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Giovanni Punto (1746-1803) Cor basse célèbre

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3. Giovanni Punto and the terzo suono

3.1 Multiphonics avant la lettre

The concert Punto and Beethoven played in Prague in 1801, was reviewed in the *Prager Neue Zeitung*:

Dieser Vortrag auf einem sonst so beschwerlichen Blasinstrumente war ganz Gesang, sowohl in der Höhe als Tiefe. In einigen theils angenehmen, theils erschütternden Kadenzen blies der Künstler sogar Doppel- und dreifache Töne. Die gewählten Variationen enthielten wirklich musikalische Neuheiten.¹⁹⁷

(This performance on an otherwise onerous instrument was totally vocal, both in the high and low register. In some partly pleasant, partly shattering cadenzas the artist executed even double and triple tones. The chosen variations contained real musical novelties.)

The only feasible extended technique to produce double tones and chords on the horn, is playing one note on the instrument and humming another one ‘through’ it. If the frequencies of these two sounds are harmonically related, a combination tone or resultant tone will be perceived. The best result gives a pure fifth.

The effect of sounds generated by a normally monophonic instrument where two or more pitches are heard simultaneously, today is called multiphonics.

Generating multiple-pitch sonorities on a brass instrument like the horn, relies on the performer producing one tone in the normal way, with the lips vibrating against the mouthpiece, while humming a second tone with impeccable intonation and dynamic balance. Additional sum and difference tones are created by the mixing of the two tones in the body of the instrument. This is the basis of the extended technique of playing double notes and chords on the horn, which has been known and practiced since the 18th century.¹⁹⁸

As the British-South African musicologist Percival Kirby (1887-1970) explains, when the ratio of two frequencies sounding together is the same as those of two tones from the harmonic

¹⁹⁷ Quoted by Dlabac, 213

¹⁹⁸ Campbell, M.: ‘Multiphonics’ Grove Music Online. <https://doi.org/10.1093/gmo/9781561592630.article.43536>
Accessed 1 July 2022

series, 'the listener hears not only the two notes (...) but also the combination tones produced by the sum and difference of their frequencies.'¹⁹⁹

For instance, if the note played on the horn has a frequency of 200 Hz and the sound sung 'through' the horn a frequency of 300 Hz, both the difference tone of 100 Hz and the summation tone of 500 Hz will be audible too as a result. In practice, the difference tone is usually clearly audible, whilst the summation tone is more difficult to discover within the spectrum of overtones that is typical for a good horn sound. The best effect is achieved when the difference tone is lower than the lowest played or sung tone, as in the example above. In that case the 'missing fundamental' will be very audible.

The same phenomenon is applied in hi-fi loudspeakers, and used in organs when there is not enough space available to build the longest of the organ pipes; two shorter pipes with harmonically related frequencies produce the sensation of a lower note, the fundamental of the relevant harmonic series.

For an introduction and discussion about the phenomenon of the missing fundamental, I refer to the in this case well-documented page from Wikipedia on the subject.²⁰⁰

Hearing and distinguishing chords is a combination of physical sensations and personal interpretation and has been subject to debate since Hermann von Helmholtz (1821-1894), the genius German physicist and physician, was the first one to describe the perception of sound in scientific terms.²⁰¹

For most brass players the skills needed to produce multiphonics are not so easy to master and most of all require well trained ears.²⁰² The technique of simultaneously playing and singing on the horn certainly was in use around 1800²⁰³, but silently disappeared from the scenery until composers started applying it again in the experimental music of the 20th century.

¹⁹⁹ Kirby, P.R.: Horn Chords: an Acoustical Problem', in: *The Musical Times*, 66, 1925; 811–813

²⁰⁰ 'Missing Fundamental' https://en.wikipedia.org/wiki/Missing_fundamental Accessed 21 June 2022

²⁰¹ Von Helmholtz, H.: *Die Lehre von den Tonempfindungen als physiologische Grundlage für die Theorie der Musik*. Heidelberg, 1862

²⁰² Mikulka, M.: *A Practical Method for Horn Multiphonics*. Self-published, n.d.; 4

²⁰³ Coar, B.: *The French Horn*. DeKalb, Illinois, 1947; 53

3.2 Horn chords in the time of Punto

Dauprat briefly discusses horn chords in his *Method*, as we will see later.²⁰⁴ For now it is sufficient to mention that according to Dauprat one needs to play low notes and sing the high ones, with the head voice.

