrument might have been shortened from a tenor trombone in later times.

6 Albrechtsberger 1825; Albrechtsberger 1837. The undated first edition of Albrechtsberger's *Opera Omnia* must have been published in late 1825 because the publication was announced in the *Wiener Zeitung* in September 1825 (WZ 1825, p. 910) and advertised in January 1826 (WZ 1826, p. 109).

7 Weiner 2005, p. 64.

8 Fröhlich was familiar with Braun's method, as he mentions it in his text. See Fröhlich 1811, p. 33.

9 Compare Figs. 9, 12 and 14 in Weiner 2005, pp. 45, 48 and 50.

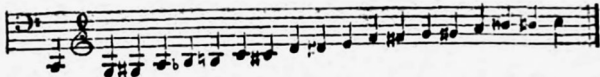
(M)

Tenor Trombone.

The musical score for the Tenor Trombone part consists of several staves. The first staff shows the instrument's range from C₂ to G₄. The notation includes various musical symbols such as clefs, key signatures, and notes. The piece is titled "Tenor Trombone." and is marked "(M)".

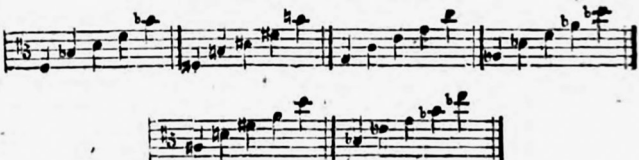
Fig. 1 Tenor trombone chart in Fröhlich: *Vollständige theoretisch-practische Musikschule* (Fröhlich 1811, p. 34).

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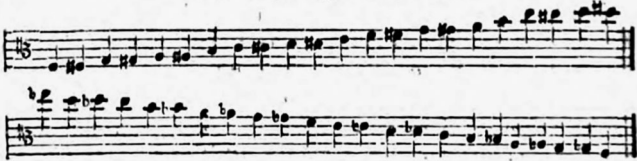


8) Posaunen gibt es dreyerley, als: Bass-, Tenor- und Alt-Posaunen; sie sind mit einem so genannten Stiefel versehen, welcher in sechs, auch sieben verschiedenen R $\ddot{u}$ ckungen gezogen werden kann; durch jeden Zug k $\ddot{o}$ nnen 4, 5 bis 6 T $\ddot{o}$ ne angeblasen werden; diese sind;

Auf der Alt-Posaune:



deren vollst $\ddot{a}$ ndige Scala ist:



Die Z $\ddot{u}$ ge auf der Tenor-Posaune sind:



und ihre Scala:

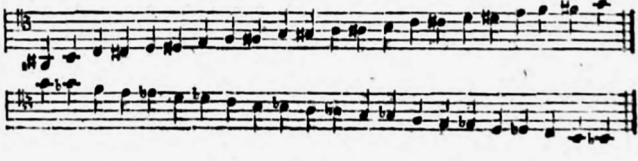


Fig. 2 Tenor trombone chart in *Johann Georg Albrechtsberger's s $\ddot{a}$ mtliche Schriften* (Albrechtsberger 1825, Vol. 3, p. 200).

Seyfried had never seen or heard an alto trombone in E $\flat$ in Vienna.¹⁰ The limits of Seyfried's organological knowledge are obvious in several other places in his text. He clearly fails to understand the difference between valves (which had been in use in Vienna since the mid-1820s) and the key mechanism that was also common at the time. Regarding the invention of the double-piston valve by Joseph Kail and Joseph Riedl (patented in 1823), Seyfried writes: "[Khayll], who applied keys and a slide to the trumpet, the horn and the trombone".¹¹ His description of the keyed trumpet, however, is very similar: "The Inventionsttrompeten, equipped with keys, enable the semitones as well".¹² He displays a complete lack of knowledge in his description of the keyed flugelhorn: "On the newly invented keyed flugelhorn, semitones are more easily reproduced, as it is not only equipped with keys but with finger-holes as well."¹³ Even if we make allowances for the likelihood that in 1825, Seyfried was not yet completely familiar with such new inventions, his incompetence in organological questions is further demonstrated in his second edition (1837) of Albrechtsberger's writings. Here, in his description of the valve trombone, Seyfried refers once more to valves (which had been known as "machines" since their invention in Vienna) as "keys" and "finger-holes": "The industrious instrument-makers of our imperial city have now also equipped the trombones with finger-holes and keys, and thus eliminated the insecurity of the slide, which is in some cases always annoying."¹⁴ It is astonishing that Seyfried, in his hometown of Vienna, had obviously never come across the printed instrumental methods of Andreas Nemetz, in which the early chromatic instruments are accurately described.¹⁵ This can be seen as further indication of Seyfried's lack of interest in organology and his resulting lack of competence in it.

As Seyfried's publications were actually revised, annotated editions of the appendix to Albrechtsberger's *Gründliche Anweisung zur Composition* from 1790, it is also worth taking another look at Albrechtsberger's original.¹⁶ As Howard Weiner has noted, Albrechtsberger's scales for alto, tenor and bass trombone do not allow us to draw any explicit conclusions about the tunings of the instruments. However, according to Weiner, the range for the alto trombone given by Albrechtsberger (a fourth lower than given by Braun, Fröhlich and Seyfried), as well as his inclusion of the note e, point to an instrument in B $\flat$.¹⁷ To add to that, Albrechtsberger describes the notes c#2 and d2 as "schwer", or "difficult to play" (Figure 3). This additional information also clearly suggests that for him, the alto trombone was in B $\flat$, as these notes are relatively easy on an alto in E $\flat$, especially when played with the small mouthpieces which were commonly used at the time.

10 An analysis of a random sample of the trombone parts from Seyfried's largely unpublished compositions produced the result that all parts could be played without any problem by the B $\flat$ trombone trio typical of Vienna at the time – neither an alto trombone in E $\flat$ nor a bass trombone in F is required. It is also worth mentioning in this context that Seyfried conducted the first performance of Beethoven's opera *Fidelio* in 1805 (see Fastl 2005), in which its two trombone parts are both best performed on B $\flat$ trombones.

11 "[...] Khayll, Kohaut, welcher letztere [*recte*: Khayll] die Trompete, das Horn und die Posaune, mit Klappen und Zug bereichert hat" (Albrechtsberger 1825, p. 202; translations by Keal Cooper if not otherwise stated). Seyfried obviously confused the two names here.

12 "Die mit Klappen versehenen Inventionen-Trompeten erlauben auch die Semi-Töne" (*ibid.*).

13 "Auf dem neu erfundenen Klappen-Flügel-Horne werden die Semitöne ungleich leichter hervorgebracht, da es außer den Klappen auch mit Grifflöchern versehen ist." (*Ibid.*, pp. 198f.).

14 "Die industriösen Instrumenten-Macher unserer Kaiserstadt haben nunmehr auch die Posaunen mit Grifflöchern und Klappen versehen, und dadurch die theilweise stets lästige Unsicherheit der Züge beseitigt." (Albrechtsberger 1837, p. 185).

15 Nemetz 1827a; Nemetz 1827b; Nemetz 1835.

16 Albrechtsberger 1790, pp. 439f.

17 Weiner 2005, pp. 58f.

40 Anhang, enthält eine Beschreibung aller jetzt gewöhnlichen

Für die Alt-Posaune.

cis d dis f fis g gis a b h c̣ cis ḍ dis

schwer.

f a f̣ fis g̣ gis ḅ ḥ c̣ pis ḍ

No. 8. Für die Trompete.

G c̣ e g ḅ c̣ d e f fis g h c̣

leichte Töne.

a b cis d e f g̣

schwere und seltene.

♩ ♮ ♯ ♭

Fig. 3 Alto trombone chart in Albrechtsberger: *Gründliche Anweisung zur Composition* (Albrechtsberger 1790, p. 440).

Howard Weiner has also pointed out in the past that some alto trombone parts from the vicinity of the 18th century Viennese court include notes which would be rather difficult to play on historical alto trombones in E $\flat$. In such trombone parts the note *e* may often occur, which on a modern E $\flat$ alto trombone is in 7th position. Historical E $\flat$ alto trombones, however, do not usually have a 7th position¹⁸ – a reality confirmed by the treatises of Braun, Fröhlich and thus also of Seyfried, as we have seen. Weiner also found Viennese alto trombone parts that descend to B $\flat$, which are theoretically playable on an E $\flat$ alto trombone, although that range is not ideal.¹⁹ The lower range of alto trombone parts is usually limited as it is linked to the range of vocal alto parts. It is therefore logical that extensions to the lower range in alto trombone parts only tend to occur in purely instrumental passages. Newly found examples of such writing, which clearly point to the use of alto trombones in B $\flat$ in the eighteenth century, can now be added to the list: In the 1st trombone parts of the *Litaniae de Beatissima Virgine* of Ferdinand Schmidt (ca 1693–1756),²⁰ the *Gloria* of a mass by Antonio Caldara (1670–1736)²¹ and the *Laudate pueri* (K. 86) of Johann Joseph Fux (1660–1741),²² we find *concertante* sections in bass clef that are not possible to perform on an alto trombone in E $\flat$ with only 6 slide positions (Figs. 4–6).

Terminological issues

The trail of evidence suggesting that B $\flat$ trombones were primarily used to perform trombone parts in the alto range is now quite convincing, at least for the Habsburg realm. Aside from the risk of projecting false attributes onto history, difficulties with terminology relating to the performance practice of trombone parts also arise. One cannot assume that the use of alto clef for a trombone part is an indication that it is intended for an alto trombone. And in fact, rather than being labelled ‘Alto’, ‘Tenor’ or ‘Bass’ trombone, many Viennese trombone parts are marked ‘Trombone primo’, ‘Trombone secondo’ etc., such as the trombone parts of the aforementioned *Laudate pueri* of Fux. Of course, we know that alto trombones in E $\flat$ have existed since the end of the sixteenth century, and such instruments must have surely been known in Habsburg lands. A key to the terminology for describing the alto trombone is offered by Michael Praetorius (1571–1621) in his well-known *Syntagma musicum* – but at the same time his description creates new problems for us. In this work, Praetorius labels a trombone in D the ‘discant’ or alto trombone, while claiming that for sound, including in the high range, a tenor trombone (in A) is preferable.²³ The earliest source that most likely refers to alto trom-

18 See Couper 2006, pp. 57 and 66 – the alto trombones by A. F. Krause (Berlin, 1795) and J. J. Schmied (Pfaffendorf, 1785) have only 6 chromatic positions.

19 Weiner 2005, p. 60.

20 Schmidt n.d..

21 Caldara n.d. I would like to thank Adam Jakab (Basel) for bringing to my attention the trombone parts of the *Gloria* by Caldara and the *Litaniae* by Schmidt.

22 Fux n.d. I would like to thank Ramona Hocker from the “Johann Joseph Fux – Werke” opera omnia project for bringing this trombone part to my attention.

23 It was again Howard Weiner who pointed this out. See Weiner 2005, p. 38. The relevant extract from Praetorius reads: “I. *Alt* oder *Discant* Posaun: *Trombino*, *Trombetta picciola*, mit welcher auch ein *Discant* gar wol und natürlich geblasen werden kan: Wiewol die *Harmony* in solchem kleinen *Corpore* nicht so gut/ als wenn auff der rechten gemeinen Posaun/ durch guten Ansatz und Übung/ ein solche höhe kan erreicht werden.” (Praetorius 1619, p. 31) English translation: “I. Alto or discant trombone: Trombino, Trombetta piccola, with which also a discant can be played well and naturally: Although, the sound [“Harmony”] in such small bodies is not as good as on the common trombone, on which such high notes can be reached with a good embouchure and with practice.” Regarding the nominal pitch of trombones, it has to be stated that the early tenor and alto trombones were considered to be in A and D. Early in the 18th century, pitch standards started to change and although the instruments basically stayed the same, the nominal pitch of the tenor and alto trombones changed to B $\flat$ and E $\flat$. See Weiner 2005, p. 37.



Fig. 4 Ferdinand Schmidt: *Litaniae de Beatissima Virgine*, 1st trombone part (extract).

bones in D as 'discant' or 'soprano' trombones actually comes from the Habsburg court musician Alessandro Orologio (1551–1633). In a letter to Duke Moritz of Kassel in 1594, Orologio offers the duke his services as a broker for the purchase of instruments and describes the fol-



Fig. 5 Antonio Caldara: *Gloria a4*, 1st trombone part (extract).

lowing Nuremberg trombones: “For Nuremberg, two small trombones and one large one. [in another hand: “trombones small and large”] and two even smaller trombones that serve as sopranos. [in other hand: “discant trombones”]”.²⁴

As Stewart Carter has noted, it is probable that the two “small trombones” were tenor trombones and the “one large one” was a bass.²⁵ The two “even smaller” trombones were most likely alto trombones in D, labelled by the German translator in *Orologio*’s letter as “discant trom-

²⁴ “Per Norimbergo, doi Tromboni piccoli et un grosso. [in another hand: “posaunen klein und groß”] et doi piu piccoli Tromboni chi servano per soprani. [in another hand: “discant posaunen”]” (Orologio 1594).

25 Carter 2012, p. 317.

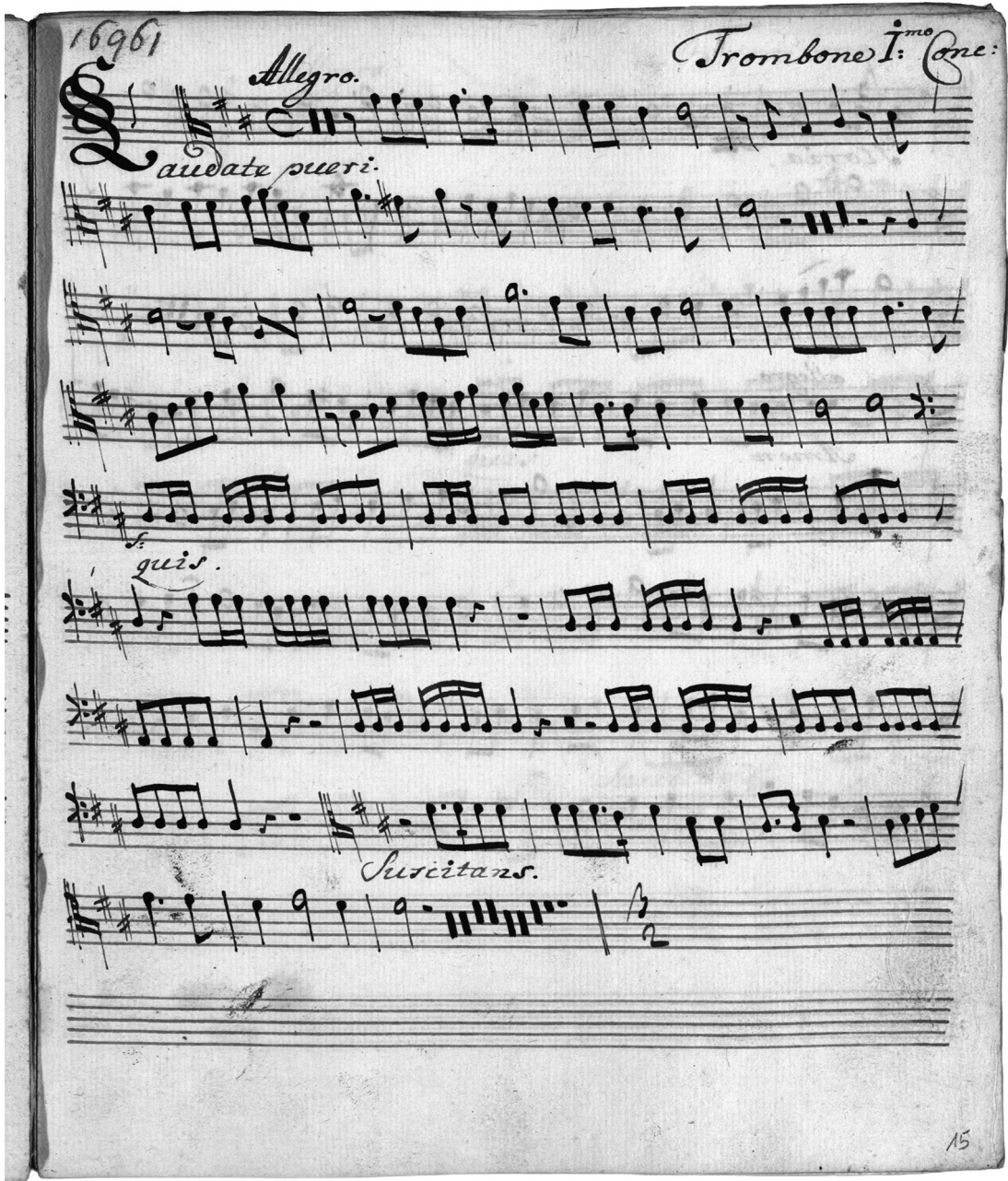


Fig. 6 Johann Joseph Fux: *Laudate Pueri* (K. 86), 1st trombone part (extract).

bones” – the terminological similarity to Praetorius is clear. This scenario can now be confirmed by an inventory from Kassel. Clearly the two alto trombones were ultimately purchased, as in an inventory from 1613 we see the entry “Zwai kleine alt oder Discant posaune” (two small alto or discant trombones) with four “Tenor und Alt posaunen” (tenor and alto trombones) and one “Quart posaune” (bass trombone).²⁶

In an inventory of the Munich court chapel from 1655, we also read: “Ain Discant Pusaunen in irem fuerder” (one soprano trombone in its case) and “Zechen alte Tenor und Altpusaunen” (ten old tenor and alto trombones).²⁷ In analogy to Orologio, the Kassel inventory and Praeto-

²⁶ See Zulauf 1902, p. 118.

²⁷ Wackernagel 2003, p. 45.

rius, the terminology here seems to imply an alto trombone in D and ten trombones in A that were used for both the alto and tenor ranges. Similar terms for trombones in various sizes and tunings that differ from our present-day simplified terminology (alto trombone in E $\flat$, tenor trombone in B $\flat$) are also found in later sources. In his *Das neu-eröffnete Orchestre* (Hamburg 1713), Johann Mattheson (1681–1764) writes of small and large alto trombones, clearly meaning E $\flat$ and B $\flat$ alto trombones for the performance of alto parts.²⁸ In 1816, in an article in the *Leipziger Allgemeine Musikalische Zeitung*, Gottfried Weber (1779–1839) too uses a terminology for various trombones that is very similar to what we have seen in sources from around 1600. As the analogies are clear, the relevant excerpts can be cited here without commentary:

The alto trombone can be exactly the same instrument as the tenor trombone (namely basically a B $\flat$ trumpet) [...]. There are, however, also alto trombones that are not, like the one just described, basically B $\flat$ trumpets, but rather E $\flat$ trumpets [...]. A discant trombone is not very common: the most convenient answer is that it is the same as the latter, the E $\flat$ alto trombone.²⁹

Lastly, there is also evidence for alto trombones in B $\flat$ in Austrian instrument-making in the nineteenth century. Two price lists of the renowned Viennese brass instrument maker Leopold Uhlmann from circa 1840 and circa 1850 advertise a “Tenor or alto trombone in B $\flat$ ” (Fig. 7). Although bass trombones, bass trumpets, bass flugelhorn and hunting horns in a variety of tunings are also advertised, an alto trombone in E $\flat$ is noticeably absent.³⁰ And similarly, in 1882, a trombone with four valves by Leopold Uhlmann is listed in an inventory of the Vienna court chapel as a “Solo B $\flat$ alto trombone” (Fig. 8).³¹

Bass trombone in B $\flat$

I would also like to cite an often-overlooked source relating to the use of the bass trombone in B $\flat$. In an anonymous description of the double-slide bass trombone of Gottfried Weber, which can be dated to around 1817, we find the following passage which makes it clear that at this time, the tenor-bass trombone in B $\flat$ was the standard instrument used for the bass range:

We are speaking first of the tenor-bass trombone (i.e. the tenor trombone played with a bass trombone mouthpiece, bass trombone in tenor size), as the one which is generally the most common and well known: it is namely the one which gives the notes of the B $\flat$ chord in first position (all the way in).³²

28 “Es sind der Posaunen groß und kleine/ nemlich: Kleine Alt / grosse Alt = Tenor- oder grosse Quart- und Baß-Posaunen” (Mattheson 1713, pp. 266f.). English translation: “There are trombones large and small, namely: small alto / large alto = tenor or large quart and bass trombones”.

29 “Auch die *Altposaune* kann ganz dasselbe Instrument seyn, wie die Tenorposaune, (nämlich im Grunde eine B-Trompete,) [...]. Man hat aber auch Altposaunen, welche nicht, wie die eben beschriebnen, im Grunde B-Trompeten sind, sondern Es-Trompeten [...]. Eine *Discantposaune* ist nicht sehr gewöhnlich: am füglichsten ist es dasselbe Instrument, wie die zuletzt beschriebene Es-Altposaune” (Weber 1816, col. 55f.).

30 See the price list of Leopold Uhlmann in Vienna (Uhlmann 1840); and also the price list of the K. K. priv. Metall-Blas-Instrumentenfabrik of Leopold Uhlmann in Vienna (Uhlmann 1850).

31 *Katalog* 1856, p. 177. In this inventory the entry concerned is dated 2 November 1882.

32 “Wir reden zuerst von der *Tenorbass-Posaune*, (d. h. *Tenorposaune mit Bass Mundstück geblasen*, *Bassposaune von Tenormensur*,) als derjenigen, welche die allgemein bekannteste und üblichste ist: es ist nämlich die, welche auf der ersten Stellung (ganz herein) den B-Akkord giebt” (Anonymous 1817, pp. 2f.). Incidentally, this source also contains a confirmation of the use of the trombone in B $\flat$ for alto parts: “Auf ähnliche Art wird jeder, welcher für die Altposaune nicht, wie oben angenommen worden, ein Instrument von derselben Mensur wie die Tenorposaune, sondern ein an sich um eine Quarte höheres Instrument (Es-Trompete, ganz herein den Es-Akkord angehend) haben mag, [...]” (Ibid., p. 6) English translation: “In a similar way, anyone who does not

Josannen i. D. Dass
 Solo B. Altpasarine & Lind.
 Eine alte Pasarine woggen
 Maffin das Pifurum

L. Ullmann
 als Aufgabe an Denselben.

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Franz Xaver Glöggl and the trombone section in B^b

And so we finally come to Franz Xaver Glöggl, Beethoven's *Equali* and the trombone section in B^b. A detailed account of the history of Glöggl's commission of Beethoven's *Equali* was given by Howard Weiner in his article of 2002 and does not need to be reproduced here.³³ In a footnote, Weiner alluded to a certain scenario but lacked documentary evidence for it at the time.³⁴ We now have access to sources which allow us to confirm Weiner's hypothesis, and in the following it will become clear that Beethoven's *Equali* were composed for a set of B^b trombones.

In 1824, Franz Xaver Glöggl sold his collection of (already historical) musical instruments to the Gesellschaft der Musikfreunde in Vienna. In surviving documents relating to this sale, a list is given of all 42 instruments sold by Glöggl, including two trombones: as number 36, a "Discant Posaun. v. Schmidt in Nürnberg" and number 37 a "Quart-Posaun. v. J. L. Ehe 1732".³⁵ Glöggl also lists the musical instruments which were still in use at the time and were not for sale.³⁶ About further trombones, we read: "By the way, my instrument collection consists for my own use [...] of 5 trombones, including one from 1609 and the so-called masterpiece of old Kerner – a gold-plated trombone with silver fittings from 1760."³⁷

As the two trombones sold are still in the collection of the Musical Instrument Collection of the Gesellschaft der Musikfreunde, they can be precisely identified. The "Quart-Posaune" is a bass trombone in E^b by Johann Leonhard Ehe (1700–1771) from 1732 (Fig. 9) and the instrument cited as a "Discant-Posaun" is an undated alto trombone in E^b by Jacob Schmidt (1642–1720) (Fig. 10).³⁸ Glöggl uses Praetorius's terminology, referring to alto trombones in E^b as 'discant' instruments and bass trombones in E^b as "Quartposaunen".³⁹ With regard to the use of the term 'discant trombone' for the E^b alto trombone, Glöggl follows the examples of *Orologio* in the late sixteenth century, the seventeenth century inventory from Kassel, and his own contemporary, Weber.

In his memoirs, Glöggl's son Franz Xaver Glöggl junior (1796–1872), who was also a trombonist, reports that in 1812 his father originally asked Beethoven to compose an *Equale* for six trombones, "as in his collection of old instruments he had a soprano and a *quart* trombone, whereas only alto, tenor and bass trombones were commonly used".⁴⁰ Here we have a witness attesting that already in this period, the two trombones which Glöggl later sold were already outdated and the remaining ones used by Glöggl, or rather his musicians, were referred to as 'alto', 'tenor'

have an instrument of the same scale length as the tenor trombone for the alto trombone, as assumed above, but an instrument that is a fourth higher (E^b trumpet, playing the E^b chord all the way in), [...]"

33 See Weiner 2002.

34 Ibid., p. 271.

35 Glöggl 1824.

36 Franz Xaver Glöggl became 'Turnermeister' (head of the town waits) of Linz in 1790 after paying out his predecessor and father Johann Josef Glöggl with 1500 fl. for the 'Turnerinventar', and in addition worked as theatre conductor and cathedral chapel master in Linz. 'Turnerinventar' refers to the musical instruments described above – these had obviously been passed on for generations from one Turnermeister to the next. Some instruments had fallen out of use but others were still in use in Glöggl's orchestras.

37 "Uebrigens besteht meine Instrumenten-Sammlung zu meinem Gebrauch [...] in 5 Posaunen, worunter eine v. J. 1609. und das sogenannte Meisterstück vom alten Kerner. eine vergoldete u. mit Silber beschlagene Posaune v. J. 1760. sich befindet." (Glöggl 1824). The "Meisterstück vom alten Kerner" was evidently a trombone by Anton Kerner senior (ca 1726–1806).

38 Collections of the Gesellschaft der Musikfreunde in Vienna, Catalogue No. 202 and 198.

39 Praetorius 1619, p. 31.

40 Cited after Thayer 1921, p. 230. See also Kopitz/Cadenbach 2009, p. 350; Weiner 2002, p. 215 and fn. 2 on p. 271; and Rainer 2016, p. 160. Franz Xaver Glöggl jr was among other things head of the town waits in Enns in 1816/17, and taught trombone and double bass at the Conservatorium of the Gesellschaft der Musikfreunde in Vienna from 1831 to 1833. See Harrandt/Fastl 2020.



Fig. 9 Bass trombone in E $\flat$ by Johann Leonhard Ehe (1700–1771), Nuremberg 1732, Collections of the Gesellschaft der Musikfreunde in Vienna, Catalogue No. 202.



