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Diatonic Transpositions on Natural Trumpet –
The Manifestation of the Instrument's Unique
Key Character in the Works of Biber and Bach

DLA dissertation theses

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1. Research criteria

1.1. Subject relevance

In addition to timbre and dynamics, the major triad based key character can also be considered a typical characteristic of general trumpet playing. Through the changes in performance style due to the expanding range of available pitches and growing richness of playing style, the dominant character originating from the nature of natural instruments gradually decreased, but did not completely disappear even with valved instruments becoming more common.

This analysis reveals and examines the earliest tendentious artistic attitude expressed against traditional instrumental style in the oeuvre of composers defining the trumpet playing of the era.

1.2. Problem statement

As the instrument grew longer resulting in lower base notes and as lip technique developed making more and more overtones available, trumpet playing advanced extremely until the 18th century.¹ However, the emergence of clarino—i.e. artistic, virtuoso style—playing compared to static battleground trumpet playing can only partly be explained by changes in the physical structure of the instrument and its playing methods. Despite this, the qualitative approach to innovating trumpet playing as opposed to the attempts to expand the number of pitches available on the instrument, previously limited to natural overtones, has not received adequate academic attention to this day.

1.3. Subject introduction

The idea of separating tonality from the instrument's base note fully matured in the innovative compositional and interpretational technique of Heinrich Ignaz Franz von Biber and Pavel Josef Vejvanovský at the Prince-Bishop's Court of Kroměříž. This period of the composers' inspirational cooperation includes the early years of Biber's Salzburg period. The significance of G minor based works written for the overtones of a natural trumpet in C goes beyond the expansion of harmonic options. Playing in an unconventional tonal system creates the new key character of the trumpet, making the instrument suitable for expressing symbols previously alien to it and for conveying new emotional contents.

¹ Tarr, 58–71.

1.4. Terminology

The term ‘diatonic transposition’ refers to the conciliation of narrow harmonic options—both in the physical and traditional sense—of the modern diatonic scale already prevailing in the 17th century and the natural overtone structure. From the aspect of compositional methodology, that means the creation of a new harmonic environment built on a fictional foundation independent from the physical base note, and from the aspect of trumpet playing, that means adjusting to the new, hypothetical base note. The new terminology places the above mentioned composers’ orchestration method in the context of music theory, as opposed to a practical approach of studying the playing of problematic overtones or those that are rarely used in the era.²

1.5. Research method

Due to the complexity of the subject, the special works being researched are analyzed at two different levels. Compositional and performance aspects of the methodological process are explored separately and in interaction, in view of and relevant to general trumpet playing. The acoustic phenomenon of the unique key character’s development is also a subject of investigation and a base for drawing conclusions. The musical analysis of purely instrumental works follows the music theory aspects given by their nature, while that of vocal works focuses on the relationship with the words and content. Conclusions about performance style are based on the theses of contemporary treatises,³ as well as the author’s performance experience and instrumental experimentations. In order to uncover the compositional intention and motivation, it is essential to carry out certain summarizing and contextualizing work based on the intellectual trends that determined the culture of the given period and location.

1.6. Results

With the application of new terminology and a progressive approach in music theory, the complex phenomenon of diatonic transposition is defined and revealed in the relevant musical works, including the compositional method, the system of performance gestures coming from it, and the acoustic aspects of the above.

² See: Sehnal, 146–147.

³ The works of Fantini, Altenburg and Quantz. See: Bibliography.

2. Dissertation contents

2.1. Diatonic transpositions in the Kroměříž trumpet collection

The transposition method was developed as a result of Biber's creative compositional work. His collection titled *Sonatae, tam aris, quam aulis servientes* presents a wide range of unconventional tonal relations; the collection can be considered a series of methodological exercises aiming to integrate the trumpet into complex instrumental ensembles. Contrary to the popular academic view originating from the misinterpretation of the circumstances in which the Kroměříž works were created and the role of the composers,⁴ the first known presentation of diatonic transpositions can be identified in Biber's *Sonata X. a 5*, in the creation of which the inspirational role of Vejvanovský is undeniable.

The piece falls into the G minor category of the methodological process. The innovative musical language manifests in the form of various sensory associations. The composer creates a dramatic effect with the tools of parallel tempo and key applications, proportionally climbing melody and harmonic tension. The style of expression shows identifiable traces of Jesuit art education,⁵ which defined the composers' intellectual environment. The creative attitude can be derived from the religious order's contradictory relationship with the transcendent.⁶ The Adagio introduction gives special momentum to the instrument's development through creating a natural balance between trumpet and violin playing. Biber creates a new performance practice for the trumpet by using tempos and keys alien to contemporary trumpet playing, as well as by defining a violin-like, plastic playing style.

Vejvanovský used the same method in composing *Sonata a 4 Be mollis*. The piece reveals the difference in paradigm between music theory terms modal and tonal, and the origin of the transpositional method's application in the hypodorian melody formation used in early polyphonic music.⁷

⁴ Cf. Bland, 18. and Brewer, 261–262.

⁵ Rawson, 101–102.

⁶ Ibid. 102.

⁷ Sehnal, 258.