Kling is more elaborate in his *Horn Schule*. He criticizes horn virtuoso Eugène Vivier (1817-1900) for claiming the discovery of the acoustic phenomenon of horn chords in 1843 and mentions Weber's *Concertino for Horn and Orchestra* (1806, revised 1815) as an example of notated multiphonics. He also refers to the information in the *great* method for horn by Dauprat. Unlike Dauprat, Kling argues that it does not matter whether one sings the highest or the lowest of the two notes. In his experience, if the performer creates a sixth or seventh in this manner, a *sympathetic* note will occur, creating a chord (figure 3.1). Funny enough Kling does not mention the fifth as a means to easily give birth to a horn chord.

He seems to be raving on the possibilities for the expert player to delight and astonish an audience with multiple-pitch sonorities on a horn and writes examples of chains of chords (figure 3.1) to be produced in this manner, but then sadly concludes with the remark that serious artists will abstain from this trickery and charlatanism.²⁰⁵

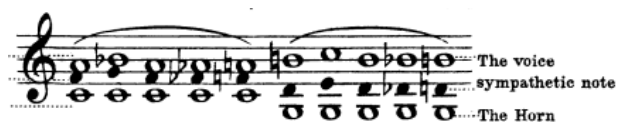


Figure 3.1
Example of horn chords in Kling's *Hornschnle*, page 73

Back to the review of Punto's 1801 Prague concert, quoted at the beginning of this chapter. The critic mentions the fact that Punto produced double tones and *even* chords. If we consider the chords as exceptional manifestations of horn technique and the double tones as more common, then suddenly a whole range of possibilities arises.

²⁰⁴ Dauprat, 152

²⁰⁵ Kling, *Horn Schule*, 72-73

Double tones, by simultaneously playing and humming, are in principle possible with all combinations of tones if they are within the range of the horn and the voice, and as long as the performance is impeccable. If slightly out of tune, annoying ‘beats’, will appear.²⁰⁶ A master like Punto must have been perfectly capable in avoiding those beats.

Kenn, one of the great cor basse soloists of the Paris Opera, who was amongst the first natural horn teachers of the Conservatoire de Paris, where he taught Dauprat²⁰⁷, wrote double tones for the low horn in one of his duos for two horns (figure 3.2).²⁰⁸



Figure 3.2
Excerpt from a duo for two horns by Kenn, with double tones in the second horn part

Kenn’s use of double tones, in an otherwise strictly traditional horn duo, and not in the showcase of an acrobatic solo cadenza, could indicate that horn players did this more often, without composers bothering to notate the option. Kenn found it worth to write the double tones down, whilst they never occur in Punto’s written compositions, as far as we have those available today. In fact, the double tone Kenn writes on all downbeats of the excerpt, the combination of the third and fifth harmonics, leads to the additional difference tone, the fourth harmonic, plus the summation tone, the 8th harmonic. See figure 3.3.



Figure 3.3
Expected sounding result of g plus e’

If composers left a lot to the imagination and good taste of the performer²⁰⁹ (naturally assuming the latter was familiar with the musical language of the period and region), this

²⁰⁶ Mikulka, 34

²⁰⁷ Ostermeyer, R.: ‘Kenn, Joseph’, <https://www.french-horn.net/index.php/biographie/113-joseph-kenn.html>
Accessed 29 August 2019

²⁰⁸ Kenn, J.: *XXV Duos pour deux Cors, Op.2*. Bonn, 1800

²⁰⁹ Goehr, L.: *The Imaginary Museum of Musical Works*. Oxford, 2007; 163

certainly also applies to the music that Punto wrote for himself. It is tempting to experiment with double tones in Punto's compositions and in pieces that were written for him. All we can say for sure is that in 1801 in Prague, in his solo cadenzas, Punto produced double tones and even chords on the horn.

Was it ...*a shoddy trick of no artistic value*, as Morley-Pegge²¹⁰ found it important to state, or another proof of Punto's artistic mastery?