Fig. 10 Alto trombone in E $\flat$ by Jacob Schmidt (1642–1720), Nuremberg (n.d.), Collections of the Gesellschaft der Musikfreunde in Vienna, Catalogue No. 198.

and ‘bass’ trombones. Since Glöggl’s “Sopran- oder Diskant-Posaune” has been shown to be an alto trombone in E $\flat$, the logical conclusion is that his ‘alto’ trombone(s) must have been tenor trombones in B $\flat$. Glöggl’s son thus confirms the theory that professional trombonists around 1800 predominantly played on tenor trombones in B $\flat$, as all five of Glöggl’s trombones still in use at the beginning of the nineteenth century were tenor trombones in B $\flat$.⁴¹ Although Glöggl gave away his E $\flat$ alto (from around 1700) and the E $\flat$ bass (of 1732), his much older tenor

⁴¹ It can be proven that bass trombones in F, G and even A $\flat$ were referred to as *Quartposaunen* in Austria in the first half of the nineteenth century. This therefore excludes the possibility that such an instrument was one of the remaining five in Glöggl’s collection. On this point see Weiner 1995, p. 19.

trombone (dated 1609) was still in use, suggesting that the age of the instruments was not the deciding factor in which trombones to keep.⁴²

Conclusion

While we still do not know whether the 6-voice *Equale* was ever composed by Beethoven, what seems to be certain is that the well-known three *Equali* for four trombones in the ranges alto/tenor/tenor/bass were composed for a set of four tenor trombones in B $\flat$. As new evidence presented in this article confirms, this scenario is a consequence of a tradition of performance practice in Austria in which alto parts (since the sixteenth century) and also bass parts (since the late eighteenth century) were all played on tenor trombones in B $\flat$.

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42 The two instruments handed over had probably originally been acquired by a predecessor of Glöggel's in the office of Turnermeister in Linz. It is possible that already in Glöggel's father's time these had fallen out of use – Glöggel's father was born in Baden (near Vienna), was Turnermeister from 1761 to 1790 and grew up with the Viennese trombone school. The practice of using only B $\flat$ trombones was most likely introduced in Linz in the 1780s at the latest, after Franz Xaver Glöggel returned from his studies in Vienna with the trombonist of the Viennese court chapel Klemens Messerer (1724–1816). Glöggel had been in Vienna from 1784 to 1786 and besides trombone also studied the violin with Anton Hofmann (1723–1809). See Harrandt/Fastl 2020.

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Anneke Scott

“Answer, Echoes, Answer”¹. The Challenges of Muted Horn Passages in Solo Repertoire of the 1820s

This paper explores the presence of muted horn passages in early nineteenth-century solo repertoire, focusing on works by three German composers: Friedrich Starke, Louis Schlösser and Franz Lachner. These pieces pose both technical and interpretive challenges, particularly regarding the practical use of mutes on the natural and/or early valve horn. Through organological and aesthetic analysis, I argue that these passages reflect a Romantic topos associated with the sublime as represented aurally by the sound of the alphorn – invoking natural echoes, silence and emotional responses. Drawing on performance practice, literary and tourist descriptions of Alpine experiences, I propose interpretive strategies that embrace rubato, silence and theatrical pacing to render these muted effects. Ultimately, I suggest these moments are not anomalies but meaningful aesthetic choices embedded in the cultural context of the 1820s.

The background to this paper is a conundrum that arose for me recently. Ahead of the 2020 Beethoven festivities planned to mark the 250th anniversary of the composer’s birth, I had been investigating the repertoire for horn and piano duo in order to develop a programme with the working title “Not the Beethoven Horn Sonata”. The impetus for creating such a programme had come from my frustration at the over-dependency of natural horn players on this one, admittedly significant piece in our repertoire. If you hear one Classical piece performed on the natural horn, it is more than likely going to be the Beethoven *Sonata in F* Op. 17. There are good reasons for this, such as the tonality of the piece being F, which makes it less daunting to perform for inexperienced players or beginners on the natural horn, as it can be played in any other solo key, such as E^b. Conservative concert promoters and audiences also have a hand in the ubiquity of this piece, favouring works by composers they know over lesser-known composers.

Beethoven reportedly composed the sonata in something of a hurry. Ferdinand Ries recounts the composer in essence completing his homework the night before submission.² To my mind,

1 Tennyson 1866, p. 79.

2 “Die Composition der meisten Werke, die Beethoven zu einer bestimmten Zeit fertig haben sollte, verschob er fast immer bis zum letzten Augenblick. So hatte er dem berühmten Hornisten Ponto versprochen, eine Sonate (Opus 17) für Clavier und Horn zu componiren und in Ponto’s Concert mit ihm zu spielen; das Concert mit der Sonate war angekündigt, diese aber noch nicht angefangen. Den Tag vor der Aufführung begann Beethoven die Arbeit und beim Concerte war sie fertig.” (Wegeler/Ries 1838, p. 82). English translation: “Beethoven almost always postponed the composition of the majority of his works due by a certain date until the very last moment. He had, for instance, promised Ponto, the famous horn player, that he would compose a sonata (Opus 17) for piano and horn and would play it with him at a concert given by Ponto. The concert with the sonata was announced, but the sonata was not yet started. On the day before the performance Beethoven began the work and had it ready for the concert.” (Wegler/Ries 1988, p. 71).

the *Sonata* feels as if Beethoven has patched together a work which incorporates the ‘party tricks’ or tropes for which both he and Giovanni Punto, the horn player for whom he wrote the work, were famous, such as the swift arpeggios and factitious notes associated with the virtuosic low horn idiom and the rapid chord passages in the piano part. However, in comparison to the *Grand Sonata* Op. 34 of the aforementioned Ferdinand Ries, performing the Beethoven *Sonata* sometimes feels like rummaging in a toy box, taking each toy out one by one, showing it off to its greatest effect and then moving on to the next.

My aim with this new programme was to demonstrate that there is much more to the early-nineteenth-century repertoire for horn and piano from Beethoven’s circle, to contextualise the Beethoven *Sonata* and to advocate for more regular inclusion of these other works in our performances.

As I drew together repertoire, three of the works considered, the *Adagio und Rondo* Op. 105 composed by Friedrich Starke in 1821, the *Concertino for horn and piano*³ Op. 16 composed by Louis Schlösser in 1825, and the *Introduction et Variations* Op. 12, composed by Franz Lachner, also in 1825, posed a particular question, in that all contain particular markings for muted horn.

While the use of mutes in brass instruments has been known since the fifteenth century,⁴ it is not at all common to see markings for muted horn until we reach later periods and composers such as Wagner, Strauss, Mahler, Ravel and Debussy. Not only is it unusual to see such markings, but also the physical act of inserting and removing a mute necessitates a certain amount of time which needs to be factored into any performance, and one would hope equally factored into any compositional decisions.

A muted effect can be made in one of four ways on the horn:

1. Using a transposing mute.
2. Using a non-transposing mute.
3. Hand-stopped.
4. Half-stopped, sometimes known as an echo.

By placing the mute in the bell of the instrument, or by using the right hand to ‘stop’ the bell, the pitch is lowered. The note descends to a pitch a semitone above the harmonic below. When gradually stopping the horn, you can hear the pitch being lowered, but the interval by which each note is lowered is different, dependent on its place in the series.⁵

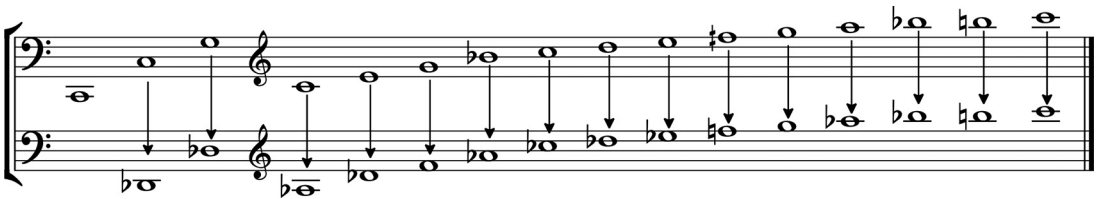


Fig. 1 Harmonic series and the resulting notes when stopped.

A transposing mute lowers the pitch of the instrument in the same way as the hand. When using a transposing mute with a valve horn, the player has to transpose what they are playing in order for the notes to be at the correct pitch. The natural horn creates its chromatic notes by the use of the hand in the bell thus making transposition to mitigate a pitch shift problematic.

3 This *Concertino* is published in three versions: (i) horn and orchestra, (ii) horn and string quartet and (iii) horn and piano.

4 See Downey 1993, esp. p. 309 and fn. 36, p. 324.

5 See Merewether 1978, pp. 40f.; Campbell/Greated 1994, pp. 400–403.

Non-transposing mutes would have to extend beyond the edge of the bell in order to affect the timbre but not the pitch. This would be very cumbersome and impractical. The solution is known as 'end correction'; mutes that fit within and up to the edge of the bell have an inner shaft, effectively extending the instrument.⁶

The challenge of inserting and removing a mute is discussed more in orchestration treatises than in pedagogical works for the horn. One late twentieth-century source advises:

Normally a couple of seconds of rest must be allowed to give the player time to pick up the mute with the right hand and insert it, and another couple of seconds, later, to remove it and put it down. If necessary, the mute can be held on a strap around the wrist, in which case it can be inserted or removed in as little as half a second.⁷

This contradicts a view from earlier in the same century which suggests that a seamless segue from open to muted is viable:

Nothing is more easily or more quickly accomplished than slipping the mute into the bell; the performer does not so much as interrupt his playing, for, while holding the Horn with his left hand, he slips in the mute with his right.⁸

For performers, a pragmatic solution to the challenge of muting the horn can be to use the right hand to stop the instrument:

Horn players often ignore the direction to play with mutes, preferring the less bothersome and quicker hand stopping. In their defense it must be added that the practice is abetted by composers who are indifferent to the distinction between the two effects.⁹

When fully stopping the horn, the player transposes everything a semi-tone lower to accommodate the changing pitch that results. Despite this being an option, it is clear from a number of sources – for example Widor – that the effects of stopping and muting, whilst similar in timbre, were notably different. Attitudes towards the distinction between the effects of muting versus hand-stopping the horn vary enormously, as do opinions on whether the mute is to be used in order to alter the dynamic of the horn and make the instrument softer, or instead to actually change the timbre of the instrument. Louis-François Dauprat indicates that it is used to make the "effect of pianissimo"; however, "this foreign body changes the quality and timbre of the tones". Dauprat further argues that "two horns at a distance and hidden, will produce a better and more natural effect than that which comes from a piece of wood, pasteboard or elastic rubber inserted in the bell of the instrument", thus suggesting that the main aim of mutes during his era was to create the sonic effect of horns being played at a distance, rather than a different timbre.¹⁰

6 For illustrations of transposing and non-transposing mutes, see Morley-Pegge 1960, p. 142.

7 Stiller 1985, p. 35.

8 "Rien de plus facile, de plus rapide que de glisser la sourdine dans le pavillon; l'exécutant ne s'interrompt pas même pour cela: il tient l'instrument de la main gauche et place son appareil avec la droite" (Widor 1904, p. 67; English after Widor 1906, p. 58).

9 Piston 1955, p. 236.

10 "On en obtient, sans doute, un effet de pianissimo qui peut surprendre; mais ces corps étrangers, unis à l'instrument, changent la qualité des sons, leur timbre [...]. Quand on a eu besoin de cet effet [double-écho], on a vu que deux Cors éloignés et cachés produisaient un effet meilleur et plus naturel, que celui qui vient d'un morceau de bois, de carton, ou de gomme élastique uni à l'instrument." (Dauprat 1824, Vol. 2, pp. 151f.; English after Coar 1952, p. 87).

Widor stipulates that mutes be used “for all *pianissimo* effects”, with “*cuivré* (with a +) [used] for stopped effects *forte*”.¹¹ This contrasts with Gaston Borch’s view of the mute not being used “to soften its tone, but to give it a distinct color, thin, nasal”. Borch recommends the use of the mute as “very effective in *forte* (*f*) or *fortissimo* (*ff*), expressing horror, or imitating a chime.”¹²

A further option on the horn, sometimes known as the echo, is to lightly half-stop or three-quarter-stop the bell of the instrument. This results in the pitch of the instrument being lowered by a semitone, which requires the player to transpose the music a semitone higher.¹³ Due to the pitch shift that results when stopping the horn for the echo effect, such passages are only feasible on the valve instrument, as it is able to create any note as either an open or a stopped note.

In 1840, Joseph-Émile Meifred, a pioneer of the early valve horn, recommended lightly stopping notes on the new valve instrument in order to perform a repeated phrase as an echo, instead of using “the old mute” which he said had been “totally abandoned”.¹⁴ Oscar Franz describes the echo as “one of the most charming effects which a skilled Horn Player can employ.”¹⁵ The relative merits of the mute versus the hand was much debated, with some, like Borch, viewing the hand as preferable due to the timbral differences that resulted: “An echo reproduces the tone faithfully, only softer, but the mute of a French Horn completely alters its tone-color.”¹⁶ Gumpert was much more negative about the use of the hand: “A stopped note will always sound squeezed, whereas one played with a mute will have a gentle colour.”¹⁷

An approach to muted passages

My initial training as a modern horn player had engendered in me the belief that mutes need to be inserted with maximum speed and minimal fuss (‘à la Widor’); that the goal was always an adept use of the mute in order not to disturb the flow of the music. However, with the three pieces considered here (Starke, Schlösser and Lachner), I could not envisage how this approach would be viable, nor how it would best serve the music. How could I interpret the markings for the use of the mutes in such a way that would work musically?

In recent years, a number of researchers have engaged with the wealth of information we have from early recordings and have demonstrated findings that lead us to question our twentieth-century metronomic approach to pre-twentieth-century repertoires.¹⁸ Aspects of earlier performance practices such as the asynchronicity or dislocation of lines, metric rubato and tempo modifications, which to fresh ears may seem idiosyncratic, eccentric or even sloppy, are beginning to be explored in performance by HIP practitioners.

My initial solution to the tempo challenges of these muted passages was to embrace a fluidity of tempo that I hear in early recordings. One feature of many early recordings is dramatic changes in tempo that are not notated in the score, and which can be heard between disparate themes or motifs, for example between a first and second subject in a sonata. As some of the

11 Widor 1906, p. 60.

12 Borch 1918, p. 22.

13 For the use of this technique, see the famous “en echo” passage (starting three bars before the *Légèrement retenu* marking) in Dukas’s *Villanelle* of 1906.

14 “[...] la main, dans cette circonstance, remplace l’ancienne Sourdinne, aujourd’hui totalement abandonnée.” (Meifred 1840, p. 5 and p. 75. Translations by the author if not otherwise stated).

15 “Einer der reizendsten Effecte des Waldhorns, den geschickte Bläser gern anwenden, ist das ‘Echo’” (Franz 1906, p. 58).

16 Borch 1918, p. 22.

17 “Ein gestopfter Ton wird immer gequetscht, dagegen ein solcher mit Sordinen geblasener zart klingen.” (Gumpert 1879, p. 63).

18 See e.g. Peres Da Costa 2012; Philip 2004.

muted passages in this survey, for example in Starke's *Adagio und Rondo*, appear almost to be an interruption within the work, it felt rational to embrace this interruption further and to step away from any desire on my part to demonstrate a swift, elegant use of the mute, and instead purposely take my time over these passages. I wanted to challenge my own notions about tempo and pulse in line with what we can hear in many early recordings.

I wish to propose a very specific solution to these muted passages from the 1820s, one that is derived from a source that I found myself exploring for the first time and that takes me into particularly apt territory for a conference organised by the Hochschule der Künste Bern.

In my view, these works all exploit a particular topos that was popular in the early nineteenth century and which the horn is well suited to emulate, namely the alphorn and the music of the *ranz des vaches*, a music and an effect considered so nostalgic, so affecting, so Swiss that people were warned not to play such music within earshot of Swiss mercenaries abroad as it supposedly risked prompting them to desert.¹⁹ Hand in hand with the specific effect of the alphorn call come both the silence of the mountains and, ultimately, the echo in reply.

These alphorn calls are distinct from other types of horn or trumpet music such as the night-watchman's call, the trumpet or bugle call, the post horn or the music of the hunt.²⁰ The alphorn call is "flowing and peaceful" and uses repeated "short motifs with long held notes at the end of a breath".²¹ The music is normally harmonically simple, as the instrument is restricted to the notes of the harmonic series. The effect of the echo is one that can be heard in music throughout history, but in the early nineteenth century the alphorn became a sonic symbol associated with the sublime, with man calling out to Nature in the mountains, and Nature answering back.

During the early nineteenth century, Switzerland became a favoured tourist destination, its majestic landscape an inspiration to artists, writers and musicians. A trip to Switzerland became essential; Johannes Bürkli warned that it was "as though a crime to die without having seen Switzerland".²² Alphorns were brought out and demonstrated to tourists who experienced the instrument being played in the wild, into a silence which would eventually return an echo bouncing back off a mountain, or perhaps a reply from another distant herdsman.

The sound of the alphorn became a romantic topos throughout the arts for a *locus amoenus*, a paradisiac landscape often tinged with nostalgia or homesickness. The sound world of the alphorn is an idealised place of safety or comfort: when you sound the horn, you know that eventually the reply, from Nature, will return.

The reply from our fellow man is notably less reliable. For example, when no reply comes to the plaintive cor anglais representing one of two shepherds towards the end of the *Scène aux champs*, the third movement of Berlioz's *Symphonie fantastique*, the effect is unsettling and ominous.

19 "J'ai ajouté dans la même Planche le célèbre *Ranz-des-Vaches*, cet Air si chéri des Suisses qu'il fut défendu sous peine de mort de le jouer dans leurs Troupes, parce qu'il faisoit fondre en larmes, désertir ou mourir ceux qui l'entendoient, tant il excitoit en eux l'ardent desir de revoir leur pays." ("I have attached here the celebrated *Ranz-des-Vaches*, this Air so loved by the Swiss that it was forbidden on pain of death to play it among the soldiers, because it caused them to give up their arms [recte: break into tears], desert or die when they heard it, arousing in them such desire to see their homeland again.") (Rousseau 1768, p. 317; English after Jones 2014, p. 186).

20 Ibid., p. 24.

21 Ibid., p. 25.

22 "Gleich als ob es ein Verbrechen wäre zu sterben, ohne die Schweiz gesehen zu haben" (Bürkli 1793, Vol. 1, pp. i–ii; English after Ozturk 2012, p. 80).



Fig. 2 Frontispiece to Kuhn 1818.

The music of the alphorns and the *Ranz des vaches* or *Kühreihen* were performed in a slow manner, without artifice. Gottlieb Jakob Kuhn, the author of the collection from which our image of the alphorn player is taken (Fig. 2), described the calls thus:

You cannot get the right idea of the effect produced by the *Kühreihen* unless you have heard them in the mountains themselves. [...] The **solemn silence of nature** that surrounds it makes the heart receptive to all that is simple and natural; it proves to be a gentle and melancholy sensation and only heard like this is it possible to appreciate the full merit of the *Kühreihen*.²³

Tourist books describe the playing of the alphorn and pay a great deal of attention to the pacing of the call versus the response, with comments on how several seconds go by before the call returns.

Upon the slope in front of the Wetterhorn is usually stationed one who blows the *alpine horn* [...]. The traveller should on no account omit to stop and listen. **A few seconds after the horn has ceased**, the few and simple notes of the instrument are caught up and repeated by the echoes

23 “Der Kühreihen, so wie überhaupt der Gesang unsrer Bauern, will schlechterdings aus einer gewissen Entfernung gehört seyn [...]. Die feyerliche Stille der erhabenen Natur von welcher man umgeben ist, die das Herz öffnet und für alles Einfache, Ungekünstelte so empfänglich macht, die sanfte süßwehmüthige Stimmung, in welche man sich hier unmerklich versetzt sieht, dieß alles muß dabey seyn wenn ein Kühreihen uns entzücken soll.” (Kuhn 1818, pp. ii–iii. English after Jones 2014, p. 21, fn 37). Bold type by the present author.

of the vast cliff of the Wetterhorn, and **return to the ear refined and softened**, yet perfectly distinct, as it were an aërial concert warbling among the crags.²⁴

The Alhorn [...] is often sounded from the opposite slope while tourists are passing. Its simple notes are reechoed **a few seconds later** from the precipices of the Wetterhorn, the effect of which is extremely pleasing.²⁵

Some comment on a faster response, but the idea remains of something that lingers:

In the sward was stationed a man and some boys with a horn. [...] He must have practised long to emit such a flow of mellow, sonorous sounds from so unmusical-looking an instrument. The notes died away in softest cadence, which notes were taken up by the mountains and reverberated by them again and again. We had scarcely a moment's interval to remark on their sweetness, when the rocks echoed the same notes in fainter strains, another pause and we heard their vibrations still lingering among the cliffs till they expired in but a musical sigh.²⁶

Nature was a major force in the Romantic imagination. The eternity of Nature contrasted with the finitude of human life. Majestic, and at times foreboding mountains – and in particular the Alps – inspired musicians and composers such as Franz Liszt who, in 1837, summarised these feelings:

The lordly majesty of the Alpine lands is perhaps too great for our own littleness. Man feels himself oppressed by such greatness. The eternal existence of the glaciers warns him of his own transitoriness; the undisturbed purity of the snow is a silent reproach to his own sullied conscience. The masses of rock hang menacingly above his head, the somber green of the fir trees, the harsh air, the terror of the avalanche, the incessant rumbling of the abyss – all are austere symbols of a destiny working itself out, yet always threatened in the shadows by a cruel blow of fate.²⁷

Franz Schubert wrote to his brother in 1825 describing his travels to Salzburg and the nearby Berchtesgaden Alps:

The mountains appear higher and higher; the Untersberg, with its ghosts and legends, particularly peers above the rest like magic. [...] The sun darkens and the gloomy clouds lower over the black mountains like children of the mist; but they touch not the peak of the Untersberg – they glide past him, as though afraid of its dreadful inmates. [...] The Untersberg, with its attendant mountains, becomes gigantic; its majesty seems almost to crush us.²⁸

24 Murray 1838, p. 80. Present author's bold.

25 Baedeker 1863, pp. 148f. Present author's bold.

26 Morrell 1998, p. 64. Bold type by the present author.

27 “Les contrées alpestres, si grandes, si majestueuses, le sont trop peut-être pour notre petitesse. Leur grandeur écrase l'homme plutôt qu'elle ne l'élève. La permanence des glaciers l'avertit trop de son instabilité; la pureté immaculée des neiges éternelles est un reproche muet à sa conscience ternie; les masses de granit suspendues sur sa tête, la sinistre verdure des sapins, un rude climat, les terreurs de l'avalanche, et la voix ininterrompue qui gronde au fond des abîmes, sont d'austères symboles d'une destinée qui s'accomplit, toujours menacée dans l'ombre d'une fatalité irrévocable.” (Liszt 1838, p. 294; English after King 1945, p. 408).

28 “Die Berge steigen immer mehr in die Höhe, besonders ragt der fabelhafte Untersberg wie zauberhaft aus den übrigen hervor. [...] Die Sonne verdunkelt sich und die schweren Wolken ziehen über die schwarzen Berge wie Nebelgeister dahin; doch berühren sie den Scheitel des Unterberges nicht, sie schleichen an ihm vorüber, als fürchteten sie seinen grauvollen Inhalt. [...] Der Untersberg mit seinem Gefolge wird riesenhaft, ihre Größe will uns fast erdrücken.” (Kreißle 1861, p. 41; English after Kreißle 1869, Vol. 2, pp. 47f.).

And in 1829 Robert Schumann wrote to his mother from Bern:

[T]here is an immense charm in distance alone; and this very feeling, and the presence of the old classic mountains, gives rise to a hundred other poetical sentiments [...]. Man is not so unhappy as he imagines, for he has a heart which always finds responsive echoes in Nature. [...] do not mourn for me if I am crushed by an avalanche, or fall into a glacier, or am struck by lightning; for it would be a finer, nobler death than dying on a sick-bed.²⁹

These reactions to the grandeur of nature as seen in the alps can all be summarised by the key Romantic concept of the ‘sublime’. The debate surrounding the aesthetic notions of ‘beauty’, ‘pleasure’ and the ‘sublime’ was driven by the work of mid-eighteenth-century philosophers such as Edmund Burke³⁰ and Immanuel Kant³¹ and led to a shift in thought from the Enlightenment psychological aesthetic to the Romantic metaphysical aesthetic.³² Nature provoked feelings in man and, whilst these feelings might include delight in its beauty, man also experienced more troubling emotions such as fear of the power of Nature, awe at its majesty and even loneliness in the face of it, all of which could also give pleasure.

An appreciation of solitude and silence in Nature, the wonder and terror felt in recognising the smallness of man in comparison to its magnitude, evoked sensations of the sublime. The eternal silence of the mountains heightened an awareness of the brevity of life. The theoretician of landscape painting Carl Gustav Carus advised: “Climb to the topmost mountain peak, gaze out across long chains of hills [...]. There is a silent reverence within you; you lose yourself in infinite space; silently, your whole being is purified and cleansed; your ego disappears. *You are nothing; God is all.*”³³ All of these reactions to Nature were summarised perfectly in one image, namely the famous painting *Der Wanderer über dem Nebelmeer* (*Wanderer above the Mists*, ca 1818) by Caspar David Friedrich, the teacher of the aforementioned Carus.

The accounts of tourists, including composers and other artists, in which the silence of the mountains is emphasised, has encouraged me actively to incorporate silence into my interpretations of the muted passages in these three works. I would like to suggest that in the use of alphorn-esque writing, the use of timbral effects and the experience of silence are all part of the composer’s intention to provoke in the audience the emotions associated with the sublime. Whether the audiences that heard these works in performance would have personally experienced alphorns ‘in the wild’ is thus somewhat redundant, as is whether these calls are authentic alphorn calls. Instead, what is important is that audiences would have instantly recognised the effect being employed and that sensations of the sublime were being evoked.

29 “[...] da auf meine Duplik dann der Reiz der Entfernung und der Gegenwart auf alten klassischen Bergen ist und dies Gefühl schon hundert andere poetisch erregt [...]. Der Mensch ist nicht so unglücklich wie er denkt; er hat sein Herz, das sein schönstes Echo in der Natur findet. [...] und verschüttet mich eine Lawine oder stürz’ ich in eine Alpe oder vom Blitze, so beweine mich nicht; denn ich stürbe schön und größer und frischer, als auf dem Krankenbette.” (Schumann 1829, pp. 71–73 and 75; English after Schumann 1888, pp. 69–71 and 73. See also King 1945, p. 405).

30 Burke 1757.

31 Kant 1764.

32 Dahlhaus 1989.

33 “Tritt denn hin auf den Gipfel des Gebirges, schau hin über die langen Hügelreihen [...] – es ist eine stille Andacht in Dir, Du selbst verlierst Dich im unbegrenzten Raume, Dein ganzes Wesen erfährt eine stille Läuterung und Reinigung, Dein Ich verschwindet, *Du bist nichts, Gott ist Alles.*” (Carus 1831, p. 29; English after Carus 2002, p. 87).

Examples of muted passages for horn in solo writing ca 1820–1825

The image shows a musical score for Louis Schlösser's *Concertino Op. 16, Adagio*, bars 16–29. The score is written for Horn in Eb and Piano. The Horn part consists of a series of open harmonic notes, some marked *f* (forte) and others *pp* (pianissimo) with *Con Sordini* (muted). The Piano part provides accompaniment with various textures, including a *cresc.* (crescendo) section and a *Solo* section. The tempo is marked *Adagio*.

Fig. 3 Louis Schlösser: *Concertino* Op. 16, Adagio, bars 16–29 (Schlösser 1825).

Born in Darmstadt in 1800, Louis Schlösser moved to Vienna in 1822 where he became acquainted with Beethoven. In 1825 he moved to Paris to study violin with Rodolphe Kreutzer and composition with Jean-François Lesueur, eventually returning to Darmstadt. The *Concertino* dates from 1825, the year of his arrival in Paris, and was dedicated to the horn player Dauprat.³⁴ There are three versions of this work: for horn with orchestra, for horn and string quartet and for horn and piano. The muted passage here comes from the slow movement and is essentially the same in all three versions, bar the different instrumentation of the accompaniment.