Vejvanovský uses diatonic transpositions as a tool for creating new performance skills. As opposed to Biber, in Vejvanovský's motivation the contradictory form of expression resulting from the effectively minor tonal character is less empathetic. Many of his works have alternative major relations as independent tonal bases. In his practical compositional method originating from his trumpeter identity, pitches outside of the overtone scale have a significant role, and it would be appropriate to establish the use of the expression phantom note to describe these, a term used in medicine and colloquially to mean notes that do not exist physically.

The trumpet fanfares marked *a due*, added to *Sonatae, tam aris, quam aulis servientes* as appendices, preserve the tradition of the genre associated with court protocols in their form and orchestration,⁸ but their melodies and harmonies present new patterns of Biber's progressive compositional work. Besides two duets of G minor tonality, the series has a special modulation exercise containing an independent passage with D minor tonal base. The compromises resulting from separating the physical and the tonal base note of the instrument grow exponentially when two trumpets are used together. In terms of methodology, the application of diatonic transposition without compact complementary parts is a prominent achievement.

Two compositional patterns can be identified in Biber's relevant excerpts. The dramatic way of expression achieved by the contrast of consonance-dissonance is typically paired with polyphonic structures in the even-metre, slower movements. On the other hand, in the lighter, triple-metre passages with vertical structures, overcoming the challenges posed by the transpositional method is realised according to the figurative system.

2.2. Creative motivation and intention, and parallels in methodology

Biber developed the transpositional method for the trumpet following the analogy of violin scordatura in order to convey the ambivalent way of expression and sacral content that can be distinctly found in his programme music. In the Gospel-themed violin partitas known as *Rosary Sonatas*, the composer associates G minor with crucifixion, while he attaches the C major based tuning appropriate for the traditional key character of the trumpet to resurrection. In the latter, the contradictory instrumental imitational playing in the form of a fanfare played by a violin is realized inversely compared to the trumpet sonata.

⁸ Hochradner, 94.

In his experiments of parallel orchestration, Biber was motivated by the search for new timbres. Playing in an alternative scale system brings unique acoustic phenomena. From the fact that the different overtone structure highlighted pitches that are difficult to intonate, we can assume extraordinary intonation gestures from a performance aspect.

2.3. Diatonic transpositions in the cantatas of Bach

Johann Sebastian Bach's cantatas also present the unique key character of the natural instrument, in the creation of which the composer applied Biber's method. Bach was not aware of Biber's work, but the Moravian composers' unconventional use of the trumpet left a deep impression in the closed professional circles of trumpet players.⁹ Bach came to know about the diatonic transposition of natural trumpets through urban musicians, and nested the unique minor relations into his cantatas with a creative intention similar to Biber's.

The heterogenic collection of cantata excerpts¹⁰ is uniform in their thematic content. The relevant works show a direct relationship with liturgical texts, the instrumental expression gains its gesture system purely from the message of the sermon. Certain content elements are conveyed in the form of musical associations. The well-known chorale melodies played on trumpet tinge the message of arias or the voice parts of choral movements. The subject of the words points to Luther's contradictory doctrine of life, the theology of the cross.¹¹

In Bach's special trumpet parts, the position of critical notes resulting from transposition bears more meaning than the unique relationship between unconventional trumpet playing and textual content. The role of special timbres is indicative; the motives of torment and suffering are associated with the effects resulting from unnatural playing. Phantom notes enhance the musical associations of textual content to achieve an extraordinary dramaturgical effect.

⁹ Altenburg, 72–74.

¹⁰ Excerpts from Bach's cantatas BWV 12, 19, 48, 77 and 126 are the subject of analysis.

¹¹ 'Theologia crucis' – Luther's programme defined after Paul the Apostle in the Heidelberg Disputation in 1518. – Wiczián, 18.

2.4. Unique key character and interpretation

Playing works that involve the transpositional method necessarily brings about performance gestures that were not characteristic of traditional natural trumpet playing.

The overtones significantly deviating from equal temperament were raised by narrowing the muscles of the mouth, bridging the differences that became prominent in the new key, which could be as large as a quarter tone. On the other hand, pitches beyond the overtone scale can be played by lowering the adjacent natural note by approximately a semitone by changing the lip position, similarly to the bending technique of modern brass warm-up.¹² The opposite direction intonation gestures result in different timbres, which can be compared to the change in timbre caused by the different string tension on the violin when non-standard tuning is used. While the manipulation of sensitive overtones results in a distinctively sharp, closed effect, phantom notes have a muted, matte timbre.

Intonational gestures overwrite the articulation standards of genre and stylistic models,¹³ reinforcing the contradictory character of performance style. As opposed to the even, metric hard-soft tonguing applied on semiquaver figures typical of virtuoso clarino playing,¹⁴ the unique intonational gestures give an asymmetric, stumbling feel to the playing style.

2.5. Conclusion

The discussed composers use this unique acoustic phenomenon to present the mysteries of establishing a connection with the transcendent, the contrast between life on earth full of suffering and living in Paradise. That is where the paradoxical language and way of expression of these works originate from. The compositional intention behind the created sound is present in the paradoxical characteristics of the pieces, from the theoretical and methodological system to the compositional and performance style to the message of the texts chosen for arrangement.

¹² Stamp, 2. and 21.

¹³ Fantini, 11. and Quantz, 126.

¹⁴ Altenburg, 96. and Quantz, 126.

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