This is the most accessible of the three works we shall examine here. The echo/*con sordino* notes are all open harmonics. Given that this work was composed for the natural horn, it would not be feasible to use hand stopping in order to create a *con sordino* effect, as this would alter the pitch of the notes. This suggests that a non-transposing mute was the intended solution.

In the opening of the Adagio section, Schlösser creates a stormy build-up prior to the horn calls and responses. Storms are the typical precursor to such an effect, as can be seen in the storm scene of Rossini's Overture to *Guillaume Tell* in 1829, which is followed by a cor-anglais imitation of the *ranz des vaches*. In the *Concertino*, the horn player has to alternate echo or *con sordino* passages in response to the open calls.

The horn player, pianist and composer Friedrich Starke was born in Elsterwerda in 1774. Starke's military service and musical roles in various parts of Saxony make it unclear as to when he eventually settled in Vienna, where he studied with Johann Georg Albrechtsberger.³⁵ Like Schlösser, he was on familiar terms with Beethoven. A famous anecdote concerns Starke visiting Beethoven for breakfast with the intention of playing the *Sonata* Op. 17 in F with the composer. Starke encountered every natural horn player's nightmare: Beethoven's piano was a semitone flat. Thankfully he had arrived with an E crook that would make the sonata playable, but Beethoven declared that the "effect would be spoiled" and instead transposed the piano part up a semitone.³⁶

34 Schlösser 1825.

35 OeZ 1836, p. 57.

36 Nohl 1877, p. 145. Translation after Forbes 1967, p. 526.

Fig. 4 Friedrich Starke: *Adagio und Rondo* Op. 105, bars 184–199 (Starke 1821).

The muted passage in Starke's *Adagio und Rondo* Op. 105 of ca 1821 interrupts the Rondo. Again, there is a stormy build-up prior to the muted passage. And again, the horn alternates between echo/*con sordino* and open. As is common for compositions of this period for horn, Starke also gives an alternative version for cello. Even accounting for the fact that the cello passages in the treble clef are intended to be played an octave lower than written, the cello version still exploits the upper range of the instrument, and I believe that Starke intends this to create a special timbral effect.

These timbral effects are not restricted to just the horn and cello. Starke is better known for his contribution to Viennese piano playing than to the horn repertoire; around the same time as this *Adagio und Rondo*, he also published his *Wiener Pianoforte-Schule* Op. 108.³⁷ Starke's piano had five pedals, and in the muted passage in the *Adagio und Rondo* he includes directions to alternate between the second pedal, the *Fortezug* or forte pedal, and the fifth pedal, the *Pianissimozug*. In the stormy section prior to the muted passage, Starke apparently contradicts his own advice from his *Pianoforte-Schule* in which he recommends that the *Fortezug* should be used only in slow passages with relatively static harmony; he especially recommends it for "pastoral, tender and melancholic arias, romances, religious compositions and all the soulful passages where the song flows slowly". Whilst this description does not seem appropriate for this tempestuous passage, such a description is perfect for the alphorn-esque passage that follows, as is Starke's recommendation of the *Pianissimozug* for "distant play, or echo", thus encouraging all three musicians, be they horn player, cellist or pianist, to exploit special timbral effects.³⁸

³⁷ Starke 1820.

³⁸ *Fortezug*: "Ueberhaupt darf man sich dieses Zuges zum Forte nur bedienen in gleichförmiger Harmonie Folge [...] in Pastorale, zärtlichen und schwermüthigen Arien, Romanzen, religiösen Compositionen, und überhaupt in allen gefühlvollen Stellen, wo der Gesang langsam dahin fließt". *Pianissimozug*: "es lässt sich durch diesen Zug ein entferntes Spiel, oder Echo, sehr gut darstellen." (Starke 1820, Vol. 1, p. 16).

“Answer, Echoes, Answer”

Variation 4: Andante

Horn in F: The part begins with a series of eighth-note patterns, alternating between fortissimo (*f*) and piano (*p*). It includes dynamic markings such as *f*, *p*, *f*, *p*, and *f*. The key signature has two flats, and the time signature is 2/4.

Violoncello: This part features more complex rhythmic figures, including triplets and sixteenth notes. Dynamics range from *f* to *ppp* (pianissimissimo). There are also markings for *Dim.* (diminuendo) and accents (>).

Piano: The piano accompaniment consists primarily of chords and arpeggiated figures. It starts with a forte (*f*) chord and moves through various textures, including *ppp* passages and *Dim.* sections.

The score continues with further musical development, including a section marked "Con Sord." (con sordina) and "Senza sord." (senza sordina), indicating changes in timbre or dynamics. The bottom system shows a repeat sign and a "Loco." marking, suggesting a change in tempo or character for the piano part.

Fig. 5 Franz Lachner: *Introduction et Variations* Op. 12, var. 4, bars 1–17 (Lachner n.d.).

In the previous two extracts, we have highlighted the inclusion of musical effects associated with the alphorn, such as stormy accompaniments, horn calls and their echoes. Our final work here, Franz Lachner's *Introduction et Variations* Op. 12, composed in 1825, is even more explicit in its association with Switzerland, given that it takes as its theme the Swiss folksong *Guggisberglied* ('S isch äben e Mönsch uf Aerde, Simelibärg).³⁹

Das alte Guggisberger Lied.

Vortrag, gehalten an der Jahresversammlung der Schweiz. Gesellschaft
für Volkskunde in Schaffhausen, Sonntag, den 12. Mai 1912.

Von Dr. Otto v. Greyerz.



's isch ä - ben e Mönsch uf Är - de, Si - me - li - bärg! 's isch
ä - ben e Mönsch uf Är - de, Si - me - li - bärg! Und
ds Vre - ne - li ab em Gug - gis - bärg, und ds Si - mes Hans Jog - ge - li
ä - net dem Bärg, 's isch ä - ben e Mönsch uf Är - de, dass
i möcht bi - n - ihm si.

Fig. 6 Das alte Guggisberger Lied (Greyerz 1912 p. 193).

39 For the history of the *Guggisberglied* see Greyerz 1912.

Whilst the introductory Andante contains passagework strongly redolent of alphorn calls, the alternating open and muted passages of variation 4 are less evocative. As with Starke, an alternative version for cello is offered, but, unlike Starke, in this key variation Lachner writes a distinctly different part, opting for a more syncopated, scalic and arpeggiated variation that yet again exploits the high register of the cello.

Unlike the earlier two pieces discussed here, there is a further challenge in the muted horn part in that it includes a number of non-harmonic notes such as the written B[♯], E[♭] and F (notes created normally by the use of the hand in the bell) at the same time as the performer is required to mute the instrument. A similar passage, containing non-harmonic notes in addition to the indication to mute the instrument, can be found in Beethoven's *Rondino* in E[♭] major, WoO 25. In the case of the *Variations*, this challenge might actually be redundant, given that Lachner composed this work for the early valve-horn player Édouard-Constantin Lewy. It is thus possible that this work was not composed for the natural horn. The use of valves would immediately nullify the challenge of muting chromatic, non-harmonic notes, and also offer up a solution for the alternating open and muted passages by potentially suggesting the use of the hand for the muted passages, rather than a physical mute.

The date of composition of these *Variations* – 1825 – situates it in a period when, as Christian Ahrens points out, “one cannot say with certainty whether the works had been especially composed for the valved horn”.⁴⁰ However, a review from 1826 does state that Édouard-Constantin Lewy played a set of variations by Lachner on the “newly-invented Viennese chromatic horn” at a concert in Stuttgart that year, so it is reasonable to assume that the work in question was this same set of variations.⁴¹

Despite the evidence that these *Variations* were most likely written for the early valve horn, the horn part of this work is written in an idiom that is very typical for the natural horn. For example, there are no notes below the sixth harmonic that are more than a semitone away from an open harmonic (see, for example, the end of variation 1 in Fig. 7).



Fig. 7 Franz Lachner: *Introduction et Variations* Op. 12, var. 1, bars 1–18 (Lachner 1825).

Perhaps Lachner took a pragmatic approach when composing these *Variations*, creating a piece that could work on the nascent valve horn (an instrument promoted by the Lewy brothers) but that was equally playable on the natural horn, which was the more dominant instrument of the period. Franz Schubert adopted a similar stance when he wrote for the early valve horn in his *Auf dem Strom* D. 943.

⁴⁰ “Allerdings lässt sich nicht mit Sicherheit sagen, ob die Werke speziell für das Ventilhorn komponiert worden waren” (Ahrens 1986, p. 28; English after Ahrens 2008a, p. 22).

⁴¹ “[...] auf dem neu erfundenen Wiener chromatischen Horne” (Anonymous 1826, col. 461).

In order to perform these *Variations* and navigate the challenge of the muted passage on the natural horn, one needs a mute that has the capacity to alternate between being both a transposing and a non-transposing mute. Such a mute might well have existed since 1795, as Gassner credits Carl Türirschmidt with having invented just such a mute in that year – one capable of “producing the semitones quite purely on the instrument”. However, this could conceivably also have been a mute that was used in lieu of the hand, i.e. specifically to create ‘semitones’.⁴² The story of Türirschmidt’s mute is repeated in Ledebur’s 1861 *Tonkünstler-Lexikon* as a means for the performer to play the “half or stopped notes as safe and pure as with the hand”.⁴³

In 1856, Bernsdorf stated that horns and trumpets were the only wind instruments that used “ein mechanischer Dämpfer”, the horn mute being a cloth-covered hollow ball of cardboard, roughly six inches in diameter, with an open tube which fitted into the bell of the horn. By means of a wire, which would protrude from the lower side of the sphere, a disc in the cavity of the ball could be operated to mask the tube, thus enabling the horn player to stop the notes whilst simultaneously muting the instrument.⁴⁴ Morley-Pegge credits Frölich with a description of a similar mute able to alter the pitch of the notes:

[A] hollow papier mâché ball, about six inches across, with an open neck to be inserted into the bell of the horn. Inside this ball was another covered with leather and with a cord attached to it which hung down from the bell. With this the neck could be more or less fully occluded at will, in the same way as by hand stopping.⁴⁵

Fitzpatrick erroneously conflates Bernsdorf’s description with the earlier references to Türirschmidt’s mute, even going as far as to declare that his “reconstruction in seasoned acacia wood” was made “to Thürschmidt’s [*sic*] specifications as quoted by Bernsdorf.”⁴⁶ Bernsdorf makes no mention of Türirschmidt, and describes a mute in keeping with the “Sordine für das einfache Horn/Sourdine pour le cor simple” as illustrated in Adam Wirth’s 1877 *Horn-Schule*.⁴⁷

An even earlier account of a mechanical mute exists from 1738 at the Gotha Hofkapelle. Ahrens cites a receipt from the Gotha court metalworker that describes the metalworker having made mutes for the duke’s horn players “so that by pushing a lever they can mute the tone or sound by means of some springs”.⁴⁸ This description is insufficient to determine whether the mute affected the pitch of the notes, and whether it was used as a means to create non-har-

42 “1795 erfand er einen Dämpfer (Sordin), vermittelt dessen man auch die Halbtöne ganz rein auf dem Instrumente hervorbringen konnte.” (Gassner 1847, p. 849).

43 “Im Jahre 1795 erfand er eine Sourdine (Dämpfer), vermittelt deren man die halben oder gestopften Töne eben so sicher und rein, als mit der Hand nehmen kann.” (Ledebur 1861, p. 610).

44 “Unter den Blasinstrumenten wird nur beim Horn und der Trompete ein mechanischer Dämpfer angewendet. Bei ersterem (dem Horn) besteht er gewöhnlich aus einer meistens mit Tuch überzogenen hohlen Kugel aus Pappe, ungefähr sechs Zoll im Durchmesser, an welcher sich ein offener Schlauch befindet, der in den Schalltrichter paßt; innerhalb der Kugel ist ein Draht mit einer Scheibe angebracht, durch welche die Höhlung des Schlauches verdeckt werden kann, damit der Hornist trotz des Dämpfers auch die Töne stopfen kann, zu welchem Behufe auch der Draht mit einem Handgriffe versehen ist, der aus der untern Seite der Kugel hervorragt.” (Bernsdorf 1856, pp. 646f.).

45 “Später machte man die Sordine gewöhnlich aus einer hohlen Kugel von Papiermaché, im Durchmesser ungefähr 6 Zoll, mit einem offenen Schlauch oder Zapfen, der in den untern Theil des Horns eingeschoben wurde. Um stopfen zu können, hatte man innerhalb desselben einen Draht mit einer daran befestigten, mit Leder überzogenen Kugel angebracht, durch welche die Höhlung des Schlauchs, nach Bedarf mehr oder weniger, gedeckt werden konnte.” (Frölich 1886, p. 225; English after Morley-Pegge 1960, p. 140).

46 Fitzpatrick 1970, p. 175 and p. 178, fn. 1.

47 Wirth 1877, p. 6.

48 “[...] daß man durch einen trücker [Drücker] vermittelt einigen federn den Thon oder Laut dämpfen kann” (Ahrens 2008b, p. 322). See also Ahrens 2007.

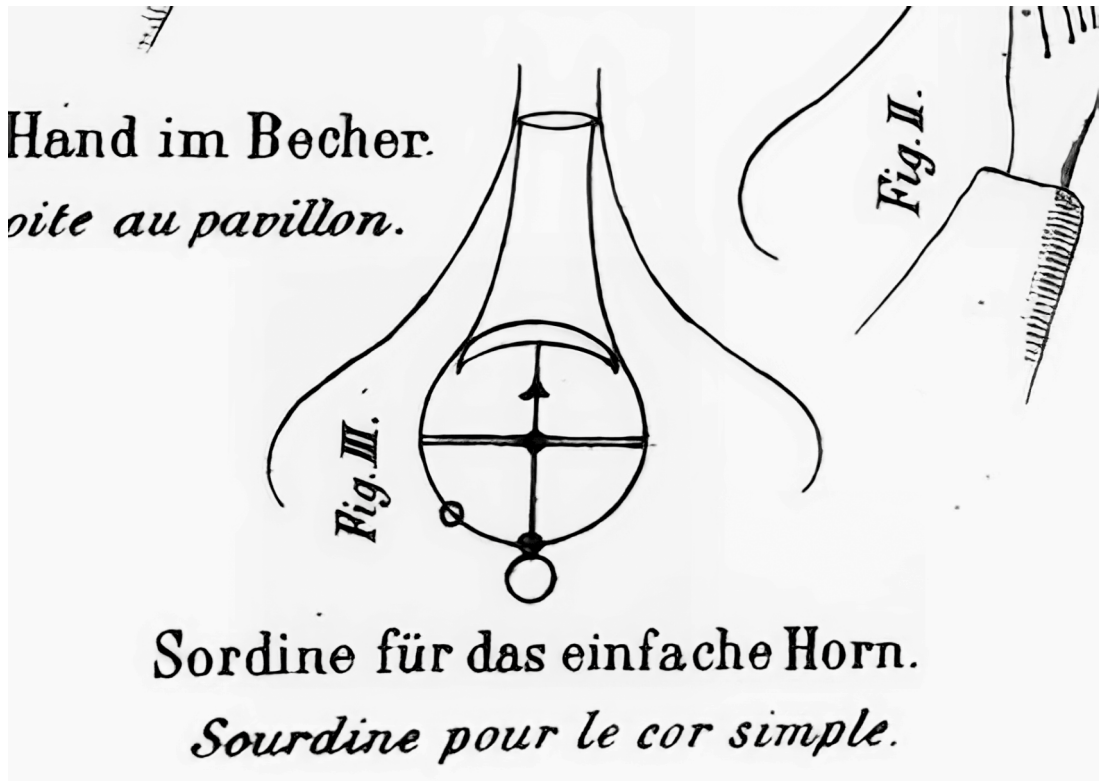


Fig. 8 "Sordine für das einfache Horn/Sourdine pour le cor simple" (Wirth 1877, p. 6).

monic notes. However, it does demonstrate a certain level of inventiveness and technical skill as regards mutes in the eighteenth century.

Conclusion

In the three pieces I have explored here, it appears that the composers are using the topos of the alphorn in order to evoke the feelings associated with the sound of the instrument. Regardless of whether they quote directly from the known alphorn repertoire of the time, the setting of these 'calls', after stormy passages in the pieces by Starke and Schlösser, and within an overtly Swiss composition in the Lachner, are enough for the composers to signal that this is the effect that they are referencing.

A number of other works from this period emulate the sound of the alphorn, yet were composed for instruments other than the horn. These compositions also use special timbral effects associated with the specific solo instrument in question. For example, Pierre-Joseph-Guillaume Zimmerman's *Second Piano Concerto* Op. 13, dating from 1823, features the alternate use of the grand pedal and simultaneous use of both the grand pedal and the 'jeu de buffle'; Bernhard Romberg's pre-1828 *Concerto Suisse* for cello incorporates harmonics, and Gustavus Valentin von Holst's 1823 *Fantasia Tirolese* for harp requires the performer to play closer to the sounding board and to use newly invented swell-box louvres.⁴⁹ The use of the mute with the horn is in keeping with these special timbral effects.

For performer/researchers such as myself, I believe that there has been an over-reliance on the 'low-hanging fruit' of research possibilities afforded to us by organological and pedagogical sources. The physical experience of working with an instrument offers much information but

⁴⁹ Zimmerman 1823; Romberg 1826; Holst 1826.

it is easy for our modern mindsets to overrule the inherent evidence of this resource. Whether we are dealing with methods, treatises, critiques or other accounts of performances in earlier eras, textual sources can be contradictory and notoriously difficult to interpret in a way that will enable us to determine the performance practices of their time.

In exploring these three works I have investigated how the organological demands of inserting and removing the mute co-exist with the musical demands, and have found the accounts of Swiss tourists, artists, composers and philosophers of the period to be essential in shaping my interpretations. For me, exploring these non-musical accounts, and especially exploring the experience of listening – also listening to silence – has afforded me a new understanding of these works that I also believe has enabled me to achieve a more coherent interpretation of them.

The time needed to put the mute in or take it out means I have to slow down. I have to engage with the stagecraft necessary to make my movements match the atmosphere of the music. I have found the use of papier-maché mutes, based on the descriptions given above, to be beneficial on account of their lightness. But most importantly, I am required to pace myself in order to emulate these tourist book descriptions, to take the ‘few seconds’ before the reply, safe in the knowledge that any tension created by those few seconds will be relieved when the response ultimately comes.

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Daniel Allenbach

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

By focussing on Richard Wagner's Ring des Nibelungen, this essay explores the semantic connotations attributed to the French horn in the nineteenth century at a time characterised by the advent of valves and associated concerns that the profile of the horn was being watered down. What is striking about the use of the horn (except when stopped) is its predominantly positive symbolism, which is closely connected with its origins and the original playing possibilities of the natural horn. Nature, happy hunting, heroism, youth, health and love are just a few key words that it connotes. The occasionally poetic, flowery descriptions found in nineteenth-century instrumentation treatises are also considered here, some of which were undoubtedly the basis for how Wagner and his contemporaries understood the horn, and how Wagner's music influenced other composers in its use.

“The Sound of Brass” was the motto for our Fifth International Romantic Brass Symposium in Biel in November 2018.¹ We learnt about the nuances of different sounds, caused not just by the player himself but also by parameters such as materials, instrument design and material processing techniques. However, there is another very important aspect of the spectrum of sound that I would like to focus on here: the semantic connotations attributed to an instrument.

In our day, such connotations sometimes do not seem very scholarly in nature and can often sound pompous, as in this example from the 1960s: “the horn calls in and out of nature, the trumpet gives the brief command from person to person; the trombones, however, proclaim ‘with a bronze mouth’ the Word of God.”² Apart from the fact that such solemn dictums refer to sound qualities that are obviously immeasurable, we cannot merely ignore them, as they were common throughout the nineteenth century. While these connotations are by no means universal, nor must every note an instrument plays be interpreted in one way or another, nevertheless a grain of truth about them might be found in a musical context – whether in melody, harmony, rhythm or timbre – and may even be felt by listeners who are otherwise unaware of them.

The poet Christian Friedrich Daniel Schubart (1739–1791) called the horn a “heavenly instrument” because it “preeminently before all others, brings forth the [...] greatest effect [on] the animal world. [It] makes the stag lie down at the mossy spring and seem to drink in,

1 See Institut Interpretation 2018.

2 “[...] das Horn ruft in und aus der Natur, die Trompete erteilt den kurzen Befehl von Mensch zu Mensch; die Posaunen aber verkünden ‘mit erzenem Mund’ die göttliche Mitteilung.” (David 1963, p. 101). All English translations by the present author unless otherwise stated.

as it were, the sounds with antlers held high.”³ Such words can help us to understand why the musicologist Alfred Einstein described the horn as the “most romantic of all instruments”.⁴ Besides its importance in music, the horn was a popular motif in the poetry of the nineteenth century, from Wilhelm Müller with his well-known “Gedichte aus den hinterlassenen Papieren eines reisenden Waldhornisten”⁵ (the “posthumous poems of a travelling horn player”) to Joseph von Eichendorff’s poems such as “Sehnsucht” (“Yearning”) or “Im Walde” (“In the forest”).⁶ The writings of Johann Gottfried Herder, Wilhelm Heinrich Wackenroder and Ludwig Tieck were also influential in this regard.⁷ In this literary context, the horn has often been associated with love, desire, hunting, and the forest in general.⁸ But in the field of art music too, the sound of the horn was very popular in the Romantic era – one thinks, for example, of Carl Maria von Weber’s *Freischütz*, the symphonies of Brahms and Bruckner, and of course the oeuvre of Richard Wagner. Apart from the mere sound of the instrument, the orchestration employed by these and many other composers can at least in some cases also be construed as semantically connotated.⁹ It is primarily the horn that evokes the German forest and the hunt in *Freischütz*. In Brahms’s first symphony, an Alphorn melody is used to inspire feelings of solemnity, while Wagner’s goal was explicitly to “focus” the orchestra’s ‘ability to speak’ with specific orchestration, and thereby to accompany and comment on the events taking place on stage in an “organic capacity”.¹⁰

Of course, these connotations are mostly mere vague allusions and references. Nevertheless, when we peruse composition treatises by Wagner’s predecessors, contemporaries and successors alongside passages from his tetralogy *Der Ring des Nibelungen*, we can discern a panorama of more concrete connotations for the sound of the horn.

- 3 “Dieß himmlische Instrument [bringt] vorzugsweise vor allen andern, die größte Wirkung auf die Thierwelt hervor. [...] daß sich der Hirsch an [sic] Moosquell lagert, und mit hoch aufgerichtetem Geweih die Töne gleichsam zu verschlingen scheint.” (Schubart 1806, pp. 311 and 313f.; English after DuBois 1983, pp. 366 and 368).
- 4 “Das Horn ist ja das romantische Instrument kat’exochoen und an seiner Verwendung allein in der Instrumentation könnte man die Entwicklung des Romantischen in der Musik studieren.” (Einstein 1950, pp. 85f.).
- 5 Müller 1821. A second volume of poems (among them the cycle “Winterreise”) was published in 1824 (Müller 1824).
- 6 Im Walde: “Es zog eine Hochzeit den Berg entlang, / Ich hörte die Vögel schlagen, / Da blitzten viel’ Reiter, das Waldhorn klang, / Das war ein lustiges Jagen! [...]” Sehnsucht: “Es schienen so golden die Sterne, / Am Fenster ich einsam stand / Und hörte aus weiter Ferne / Ein Posthorn im stillen Land. / Das Herz mir im Leibe entbrennte, / Da hab’ ich mir heimlich gedacht: / Ach, wer da mitreisen könnte / In der prächtigen Sommernacht! [...]” (Cited after Eichendorff 1841, pp. 6 and 31f.).
- 7 See, among others, Herder 1830, pp. 128f.; Wackenroder 1799, pp. 178 and 245. I am indebted to Arne Stollberg for this reference.
- 8 See Bodendorff 2002, p. 242.
- 9 Voss 1970a, p. 169.
- 10 “Um das außerordentlich ermöglichende Sprachorgan des Orchesters zu der Höhe zu steigern, daß es jeden Augenblick das in der dramatischen Situation liegende Unausprechliche dem Gefühle deutlich kundgeben könne, hat der von der dichterischen Absicht erfüllte Musiker [...] seine Erfindungsgabe ganz nach der von ihm empfundenen Notwendigkeit eines treffendsten, bestimmtesten Ausdruckes zum Auffinden des mannigfaltigsten Sprachvermögens des Orchesters zu schärfen [...] – so daß gerade die *allerreichste* Orchestersprache mit dem künstlerischen Zwecke sich kundgeben soll, gewissermaßen gar nicht beachtet, *gar nicht gehört* zu werden, nämlich nicht in ihrer *mechanischen*, sondern nur in ihrer *organischen* Wirksamkeit, in der sie eins ist mit dem Drama.” (Wagner 1994, pp. 386f.; English after Wagner 1995, pp. 370f.). A good overview of his orchestration is provided by Schirmer 2012. Further information may be found in Janz 2006. And last but not least, Humburg (2004) and Schäfer (1982) give examples of the connotations of the instrumentation in the *Ring* (some of which shift as the work progresses).

The “purposeful use of the horn”

The Romantic era brought both prominence to the sound of the horn in symphonies and operas, and the innovation of the valve instrument. The invention of valves by Blümel and Stölzel in 1814 made it possible to play the instrument chromatically without the changes in timbre caused by hand-stopping. Many performers and composers had reservations about these innovations.¹¹ And while some horn players enthusiastically exploited the new possibilities and praised the development of the valve horn as a great advance, others regretted the loss of the colour of the hand-stopped horn. Critics also expressed concern about a loss of semantic meaning for the horn because the valves enabled the musicians to play everything: “the purposeful use of the horn was abandoned in favour of its permanent involvement in the musical argument. As a result, many feared the sound of the horn would lose its independence.”¹²

Despite these fears, horn writing almost up to the end of the nineteenth century owed a lot to the harmonic series that is the basis of the original horn sound (and in some cases, horn writing continues to rely on it to the present day).

The reasons for this reluctance to use the new instrument might have lain in part in sheer habit, issues of performance practice, or expectations for the timbre. Another reason is to be found in the reservations that were expressed in numerous instrumentation treatises regarding the intonation and sound of the valve horn.¹³ As an example of this, and also of a contemporary reply to such criticism, we can consult Richard Wagner's preliminary remarks to his opera *Tristan und Isolde*:

The introduction of the valves has indisputably gained so much for this instrument that it is difficult to disregard this improvement, although the horn has thereby suffered an undeniable loss in the beauty of its tone and especially its ability to achieve a smooth legato. Given this great loss, the present composer, who is committed to preserving the true nature of the horn, would have had to abstain from using the valve horns, had he not experienced excellent artists, treating [the horn] with the utmost care, who were able to remove the abovementioned disadvantages almost imperceptibly so that there was hardly any difference in terms of tone and legato. In anticipation

- 11 After starting with just natural horns in his early operas, Wagner used two natural horns and two valve horns side by side in *Rienzi*, *Der fliegende Holländer* and *Tannhäuser*. With his later operas he became a kind of favourite enemy of the natural horn enthusiasts: “A member of the Hallé Orchestra between 1871 and 1874, he [Antoine Pacquis] ‘tried in vain’ to play Wagner's horn parts on the hand horn, and according to Borsdorf, eventually, ‘threw the music on the floor and danced on it. Hallé tried to calm him down, but he merely exclaimed, ‘I do not care. Zat is not the way to write for the instrument’, and executed another war dance.” (Cited as in Humphries 2000, p. 23. Humphries gives a letter from 1945 as evidence).
- 12 “Viele Kritiker stießen sich daran, daß man die Hörner (mehr noch als Trompeten und Posaunen, deren Einsatz auch weiterhin bestimmten musikimmanenten Restriktionen unterworfen blieb) nun tatsächlich ‘alles blasen ließ’. Gemeint war damit nicht allein, daß man Passagen und Phrasen, die früher selbst auf einem Horn mit seinen Stopfönen unausführbar gewesen waren, nunmehr auch auf Blechblasinstrumenten spielen lassen konnte, sondern vor allem, daß der gezielte Einsatz des Horns aufgegeben wurde zugunsten einer ständigen Beteiligung am Klanggeschehen. Dadurch mußte nach Ansicht vieler die Eigenständigkeit des Hornsatzes verloren gehen, das Instrument drohte seine Bedeutung einzubüßen.” (See Holmes et al. 1996, cols. 386f.).
- 13 See e.g. Emil Postel, who complained about the loss of the characteristic sounds of horns, trumpets and trombones, and argued in favour of writing for the natural instruments: “Dem durch die Ventile erlangten Vortheile tritt aber auch ein wesentlicher Nachtheil gegenüber, indem durch die Ventile der ursprüngliche charakteristische Horn-, Trompeten- und Posaunenton verloren geht, und alle Instrumente einen mehr gleichartigen Klang erhalten. Daher bedienen sich die Componisten mit Recht noch immer der Natur-Instrumente, und versagen sich lieber manchen Ton, als daß sie den eigenthümlichen Horn-, Trompeten- und Posaunenklang aufgeben sollten” (Postel 1856, p. 226).

of what we hope will be the inevitable further improvement of the valve horn, horn players are herewith strongly advised to study the parts assigned to them in this score very carefully.¹⁴

The nature of the (valve-less) horn – thus the poet Schubart – produces “gentle, sweet, echoing, tenderly lamenting sounds that completely fill the gaps of the string instruments [...]. The horn, if thought of as a human being, is a good, honourable man who recommends himself to almost every society not as a genius, but as a sensitive soul. [...] Charm and, if one may say so, a cordial familiarity are the keynotes of this magnificent instrument.”¹⁵

Now we shall consider the music that Wagner wrote for the ‘true nature’ of the horn in his *Ring of the Nibelung*.¹⁶

Primordial instrument – pure nature

The wind instruments were of the utmost importance to Richard Wagner in his compositions. In *Oper und Drama*, for example, he wrote: “The oldest, truest, most beautiful organ of music, the organ to which alone our music owes its being, is the *human voice*. The most naturally [sic] was it counterfeited by the *wind-instrument*, and this again by the stringed instrument.”¹⁷ Their proximity to the human voice, and indeed their ‘descent’ from it, are thus important characteristics of wind instruments, and give them – especially the horn – the distinction of being as close to what we might term primordial or natural instruments. This idea seems to be expressed most clearly at the very beginning of Wagner’s tetralogy, in the prelude to *Rheingold*.

Over an ‘eternal’ E $\flat$ in the double basses and its fifth, B $\flat$, in the bassoons, the eight horns start a canon with an ascending motif consisting exclusively of the natural harmonics Nos. 2–10 (with the exception of the seventh and ninth), thereby ‘naturally’ developing a triad.¹⁸ Initially

14 “Durch die Einführung der Ventile ist für dieses Instrument unstreitig so viel gewonnen, daß es schwer fällt, diese Vervollständigung unbeachtet zu lassen, obgleich dadurch das Horn unleugbar an der Schönheit seines Tones, wie namentlich auch an der Fähigkeit, die Töne weich zu binden, verloren hat. Bei diesem großen Verluste müßte allerdings der Komponist, dem an der Erhaltung des echten Charakters des Hornes liegt, sich der Anwendung der Ventilhörner zu enthalten haben, wenn er nicht andererseits die Erfahrung gemacht hätte, daß vorzügliche Künstler durch besonders aufmerksame Behandlung die bezeichneten Nachteile *fast* bis zur Unmerklichkeit aufzuheben vermochten, so daß in Bezug auf Ton und Bindung kaum noch ein Unterschied wahrzunehmen war. In Erwartung einer hoffentlich unausbleiblichen Verbesserung des Ventilhornes sei daher den Hornbläsern dringend empfohlen, die in der vorliegenden Partitur ihnen zugewiesenen Partien sehr genau zu studieren” (Wagner 1990, p. XII). It is interesting that Wagner mentions just the horn, and none of the other instruments that went through similar processes of change. Voss argues in this context that the horn was taken as the ‘voice’ of Nature and could not be omitted: “[...] daß auf den ursprünglichen Ton des Horns nicht gut verzichtet werden konnte, weil er als ‘Stimme’ der Natur aufgefaßt wurde und die Ursprünglichkeit der Natur vermittelte bzw. vermitteln sollte.” (Voss 1970, p. 179). Henri Kling, a horn player himself, declared that his fellow horn players were to blame, as they were unaware of the true character of their instrument: “[...] von denen viele eigentlich nicht die geringste Idee davon haben, wie das chromatische Horn seinem wahren Charakter nach behandelt werden muss, und die in das Horn hineinblasen wie in eine Trompete oder Posaune oder gar in eine Giesskanne.” (Kling 1883, p. 41).

15 “[...] sanfte, süße, den Nachhall weckende, zärtlichklagende und die Lücken der Saiteninstrumente ganz ausfüllende Töne [...]. Das Waldhorn menschlich gedacht, ist ein guter ehrlicher Mann, der sich eben nicht als Genie, sondern als empfindsame Seele, fast allen Gesellschaften empfiehlt. [...] Lieblichkeit, und wenn man so sagen darf, freundschaftliche Traulichkeit, ist der Grundton dieses herrlichen Instruments.” (Schubart 1806, pp. 311–314. English adapted after DuBois 1983, pp. 366–369).

16 A list of the passages for brass instruments in the *Ring* may be found in Bock 2011. The horns are discussed on pp. 225–298.

17 “Das älteste, echteste und schönste Organ der Musik, das Organ, dem unsere Musik allein ihr Dasein verdankt, ist die *menschliche Stimme*; am natürlichsten wurde sie durch das *Blasinstrument*, dieses wiederum durch das *Saiteninstrument* nachgeahmt” (Wagner 1994, p. 130; English after Wagner 1995, p. 122).

18 However, as Ariane Jeßulat (2013, pp. 99–102) points out, the triad and the harmonics might not correspond merely to Nature itself.

in four-bar intervals, then every two bars, every bar and finally every half-bar, the entries follow each other and make the web of sound ever denser and more intense. Wagner achieves a further intensification by leading the canon onto the twelfth harmonic (g²) in bar 42. From the deep E^b of the beginning, the E^b-major sounds grow through the orchestra, reaching ever-higher registers. According to Wagner's assistant Heinrich Porges, Wagner emphasised the "impression of a self-developing natural phenomenon".¹⁹ The crescendo was thus meant to be self-evident, almost unintentional, and was achieved primarily by the successive addition of more instruments.

These roughly four minutes of E^b-major waves have been interpreted both as an image of the waves of the Rhine and as a kind of creation scenario. Wagner himself described this prelude (along with the ensuing song of the Rhinemaidens) as the "lullaby of the world".²⁰ The key of E^b major has often been regarded as holy and mysterious.²¹ The horns' connotation in connection with these so strikingly used harmonics and the smooth interweaving of sounds seems to be primordialism, purity and naturalness.

A similar passage is found in *Götterdämmerung* (G587).²² Again, the context is one of growing or awakening – not of the world as in *Rheingold*, but of daytime. The stage direction speaks of the red dawn spreading across the sky and the ascent of the day. Again, all eight horns appear in canon above a pedal point in the double basses. However, Wagner here does not just use an ascending harmonic series, but a new motif, formed from the B^b-major triad and the B^b-major scale. Again, the horns begin with a canon, here two bars apart. When Siegfried appears, Wagner quotes both the magic helmet motif in muted horns, then the beginning of Siegfried's horn call. In just a few bars, the horns lead us from the experience of Nature through a sunrise, via the mysterious element of the Tarnhelm to the appearance of Siegfried the hero.

"The noblest hero in the world"²³

Siegfried himself is closely connected to the sound of the horn – according to the stage directions, he even carries a silver horn with him (Fig. 1).²⁴ The best example of this is probably his horn call (S590f.), which is a combination of two different motifs. Wolzogen calls them the "motif of Siegfried the Wälsung" and the "Call of the Forest Boy".²⁵ The former appears already in the *Walküre*, in the moment when Brünnhilde tells the desperate Sieglinde that she is to be a mother (W793f.) and in her conversation with Wotan (W941). It also sounds in response to Brünnhilde's request that Wotan should not hand her over to any man, but to a free hero; the hero is accordingly identified by the orchestra as Siegfried (W988). This motif is characterised by an ascending fourth at the beginning, and by a harmonic lightening from minor to major. Wolzogen emphasises its relationship with the curse motif in particular, writing of the "festive

19 "Eindruck eines sich ganz von selbst entwickelnden Naturphänomens" (Porges 1881, p. 8).

20 "Von der Wellenbewegung im Rheingold sagt R., 'es sei gleichsam das Wiegenlied der Welt.'" (WagnerC 1976, p. 129, entry of 17 July 1869).

21 See e.g. Borchmeyer 1995, p. 4.

22 A short reprise of the Rhine motif also appears in the third act of *Götterdämmerung*, before Siegfried meets the Rhinemaidens (G935f.). The numbers given here refer to the page in the Eulenburg miniature score of the respective opera: R stands for *Rheingold*, W for *Die Walküre*, S for *Siegfried* and G for *Götterdämmerung*, all published in Leipzig without a date.

23 "[...] den hehrsten Helden der Welt" (W793f.).

24 S31, S590.

25 "Motive Siegfrieds des Wälsungen", "Ruf des Waldknaben" (Wolzogen 1876, pp. 61 and 63).



Fig. 1 Jean de Reszke in the title role of Wagner's *Siegfried* (Photo: Félix Nadar ca 1896, MetOpera Database).

horn sound powerfully rising from minor to major”.²⁶ The “Call of the Forest Boy”, on the other hand, first appears in the strings (S31) at the first appearance of Siegfried, but is immediately taken over by the horns (and other winds) (S33). It reminds one of a hunting fanfare.

These two motifs are finally combined in Siegfried's call on his horn – or his “Waldweise”, as Siegfried himself announces it (S588). The whole of Siegfried's horn call would easily be playable on the natural horn. Only the frequent *f*’, the *a*’ and *b*’ in the Wälsung motif are not directly accessible as harmonics, and would have to be played by means of hand-stops.

The dichotomy of the motif is also determined stylistically. While the first part has a cheerful, irrepressible character, the motif of the Wälsung is more restrained, a quality that Wagner emphasises with the instruction “mässig” (moderately) (S590). In addition to the semantic meaning of the horn call, however, it should not be forgotten that the horn call is also an intrinsic part of the action on stage.²⁷ Siegfried wants to attract a companion with his horn (S589f.) – an ability with which the horn was already associated²⁸ – and thereby ultimately awakens the sleeping dragon, Fafner.

However, the importance of the horn to Siegfried's character is also proven in other parts of the score. Time and again, the horns play Siegfried's song in unison (their tessitura is roughly the same as that of the tenor voice). This occurs, for example, when Siegfried goes to the forest (“Aus dem Wald fort in die Welt zieh'n” – S138f.), during the forging of Nothung (“Blase, Balg!” – S331, “Wild im Walde wuchs ein Baum” – S333) and, finally, in his love duet with Brünnhilde (“Sie ist mir ewig” – S1152). Each of these situations is notable for a boisterous sense of happiness that can extend into presumptuousness. The horns express the joy and the impetuous, cocky nature of this ‘free’, naive hero.

Hunt

We have already mentioned Siegfried's horn call as akin to a hunting fanfare, so we cannot fail to mention the acoustic design of the hunting scene in *Götterdämmerung* (G933f., G1067f.). Horns – including that of Siegfried – are heard from different sides and at different distances from us. But Wagner elsewhere refers to hunting and hunting horns not just with regard to a real hunt taking place on stage, but also as a metaphor. Thus, for example, the metre, motifs and orchestration in the “Ride of the Valkyries” (W619) all refer to hunting – here, of course, in connection with the ‘wild hunt’ of the Valkyries. The atypical minor third at the beginning quite possibly refers to the sphere of ghosts and death. Normally, hunting motifs adhere to the harmonic series and are thus given in major keys. Nevertheless, as in Siegmund's description of the hunt for Wolfe (W55–62), minor triads and unexpected tonal changes here repeatedly impinge on the hunting motif, which in turn is influenced by Hunding's motif.²⁹ The symbol of the ‘hunt’ is thus also transformed by Wagner by means of other motifs and their emotional signification.

Youth and health

The horn is also a symbol of the youth and health of the gods, as in the motif of the “golden apples” (R237f.). Although the quiet horn fifths and thirds here could also signify the ‘natural

26 “[...] mit festlichem Hörnerschalle im kraftvoll aus moll zu dur sich erhebenden Motive Siegfrieds des Wälsungen [...] ertönt.” (Ibid., p. 61).

27 Schäfer 1982, p. 194.

28 See e.g. Schubart 1806, p. 314 (DuBois 1983, p. 368) and Voss 1970b, p. 177.

29 Apart from during Siegfried's hunting tale, this motif is played instead by the Wagner tubas.

product' of the apple or the gold,³⁰ it is notable that the cor anglais and bassoon take over the motif as soon as illness is mentioned. When the giants bring Freia back to the gods (R581f.), the theme sounds again, once more as a canon. So it seems likely that the horns signify not merely the apples themselves, but primarily their positive qualities such as health and eternal youth.

Love

The use of the horn in connection with love is also striking. Examples of this include the motif of the renunciation of love ("Wer der Minne Macht entsagt"), which is quoted again in the orchestral interlude after Alberich's robbery of the gold (R179), played by the horn and cor anglais. The horns also play an important role in Siegfried's story of the mating and brooding animals of the forest (S88f.) and in Mime's narration about fear (S280), which Siegfried probably misunderstands: a motif appears here in the horn and woodwind that is found again later in connection with Brünnhilde (S960f.). Its loveliness (it is marked *dolcissimo*!) hardly makes this motif suitable for awakening fear. The horns also sound when Siegfried thinks about his mother at the words "ein Menschenweib" (S568f.) and in the vast love duet of Brünnhilde and Siegfried in the last act of *Siegfried*. Already at the point where the two of them begin singing together (S1146), the horns announce a motif consisting of a sequence of fourths and thirds that Wolzogen calls the motif of "love's decision"³¹ (otherwise known as the "love union motif"), and which the couple takes up later (S1152f.). Wagner himself described this musical idea as "heroically rejoicing, yet quite popular".³² In addition to its "expression of joy"³³ – and especially when viewed in the context of the other passages mentioned – it can be assumed that Wagner intended to depict not just this jubilation, but also the reason for it – love – with his orchestration.

The horn in orchestration treatises

These connotations, which seem to show Wagner's idea of the "true nature" of the horn, have their roots in historical and commonplace views of his day. At the same time, Wagner's compositions themselves influenced future attitudes towards the horn. For this reason, I shall now look at the characterisations of the horn as stated in treatises that Wagner either knew or could have known, along with those in publications that he influenced.

Such characterisations of the horn often go back to its rise in the eighteenth century, to authors like Johann Mattheson and Christian Friedrich Daniel Schubart. In the nineteenth century, Hector Berlioz and many others after him published treatises that had a varying impact on how the instrument was viewed and used.³⁴

The horn occupies a special position in most orchestration treatises. It is given more space than the other brass instruments and is often treated as the primary brass instrument. The reason for this is probably its much more frequent use when compared to trumpets or trombones, both in terms of its general use in orchestras and in individual works. Mozart and Haydn, for example, often wrote for an orchestra comprising just strings, two oboes and two horns – but no further woodwind, let alone brass. And up to the late-Romantic era, most scores that contain other brass instruments make far more use of the horns than of trumpets or trombones. This

30 The Rhinegold motif appears first in the horn (R105f.), but probably more as sort of premonition (in G major) of the radiance of the trumpet (R110, in C major). See Voss 1970b, p. 191.

31 "Melodie des Liebesentschlusses" (Wolzogen 1876, p. 95).

32 "[...] heroisch jubelnd, und doch dabei ganz volkstümlich" (Wagner 1859, p. 157).

33 "Ausdruck des Jubels" (Voss 1970b, p. 183).

34 For an overview see Messwarb 1997.

was probably compounded by the reputation of the horn's sound and musical significance: "Its expressiveness is the most versatile, and is greater than that of other metal instruments."³⁵ For this reason, it has often been suggested as "a link between the brass and woodwind"³⁶ and is therefore usually treated more generously than the trumpets. Together with them, it is considered an instrument for fanfares ("joyeuses fanfares de chasse")³⁷ and for middle-range harmonies, which can be performed according to needs of the moment, either with characteristic rhythms or held notes.³⁸ Fanfares are usually mentioned in connection to the forest or the hunt: "The valve horn in no way denies its origin in the forest. Its calls, its fanfares have the same freshness and infinitely more melodic variety than those of the old hunting horn."³⁹ The ability of the horn to blend with all other instruments was also emphasised, especially with the bassoons.⁴⁰ In addition, Hermann Erpf's orchestration treatise mentions the "chordal use of the horns", which became a "core support for the overall sound" and thus an important component of the Romantic orchestra.⁴¹ Eugen Thomas says: "The horn tone saturates in such a way that it alone in many cases replaces the full wind section,"⁴² but at the same time he emphasises the contrast of the different registers: "The soft yet rich horn sound contrasts with the thinner timbre of the woodwinds and strings most favourably."⁴³

The horn is suited not only for accompanying, but also for melodic tasks, though the melody must sometimes be adapted to the "technical capabilities of the French horn, in particular [it must be] simplified and modified."⁴⁴ Its melodic capabilities are especially limited by the horn's properties as a natural instrument, and its harmonics should be preferred for important passages. Thus Koch writes: "Horn solos, as long as they are mainly limited to open notes, always exert a great enchantment on the listener and acquire a certain charm."⁴⁵ For this reason, Berlioz proposed using horns in several keys simultaneously, using an open horn to reinforce stopped notes played by a horn in another key.⁴⁶ Rimsky-Korsakov, on the other hand, wrote about its melodic capabilities as follows: "[i]n spite of valves the horn has but little mobility and would seem to produce its tone in a languid and lazy manner."⁴⁷ As for using the horn with other instruments, various combinations are conceivable for melodic tasks. As Mayerhoff admits: "None of the orchestral instruments has increased in importance, i.e. in use and usefulness, in the course of time, as much as the horn,

35 "Seine Ausdrucksfähigkeit ist die vielseitigste, und ist grösser als bei den anderen Metallinstrumenten." (Hofmann 1893, p. 7).

36 See e.g. Rimsky-Korsakov 1922a, p. 24.

37 Berlioz 1994, p. 74.

38 "Markieren des Rhythmus, mit oder ohne Trompeten und Pauken, thematisch oder akkordisch" (Erpf 1959, p. 90).

39 "Le cor à pistons ne renie pas son origine forestière. Ses appels, ses fanfares brillantes comportent autant de savoir et infiniment plus de variété mélodique que ceux de l'ancienne trompe de chasse." (Gevaert 1885, p. 276).

40 Prout 1877, p. 47. – "Füllung in der tiefen Mittellage, auch zusammen mit Holzbläsern, besonders Fagotten" (Erpf 1959, p. 90) – "Das Horn ist vielleicht von sämtlichen Instrumenten dasjenige, welches sich am besten mit allen Gruppen mischt. Ich müßte, um dies in seinem Reichtum zu erhärten, die ganze Meistersinger-Partitur hier einfügen" (Strauss 1905, p. 279).

41 "[...] mehrstimmige[n] Akkordsatz der Hörner"; "tragenden Kern des Gesamtklangs" (Erpf 1959, p. 192).

42 "[...] der Horn ton sättigt eben derart, dass er allein, in vielen Fällen eine volle Harmonie ersetzt." (Thomas 1899, p. 109).

43 "Der weiche und doch satte Hornklang kontrastiert mit dem dünneren Timbre der Holzbläser und Streicher auf das Vorteilhafteste." (Ibid., p. 27).

44 "[...] den technischen Möglichkeiten des Waldhorns angeglichen oder [...] besonders vereinfacht und abgewandelt" (Erpf 1959, pp. 90f.).

45 "Hornsoli, solange sie sich hauptsächlich auf offene Töne beschränken, üben stets einen großen Zauber auf die Zuhörer aus, sie gewinnen ihren Liebreiz." (Koch 1912, p. 191).

46 Berlioz 1994, pp. 71–73.

47 Rimsky-Korsakov 1922a, p. 24.

which, alone or blended with other solo instruments (violoncello, viola, violin, clarinet, etc.) gives the most sentimental melodic expression with warmth and beauty of sound”.⁴⁸ Thomas also praises the sound of the horns together with the violas and cellos as being “liquid silver”.⁴⁹

The sound of the horn has been described as very versatile. In addition to its rather dark⁵⁰ or even dull⁵¹ low range and its rough, fanfare-like tones, which are “not so rude by nature as the trumpets”,⁵² various authors have praised the “elegiac, mysterious-fantastic”,⁵³ dreamy⁵⁴ and “lovely-pompous”⁵⁵ sound character of the horn – “soft, poetical, and full of beauty”,⁵⁶ “chaste et réservée”,⁵⁷ “genial”,⁵⁸ melancholic,⁵⁹ enthusiastic,⁶⁰ “noble and lugubrious”,⁶¹ balanced, warm and “at the same time characterised by a maximum sustaining power”.⁶² Thus, “sustained melodies are the most effective”;⁶³ Kunitz even speaks of the orchestra’s “leading bel canto soloist”.⁶⁴ Despite its tendency to melancholic sounds, commentators have also repeatedly stressed the horn’s suitability for all kinds of music. “It nestles, one might say, in all conceivable moods of life, and has been used best and most often in the works of our masters to express joy, pain, sorrow and sadness.”⁶⁵ Specifically with reference to the “scores of the great magician [Richard Wagner]”, Richard Strauss speaks of the various possibilities of orchestrating for the horn:

whether it calls ringingly Siegfried’s exuberant vitality in the virgin forest, [...] whether it seeks to conjure the picture of the unknown mother to Siegfried, who is pining for her like a child [...], whether it is the symbol of Freya’s youth-giving apples [...], whether it sings in muted sounds of the miracles of the Tarnhelm [...] – it always serves its task fully and entirely, it is unique in its versatility, and its effect is always conspicuous.⁶⁶

48 “Keines der Orchesterinstrumente hat im Laufe der Zeiten an Wichtigkeit, d. h. an Verwendungsmöglichkeit und Verwendungsfähigkeit, so zugenommen wie das Horn, welches, allein oder mit anderen Soloinstrumenten (Violoncello, Bratsche, Violine, Klarinette usw.) gemischt [...], die empfindungsvollsten melodischen Wendungen mit Wärme und Klangschönheit wiedergibt” (Mayerhoff 1913, p. 74).

49 “flüssiges Silber” (Thomas 1899, p. 28). Others offer very similar images: “[...] sonore und weiche Klänge wie flüssiges Edelmetall das Ganze durchfluten” (Mayerhoff 1913, p. 74).

50 Rimsky-Korsakov 1922a, p. 24.

51 Thomas 1899, p. 84.

52 “[...] nicht so rude von Natur sind / als die Trompeten” (Mattheson 1713, p. 267).

53 “[...] weiche, elegische, geheimnisvoll-phantastische Ton des Horns” (Erpf 1959, p. 192).

54 Sachs 1913, p. 419.

55 “Die lieblich-pompeusen Waldhörner” (Mattheson 1713, p. 267).

56 Rimsky-Korsakov 1922a, p. 27.

57 Berlioz 1994, p. 74.

58 Rimsky-Korsakov 1922a, p. 54. In the German translation: “herzlich” (“heartily”). Rimsky-Korsakov 1922b, p. 62.

59 Prout 1877, p. 51.

60 Koch 1912, p. 190.

61 “[...] edel und schwermüthig” (Hofmann 1893, p. 7).

62 “[...] zugleich von grösster Tragfähigkeit” (Kunitz 1956, p. 374).

63 Prout 1877, p. 45.

64 “[...] führenden ‘Belcanto-Solisten’ des Orchesters” (Kunitz 1956, p. 420).

65 “Es schmiegt sich, könnte man sagen, in alle denkbaren Stimmungen des Lebens und ist in den Werken unserer Meister zu Ausdrücken von Jubel, Freude, Schmerz und Trauer auf’s Beste und Vielfachste verwendet worden.” (Hofmann 1893, p. 7). Gevaert writes in this context that the horn has “devenu une des voix les plus riches de l’orchestre moderne. Voix tour à tour énergique et douce, rude et moëlleuse, elle relie dans l’ensemble symphonique les sonorités opposées des bois et des cuivres; isolée de la masse instrumentale, elle communique à la plus simple cantilène le charme de son timbre pénétrant.” (Gevaert 1885, p. 210). See also Berlioz 1994, p. 68.

66 “[...] die Partituren des großen Magiers vom Rheingold an Takt für Takt durchgehen. Das Horn, ob es aus dem übervollen Herzen Siegfrieds den Jubel sonnigster Lebenskraft in Germaniens Urwald hinausschmettert [...], ob es der kindlichen Sehnsucht Siegfrieds das Bild der ungekannten Mutter hervorzuzaubern sucht [...], ob es Symbol der, Jugendfrische verleihenden Äpfel der Freia ist [...], oder in gedämpften Lauten von den Wundern des Tarnhelms singt [...], stets ist es ganz und voll auf dem Platz, einzig in seiner Vieldeutigkeit und immer von

This noble, melancholic sound also has an effect on the symbolism attributed to the horn, which is manifested already in the metaphor-rich descriptions given above. For example, the horn is supposedly particularly suited to “the expression of that romantic longing for the far-away, the indeterminate, the unreal and the fantastic”,⁶⁷ above all for the forest and the great outdoors.⁶⁸ This author might have been thinking of Beethoven's Sixth Symphony (the *Pastoral*) in his assessment. And as for Carl Maria von Weber, he “discovered in the former hunting and forest instrument new, sometimes dreamy, sometimes picturesque sounds, full of that deep sense of nature which seems to be inborn among the peoples of the Germanic race.”⁶⁹ This description reveals an assumption in certain circles of a supposed German purity and depth, derived in part from myth and also found represented in Richard Wagner's *Ring*.

Where man comes into play, the horn's connotations are – perhaps also given the hunting context⁷⁰ – “heroic, knightly expression”,⁷¹ “[e]nergetic power, free or restrained, simplicity and eloquence”,⁷² and the “cheerful male courage of young Siegfried”⁷³ – but also “Charm and, if one may say so, cordial familiarity”, as mentioned before.⁷⁴

Gevaert denies brass players the ability to play melodies and as such to express “the instinctual feelings of the human being”, though he refers to the “brazen and masculine accents” that “express more complex states of mind, where the moral consciousness plays a role.”⁷⁵ However, he contradicts himself a few pages later:

The horn is essentially a poetic instrument like the harp and the flute; but his poetry is more intimate, more romantic. It does not affect emotion as the reed instruments do, by the direct imitation of the cry of passion, uttered by the human voice; the impressions it conveys come mainly out of associations of ideas. No other instrument seems to act so powerfully on the imagination of the listener. The sounds of the horn carry the mind yonder, into the infinite, into the vast forests, in the shade of age-old oak trees, or into the sweet worlds of dreams and fairy-tales, to the edge of bright fountains, where one can hear through the beautiful summer nights the echoing of the mysterious sounds of Oberon's horn.⁷⁶

besonders hervorleuchtender Wirkung.” (Berlioz/Strauss 1905, p. 279; English after Berlioz/Strauss 1948, p. 260). Strauss mentions other operas as well, I cite here only the examples from the *Ring des Nibelungen*.

67 “Auch das Hr eignet sich also besonders zum Ausdruck jener romantischen *Fernsehnsucht* wie überhaupt des Unbestimmten, Irrealen und Fantastischen.” (Bartenstein 1974, p. 125). See also Holmes et al. 1996, col. 384: Ahrens speaks of the human desire for rest and security (“*Sehnsucht des Menschen nach Ruhe und Geborgenheit*”).

68 Ibid., col. 376. Kling mentions the souvenirs of fragrant mountains and forests (“*duftigen Berge und Wälder*”) as well as the invitation to a joyful hunt (“*Vergnügen der Jagd*”). Kling 1883, p. 39.

69 “Weber sut trouver pour l'ancien instrument forestier des accents tour à tour rêveurs et pittoresques, pleins de ce sentiment profond de la nature qui semble inné chez les peuples de race germanique.” (Gevaert 1885, p. 213).

70 Ahrens points to the hunt and the horn as “attributes of aristocratic splendour” (“*Attribute aristokratischer Prachtentfaltung*”). Holmes et al. 1996, col. 376.

71 “[...] l'accent héroïque, chevaleresque” (Gevaert 1885, p. 211).

72 Rimsky-Korsakov 1922a, p. 55.

73 “[...] den fröhlichen Mannesmut Jungsiegfrieds” (Mayerhoff 1913, p. 74).

74 “*Lieblichkeit, und wenn man so sagen darf, freundschaftliche Traulichkeit*” (Schubart 1806, p. 314; English after DuBois 1983, p. 369).

75 “Aussi les cors, les trompettes et les trombones ne sont pas faits pour la mélodie monodique, expression naturelle des sentiments instinctifs de l'être humain; leur accents métalliques et mâles appellent l'harmonie simultanée; ils traduisent des états de l'âme plus complexes, où intervient la conscience morale.” (Gevaert 1885, p. 196).

76 “Le cor est un instrument essentiellement poétique, comme la harpe et la flûte; mais sa poésie est plus intime, plus romantique. Il n'affecte pas le sentiment à la manière des instruments à anche, en reproduisant directement le cri de la passion modulé par l'organe humain; les impressions qu'il procure naissent surtout d'associations d'idées. Aucun instrument peut-être n'agit aussi puissamment sur la fantaisie de l'auditeur. Les sons du cor transportent l'esprit au loin, dans les libres espaces, au sein des vastes forêts, sous l'ombrage des chênes séculaires, ou

Furthermore,

sensations and situations in which the imagination actively intervenes are the domain of the horn as a solo instrument: hope for the future [...]; remembrance of the past, remembering moving words spoken in a solemn moment [...]; commemoration of the beloved [...]; invocation of an unknown, mysterious being [...]; restless expectation of the beloved [...]. In all these, the horn is thought to be an ideal voice, sounding sublime across time and space.⁷⁷

In short, Gevaert calls this the “somewhat metaphysical nature of the horn.”⁷⁸

With Gluck, the horn, along with the trombones, appears in a sacred context along with being a martial symbol.⁷⁹ But this latter aspect is denied by a scholar of our own time, Christoph Reuter, who explicitly excludes war and martiality in the context of the horn: “In contrast to the trumpet, it was not used for warlike purposes, and it was almost exclusively associated with positive, ‘noble’ attributes.”⁸⁰

Stopped notes

The use of stopped notes on the horn and the symbolism this evokes stand in stark contrast to all the above-listed attributes. Instrumentation treatises write of its “eerie impact.”⁸¹ Its sound is greatly dampened by introducing one’s hand into the bell of the instrument. The result is a pungent, metallic colour and it also increases the pitch by a semitone, since the air column is shortened. Stopped notes “are used *piano*, regardless of their nature and colour, to achieve echo effects. In a *forte*, the wind player can give them a dull-sounding yet still blaring character. These (stopped) *forte* notes are excellently suited to representing certain gruesome, oppressive, threatening moods.”⁸² This “horrifying sound” expresses with “gruesome blaring” “revenge, fear, poverty, danger, the terrible, devilish and ominous, or the angry, maddening, passionate” and, played *piano*, “painful, unpleasant and oppressive feelings.”⁸³ Berlioz also speaks of a “muffled, raucous, wild timbre”, which is to be used above all “in certain scenes of silent horror.”⁸⁴

dans les pays charmants du rêve et de la féerie, aux bords des claires fontaines où l’on entend par les belles nuits d’été résonner les notes mystérieuses du cor d’Obéron.” (Ibid., p. 210).

77 “Dans l’orchestre dramatique, qui s’attache à traduire non-seulement de vagues aspirations, mais des états déterminés de l’âme, le cor traité en instrument principal a pour domaine les sentiments et les situations où l’imagination intervient d’une manière active: espoir en l’avenir [...]; rappel du passé, réminiscence de paroles émouvantes prononcées dans un moment solennel [...]; souvenir de l’objet aimé [...]; appel à un être inconnu et mystérieux [...]; attente inquiète du bien-aimé [...]. Partout ici le cor est conçu comme une voix tout idéale, qui se fait entendre à travers le temps et l’espace.” (Ibid., p. 211).

78 “[...] ce caractère en quelque sorte métaphysique des sons du cor.” (Ibid., p. 211).

79 See Bartenstein 1974, p. 125.

80 “Da es im Gegensatz zur Trompete nicht für kriegerische Zwecke eingesetzt wurde, wurde es nahezu ausschließlich mit positiven, ‘edlen’ Attributen verknüpft.” (Reuter 2002, p. 330).

81 “Einschlag des Schauerlichen” (Bartenstein 1974, p. 125).

82 “Sie werden, im *piano* wesen- und farblos, zur Erzielung von Echowirkungen verwendet. Im *forte* kann ihnen der Bläser einen dumpfdröhnenden und dabei doch schmetternden Charakter verleihen. Zur Darstellung gewisser schauerlicher, bedrückender und bedrohlicher Stimmungen eignen sich diese (gestopften) Fortetöne vorzüglich” (Mayerhoff 1913, p. 72).

83 “Die gestopften Töne, wenn man diese stark blasen lässt, haben eine dumpfe, schaudererregende Klangfarbe, man wende diese nur für besonders dramatisch motivierte Szenen an. Dann können diese dumpfen aber doch grauenvoll schmetternden Klänge auch die Rache, die Angst, die Noth, die Gefahr, das Schreckliche, Teuflische und Unheil verkündende oder das Zornige, Wuthvolle, Leidenschaftliche ausdrücken. Lässt man dagegen diese gestopften Töne pianissimo und in ausgehaltenen Noten blasen, so erregen sie schmerzliche, unangenehme und beklemmende Gefühle” (Kling 1883, p. 39).

84 “[...] produire des effets inhérents à leur timbre sourd, rauque et sauvage. [...] Il peut résulter, dans certaines scènes d’horreur silencieuse, un très grand effet de ces notes bouchées” (Berlioz 1994, p. 70).

So whereas the open horn may stand for Nature, loveliness and power, the stopped horn turns these attributes into their opposite, such as threatening, horrible moods, fear or anger. There are also numerous examples of this in the *Ring of the Nibelung*. Words or phrases are highlighted by stopped notes and thus assigned negative meaning (even where this is not already obvious). These include “pfui” (R64), “Schelm” (R266), “Nibelungenherr” (R389), “so ist es aus” (W295), “verblüht” (W872), “traurig” (S113), “Unheil” (S161), “Alberich” (S696), “Ekel” (S851), “unbeweibt” (G209), “gerächt” (G758), “erschlagen” (G1209) or “verfluchter Reif” (G1281).

The stopped horns are also used for echo or distance effects, as for example in the appearance of Waltraute, where the Valkyrie motif is first given in this manner (G378f.). But muted horns (*con sordino*) must not be equated with the stopped horn; they are often also meant as echoes (see, for example, G1240). Wagner usually uses the mute only in low dynamics, for example in connection with the magic helmet (R377, G502). This sound becomes something ‘veiled’, but without assuming the brassy colour of the stopped horn.

It is surprising that Alberich’s curse on love (R166) is accompanied by open horns, though this is rather the exception that confirms the rule. Other curses, such as that of Siegmund (W466), are marked by stopped notes, and the curse motif⁸⁵ also appears in the *Götterdämmerung* played by a stopped horn (G373, G843). Apart from these curses, it is remarkable how often stopped horns can be heard in connection with the two Nibelung dwarves, namely Mime (e.g. in *Siegfried*, beginning in the third scene or G1117) and Alberich (S455f.). This serves to characterise them as being the opposite of the hero Siegfried.

The stopped horn initiates the rhythm that accompanies the motif that Hans von Wolzogen calls the “work of destruction of the Nibelungs”⁸⁶ (e.g. R564, G738), which is later also often associated with gloomy prophecies by Erda (R631, W413). Wagner also uses stopped horns in the Norn scene and in connection with the fate motif⁸⁷ (W893, W1011, G1195). It therefore seems that he preferred to use this sound for gloomy, despairing and threatening purposes.

Conclusion

When one examines the semantics of the horn in Wagner’s *Ring*, one marvels at the variety of uses and meanings that are conveyed by his leitmotifs, quite apart from their music itself. There is no doubt that Wagner carefully considered how to use the instruments of his orchestra and attached great importance to the resulting (collective) sound and its semantic connotations. On the one hand, he referred back to older music theorists and composers by incorporating traditional connotations for certain instruments, but on the other hand, he also helped to determine the perceptions of his contemporaries, and constructed connotations that have lasted until our own day. At a time when the valve horn was prevailing ever more over the old natural horn, Wagner drew increasingly on the possibilities of the valve horn in his works, sometimes driving the instrument to the limits of what was feasible. Wagner thus also made new demands on his performers, who accepted them with varying degrees of enthusiasm, and endeavoured to fulfil these demands as best they could.⁸⁸

85 Wolzogen 1876, pp. 39f.

86 “Vernichtungsarbeit der Nibelungen” (Ibid.).

87 “Motiv der Schicksalskunde” (Ibid., pp. 56–58).

88 Constant hostility existed, for example, between Wagner and Richard Strauss’s father, the horn player Franz Strauss. According to all reports, the latter was a gifted horn player, with whom Wagner reputedly could not be angry “when he blows [his horn]” (“wenn er bläst”), but who described Wagner’s music as “contrary to the nature of the horn” (“wider die Natur des Horns”). See Janetzky 1985, pp. 112–114.

What is striking about the use of the horn is its predominantly positive symbolism (in its open state), which is closely connected with its origins and the original playing possibilities of the natural horn. Nature, happy hunting, heroism, youth, health and love are just a few key words that it connotes. The peculiarities of hand-stopping have also been preserved for special effects. Along with echo effects, stopped notes often effect a reversal of the horn's positive attributes, connoting something negative instead. In any case, it is clear that the versatility of the horn and its variable sound had a decisive impact on the semantic levels of Wagner's operas. After all, the horn is not just one-dimensional, but a multi-faceted instrument, able to express a rich variety of feelings, associations and sounds.

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Martin Skamletz

Ein Wiener Stil der orchestralen Behandlung der Blechblasinstrumente. Seyfried aktualisiert Albrechtsbergers Instrumentenkunde und orchestriert eine Arie von Grétry neu

Eine eigenständige Instrumentationslehre von Ignaz von Seyfried, wie er sie in seiner Edition der Schriften von Johann Georg Albrechtsberger (1826) ankündigt, ist letztlich nie erschienen, aber zumindest in einigen Grundzügen in die Kommentare zu den einzelnen Orchesterinstrumenten eingegangen, die in der zweiten Auflage dieser Edition (1837) noch ausführlicher gehalten sind. Im vorliegenden Beitrag werden die Anmerkungen Seyfrieds zu den Blechblasinstrumenten, in denen ein klassischer Wiener Stil der Behandlung dieser Instrumentengruppe greifbar wird, mit seiner eigenen Orchestrierungspraxis in Beziehung gesetzt. Als Studienobjekt hierfür dient eine Arie aus seiner Bearbeitung von André-Ernest-Modeste Grétrys Oper Richard Cœur-de-lion für das Theater an der Wien (1810).

A Viennese Style for the Orchestral Treatment of Brass Instruments. Seyfried Updates Albrechtsberger's Organology of Musical Instruments and Re-Orchestrates an Aria by Grétry

Ignaz von Seyfried never published the independent theory of orchestration that he had announced in his 1826 edition of Johann Georg Albrechtsberger's writings. However, certain basic features of it were included in his commentaries on the individual orchestral instruments that are more detailed in his second edition of the same book in 1837. In this article, Seyfried's comments on the brass instruments, in which we can discern a classical Viennese style of how to treat this group of instruments, are placed in relation to his own orchestration practice. An aria from his re-orchestration of André-Ernest-Modeste Grétry's opera Richard Cœur-de-lion for the Theater an der Wien (1810) serves as the focus of our study.

Ab Mitte der 1790er-Jahre ist Ignaz von Seyfried (1776–1841) etwa drei Jahrzehnte lang zunächst an Emanuel Schikaneders Freihaustheater auf der Wieden und dann an dessen Nachfolgebau, dem Theater an der Wien tätig – die meiste Zeit in der Rolle eines Kapellmeisters. In dieser Funktion probt und leitet er nicht nur unzählige Aufführungen von Kompositionen anderer, etwa 1805 der ersten Fassung von Beethovens Oper *Leonore/Fidelio*, sondern produziert er auch eine große Zahl an eigenen musikdramatischen Werken. Zur Beethoven-Literatur hat er einige Dokumente und Anekdoten sowie die erste – allerdings bearbeitete und deswegen stark kritisierte – Edition von dessen kompositorischen Studien beigetragen.¹ Von einiger Bedeutung als Quelle für die Geschichte der erwähnten Theater ist seine Dokumentation deren täglichen Spielplans, die er zwischen 1795 und 1829 führt,² und besonders aufschlussreich für die damalige

1 Beethoven 1832.

2 Seyfried *Theaterjournal*.

Theaterpraxis erscheinen die Bearbeitungen, denen er etwa die französischen Opern unterzieht, die am Theater an der Wien auf die Bühne gebracht werden.³

Seyfrieds Beschäftigung mit der Edition musiktheoretischer Arbeitsmaterialien beginnt im Zuge seiner beruflichen Neuorientierung Mitte der 1820er-Jahre, als er sich selbst verstärkt dem Kompositionsunterricht zuwendet: Vor *Beethoven's Studien* (1832) hat er 1826 schon *Sämmtliche Schriften* seines eigenen Lehrers Johann Georg Albrechtsberger (1741–1809) herausgegeben⁴ und 1827 die *Wiener-Tonschule* veröffentlicht, die er Joseph Preindl (1756–1823), Albrechtsbergers Nachfolger als Kapellmeister am Stephansdom zuschreibt.⁵ Während die Umstände und Hintergründe der Entstehung dieser in einem modern textkritischen Sinn höchst problematischen, aber nichtsdestoweniger aufschlussreichen Publikationen an anderer Stelle thematisiert werden,⁶ soll in diesem Beitrag ein in ihnen nur kurz gestreiftes Randgebiet zur Sprache kommen, nämlich die Instrumentenkunde und Instrumentationslehre.

Von der Instrumentenkunde zur Instrumentationslehre

Im Anhang zum dritten und letzten Band seiner Edition von *J. G. Albrechtsberger's sämmtlichen Schriften*, auf eine »Kurze Beschreibung aller jetzt gewöhnlichen und brauchbaren Instrumente sammt ihren Tonleitern« folgend, vor Biografie, Schüler- und Werkverzeichnis Albrechtsbergers, hat Seyfried eine von ihm selbst verfasste »Kurze Anleitung zum Partitur-Spiele« eingefügt, an deren Ende auch noch »der vorteilhafteste Gebrauch der Gesammtmasse der Instrumente« angesprochen wird, also die Orchestrierungspraxis, deren systematische Behandlung Seyfried allerdings auf eine spätere Publikation verschiebt:

Der Herausgeber behält es sich vor, vielleicht bey einer andern Gelegenheit diese Materie ausführlicher zu besprechen, und das, was ihm in Beziehung auf die Kunst der Instrumentirung als Resultat praktischer Erfahrung im Allgemeinen und Einzelnen klar, durch die Beyspiele unserer größten Meister zur unumstößlichsten Evidenz erwiesen worden, seiner Zeit in einem eigenen Werkchen der Musikwelt zur Prüfung vorzulegen.⁷

Für eine solche Unternehmung fühlt sich Seyfried kompetent, da er in seiner langen Laufbahn als Theaterkapellmeister dieses Handwerk in der täglichen Praxis erlernt und seine Ergebnisse jeweils auch in ihrer Anwendung im Orchester überprüft hat. Eine zeitgenössische Rezension seiner Albrechtsberger-Edition greift diese Schlussbemerkung auf und begrüßt die durch Seyfried in Aussicht gestellte Publikation einer Instrumentationslehre:

Möchte der geistreiche Bearbeiter des classischen Albrechtsberger doch Wort halten, und uns das [...] recht bald in einem eigenen Werke schenken; wie viel Verdienst um Mit- und Nachwelt würde er sich auch damit noch erwerben! Ein Mann, welcher in so vielen, in echter Weihe geschaffenen Werken die Kraft und den sicheren Effekt seiner Instrumentation darlegte, würde dadurch unendlich nützlich seyn! Man kann ihn nicht dringend genug dazu auffordern. Wie groß er als Instrumentist sey, hat er zumahl in der genialen Instrumentation mancher Klavier-Werke des unsterblichen Mozart bewiesen. Er halte Wort und sey uns ein wohlthätiger leuchtender Stern auf diesem noch ziemlich dunklen Pfade.⁸

3 Siehe dazu Skamletz in Vorb.

4 Albrechtsberger 1826 bzw. 1837.

5 Preindl 1827.

6 Skamletz 2024.

7 Albrechtsberger 1826, Bd. 3, S. 209.

8 ATz 1826, S. 92. Mit den Mozart-Instrumentationen sind die (laut Seyfrieds Autograph A-Wn Mus.Hs.3291) in

Eine derartige eigenständige Instrumentationslehre hat Seyfried zwar letztlich nie geschrieben, doch aus seinen praktischen Arbeiten als Orchestrator im Vergleich mit seinen ergänzenden Kommentaren zur Instrumentenkunde Albrechtsbergers lassen sich einige Einsichten darüber gewinnen, nach welchen Prinzipien er seinen Orchestersatz gestaltet. Dies soll in diesem Beitrag fokussiert auf die Behandlung der Blechblasinstrumente geschehen, die in ihrer damaligen Verfasstheit als Naturinstrumente bekanntlich einen relativ eng definierten Spielraum ihrer Verwendung zulassen.

Als Studienobjekt für Seyfrieds Instrumentationspraxis wird hier ebenfalls nur ein sehr kleiner Ausschnitt aus seinem Arbeitsfeld als Kapellmeister ausgewählt: eine Arie aus André-Ernest-Modeste Grétrys Oper *Richard Cœur-de-lion*, die Seyfried 1810 für die Produktion dieses Werkes als *Richard Löwenherz* am Theater an der Wien bearbeitet und die als Stimmenhandschrift in der Musikbibliothek des Stifts Melk überliefert ist.⁹ In dieser Arie erweitert Seyfried die Instrumentation Grétrys gerade in Bezug auf die Blechblasinstrumente nur schon durch Hinzufügung von zwei Trompeten samt Pauken sowie drei Posaunen gegenüber der Vorlage, die lediglich zwei Hörner vorsieht. Er greift dabei jedoch weniger stark in die kompositorische Struktur ein als in anderen seiner Bearbeitungen. Dass Seyfrieds Stil des Einsatzes der Blechblasinstrumente ein spezifisch wienerischer ist, wird angesichts der charakteristischen Änderungen deutlich, die er gegenüber Grétrys französischem Gebrauch der Hörner vornimmt.¹⁰ Seyfrieds Selbsteinschätzungen sowie zeitgenössische Pressestimmen runden diese Betrachtung ab.

Albrechtsbergers Instrumentenkunde bearbeitet durch Seyfried

Seyfried aktualisiert die bereits im Anhang der ersten Ausgabe von Albrechtsbergers *Gründlicher Anweisung zur Composition* (1790) enthaltene »Beschreibung aller jetzt gewöhnlichen und brauchbaren Instrumente, sammt ihren Tonleitern«¹¹ zweimal: In der ersten Auflage seiner Edition von *J. G. Albrechtsberger's sämtlichen Schriften* (1826) bringt er den originalen Text fast unverändert, ergänzt ihn um Aufzählungen von Lehrbüchern und bekannten Virtuosen und erwähnt in der Zwischenzeit in Gebrauch gekommene Instrumente – im Fall des Waldhorns das »neu erfunden[e] Klappen-Flügel-Hor[n]«, den »Bombardone« und das »Posthorn«,¹² bei den Trompeten ebenfalls »mit Klappen versehen[e] Inventions-Trompeten«.¹³ Dabei übernimmt Seyfried sogar die Bemerkungen zum vierstimmigen Trompetensatz, der in den 1820er-Jahren nicht mehr besonders aktuell ist, und verändert Albrechtsbergers Unterteilung des Tonumfanges der Trompete in »leichte Töne« ($g-c'''$) und »schwere und seltene« ($as''-g'''$)¹⁴ nur insofern, als er die gebräuchlichen Töne nicht höher als bis zum g'' gehen lässt, die höheren hingegen »Concert-Töne« nennt und ihren Umfang sogar noch in die Tiefe erweitert (um h , e und c). Beim ersten Horn lässt Seyfried Albrechtsbergers »seltene Töne« über dem c''' ($d'''-g'''$) weg und gibt für das zweite Horn das g'' als höchsten Ton an (gegenüber Albrechtsbergers as''). Auffällig ist außerdem, dass Seyfried für das erste Horn – im Gegensatz zu Albrechtsberger – das d' als spielbaren Ton aufführt. Die von Seyfried wiedergegebenen Spielübungen für den Grunddrei-

den Jahren 1812 und 1813 entstandenen Bearbeitungen der Fantasie und Sonate c-Moll KV 475/457 einerseits sowie des Klavierquartetts KV 478 und der Orgelfantasie KV 608 andererseits gemeint, die bei Breitkopf & Härtel in Stimmen gedruckt erscheinen (Mozart *FantasieC* bzw. Mozart *FantasieF*).

9 Seyfried *Aria*.

10 Vgl. die Bemerkungen zur wahrscheinlich ebenfalls von Seyfried verantworteten Einrichtung von Cherubinis Oper *Les deux journées* für das Theater an der Wien 1802 in Skamletz 2020, S. 257–261.

11 Albrechtsberger 1790, S. 416–440.

12 Ebd., S. 428; Albrechtsberger 1826, Bd. 3, S. 197–200.

13 Albrechtsberger 1790, S. 428 f.; Albrechtsberger 1826, Bd. 3, S. 201–203.

14 Albrechtsberger 1790, S. 440.

klang sind ganz offensichtlich aus Duvernoys *Méthode de cor* übernommen, die Seyfried zwar nicht direkt als Quelle nennt, aber immerhin in seine Liste der »besten Schulen« aufnimmt.¹⁵

Die größte Modernisierung von Albrechtsbergers Text durch Seyfried findet sich in der Aufzählung der gebräuchlichen Stimmungen: Die Hornstimmungen nach Albrechtsberger – B basso, C basso, D, »Eb oder Es, nicht aber Dis«, F, G, A, B alto und C alto – werden von Seyfried in dieser Reihenfolge übernommen und dann noch um E, H, Fis, As und Des ergänzt, wobei er den ausdrücklichen Ausschluss der ehemals weit verbreiteten Schreibweise »in Dis« nicht mehr für nötig hält; bei der Trompete, »welche nur aus B C D und Eb dur geblasen wird«, wie Albrechtsberger den Wiener Gebrauch um 1790 zusammenfasst, nennt Seyfried 1826 neu Stimmungen »aus A, B, C, D, Eb, E, F und G«.

Gegenüber dieser nur in technischen Details behutsam modernisierten und in den Grundzügen fast etwas nostalgisch wie in Albrechtsbergers Original formulierten Instrumentenkunde in der ersten Auflage der *Sämmtlichen Schriften* fügt Seyfried in der noch vom ihm selbst betreuten und wie alle seine Editionen ab der *Wiener-Tonschule* im Verlag von Tobias Haslinger erschienenen zweiten Auflage (1837) noch wesentlich mehr hinzu: Im Falle der Hörner nennt er auch die »in Frankreich erfundene *Orphicléide* [sic], welche bereits in allen überrheinischen Bühnen-, Kirchen- und Kammer-Compositionen eine wichtige Rolle spielt«,¹⁶ und führt aus, dass die verschiedenen Hornstimmungen aufgrund der »durch aufgesteckte Bögen« sehr unterschiedlich langen Luftsäule auch nicht alle in gleicher Weise behandelt werden können:

Daraus läßt als allgemeine Norm sich folgern: daß bey den tieferen Stimmungen die Töne zwischen und ober der fünften Linie leicht und gut zu benützen sind, welche hingegen bey höheren Mutationen, z. B. G, A und As vorsichtiger behandelt werden müssen, da selbe schwieriger anzu- blasen, zugleich der abgerundeten körperlichen Fülle ermangeln.¹⁷

Ausgehend von einer Betrachtung der mit Hilfe der Hand zu produzierenden Töne außerhalb der Naturtonreihe, die beim Komponieren »mit Umsicht anzuwenden« sind, folgt dann noch eine ausführliche und in Seyfrieds typisch blumiger Ausdrucksweise ausgesprochen persönlich formulierte Charakteristik des Hornes im Orchester:

Alle halbtönige Passagen, im raschbewegten Zeitmaße, beurkunden allerwegs einen hohen Grad technischer Virtuosität, können wohl Bewunderung erregen, aber wenig mehr. Das Horn soll singen; darin liegt seine schönste, einzige, wahrhaft magische Kraft. Die Töne müssen sich erst allmählig vollständig entwickeln, gleich der Menschenstimme, mit den zartesten Nuanzen, im ächten *Portamento di voce*; – dann sind aber auch oft wenige Töne bloß die Dollmetsche eines überströmenden Gemüthes, – artikulierte Herzenslaute, unwillkürlich Thränen entlockend. – Unter den ausfüllenden Orchester-Instrumenten behauptet es unbestritten den ersten Rang. Ein, oder zwey Hörner-Paare repräsentiren die vollständigst harmonische Bindekette, und gestalten sich oftmahls zu einer selbstständigen Fundamentalbasis; z. B. wenn ein und derselbe Ton mehrere Tacte hindurch, unverrückt, fest ruhend, liegen bleibt, und bezüglich des fortschreitenden Grundbasses stets in dem Verhältnisse eines anderen Intervalls, bald als Secunde, Terz, Quart, Quinte u. s. w. erscheint; in welcher, dem gewöhnlichen Hörnersatz entfremdeten Anwendung geistreichen Meistern überraschende Wirkungen zu Gebote stehen.¹⁸

15 Albrechtsberger 1826, Bd. 3, S. 198 (»folgende aber heißen Naturtöne, und können frey angeblasen werden«). Vgl. Duvernoy 1802, S. 7 (»Leçons / Sur les notes qui doivent se faire sans la main dans le Pavillon«).

16 Albrechtsberger 1837, Bd. 3, S. 184.

17 Ebd., S. 181 f.

18 Ebd., S. 182 f.

Man gewinnt fast den Eindruck, Seyfried habe – vielleicht angeregt durch die zitierte Rezension der ersten Auflage von Albrechtsbergers *Sämmtlichen Schriften* – in der Neuauflage doch noch versucht, in dessen Instrumentenkunde zumindest einige Elemente einer Instrumentationslehre einzufügen. Zudem findet sich am Ende der »Kurze[n] Anleitung zum Partitur-Spiele« keine Ankündigung eines eigenständigen Buches zu diesem Thema mehr.¹⁹

Bei den Posaunen erscheint der Weg von Albrechtsbergers neben den Notenbeispielen buchstäblich nur zweizeiliger Vorlage (»Posaunen giebt es dreyerley«)²⁰ über eine im Grunde lediglich um die Erklärung der Züge erweiterte Darstellung in der ersten Auflage der *Sämmtlichen Schriften*²¹ hin zu deren zweiter Auflage besonders weit: Dort ist noch ein langer Absatz eingefügt, der zwar insgesamt wie eine Aneinanderreihung von einzelnen Aphorismen wirkt, aber Seyfrieds Ambition zum Ausdruck bringt, eigene Überlegungen zur Verwendung dieses Instruments im Orchester zu liefern. Dabei verbindet sich ein gewisser Kulturpessimismus in seinen ästhetischen Urteilen mit konkret aufführungspraktischen Hinweisen aus seiner umfangreichen Theatererfahrung. Außerdem scheint durch, dass Seyfried sich seit dem Ende seiner Laufbahn als Theaterkapellmeister auf die Komposition von Kirchenmusik verlegt hat:

Die industriösen Instrumenten-Macher unserer Kaiserstadt haben nunmehr auch die Posaunen mit Grifflöchern und Klappen versehen, und dadurch die theilweise stets lästige Unsicherheit der Züge beseitigt. Ein routinirter Bläser hat vorzüglich darauf Bedacht zu nehmen, daß er jeden Ton um ein Comma früher anschlägt, als es der eigentliche Tact-Rhythmus erheischt; weil die Luft erst sich entwickeln muß, und sonst immer etwas zu spät der Klang vernommen wird. Langsame, feyerlich getragene Accorde bringen stets die erhabenste Wirkung hervor; schnelle Wechselfiguren, Läufe u. dgl. müssen nothwendig einer klar verständlichen Deutlichkeit ermangeln, und die alte Verfahrungsweise, in Fugensätzen aus purer Bequemlichkeit die Posaunen mit den Singstimmen im Einklange fortschlendern zu lassen, dürfte weder zu billigen, noch zu rechtfertigen, oder nachzuahmen seyn. Die eigenthümliche Würde dieser Instrumente weiset ihnen zunächst den Ehrenplatz in der Kirche an; *Gluck* und *Mozart* haben sie auch mit wunderbar herrlichem Erfolge in das musikalische Drama verpflanzt; die Nachkommen haben ihrer Natur sie entwürdigt; sie müssen gegenwärtig zu Allem herhalten, und fortwährend verstärken, gleich den übrigen Blechmassen, in ernsten und komischen Opern, bey Regiments-Banden und Tanzmusiken, woselbst ein obligates Posaunen-Solo in einem Walzer oder Galopp so recht wie sarkastische Ironie sich ausnimmt.²²

Ein Wiener Stil der Behandlung der Blechblasinstrumente

Bereits Albrechtsbergers ursprünglicher Passus über die Trompete enthält eine kurzgefasste Anweisung zur Satzweise der Trompeten, die auch für die Naturhörner gilt:

Die zwey *Clarini* führen einen leichten Gesang meistens in Terzen oben von dem zweygestrichenen bis in das dreygestrichene C[;] die Quint g/d und hernach e/c zwischen den fünf Linien, machen gern die Cadenz aus. Wenn der Satz ins F dur von C dur übergeht, giebt man ihnen gern die verdoppelte Quint c'/c'' wenn er aber in das A moll übergeht, die verdoppelte Quint e'/e''.²³

19 Ebd., S. 189–194.

20 Albrechtsberger 1790, S. 428.

21 Albrechtsberger 1826, Bd. 3, S. 200 f.

22 Albrechtsberger 1837, Bd. 3, S. 185 f.

23 Albrechtsberger 1790, S. 428. Die Tonnamen (hier wiedergegeben z. B. als g/d) sind in der Vorlage übereinander gedruckt und die Oktavbezeichnungen (hier z. B. c'/c'') durch Oberstriche angegeben.

Seyfried übernimmt diesen Abschnitt, in dem vom Clarinspiel bis ins c''' hinauf die Rede ist, in beiden Auflagen seiner Edition wörtlich, lässt jedoch wie bereits erwähnt in seinem Notenbeispiel den normalen Tonumfang beim g'' enden. Auch der im Zusammenhang der Hörner eingefügte und ebenfalls schon zitierte Zusatz Seyfrieds über »die Töne zwischen [den fünf Linien] und ober der fünften Linie« bezeichnet die Teiltöne 5 bis 12 als gebräuchlichen Tonumfang; das von Gerhard Stradner entdeckte und auf »Wien um 1800« datierte Manuskript von Friedrich Ponsing, das Hörner und Trompeten in Bezug auf ihren orchestralen Gebrauch im selben Atemzug nennt und fast gleich behandelt, geht in vergleichbarer Weise von den Teiltönen 3 bis 12 aus: »Im Tutti setzt man diese Instrumenten [*Corni et Clarini*] selten höher als bis G [g''] in die Tiefe aber bis G [g]. Im Solo setzt man dem Horn vom G [g] besonders im Durchlauf, alle Töne bis ins C, D, E, F, auch G hinauf, im Tutti hingegen, hat das Instrument, nemlich die Clarine nur die Accord-Töne von unten hinauf, bis das E im 4^{ten} Felde.«²⁴



Bsp. 1.1–1.8 Notation der Naturtöne auf Hörnern und Trompeten und ihre standardmäßige Verwendung im Wiener Orchestersatz um 1800 (mit hinzugefügter Bassstimme, in der Viertelnoten für gleichwertige Varianten unter den halben Noten im oberen System stehen).

Die gebräuchliche Notation der Teiltöne auf beiden Instrumenten in allen Stimmungen ist in Beispiel 1.1 kurz rekapituliert. Der 1. Teilton (der Pedalton) ist kaum spielbar und wird nie verlangt, der 2. höchstens gelegentlich im zweiten Horn. Sehr selten verwendet wird im Wiener Gebrauch der 7. Teilton (die gegenüber den üblichen Temperierungen um einiges tiefer intonierte »Naturseptime«), der 11. Teilton (das zwischen f'' und fs'' liegende »Alphorn-Fa«) hingegen auf dem Horn durchaus häufig und dabei meist als notiertes f'' mit geringfügiger Intonationskorrektur durch die Hand im Schallstück (auf der Trompete – ohne diese manuelle Korrekturmöglichkeit – selten, aber doch etwa in Beethovens Sinfonie in C-Dur op. 21 im 4. Satz ab T. 260), äußerst selten als notiertes fs'' (so auf dem Horn in Mozarts Sinfonie in D-Dur KV 504, 1. Satz, T. 121); höhere Teiltöne als der 12. werden nicht sehr häufig vorgeschrieben (der 16. Teilton etwa in Beethovens Sinfonie op. 21 im 1. Satz ab T. 280).

Nicht nur sind die Tonumfänge des ersten und des zweiten Bläasers voneinander unterschieden (Albrechtsberger macht zusätzlich auch noch Angaben zur Rolle von in »Aufzügen« verwendeten dritten und vierten Trompeten, die einen Einblick in die traditionelle Praxis einer letztlich improvisierbaren Mehrstimmigkeit mit klar verteilten Teiltonbereichen geben);²⁵ im ausnotierten Orchestersatz mit je zwei Hörnern und Trompeten sind auch die Zusammenklänge zwischen der jeweils ersten und zweiten Stimme reglementiert und standardisiert (Bsp. 1.2–1.8), wobei die zentrale harmonische Situation durch den 4. und 5. Klang von Beispiel 1.2 repräsentiert wird: »[D]ie Quint g/d und hernach e/c zwischen den fünf Linien, machen gern die Cadenz aus.«²⁶ Ergänzt um den Klang aus den Teiltönen 8 und 10 ergibt sich die als »Hornquinten« bekannte charakteristische Satzweise, die – aufwärts und abwärts anwendbar – die Basis für

²⁴ Ponsing 1800, S. 16 und Faksimile S. 17. Im Zitat in eckige Klammern gesetzte Notennamen sind in der Vorlage in Noten geschrieben.

²⁵ Albrechtsberger 1790, S. 428.

²⁶ Ebd.

den Einsatz der Hörner und Trompeten im Bereich einer regulären Tutti-Passage in der Grundtonart eines Stückes bildet (Bsp. 1.2, Klänge 3–5 bzw. 5–7). Die davor stehenden Klänge aus dem 9./11. Teilton – bei solistischer melodischer Aktivität auch noch aus dem 10./12. Teilton – werden tendenziell nur auf den Hörnern und normalerweise eher abwärts verwendet (zum Beispiel in Mozarts Sinfonie in C-Dur KV 73/75a im 3. Satz, T. 7 f.).

Ein demgegenüber eher passiver Einsatz der Hörner, oft im *piano* mit länger gehaltenen Tönen, wird durch die Oktave des 3. und 6. Teiltönen realisiert, die Teil der Tonika ebenso wie der Dominante der Grundtonart sein kann (Bsp. 1.3). Aufgrund der dabei – je nach Stimmung – eher tiefen Lage des zweiten Horns ist diese Praxis oft an eine ebenfalls liegende Bassstimme gekoppelt, was in der Harmonie an der entsprechenden Stelle meist einen Wechsel zwischen der Dominante und dem Quartsextakkord der Tonika ergibt.

Wenn – abgesehen von der Kombination des 9./11. Teiltönen für den Sextakkord auf der 4. Bassstufe (Bsp. 1.2, Klang 2) – prädominante Klänge mit Blechblasinstrumenten instrumentiert werden sollen, kommt auch die Kombination des 8. und 9. Teiltönen vor, die sowohl eine ›subdominante‹ als auch eine ›doppeldominante‹ Interpretation zulässt (Bsp. 1.4 mit zwei verschiedenen möglichen Basstönen).

Sollte die Grundtonart zwischenzeitlich ›vermollt‹ auftreten, ist im ersten Horn der mit der Hand zu bewerkstellende Einsatz des notierten *es* zwischen dem 9. und 10. Teilton denkbar (Bsp. 1.5); allerdings wird in solchen Fällen für die Moll-Tonika häufiger einfach die Oktave des 4. und 8. Teiltönen eingesetzt.

Diese Oktave ist auch ganz allgemein zur Darstellung einer ›subdominanten‹ Harmonie oder Tonart geeignet – nur als einzelner Akkord innerhalb der Grundtonart oder nach Modulation kombiniert mit ihrer eigenen Dominante (Bsp. 1.6). Entsprechendes gilt für die Paralleltonart, die mit der Oktave des 5. und 10. Teiltönen sowohl ihre Tonika als auch ihre Dominante bespielen kann (Bsp. 1.7). Nochmals in den Worten Albrechtsbergers: »Wenn der Satz ins F dur von C dur übergeht, giebt man ihnen gern die verdoppelte Quint *c'/c*“ wenn er aber in das A moll übergeht, die verdoppelte Quint *e'/e*“.²⁷

Die innerhalb jedes sonatenartigen Satzes reguläre und ausnahmslos zum Einsatz kommende Modulation in die Tonart der Dominante bietet sowohl den Hörnern als auch den Trompeten die Möglichkeit, mittels der *unisono* gespielten 9. und 6. Teiltöne teilzunehmen (Bsp. 1.8), wobei der 6. Teilton allenfalls auch in Oktavverdopplung mit dem 3. oder 12. Teilton auftreten kann.

So weit eine kurze Darstellung der üblichen Verwendung von Hörnern und Trompeten in Wien um 1800 als sinngemäße Ausarbeitung der von Albrechtsberger skizzierten und von Seyfried weiterentwickelten Darstellung; die fast immer in Kombination mit den Trompeten auftretenden Pauken werden ebenfalls auf den Grundton und die 5. Stufe der Grundtonart jedes gespielten Satzes eingestimmt, haben nur diese beiden Töne zur Verfügung und sind in ihrem Einsatz normalerweise an den der Trompeten gebunden.

»Dem gewöhnlichen Hörnersatz entfremdete« Ausnahmen

Ein Beispiel einer von Seyfried im Zusammenhang der Hörner erwähnten »dem gewöhnlichen Hörnersatz entfremdeten Anwendung« mit »überraschende[n] Wirkungen« ist im 1. Satz von Mozarts Sinfonie in D-Dur KV 504 zu finden: Das Ende des in die Dominanttonart modulierenden Teils der Exposition zeigt genau das von Seyfried beschriebene Phänomen des liegenbleibenden Tones, unter dem eine chromatisch fortschreitende Bassstimme eine Folge von

27 Ebd.

zum Teil unerwarteten Harmonien erzeugt (Bsp. 2).²⁸ Das liegende *c* der Hörner, Trompeten und Pauken ist hier in den Takten 88–93 über dem Bass zunächst kleine Septime, dann nacheinander große und kleine Sexte, reine und verminderte Quinte, Quarte, große und kleine Terz.

Die Transposition dieser Passage um eine Quinte nach unten im Rahmen der Rekapitulation des Sinfoniesatzes (Bsp. 2, T. 235–240) bringt es mit sich, dass die Blechblasinstrumente nicht in der gleichen Weise am harmonischen Prozess mitwirken können wie in der Exposition, da sie den dafür nötigen Ton *f* gar nicht oder nur sehr eingeschränkt zur Verfügung haben. An der Realisierung dieser Stelle als volles Tutti mit nur minimalen harmonischen Anpassungen wird jedoch trotzdem festgehalten, und der »geistreiche Meister« Mozart entwickelt zur Lösung dieses Problems ein Konzept, das die Rollen der Hörner einerseits und der Trompeten und Pauken andererseits stärker differenziert – eine schöne Illustration von Ponsings Beobachtung, »daß man dem *Corno* mehr ziehende, und dem *Clarin* mehr stoßende Noten giebt«.²⁹ Vor allem aber verwenden die Hörner mit *b'* den sonst vermiedenen 7. Teilton (die Naturseptime) und mit *es'*, *des'* und *h'* Töne aus der solistischen Spielpraxis dieser Instrumente, die den Einsatz der Hand im Schallstück verlangen, eine stark veränderte Klangfarbe zur Folge haben und im klassischen Orchester normalerweise nicht verwendet werden. Für den Wiener Gebrauch ebenso ungewöhnlich ist der Einsatz der Hörner zur Verdopplung der Basslinie (T. 239 f.).

Bsp. 2 Mozart: Sinfonie KV 504, 1. Satz, T. 88–96 (Exposition, oben) und T. 235–243 (Rekapitulation, unten), transponiert nach G-Dur bzw. C-Dur (original in A-Dur bzw. D-Dur), Blechblasinstrumente in C (original in D).

Noch 1840 geht Schillings *Universal-Lexicon der Tonkunst* bei der Besprechung des Hornes, auch wenn schon »die neuesten Ventilhörner« erwähnt werden, nach wie vor vom Naturhorn aus. Dort heißt es, dass derartige nicht in den natürlichen harmonischen Teiltönen enthaltene, also

Horn-leiterfremde Töne [...] nur durch Stopfen und künstliche Embouchure sehr schwer angegeben werden können, daher einen dumpfen, gegen die hellen, natürlichen Töne sehr absteichenden, fast heiseren Klang haben, und deshalb auch nur im höchsten Nothfall (im Tutti sind sie fast

28 Die in D-Dur stehende »Prager« Sinfonie KV 504 ist zum Zweck dieser Demonstration nach C-Dur transponiert, um die Lesbarkeit dieses komplexen Prozesses ohne Transposition der Stimmen der Blechblasinstrumente zu erleichtern.

29 Ponsing 1800, S. 16 und Faksimile S. 15.

ohne alle Wirkung) anzuwenden sind, und daß, selbst im gelungensten Falle, fast alle abgeleiteten (nicht natürlichen) Töne auch in Beziehung auf die jetzt herrschende Temperatur, niemals ganz rein angeblasen werden können.³⁰

Eine durch Seyfried neu instrumentierte Arie von Grétry in einer außergewöhnlichen Quelle

Im Musikarchiv des Stifts Melk, zu dem Ignaz von Seyfried nicht zuletzt durch den Eintritt seines Sohnes in den Benediktinerorden im Jahre 1826 ein enges Verhältnis pflegt,³¹ ist ein Stimmensatz zu einer einzelnen Nummer aus seiner Bearbeitung von Grétrys Oper *Richard Löwenherz* erhalten,³² die von ihm 1810 am Theater an der Wien auf die Bühne gebracht worden ist.³³ Blondels Arie »Wen[n] dich jederman verläßt, o Richard!« ist nach seinem Duett mit dem gefangenen König auf den Burgzinnen eine der bekanntesten Nummern aus dieser Oper; ihre Melodie wird in Frankreich während der Revolution sogar zu einer inoffiziellen Hymne der Royalisten.³⁴ Gegenüber der Oper, in der die Rolle des diese Arie singenden Blondel von einem Tenor übernommen wird, enthalten die Melker Stimmen eine im Sopranschlüssel notierte Solostimme und sind auch auf dem Titelblatt ausdrücklich als »Arie aus dem Richard Löwenherz [...] für eine Sopran-Stim[m]e« bezeichnet. Während Grétrys Original sich hinsichtlich der Blasinstrumente auf zwei Flöten, zwei Fagotte und zwei Hörner in C beschränkt, fügt Seyfried in seiner Neufassung noch zwei Oboen, zwei Trompeten samt Pauken sowie drei Posaunen hinzu; zur vollen Orchesterbesetzung der ganzen Oper fehlen also nur die Klarinetten.

An dieser Arie soll im Folgenden aufgezeigt werden, wie Seyfried die Instrumentierung Grétrys in Bezug auf die Blechblasinstrumente nicht nur durch Hinzufügung von weiteren Instrumenten erweitert, sondern gegenüber Grétrys andersartiger Konzeption seiner Hornstimmen die oben dargestellten Wiener Prinzipien des Blechbläsersatzes anwendet. Beide Versionen sind im Anhang dieses Beitrages möglichst taktgleich übereinander gedruckt, um einen direkten Vergleich der beiden Orchestrierungen zu ermöglichen.³⁵

Tonsatz-Korrekturen

In seiner Autobiografie bespricht Seyfried seine Bearbeitung des *Richard Löwenherz* folgendermaßen:

Meine zweyte, nicht minder von dem glücklichsten Erfolg begünstigte Arbeit [im Jahr 1810] war eine gänzliche Umstaltung des Richard Löwenherz. Die Sopran-Parthie der Gräfinn Margarethe von Flandern mußte für die *Bravour*-Kehle der Mad^{me} Campi appetirt werden; ich setzte ihr

30 Schilling 1840, S. 630.

31 Seyfried schreibt in seiner Autobiografie über das Stift Melk: »Was mir dagegen wieder eine Sorge vom Herzen nahm, war die Einkleidung meines Sohnes Friz, der, folgend seinem Berufe zum Priesterstande, am 11^{ten} November [1826], unter dem Ordens-Namen Leopold, in der Benedictiner-Abtei Melk, woselbst er die *Humaniora* absolvirt hatte, sein Noviziat antrat. Indem ich dieses schreibe [am 31.12.1827], ist er bereits schon Clericker, u. eben so zufrieden in dem selbst gewählten Stande, als seine Vorgesetzten, u. künftigen *Confratres* mit ihm; die größte, lohnenste Beruhigung für ein Vaterherz.« (Seyfried *Scizze*, S. 43).

32 Seyfried *Aria*. Für eine Spartierung der Stimmen s. Anhang. Da es sich dabei nicht um eine kritische Ausgabe, sondern um eine Lesefassung handelt, wird auf einen Editionsbericht verzichtet.

33 Für eine umfassendere Besprechung dieser Bearbeitung auf Basis weiterer Quellen s. Skamletz in Vorb.

34 Siehe hierzu Mason 1996, S. 46–48, 54–60 & 215 f.

35 Zur Datierung der gedruckten Pariser Partitur (Grétry 1786), die nach den ersten Aufführungen des Werkes (1784) erst 1786 erschienen ist, siehe Charlton 1986, S. 248 & 355 (Anm. 31).

daher drey wahrhaft große Szenen, die ich zu dem Beßten zähle, was ich in meiner Künstlerlaufbahn geleistet, u. die unbedingt zu den dankbarsten gehören, welche sich eine Sängerin nur jemals wünschen kann. Auch mit Chören, Tänzen, Märschen, Gefechten p. p. wurde der schöne romantische Stoff bereichert, doch – wie es sich von selbst versteht – blieben Grétrys reizende Melodien unverändert; nur den Baß erlaubte ich mir mitunter zu rectificiren, denn, nach diesen zu urtheilen, muß man ungläubig den Kopf schütteln, wenn der Reformator der französischen komischen Oper in seinen Memoiren behauptet, zu Rom, als Zögling des Lütticher *Conservatoriums*, das Studium des *Contrapuncts* getrieben zu haben.³⁶

Es muss einer anderen Gelegenheit vorbehalten bleiben, der um 1800 im deutschen Sprachraum weit verbreiteten Kritik an der Qualität von Grétrys Tonsatz in umfassender Weise nachzugehen; in der hier im Zentrum der Betrachtung stehenden Arie erscheinen die Eingriffe Seyfrieds in die von Grétry angelegte kompositorische Struktur jedenfalls tatsächlich geringfügig und es lässt sich beobachten, dass die melodische Kontur der Singstimme und auch der formale Ablauf wirklich über weite Strecken beibehalten sind.

Seyfried verkürzt das eröffnende Ritornell von 22 auf 16 Takte und verlängert das abschließende von 9 auf 13 Takte. Diese Umverteilung von Material im Orchestertutti kann im Sinne einer dramaturgischen Straffung zu Beginn und einer Entfaltung der wie angedeutet viel größeren Instrumentierung am Ende verstanden werden; es finden sich aber auch Eingriffe in den Tonsatz: Abgesehen davon, dass Seyfried mit seiner Kürzung die zweimalige Andeutung einer Wendung in die Tonart der II. Stufe d-Moll, die ja schon in den Eröffnungstakten angetönt worden ist (T. 4–6, s. Anhang), in diesem Abschnitt zu einer einzigen harmonischen Bewegung zusammenzieht, entfernt er auch die ausgedehnte Kette von einfachen Sextakkorden (>Fauxbourdon«, Gr., T. 14–16, Bsp. 3), die noch dazu in eine in Seyfrieds Verständnis wahrscheinlich fragwürdige harmonische Bildung in Takt 17 mündet, die normalerweise als nach d-Moll führender dominantischer Sekundakkord zu deuten wäre, hier aber im ganzen Orchester tatsächlich nur aus den gehaltenen Tönen *g* und *cis* besteht (und auch der in der Oberstimme der Violinen weiterhin vorhandene Eckton *f* trägt nicht zur harmonischen Klarheit dieser Stelle bei).

Im abschließenden Ritornell, nach einer durch ihn selbst eingefügten und ausnotierten kurzen Solokadenz des Solisten (S., T. 89–93, Bsp. 4), führt Seyfried vor, wie er die hier nochmals auftretende Fauxbourdon-Stelle Grétrys (Gr., T. 97 ff.) durch einen stufenweise fallenden Bass ersetzt, der auf dem Grundton der Tonart beginnt und unter den gehaltenen Liegetönen *c/e* leitereigene Stufen von C-Dur in verschiedenen Bassstellungen aneinanderreicht (S., T. 93 ff.). Dieses der Vorlage gegenüber völlig andersartige Satzmodell erlaubt Seyfried nicht zuletzt den durchgehenden Einsatz der Blechblasinstrumente auf den Naturtönen *c* und *e*.

Dass Seyfried einfache Ketten von Sextakkorden aber auch in blechbläserfreien Abschnitten außerhalb der Grundtonart nicht mehr als zeitgemäß oder möglicherweise sogar als satztechnisch mangelhaft empfindet, zeigt sich etwa am Ende des Mittelteils der Arie, der in G-Dur schließt (Gr., T. 45 f./S., T. 39 f., Bsp. 5): Seyfried beginnt seinen ebenfalls stufenweise absteigenden Bass wiederum eine Terz tiefer als die Vorlage und führt mittels mehrfacher Umkehrung des passenden Dominantseptakkordes eine Auskomposition der Tonart e-Moll ein, lässt dafür aber die von Grétry vorgenommene nochmalige Andeutung von a-Moll weg (Gr., T. 46 f.), um allerdings dann selbst wiederum die Kadenz zu chromatisieren (S., T. 40).

36 Seyfried *Scizze*, S. 22 f. Es handelt sich hier um eine Bezugnahme auf Grétrys Bericht über seine Studien bei Giovanni Battista Casali (1715–1792) in Rom, die Seyfried wohl aus der deutschen Teilübersetzung von Grétrys Memoiren durch Karl Spazier kennt (Grétry/Spazier 1800, S. 54–57; dies entspricht Grétry 1789, S. 100–103 und Grétry 1797, Bd. 1, S. 85–88).

Grétry

Seyfried

Gr.

S.

Gr.

S.

13

18

13

15

The image shows a musical score for a piece titled 'Grétry' and 'Seyfried'. The score is written for piano (Gr.) and voice (S.). The key signature is one sharp (F#), and the time signature is common time (C). The score is divided into measures, with measure numbers 9, 10, 13, 18, 13, and 15 indicated. The notation includes treble and bass staves for the piano part, and a single staff for the voice part. The piano part features various chords and melodic lines, while the voice part consists of a single melodic line. The score is presented in a clean, professional layout with clear notation and measure numbers.

Bsp. 3 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 9–22 (Vorlage Grétry [1786], oberes System)/9–16 (Bearbeitung Seyfried 1810, unteres System). In den Beispielen 3–5 werden nur der Bass und die Singstimme wiedergegeben (in Ritornellen die orchestrale Oberstimme, bei harmonisch oder stimmungsführungstechnisch komplexeren Stellen alle relevanten Stimmen). Generalbassbezeichnung: M. Sk.

Auch die Einfügung des *cis* im Bass durch Seyfried (S., T. 38) hat einen harmonischen Sinn: Dadurch wird dem in mehreren Stimmen chromatisch gleitenden Übergang von der Dominante von a-Moll in jene von G-Dur (Gr., T. 44) eine etwas konkretere Grundlage in Form eines doppeldominantischen verminderten Septakkordes gegeben – wahrscheinlich ein Musterbeispiel dafür, was Seyfried meint, wenn er schreibt, er habe sich erlaubt, »den Baß [...] mitunter zu rectificiren«. Dass er »Gretry's reizende Melodien unverändert« gelassen habe, stimmt auch nicht durchgehend und ausnahmslos, wie diese Beispiele vor Augen führen.

In diesem Sinne verändert Seyfried auch den Bass einer vorausgegangenen Kadenz in G-Dur (Gr., T. 30–32/S., T. 24–26, Bsp. 5), bei dem ihn wohl stört, dass das Dominantpedal im Bass vom Quartsextakkord aus verlassen wird (Gr., T. 32), weswegen er der ganzen Stelle eine andere Bassstimme unterlegt, ohne ihren harmonischen Sinn grundsätzlich zu ändern. Noch-

95
Gr. son - - -
6 4

89
S. ret - - ten kann, nicht ret - - - ten
6 4 6 6 6 4 5 4 5 3
[pp]

97
Gr. ne.
6 6 6 6 6 4

93
S. kann.
[f]
[5] 6 4 [5] 6 4 7 6

Bsp. 4 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 95–100/89–96.

mals ein Fauxbourdon steht am Beginn des abschließenden *Allegro*, und diesmal mündet er in aufsteigende Terzparallelen über liegendem Bass (Gr., T. 50–54, Bsp. 5) – beide in Seyfrieds Auffassung wohl zu einfachen Satzmodelle werden in seiner Fassung durch dichte Ketten von Zwischendominanten ersetzt (S., T. 43–47).

Behandlung der Blechblasinstrumente

Seyfried ›normalisiert‹ in seiner Instrumentierung auch den aus Wiener Sicht stellenweise ungewöhnlichen Hornsatz der französischen Vorlage und passt ihn dem beschriebenen Wiener Gebrauch an. So fügt er etwa die typischen Kadenzwendungen ein: In T. 35 f. (Gr., T. 41 f., Bsp. 6) geschieht dies zeitlich gedrängt und in rhythmisch vergleichsweise komplizierter Weise, entspricht aber genau der Standardfloskel der ›Hornquinten‹ (vgl. Bsp. 1.2). Eine weitere Kadenz mit von Seyfried hinzugefügten Hornquinten findet sich in T. 23 f. (Gr., T. 29 f., s. Anhang). Auch in der Kadenz in der Dominanttonart (T. 62 f., Bsp. 6) – von Grétry (T. 68 f.) ebensowenig mit Hornklängen versehen wie die zuvor besprochene in der Grundtonart – bringt Seyfried die in diesem tonartlichen Kontext passende Standardfigur (vgl. Bsp. 1.8).

Die Oktave des 4./8. Teiltons in T. 34 (dies entspricht bei Grétry T. 40, Bsp. 6) lässt Seyfried unverändert, da sie mit der Wiener Darstellungsweise für eine VI. Stufe übereinstimmt. Gleiches geschieht in T. 74 ff. (Gr., T. 80 ff., Bsp. 7), wo ein charakteristischer Orgelpunkt auf der Tonika steht, der einen Hang zur Tonart der Subdominante aufweist (vgl. Bsp. 1.6). Im Übrigen verwendet Grétry im Bereich der Grundtonart C-Dur diese Oktave vielfach auch zur Darstellung

30 **[Allegro]**

Gr.

[person] nemo seul dans l'u-ni - vers voudrais bri sertes fers et tout le re - ste t'a-ban-don[ne]

24 **[Allegro maestoso]**

S. kann, in Fes - seln schmach tet er, der nur für and're leb te, und Niemand, Niemand will zur Ret - tung

44 **[Plus lent]**

Gr. coeur doit êt re na-vré de dou leur, oui, son coeur est na- vré, na vré de dou[leur]

38 **[Più moderato]**

S. ein zärt lich Herz, könnt es den Scham er - tra gen? er-lag es nicht dem

50 **Allegro**

Gr. [Mo]nar - ches, cher - chés, cher-chez des a - mis non sous les lau - riers de la gloi - re

43 **Allegro pomposo**

S. [Mo]nar - chen! wollt ihr ei - nen Freund? sucht ihn nicht un - ter Lor - ber - zwei - gen, er

Bsp. 5 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 30–33/24–27, 44–47/38–40 und 50–54/43–47.

der einfachen Tonika, was Seyfried nicht übernimmt (bei ihm wird die Dur-Tonika regulär durch die Teiltöne 5 und 8 ausgedrückt).

Grétrys Einsatz der Hörner auf dem Orgelpunkt der Dominante ab T. 60 (Seyfried ab T. 53, Bsp. 7) entspricht eigentlich genau dem Wiener Gebrauch und hätte von Seyfried so übernommen werden können (vgl. Bsp. 1.3); er nutzt jedoch stattdessen die Gelegenheit, die beiden

40 67

Hr. (Gr.)

Hr. (S.)

Red. (S.)

Arm, der ret ten möch- te, und... nicht ret- ten kann, und sei- ne ed- le rein, wie sein- ne Lie- der; Wen[n] dich

Bsp. 6 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 40–42/34–36 und 67–69/61–63. In den Beispielen 6–8 stammen jeweils nur die im obersten System wiedergegebenen Hornparts aus der Vorlage von Grétry, der auf Blechbläser, Singstimme, Bass und wenige Mittelstimmen reduzierte Kontext hingegen aus der Fassung von Seyfried.

80 60

Hr. (Gr.)

Hr. (S.)

Tr. (S.)

Pk. (S.)

Red. (S.)

je- der man, ver- läßt o- Ri chard mein der Sein Herz ist bie- der,

Bsp. 7 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 80–82/74–76 und 60–63/53–56.

Hörner in das responsorische Spiel mit dem Terzenmotiv über dem Orgelpunkt einzubeziehen und ihnen dabei eine quasi-solistische Rolle zuzuweisen. Das liegende g, das bei Grétry an dieser Stelle in den Hörnern steht, überlässt Seyfried hingegen den Trompeten und Pauken.

Der Beginn des die Arie abschließenden *Allegro*-Abschnittes (Grétry T. 51, Seyfried T. 43, Bsp. 8) scheint mit seiner Dreiklangsmelodik wie für die Verwendung der Blechbläser geschaffen und aus Wiener Sicht ist es wohl unverständlich, warum Grétry diese Gelegenheit zu ihrem Einsatz nicht nutzt. Seyfried lässt demgegenüber in seiner Version die Hörner die eröffnende *unisono*-Bewegung in Oktaven mitspielen und bringt seine Vorstellung von diesem *Allegro*-Abschnitt mit dem Zusatz »*pomposo*« unmissverständlich zum Ausdruck. Umgekehrt hätte Seyfried wohl niemals ein unbetontes halbschlüssiges Ende auf einer Fermate im *piano* mit dem 1. Horn exponiert auf dem 12. Teilton ausklingen lassen, wie das Grétry gerade davor in T. 49 tut (Seyfried hingegen T. 42 eine Oktave tiefer, Bsp. 8).

Seyfried setzt jedoch nicht überall grundsätzlich mehr Blechblasinstrumente ein als Grétry: So verzichtet er im Abschnitt *Più moderato* zum Gesangstext »verlässt« zweimal auf den *forte*-Akzent und die von Grétry ziemlich hoch gesetzten Hörner, lässt diese Stellen nur durch Streicher begleiten und fügt auch noch jeweils eine Fermate ein, ohne insgesamt das *piano* zu verlassen (Seyfried T. 18 und 30, was Grétrys T. 24 und 36 entspricht, s. Anhang). Auch in der Schlusskadenz vor dem abschließenden Tutti-Einsatz (S., T. 89 ff./Gr., T. 95 ff., Bsp. 4) ist Seyfrieds Dramaturgie derjenigen von Grétry geradezu entgegengesetzt: Er begleitet die Kadenz nur mit den Streichern und den beiden Oboen im *pianissimo*, wohl um einen größtmöglichen Kontrast zum folgenden Einsatz des ganzen Orchesters zu erzielen, während Grétry

49 *Allegro* 75

Hr. (Gr.) *p* *f*

Hr. (S.) *p* *f*

Tr. (S.) *f* *f*

Pk. (S.) *f* *f*

Pos. (S.) *f*

Red. (S.) *Allegro pomposo*
Mo - nar - chen! wollt ihr ei - nen die - ser Arm, der ret - ten möch te, und nicht ret - ten kann Wen[n] dich

Bsp. 8 Grétry/Seyfried: *Richard Löwenherz*, Nr. 3, T. 49–51/42–44 und 75–79/69–73.

ausgerechnet hier in der Kadenz den Hörnern eine Art von Hornquinten vorschreibt (allerdings statt in die reguläre Sexte e'/c'' in die Oktave c'/c'' mündend), um sie im danach einsetzenden Tutti wieder pausieren zu lassen.

Das Verhältnis von Hörnern, Trompeten und Posaunen

In der großen Tutti-Kadenz ab T. 70 wiederum fallen Seyfrieds Hornparts sehr ähnlich aus wie jene von Grétry (dort ab T. 76, Bsp. 8): Hier ist zu beobachten, wie die von Seyfried hinzugefügten Trompeten hinsichtlich ihrer Lage die Rolle von Grétrys Hörnern übernehmen, während Seyfrieds Hörner den in T. 70 gespielten zwischendominantischen Sekundakkord eine Akkordlage höher als die Trompeten verstärken und sich darüber hinaus schon vor dieser Kadenzwendung im Einsatz befinden.

Damit ist auch ein weiteres wesentliches Charakteristikum von Seyfrieds Verstärkung der Instrumentierung durch umfangreicheren Einsatz der Blechblasinstrumente angesprochen: Die Hörner spielen bei ihm in den Tuttipassagen zwar streng nach den eingangs beschriebenen Standardbewegungen (Bsp. 1), tun dies jedoch kontinuierlicher als in der französischen Vorlage, wodurch sich durchgehend ein massiverer Orchesterklang ergibt. Stellenweise emanzipieren sie sich von der reinen Tuttifunktion, übernehmen Soloaufgaben (paarweise oder alleine) und nähern sich damit in ihrer Funktion den Holzblasinstrumenten an, die ihrerseits viel zahlreicher auftreten und einen größeren Tonumfang bespielen als in der französischen Vorlage.

Die Trompeten, die grundsätzlich eine Oktave höher klingen als die Hörner, rücken gewissermaßen in die hergebrachte Funktion der Hörner nach und verleihen dem Orchestersatz an geeigneter Stelle die nötigen vereinzelt zusätzlichen Glanzlichter, die durch das kontinuierliche Spiel der Hörner verloren gegangen sind. Diese Tendenz ist nicht nur an Beispiel 8, sondern auch schon an den zuvor nur anhand der Hörner besprochenen Stellen ablesbar, wo die Trompeten und Pauken zusätzliche Akzente setzen. In Beispiel 7 übernehmen sie die Rolle des dominantischen Orgelpunktes, weil die Hörner solistisch beschäftigt sind, tun dies aber mittels der von Ponsing beschriebenen »mehr stoßenden« Noten (anstelle der »mehr ziehenden« der Hörner).

Darüber hinaus zeigt Beispiel 8 auch den normalen Einsatz der drei Posaunen zur weiteren Verstärkung von Tuttistellen in mittlerer bis tiefer Lage. Seyfrieds bereits ausführlich zitierte eigene Einschätzung dieser Instrumente in seinen Albrechtsberger-Ergänzungen von 1837 wirkt zwiespältig, aber bereits 1810, zur Entstehungszeit seiner hier besprochenen Grétry-Bearbeitung, sind die Posaunen zum normalen Bestandteil eines großen Wiener Opernorchesters geworden. Diese Institutionalisierung vollzieht sich nicht nur als Fortführung und Verstetigung ihrer von Seyfried angesprochenen Verwendung in Werken etwa von Gluck und Mozart, sondern zumindest teilweise auch unter dem Einfluss der französischen Praxis, die in den Jahren um 1800 in Form einer großen Anzahl an musiktheatralischen Werken französischer Herkunft auf den Wiener Bühnen präsent ist und ihrerseits sogar zwei verschiedene Arten des Einsatzes von Posaunen vorsieht: als Ensemble von drei Posaunen (Alt, Tenor und Bass), wie es später zur Regel wird und wie es auch Seyfried hier verwendet, oder auch nur als einzelne Bassposaune. Nach David M. Guion sind diese beiden Typen des Posauneneinsatzes auf die Orchesterpraxis der verschiedenen Pariser Opernhäuser zurückzuführen, für die die entsprechenden Werke komponiert und an denen sie zuerst aufgeführt worden sind: »In the years after the Revolution, the Opéra continued to employ three trombonists, while smaller theaters, for the most part, had only one. (In about 1797, the Théâtre de la rue Feydeau added a second trombonist to its staff.)«³⁷ Dies betrifft in erster Linie die Gattung der postrevolutionären Opéra comique, wohingegen Grétrys *Richard Cœur-de-lion* von 1784, der im hier besprochenen Beispiel als Vorlage für Seyfrieds Bearbeitung dient, ursprünglich noch gar keine Posaunen verwendet.

Selbsteinschätzungen und Pressestimmen

In seiner zitierten Ergänzung der rudimentären Angaben Albrechtsbergers zu den Posaunen nimmt Seyfried eine kritische Haltung zum Trend seiner Zeit ein, die Blechblasinstrumente im Orchester in viel größerer Zahl und nahezu pausenlos zu verwenden (»sie [die Posaunen] müssen gegenwärtig zu Allem herhalten, und fortwährend verstärken, gleich den übrigen Blechmassen«).³⁸ In seinen Zusätzen zur Trompete bläst er ins selbe Horn und drückt sich dabei noch viel pointierter aus:

Vormahls beobachtete man in der Anwendung dieser kriegerischen Instrumente eine weise Mäßigung, eine wohlberechnete Ökonomie; man versparte ihre wirklich imposante Wirkung bloß für großartige Momente; zum Ausdruck des Siegesjubels, hoher Festlichkeit, laut aufjauchender Freude, majestätischen Triumphes-Feyer u. s. w. – heut zu Tage ist es anders geworden, das Trompeten-Geschmetter darf nirgends fehlen; es ist die eigentliche Würze, – eine ätzende, aus Cayenne-Pfeffer präparirte Lauge. Nahmentlich treiben die modernen Opern-Componisten mit dem unschuldigen ›Blech‹ gar heillosen Unfug. Ohne 4 Hörnern, 3 Posaunen, 2 Trompeten, Pauken, großen Trommel etc., kann kein naives Landmädchen mehr tändeln, kein zärtliches Pärchen ewige Lieb' und Treue sich schwören, keine Königin das Schaffot besteigen, kein Quacksalber seine Arcana anpreisen, kein Bühnenheros die letzten Seufzer aushauchen, oder das harmlose Schnittervölkchen munter fröhlich die Ärnte-Feyer begehen. – Die so nothwendige charakteristische Scheidelinie ist überschritten, und wird nimmer respectirt; alles muß dienen als Mittel zum Zwecke, und dieser einzige Zweck heißt: ›Lärm;‹ – damit wird ausschließlich das Mystificationsgeschäft betrieben.³⁹

37 Guion 1988, S. 230.

38 Albrechtsberger 1837, Bd. 3, S. 186.

39 Ebd., S. 187.

Diese Bemerkungen sind 1837 als Zusatz zur zweiten Ausgabe von *J. G. Albrechtsbergers sämtliche Schriften* geschrieben, und es mag sein, dass sich Seyfried im geläuterten Alter im Einsatz der Blechblasinstrumente tatsächlich in größerer Zurückhaltung geübt hätte, wenn er nochmals als Opernkomponist tätig geworden wäre. Fünfzehn Jahre früher jedoch scheint er laut einer Konzertkritik diesbezüglich noch nicht über alle Zweifel erhaben gewesen zu sein:

Das biblische Drama: *Salmonäa und ihre Söhne*, aus dem Französischen, von Castelli, mit Musik vom Ritter von Seyfried: eine sonderbare Zwischengattung von Oper und Melodram, welche uns jedoch keine der glücklichen Kunstformen zu seyn scheint, da die verschiedenen Elemente der Musikbegleitung und der Rede gleichsam im Kampfe mit einander begriffen sind, und nicht selten sich wechselweise stören. [...] Da Hr. von Seyfried unter diejenigen Componisten gehört, die den musikalischen Effekt hervorzubringen verstehen, ohne zu dem Lärm und Getöse der Blechinstrumente ihre Zuflucht zu nehmen, so wundern wir uns, dass er sich auch zuweilen von dem falschen Genius unserer heutigen Tonkunst verleiten lässt.⁴⁰

Im selben Jahr 1822 und ebenfalls in der *Allgemeinen musikalischen Zeitung* wird Seyfrieds Neuinstrumentierung anlässlich einer Wiederaufnahme des *Richard Löwenherz* in Wien grundsätzlich positiv rezensiert und fällt zumindest die in diesem Beitrag besprochene Arie nicht besonders auf: »No. 3. Blondel's Arie – C dur – jenes allbekannte Meisterstück, voll Ausdruck, innigen Gefühles und richtiger Deklamation.«⁴¹ Angesichts einer Produktion in Prag zu Beginn des selben Jahres – wohl auch in Seyfrieds Fassung, die aber nicht ausdrücklich genannt wird – hätte sich der Rezensent hingegen gewünscht, es wäre eine unbearbeitete Fassung gespielt worden, »denn die Zuthaten der Nachfolger und die theils allzureiche Instrumentation überschwemmten die Gretry'sche Tondichtung.«⁴² Bei ähnlicher Gelegenheit in Wien 1816 heißt es nach einer Bezugnahme auf den durch Seyfried angeblich verbesserten Tonsatz Grétrys: »Aber an die Stelle der ausgemerzten Fehler sind unserm Bedünken nach neue getreten. Die edle Simplizität des Stoffes ging verloren; das Geräuschvolle, das Prachtvolle hat das Gemüthliche, das Herzliche verdrängt.«⁴³ Dabei ist mit »geräuschvoll« und »prächtlich« gewiss nicht zuletzt der verstärkte Einsatz der Blechblasinstrumente gemeint. In den direkten Reaktionen auf die Erstaufführung von Seyfrieds Bearbeitung auf dem Theater an der Wien Ende 1810 wird sein Umgang mit diesem Werk, der auch die Einfügung von ganz neu komponierten Teilen mit sich bringt, noch kritischer gesehen: »nicht die Hälfte der vorkommenden Musikstücke war von Gretry; und die gebliebenen – ursprünglich vom Componisten zart und einfach gehalten – wurden mit manchen derben musikalischen Lappen behangen.«⁴⁴

Als Zeugnis eines lebendigen und nicht bloß konservatorischen Umgangs mit älteren Repertoirewerken scheinen Seyfrieds Bearbeitungen trotzdem interessant – gerade dadurch, dass in ihnen eine spezifisch wienerische Orchesterkultur der Zeit greifbar wird, die in diesem Beitrag punktuell anhand der Behandlung der Blechblasinstrumente demonstriert werden sollte. Auf jeden Fall müsste dabei nachvollziehbar geworden sein, dass die Betrachtung von Instrumentation nicht von satztechnischen Fragen zu trennen ist.

40 AmZ 1822a, Sp. 47.

41 AmZ 1822b, Sp. 839.

42 AmZ 1822a, Sp. 46.

43 Sammler 1816, S. 24.

44 AmZ 1811, Sp. 83.

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Martin Skamletz studierte Musiktheorie und Querflöte in Wien, Traverso in Brüssel und Komposition in Feldkirch. Nach Stationen beim Schweizerischen Musikpädagogischen Verband, an der Musikhochschule Trossingen und am Vorarlberger Landeskonservatorium trat er 2007 eine Stelle an der Hochschule der Künste Bern an, wo er für das Institut Interpretation verantwortlich ist und musiktheoretische Fächer unterrichtet.

Anhang

André-Ernest-Modeste Grétry: *Richard Cœur-de-lion*, Air »O Richard, o mon Roi!«

Auf jeder Seite oben: Originalausgabe Paris [1786]; unten: Neuinstrumentierung von Ignaz v. Seyfried für das Theater an der Wien (*Richard Löwenherz*, 1810).

O Richard, o mon Roi
Richard Cœur-de-lion, Paris: Houbaut [1786], S. 18-24 Grétry

Allegro
a2

Flûtes trav. *sf*

Bassons *sf*

Cors en Ut *sf* a2

Blondel

Violons 1 *sf*

Violons 2 *sf*

Violes *f*

Basses *f*

Nr. 3 Aria
aus dem *Richard Löwenherz* (A-MVI 1158) Grétry/Seyfried

Allegro maestoso

Flauti *f*

Oboi *f*

Fagotti *f*

Corni in C *f* a2

Trombe in C *f*

Timpani *f*

Tromboni

Blondell

Violino I mo *f*

Violino I do *f* a2

Viole *f* a2

Basso *f*

The first system of the musical score includes staves for Flute (Fl.), Fagott (Fg.), Horn (Hr.), Blasinstrument (Bl.), Violin 1 (VI. 1), Violin 2 (VI. 2), Viola (Vla.), and Bass (B.). The Flute and Fagott parts are in treble and bass clefs respectively, with a key signature of one flat. The Horn part is in treble clef with a key signature of one flat. The Blasinstrument part is in treble clef and contains rests. The Violin 1 part is in treble clef and plays a melody. The Violin 2 part is in treble clef and plays a rhythmic accompaniment. The Viola part is in alto clef and plays a harmonic accompaniment. The Bass part is in bass clef and plays a harmonic accompaniment.

7

Fl. *ff*

Ob. *ff*

Fg. *ff*

Hr. *ff*

Tr. *ff*

Pk. *ff*

Pos. *ff*

Bl. *ff*

VI. 1 *ff*

VI. 2 *ff*

Vla. *ff*

B. *ff*

11

Fl.

Fg.

Hr.

Bl.

VI. 1

VI. 2

Vla.

B.

3

12

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

VI. 1

VI. 2

Vla.

B.

3

4

21 **plus Lent**

Fl. ^{a2}

Fg.

Hr.

Bl.

O Ri - chard, o mon Roi, l'u - ni - vers t'a - ban - don - ne, sur la

Vi. 1

Vi. 2

Vla.

B.

p *f* *p*

4

15 ^{a2} **Più moderato**

Fl.

Ob.

Fg.

1. Solo *p*

Hr.

Tr.

Pk.

Pos.

Bl.

Wen[n] dich je - der-man ver - läßt, O Ri - chard, o mein Kö - nig! bleibt dir al-

Vi. 1

Vi. 2

Vla.

B.

p *p* *a2* *p* *p*

27 5

Fl. 

Fg. 

Hr. 

Bl. 

Fl. 1 

Fl. 2 

Vla. 

B. 

21 5

Fl. 

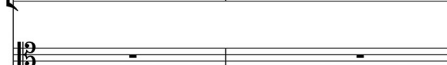
Ob. 

Fg. 

Hr. 

Tr. 

Pk. 

Pos. 

Bl. 

Fl. 1 

Fl. 2 

Vla. 

B. 

32

Fl. *a2*

Fg. *f a2*

Hr. *a2*

Bl. *f*

fers et tout le re-ste t'a-ban-don - ne. O Ri - chard, o mon Roi, l'u-ni-vers t'a - ban -

VI. 1 *f*

VI. 2 *f*

Vla. *p f*

B. *p f*

38 7

Fl.

Fg.

Hr.

Bl.

Vl. 1

Vl. 2

Vla.

B.

don - ne, sur la ter - re il n'est donc que moi qui s'in-te - res - se à ta per - son - ne. Et sa no-ble a mi - e, hé - las, son

32 7

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

Vl. 1

Vl. 2

Vla.

B.

Kö - nig! bleibt dir al - lein nur die - ser Arm, der ret-ten möch-te, und nicht ret - ten kann, und sei-ne ed-le Freun-din, weh ihr!

8

44

Fl.

Fg.

Hr.

Bl.

coeur doit être na - vré de dou-leur, — oui, son coeur est na - vré, na - vré. de dou-leur. Mo

VI. 1

VI. 2

Vla.

B.

cresc. f p

a2

p

8

38

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

ein zärt-lich Herz, könnt es den Scham er - tra - gen? er - lag es nicht dem Schmerz. Mo

VI. 1

VI. 2

Vla.

B.

p

a2

p

50 **Allegro** 9

Fl. - - - - -
Fg. - - - - -
Hr. - - - - -
Bl. nar - ches, cher - chés, cher - chez des a - mis non sous les lau-riers de la gloi-re mais sous les Mir - thes fa - vo-
Vl. 1 *f* *p*
Vl. 2 *f* *p*
Vla. *f* *p*
B. *f* *p*

43 **Allegro pomposo** 9

Fl. *f* a2
Ob. *f*
Fg. *f* *fp*
Hr. *f* *fp*
Tr. *f* a2
Pk. *f*
Pos. - - - - -
Bl. nar - chen! wollt ihr ei - nen Freund? sucht ihn nicht un - ter Lor - ber - zwei - gen, er ruht im stil - len My - then
Vl. 1 *f* *p* *cresc.* *fp*
Vl. 2 *f* a2 *p* *cresc.* *fp* a2
Vla. *f* *p* *cresc.* *fp*
B. *f* *p* *cresc.* *fp*

10

56

Fl.

Fg.

Hr.

Bl.

ris qu'off - rent les fil - les de mé - moi - - re.

VI. 1

VI. 2

Vla.

B.

61 11

Fl. *61*

Fg.

Hr.

Bl. Un Trou-ba-dour est tout a-mour, fi-dé-li-té, con-

Vl. 1

Vl. 2

Vla.

B.

55 11

Fl. *55*

Ob. *pp*

Fg. *pp*

Hr. *pp*

Tr.

Pk.

Pos.

Bl. Sein Herz ist_ bie-der, treu und_ rein treu und rein, und

Vl. 1

Vl. 2

Vla.

B.

[illegible]

12

59

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

bie - der treu, bie-der, rein, wie sein - ne__ Lie - der; Wen[n] dich je - der-man__ ver -

VI. 1

VI. 2

Vla.

B.

f *p* *a2* *f* *p* *fp*

71 13

Fl. *f* *p* *f* a2

Fg. *f* *p*

Hr. *f* *f*

Bl. *f* *p*

Vl. 1 *f* *p* *f*

Vl. 2 *f* *p* *f*

Vla. *f* *p* *f*

B. *f* *p* *f*

Roi, l'u-ni-vers t'a-ban-don-ne, sur la ter-re il n'est que moi, il n'est que moi qui s'in-tes-se à ta per-son-

65 13

Fl. *f* *f* *f*

Ob. *f* *p* *f*

Fg. *f* *p* *f* a2

Hr. *f* *p* *f*

Tr. *f* *f*

Pk. *f* *f*

Pos. *f* *f*

Bl. *f* *f*

Vl. 1 *f* *p* *f*

Vl. 2 *f* *p* *f* a2

Vla. *f* *p* *f* a2

B. *f* *p* *f*

läßt, O Ri-chard, o mein Kö-nig bleibt dir al-lein, nur die-ser Arm, der ret-ten möch-te, und nicht ret-ten-

14

79

Fl.

Fg.

Hr.

Bl.

ne. O Ri-chard, o__ grand Roi, l'u-ni-vers t'a-ban-don-ne, sur la ter-re il n'est que

1.

f *sf* *sf* *p*

14

73

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

kann Wen[n] dich je-der-man ver-läßt o__ Ri-chard mein Kö-nig, bleibt dir al-lein nur

rf *rf* *rf* *rf* *p* *rf* *rf* *rf* *p* *cresc.* *cresc.* *cresc.* *cresc.*

85 15

Fl. *cresc.* *f* *a2*

Fg. *cresc.* *f*

Hr. *cresc.* *f* *f*

Bl. *cresc.* *f*

moi, oui, c'est Blon - del, il n'est que moi, il n'est que moi qui s'in - te - res-se à ta per - son - ne, n'est-il que moi, n'est-il que

Vi. 1 *cresc.* *f*

Vi. 2 *cresc.* *f*

Vla. *cresc.* *f*

B. *cresc.* *f*

79 15

Fl. *f* *a2*

Ob. *f*

Fg. *f* *a2*

Hr. *f* *a2*

Tr. *f* *a2*

Pk. *f* *a2*

Pos. *f* *a2*

Bl. *f* *a2*

die-ser Arm bleibt dir nur die-ser Arm, nur die-ser Arm, der ret-ten möch-te, und nicht ret - ten kann, bleibt dir al - lein nur die-ser

Vi. 1 *f* *a2*

Vi. 2 *f* *a2*

Vla. *f* *a2*

B. *f* *a2*

16

93

Fl.

Fg.

Hr.

Bl.

moi qui s'in - te - res-se à ta per - son - ne.

VI. 1

VI. 2

Vla.

B.

16

87

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

Arm, der ret-ten möch-te, und nicht ret - tenkann, nicht ret - ten kann.

VI. 1

VI. 2

Vla.

B.

100

17

Fl.

Fg.

Hr.

Bl.

Vl. 1

Vl. 2

Vla.

B.

96

17

Fl.

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

Vl. 1

Vl. 2

Vla.

B.

18

Fl. ¹⁰¹

Ob.

Fg.

Hr.

Tr.

Pk.

Pos.

Bl.

Vl. 1

Vl. 2

Vla.

B.

¹⁰²

Ryoto Akiyama

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

Johannes Kuhlo is widely recognised as the most influential proponent of the Posaunenchor movement. However, his vision for the Posaunenchor diverged from contemporary practice. This paper examines Kuhlo's detailed conceptualisation of the Posaunenchor within the socio-historical context of the Lutheran working-class milieu of late nineteenth-century Eastern Westphalia. A committed Bibli-cist, Kuhlo revered the words of the Lutheran Bible and aspired for the Posaunenchor to emulate the human voice preaching the Gospel. To this end, he sought to establish a distinctive, chorus-like brass ensemble, centred on the flugelhorn as the principal melodic instrument, and with a performance style deliberately distinct from both military bands and other vernacular ensembles. Kuhlo envisioned the Posaunenchor as an embodiment of Christian social conservatism – an ensemble that sonically represented the sacred ideals of the Lutheran German Empire.

The term 'Posaunenchor' is used today to denote a congregational brass ensemble in the German Protestant Church. It was registered as an example of Germany's Intangible Cultural Heritage by the German Commission for UNESCO in 2016 and has been described as a "trademark of the Protestant Church".¹ It remains indeed an indispensable part of local Protestant congregational music-making in Germany to this day. The term is often literally translated as 'trombone choir', but this does not accurately capture the essence of the congregational ensemble to which it refers. The ensemble comprises not only slide trombones but also trumpets, flugelhorns, French horns, 'Tenorhorns', 'Baritons',² tubas and others. Labrosones are chosen for their sound range and nominal pitch, and they align well with four-part choral arrangements. However, the term 'Posaunenchor' should not be considered an organological misnomer for the ensemble. Instead, it underscores the intricate challenges involved in translating and interpreting the German term 'Posaune', which are shaped by cultural conditions. Accordingly, the use of 'Posaune' as signifying only a slide trombone becomes less than self-evident, particularly in an era characterised by considerable technological changes such as the intro-

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1 UNESCO n.d.

2 The German 'Tenorhorn' is similar to the baritone found in British brass ensembles, whereas the German 'Bariton' is similar to the British euphonium. For this reason, we use the German term for both instruments.

duction of valve mechanisms. The concept of ‘Posaunenchor’ as a congregational ensemble can shed light on this issue.

Johannes Kuhlo (1856–1941), a Lutheran pastor from Eastern Westphalia, is recognised as the most significant promoter of the Posaunenchor movement. He was renowned as a conservative Lutheran patriot both during Wilhelmine Germany and after it. Kuhlo’s engagement in political activities is well-documented,³ but previous research, predominantly conducted in the fields of practical theology, church history, church music history and music history, has frequently created a dichotomy between his musical/theological practices and his political ideology, especially regarding his association with National Socialism.⁴ Musicology has predominantly framed the Posaunenchor within the confines of Christian congregational music.⁵ It is critical, however, to recognise that Kuhlo’s instrumental vision for the Posaunenchor is inextricably linked with both the Christian faith and his conservative-patriotic political ideology. To adopt a different approach, we must suspend the prevailing dichotomous framework and reassess Kuhlo’s work beyond any theological legitimisation. This approach is necessary if we are to advance research into this congregational ensemble and comprehend the cultural conditions surrounding the use of labrosones in relation to the Christian faith. It is essential for us to avoid conflating Kuhlo’s concepts and those of his devotees with contemporary practices.

In this essay, I will examine Johannes Kuhlo’s *Posaunen-Fragen*,⁶ first published in 1909, which is his most renowned work. This is an expanded version of the practical instructions for the *Posaunenbuch*, which I will discuss in a subsequent section. In *Posaunen-Fragen*, Kuhlo articulates his vision for the Posaunenchor and provides practical guidance for such ensembles, drawing on his personal experience. This text has frequently been referenced by brass players in Posaunenchöre, theologians, church musicians and musicologists, even in the late twentieth century, particularly for its ecclesiastical insights for congregational brass ensembles. My analysis will then focus on Kuhlo’s detailed description of the Posaunenchor within the sociohistorical context of the Lutheran working-class milieu in Eastern Westphalia in the late nineteenth century. This approach reveals that *Posaunen-Fragen* touches on issues that are political in intent, beyond music and theology. I will elucidate how Kuhlo conceptualised the ideal musical practice of the Posaunenchor, especially with regard to the use of the flugelhorn, commonly known as the ‘Kuhlohorn’, for this ‘sacred’ (*geistlich*) brass ensemble. I shall also demonstrate how his musical concepts were intricately entwined with his conservative, patriotic beliefs. I will commence by presenting biographical details about Kuhlo and his social background and then outline his conceptualisation of the Posaunenchor, drawing here on *Posaunen-Fragen*. Lastly, I will examine Kuhlo’s religio-political views, particularly in relation to the patriotic performances of his Posaunenchor. I thereby aim to contribute to a deeper understanding of the cultural perception of the ensemble and the concept of the ‘Posaunen’ during the long nineteenth century.

1. Johannes Kuhlo as a Lutheran pastor in Minden-Ravensberg

Although Johannes Kuhlo had a significant influence on the musical practices of the Posaunenchor, he was not a professionally trained brass player, but a Lutheran pastor in the administrative district of Minden-Ravensberg in Eastern Westphalia. His biographical details and the region-

3 See Neumann 2006; Schnabel 2011.

4 See Schnabel 1993, pp. 191–194; Schnabel 2003, pp. 79–140.

5 See Ahrens 1997; Schepping 2000, p. 657.

6 Kuhlo 1909.

al context are indispensable for understanding his conception of the Posaunenchor because the socio-cultural and religious environment of the region significantly shaped his faith and perspective. The neo-pietistic Lutheran Christian revival movement (*Erweckungsbewegung*) was a determining factor in Minden-Ravensberg society in the nineteenth century.⁷ After the Napoleonic Wars, this region experienced political confusion, economic upheavals and poverty. Confusion struck the lives of peasants and craftsmen in rural communities. In their need, they often looked to their Christian faith for comfort. Either local pietistic pastors or diaspora preachers of the Moravian Church (*Herrnhuter Brüdergemeine*) in Oberlausitz in Saxony might have inspired this trend. In the first half of the nineteenth century, peasants and craftsmen began gathering in covert religious assemblies outside the institutional Church, reading the Bible, listening to pietistic sermons, exchanging their ideas about their Christian faith, and singing spiritual songs. The edifying experience gained through communal singing assumed central importance. The core elements of their movement were Biblicism, the Lutheran *sola fide*, charitable activities and emotional experience rather than any rational understanding of religion. They also tended to believe that the Enlightenment and liberalism after the French Revolution had caused their poverty, and they demanded a monarchical order like that of Protestant Prussia. From the 1840s onwards, elements of this neo-pietistic movement spread through the whole of eastern Westphalia and came to constitute a perceptible part of its socio-cultural milieu.⁸

Pastors who were opposed to Enlightenment positions played a pivotal role in disseminating and invigorating this movement. Among these leading figures, Johann Heinrich Volkening (1796–1877) fervently advocated for musical activities within the congregations. Eduard Kuhlo (1822–1891), the father of Johannes, was one of the movement's leading pastors. Beginning in the 1850s, he organised Lutheran youth clubs for boys and girls (*Jünglings- und Jungfrauenverein*),⁹ gave instruction to choruses formed in the clubs and congregations, and fostered brass ensembles that became known as Posaunen or Posaunenchor. The origin of this term, specific to Minden-Ravensberg, remains unclear. The diaspora preachers of the Moravian Church in Oberlausitz of Saxony might have spread this term, for 'Posaunenchor' is already mentioned in sources there from the middle of the eighteenth century;¹⁰ it is also possible that Biblicist pastors and brass players coined it with reference to the term 'Posaune' as used in Psalm 150 in Luther's translation of the Bible: "Lobet ihn mit Posaunen" ("praise [the Lord] with trombones").¹¹ Under the organisational leadership of Eduard Kuhlo, the Posaunen became an integral part of clubs and associations by the 1870s.¹² The popularisation of wind bands in society in general and the increasing availability of valve brass instruments in this era were undoubtedly contributory factors.

It was in this environment that Johannes Kuhlo emerged, a charismatic figure who later acquired the nickname 'Posaunengeneral' (the general of the Posaune), by which he was still known even in the late 20th century.¹³ He grew up taking part in the Posaunenchor conducted

7 Mooser et al. 1989.

8 Mooser 1989.

9 See Jüttemann 2008.

10 See, for example, Peuckner 2009.

11 Originally 'shofar', that is, a ram's horn. In most English translations of the Bible, this instrument is given as 'trumpet'.

12 On the emergence of the *Posaunenchor* movement and Eduard Kuhlo, see Gießelmann/Krull 1989; Gießelmann 2003; Schnabel 2003, pp. 11–77.

13 For more biographical information on Kuhlo, see Schnabel 1994, pp. 113–124. There is a biography by Wilhelm Ehmann (1951) that draws on information from Kuhlo's family and acquaintances and on Ehmann's own experiences with Kuhlo, but is not based on critical research.

by his father. He learned the alto trombone at the age of eight and then taught himself the flugelhorn. From childhood onwards, Johannes Kuhlo helped his father with running an instrumental ensemble for local youth clubs. When he later took his father's place, he became the most prominent leader of Posaunenchor in the Wilhelmine period. As a pastor, he was engaged in welfare and social work in 'diaconia' (Protestant welfare organisations) in the Inner Mission within the Lutheran church. Friedrich von Bodelschwingh (1839–1910) employed Kuhlo as a pastor in his Bethel Institution near Bielefeld in 1892, where Kuhlo lived for much of his lifetime. It should be noted that Kuhlo's pastoral career was deeply embedded in the contemporary revival movement, which had also prompted the development of the Inner Mission and the burgeoning diaconia in eastern Westphalia. It attempted to solve the social problems that had appeared after the Industrial Revolution by restoring Christian morals through establishing welfare institutions. This shaped a specific Lutheran conservatism in eastern Westphalia, set against the growing Marxism and socialism in the region.¹⁴ Johannes Kuhlo was one of the most representative figures of this tendency. He was a devoted Biblicist, and it is said that he regarded himself as "conservative to the bone".¹⁵

His efforts to improve others through music, by playing the flugelhorn and directing the Posaunenchor, were fully integrated into his diaconal work. In this regard, he represents a quintessential figure in his regional context.

2. Kuhlo's Posaunenchor

As a conservative Lutheran pastor, Kuhlo envisioned the Posaunenchor as a 'sacred' brass ensemble dedicated to Bible-oriented, devotional musical practices and "to the glory of God, to the edification of the congregation, and the joy of the members."¹⁶ This is still the most often-cited phrase in Posaunenchor today. Kuhlo, a Biblicist, held the words written in the Lutheran Bible in high esteem and desired the Posaunenchor to emulate the sound of the human voice preaching the Gospel. To realise this vision, he wanted to establish a unique, chorus-like brass ensemble that was distinctly separate from military and vernacular bands.

A key concern of Kuhlo's was to differentiate the Posaunenchor from 'secular' music ensembles and practices.¹⁷ To achieve this, he promoted a unique repertoire and notation system. His music publications had a major impact on the conditions of performance. The first thorough, systematically arranged music anthology for the Posaunenchor was the *Posaunenbuch*¹⁸ published by Kuhlo's father Eduard in 1881. Johannes assisted in his father's work and by the 1920s had improved this anthology and expanded it into four volumes.¹⁹ Inspired by the hymnological research of Johannes Zahn (1817–1895) and his contemporaries, who dedicated themselves to the regeneration of Reformation melodies and were influenced by the concurrent revival and scholarly study of Johann Sebastian Bach's music, Kuhlo favoured having the Posaunenchor perform Protestant chorales arranged in a 'cantional' setting (i.e. in four parts with a note-against-note accompaniment to the melody) as well as chorale settings by Bach.²⁰ In addition to these chorales, it is noteworthy that the *Posaunenbuch* encompasses other religious songs and Ger-

14 On the work of diaconal institutions in eastern Westphalia, see Mooser et al. 1989, pp. 113–229.

15 "[...] nach eigenen Worten 'konservativ bis auf die Knochen'" (Schnabel 2003, p. 133).

16 "Lobet den HERRN mit Posaunen! [...] zur Ehre Gottes, zur Erbauung der Gemeinde und zur Freude seiner Mitglieder" (Kuhlo 1909, p. 1).

17 See *ibid.*, pp. 101–132.

18 Ehmann edited the facsimile of this first *Posaunenbuch* (KuhloE 1881).

19 See Schlemm 1996.

20 Kuhlo 1909, pp. 60f. and 112f.; see also Schnabel 2003, pp. 106–112.

man folk songs about nature, community and the fatherland. It includes patriotic songs such as *The Watch on the Rhein* (*Die Wacht am Rhein*) and the *Deutschlandlied*, which Kuhlo similarly arranged in cantional settings like chorales. He regarded the Protestant chorales as the highest form of folksong, evoking God's Creation and the Christian community.²¹ He employed a unique notation using a piano score in C, which he called '*Klavierschreibweise*' (piano notation), distinguishing it from the transposed notation developed for military and other bands.²² He emphasised its practicality: it saved time and paper that would otherwise be needed for transposing instruments, and it let the brass player grasp the harmonic structure of the music. However, it should also be noted that Kuhlo aimed to insulate the Posaunenchor brass players by confining them to his strict system. This restriction was designed to prevent these young male musicians from participating in other ensembles, whose notation would be unfamiliar unless they learned it separately.²³ In this manner, Kuhlo's *Posaunenbuch* functioned as a conduit for interweaving ecclesiastical elements with patriotic communalism, simultaneously serving as a means of exclusion, which in turn marginalised the Posaunenchor from other ensembles.

Kuhlo expanded the instructional section of the *Posaunenbuch*, *Anhang A* (Appendix A),²⁴ into a separate booklet entitled *Posaunen-Fragen*. Here, Kuhlo discusses the instruments that make up the ensemble, and which function as a means of manifesting his ideas.²⁵ While the term 'Posaunen' was used to describe the instrumental ensembles of youth clubs, a literal Posaunenchor, i.e. a 'chorus' comprising just slide trombones, was seldom realised in the movement. By the 1860s, it is probable that the instrumentation had emerged as a significant issue in performance practice. In 1861, an anonymous Posaunenchor conductor in Iserlohn proposed what he regarded as the ideal ensemble, arguing against trombones due to technical difficulties, and suggesting trumpets instead on account of their biblical connotations. Valve instruments were popular in military bands and were being increasingly adopted in four-voiced Posaunenchor ensembles.²⁶ In the first edition of the *Posaunenbuch*, Eduard Kuhlo's recommendations were primarily focused on the technical aspects of performance.²⁷ Johannes Kuhlo revised his father's views, placing greater emphasis on resembling a vocal choir, and underscored the use of the flugelhorn for the melody or soprano parts (see Table 1). His priority was that the soprano part that has the melody should be played on the flugelhorn, complemented by suitable alto and tenor instruments, with the indispensable bass part on slide trombone and helicon. Kuhlo did not intend entirely excluding slide trombones from the alto, tenor, or bass parts, though he did find the valve trombone less desirable. It is possible that he envisioned using the prevailing Sattler-Penzel type for its soft but majestic timbre. However, the difficulties posed by slide trombones in an ensemble led him to choose (valved) flugelhorns to achieve a round, soft, solemn timbre with a rich resonance, akin to a chorus of singers. Remarkably, Kuhlo treated the flugelhorn as more compatible with the slide trombone than trumpets or cornets, which he perceived as overly aggressive and noisy, and not suited to his timbral ideals. This contrast between flugelhorns and trumpets/cornets should not be interpreted as aligning with later classification systems in organology. Instead, it reflects a preference based on both sound character

21 Kuhlo 1926, p. II.

22 Kuhlo 1909, pp. 62–69; see also Schnabel 1993, pp. 12–19.

23 Kuhlo 1909, p. 65.

24 Kuhlo 1894.

25 Kuhlo 1909, pp. 6–26. I deal with the comprehensive issue of Posaunenchor instrumentation in another place. Please see Akiyama forthcoming.

26 Anonymous 1861; Schnabel 1993, pp. 72f.

27 KuhloE 1881, pp. 4–9.

and practicability.²⁸ The French horn (*Waldhorn*) could have been incorporated in the ensemble, but Kuhlo was concerned about its practicability. His approach can best be described as applying contemporary instrument-making technologies to produce a sound that was in his mind both historical and biblical in character.

	I. (soprano)	II. (alto)	III. (tenor)	IV. (bass)
basic quartet	1. flugelhorn	2. flugelhorn	3. Tenorhorn	4. slide trombone with thumb valve
beginning choir	5. flugelhorn			6. helicon
complete choir	9. flugelhorn	7. alto trombone in e^b	8. Tenorhorn	
powerful choir	10. flugelhorn	12. flugelhorn	13. tenor trombone	11. helicon
large choir	14. flugelhorn	16. flugelhorn	17. French horn	15. slide trombone without thumb valve

Table 1 The different possible line-ups of Kuhlo's Posaunenchor, given in increasing order of size as proposed in Kuhlo 1909, p. 17.

Johannes Kuhlo specifically referred to the oval flugelhorn,²⁹ which later became popularly known as the 'Kuhlohorn'. The guidelines in the *Posaunenbuch* suggest that young men's clubs in Minden-Ravensberg were importing this horn from Saxony or Silesia by the beginning of 1880s.³⁰ By 1882, Johannes Kuhlo appears to have established a collaboration with August Glier in Markneukirchen, which subsequently became the centre for the production and retail of the instrument sets recommended by Kuhlo. In the 1890s, Kuhlo engaged Ernst David to produce these instruments – an instrument maker who had done his apprenticeship in Markneukirchen and had been active in Bielefeld since 1895. In the second edition of the practice guide *Anhang A*, published in 1894, Kuhlo enthusiastically endorsed David's instruments in a new footnote while still recommending those of Glier. Kuhlo praised David as a "true master of brass instrument making", highlighting the excellent intonation and smooth sound quality of his flugelhorns.³¹ This information aligns with a design registry report in the 1896 edition of the *Zeitschrift für Instrumentenbau*, which indicates that David established his workshop in Bethel in Bielefeld by November 1895 and developed a new tuning slide.³² In line with Kuhlo's recommendations, David sold instrument sets specifically tailored for Posaunenchor use. His advertisement featured instrument sets with a B^b flugelhorn, labelled the "System Kuhlo".³³ Figure 1 shows an oval flugelhorn produced in the workshop of David, ca 1920s.

The *Posaunenbuch*, *Anhang A*, and *Posaunen-Fragen* of 1909 illustrate how Kuhlo developed his conception of instruments through practical experience. It is important to note that the major extension from *Anhang A* to *Posaunen-Fragen* was the success of his engagement in religio-political activities.

28 The understanding of the trumpets and the horns as two separate families in Posaunenchor emerged after the 1920s, being possibly influenced by the musicological discourse of the time. This is a topic I intend to discuss at another opportunity.

29 The origins and development of this type of flugelhorn cannot be traced. According to Heyde (1987, pp. 211 and 278), this type of horn was probably produced in Vogtland in the mid-nineteenth century.

30 KuhloE 1881, p. 9.

31 Kuhlo 1894, pp. 19 and 61.

32 *ZfI* 1896, p. 705.

33 Such advertisements are found in the *Posaunenbuch* (KuhloE 1881), such as on the last pages of Kuhlo 1926.



Fig. 1 Kuhlohorn produced in the workshop of Ernst David.

3. Posaunenchor and Christian Social Conservatism

What, then, were the underlying reasons for Kuhlo's dedication to the Posaunenchor in *Posaunen-Fragen* of 1909? Previous studies have stressed his model as the basic sacred brass ensemble of the Protestant Church in Germany. However, this view ignores the fact that his intention in the *Posaunen-Fragen* was not to produce a theological catechism of brass playing, but rather a personalised, religio-political manifesto. This is where his biography as a Lutheran pastor within a specific regional context is a major factor to consider.

During the Wilhelmine period, Kuhlo eagerly supported the Christian social (*christlich-sozialer*) conservatism of Adolf Stoecker (1835–1909),³⁴ who aimed to solve the social problems caused by industrialisation and to unify the German nation through the 're-Christianisation' of society and the restoration of Christian morals under the authority of a Protestant monarch. Stoecker condemned liberalism, capitalism and profane socialism, and also advocated anti-Semitism.³⁵ He established the Christian Social Party (CSP) to uphold his religio-political ideology. Stoecker's policies failed to establish themselves in either Berlin or nationally. However, Stoecker and the CSP had an active group of supporters in Minden-Ravensberg at the turn of the century³⁶ who included rural Lutheran, working-class people alongside conservative pastors such as Kuhlo and his employer Bodelschwingh. The Posaunenchöre were not separate from the political activity of Christian social conservatism; Kuhlo and his Bethel Posaunenchor even performed for the party's political campaign.³⁷ In the *Posaunen-Fragen*, it is notable that Kuhlo used the key term '*christlich-sozial*' to accuse the capitalist system of manufacturing and marketing instruments to impoverish lower-class workers. Instead, he recommended buying directly

34 See footnote 3.

35 See Stoecker 1913; Brakelmann et al. 1982; Jähnichen 2013. See also Mosse 1975, pp. 90–93.

36 See Nipkau 1989.

37 See Schnabel 2003, p. 133.

from David because of the quality of his products, his technological insights and the absence of dealers' mark-ups.³⁸ Kuhlo strove to realise his ideas both through the edification provided by music practice and through direct political and economic action. His prime objective was to embody the world order of Christian social conservatism through his Posaunenchor.

As a Christian social conservative, Kuhlo supported the monarchical order and the authority of the Protestant Hohenzollern family in the German Empire. The concluding section of his *Posaunen-Fragen* is entitled "Of the history and the blessings of the Posaunenchor" and describes with pride the success of mass performances of Kuhlo's Posaunenchor at acts of homage to the Emperor (*Kaiserhuldigung*).³⁹ He organised four such major performances around the turn of the century.⁴⁰ In 1896, Kuhlo conducted some 1,300 brass players in Posaunenchor at a patriotic ceremony celebrating the inauguration of a monument to Wilhelm I in Porta Westfalica in eastern Westphalia, with the current Emperor Wilhelm II in attendance.⁴¹ The massed Posaunenchor performed the Bach chorale *Wachet auf, ruft uns die Stimme* (Awake, the voice is calling us) and the patriotic songs *Ich hab' mich ergeben* (I surrendered) from Kuhlo's *Posaunenbuch*. In 1897, Kuhlo organised a homage to Wilhelm II with a performance at Bethel, featuring 2,000 brass players and 10,600 choral singers from the young men's and women's clubs, to which both the Emperor and Empress were invited. The massed Posaunenchor performed the Protestant chorale *Nun danket alle Gott* (Now thank we all our God) to celebrate the Prussian victory over Napoleonic France in the Battle of Waterloo in 1815.⁴² This celebration was part of a regional Christian festival for the Posaunenchor and youth clubs under the motto "Let everything that has breath praise the Lord!"⁴³

4. Concluding remarks

Posaunen-Fragen and related sources⁴⁴ on the instrumentation of Kuhlo's Posaunenchor are indispensable for comprehending not only the Posaunenchor itself but also for providing insights into the history of labrosones in the late nineteenth and early twentieth centuries. However, it is noteworthy that Kuhlo's instrumentation guidelines are intricately intertwined with his religio-political beliefs, particularly within the regional context of Minden-Ravensberg during the Wilhelmine period. Kuhlo's Posaunenchor was deeply rooted in the conservative, patriotic, Lutheran ideology of this region. He consequently envisaged the Posaunenchor as a brass ensemble that reflected the values and norms of Christian social conservatism and epitomised the sacred Lutheran German Empire in sound. The collapse of the German Empire at the end of World War I was seen by those same Lutheran conservatives as the demise of their religio-political vision. Kuhlo, however, resolutely continued in his role of *Posaunengeneral* during the Weimar Republic. After resigning as a pastor in 1922, he dedicated himself more intensively to Posaunenchor, touring with his *Kuhlo-Horn-Sextett* from Bethel and lecturing on the 'sacred' art of brass-playing, while also expressing more anti-Semitic views. His conservative Lutheranism and political conservatism not only drove his support for the Posaunenchor but also steered him towards National Socialism. Eventually, he saw Hitler as the 'saviour' of

38 Kuhlo 1909, pp. 20f.

39 "Von der Geschichte und dem Segen der Posaunenchor" (ibid., pp. 84–141, especially pp. 116–138).

40 See also Schnabel 2003, pp. 97–101.

41 See Gießelmann 1991; Neumann 2005.

42 *Kaiserhuldigung* 1897, p. 10. See Keil 2009.

43 *Kaiserhuldigung* 1897 and Kuhlo 1909, p. 138.

44 Kuhlo published the fourth edition of *Posaunen-Fragen* (Anhang A) in 1933, incorporating minor changes.

the fallen German Empire and became a member of the NSDAP.⁴⁵ My research aims to analyse this complex relationship between religious and political ideologies within the Posaunenchor and underscores the importance of studying brass instruments as cultural artefacts. This includes examining their cultural significance through facets such as manufacture, performance, sound conception and societal reception. Such an approach promises to deepen our understanding of brass instruments and their music in Germany's 'long nineteenth century', recognising instrumentation as a politically and confessionally charged element.

In conclusion, it is necessary to comment on the contemporary trends within the Posaunenchor tradition, based on my field research conducted primarily in Göttingen from 2014 to 2018. I observed that while modern Posaunenchöre still acknowledge Kuhlo as a pivotal historical figure, their stance is decidedly against the resurgence of far-right, populist politics today. Exploring whether and how Posaunenchöre have transcended the political dimensions of Kuhlo's original conception presents a valuable avenue for further research. In the realms of musicology and organology, I advocate against overgeneralising by assuming that Kuhlo's ideas about the Posaunenchor applied across the entire movement. Our focus should rather be on how his individual ideas, in conjunction with regional conditions, were received or rejected in other regions and by subsequent generations. Finally, I must mention Wilhelm Ehmann (1904–1989), a pupil of Kuhlo at Bethel and a musicologist associated with National Socialism. After 'Denazification', Ehmann played a significant role in shaping a narrative through his famous biography of Kuhlo⁴⁶ and his writings on ecclesiastical brass in the Federal Republic of Germany that incorporated *Kantorei* practices. Furthermore, he exercised a noteworthy influence on the historical brass performance revival at the confluence of Protestant church music and German musicology. At this juncture, a thorough critical examination of his ideological stance remains a paramount challenge, not only in Posaunenchor research but also in the broader context of musicology and organology.

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46 See footnote 13.

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