It is interesting to read what Dauprat writes about the topic in relation to Punto:

Il en est de même des doubles sons que l'on fait sur quelques notes graves du Cor, et auxquelles on joint les sons de la voix de tête qui sortent par les narines. Les jeunes gens à qui l'on donne le moyen de produire ces doubles sons, y parviennent presque aussitôt. *Punto* qui les faissait beaucoup mieux que tous ceux qui s'en sont mêlés depuis, en avait lui-même la facilité et le ridicule.

Laissez donc aux charlatans les moyens extraordinaires, qui ne conviennent qu'à la médiocrité, qui n'étonnent que les ignorans, et que repoussent également les connaisseurs et les vrais Artistes.²¹¹

(It is the same with the double sounds that are made on certain low notes of the horn, and to which are added the sounds of the head voice coming out of the nostrils. Young people who are given the means to produce these double sounds succeed almost immediately. Punto, who did them much better than all those who attempted them since, himself admitted how easy and ridiculous they were. Let us therefore leave to charlatans these extraordinary exploits, which only befit mediocrity, which astonish only the ignorant, and which connoisseurs as well as true artists reject.)

3.3 Examples of written-out multiple-pitch sonorities on the horn

Whatever the esthetic judgement will be, Punto was in excellent company. The musical discovery of combination tones is credited to Tartini, the violin player and music theorist. Tartini emphasized the practical and pedagogical use of the phenomenon; intonation of double stops on the violin can be judged by carefully listening to the difference tone, the *terzo suono*.²¹²

Living in a century that was highly interested in novelties, Punto was not the only one who learned about this 'trick' and used it to the astonishment of his audiences. There are at least

²¹⁰ Morley-Pegge, *The French Horn*, 91

²¹¹ Dauprat, 152

²¹² Tartini, G.: *Trattato di musica secondo la vera scienza dell'armonia*. Padua, 1754

three examples of notated multi-pitch sonorities for horn in classical music, one of those very well-known amongst horn players.

A copy of Antonio Rosetti's horn concerto in E $\flat$ major (C49), probably in the hand of horn player Joseph Michael Mayr (1751-1807), includes written out cadenzas and lead-ins.²¹³ In such a lead-in for the third movement, figure 3.4, the part indicates double tones, generating horn chords when performed well.

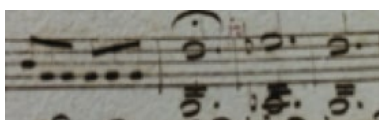


Figure 3.4

Lead-In with double tones for third movement of Rosetti's horn concerto in E $\flat$ major, probably by Mayr

Problematic is the lowest note of the double tone right after the fermata. According to Hiebert there is no solution to this spot other than this is a progression from a Perfect 5th to a Diminished 7th and back to a Perfect 5th.²¹⁴ The fifths are not in question, the seventh is. As written in the manuscript, with the F $\flat$ in the bass, the middle interval is a Major 7th, which does not work. Hiebert's solution is to interpret the F $\flat$ as a F $\sharp$ /G $\flat$. That way the riddle is solved with intervals that make sense in this context.

The approach is the same in the written-out cadenza to Weber's Concertino (figure 3.5), an example of horn chords from the time just after Punto. Different from the examples studied above, by Rosetti (or in fact by Mayr) and Kenn, Weber writes the complete chords that he is expecting, without making clear which notes are to be played, which are to be sung, and which are the expected result of those.

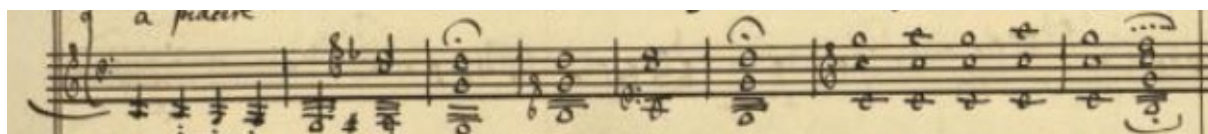


Figure 3.5

Written out horn chords in the solo cadenza of Weber's Concertino for horn

²¹³ Manuscript copies of parts at UC Berkeley (n.d.). Autograph score at the Oettingen-Wallersteinsche Bibliothek in Augsburg. ...*Concerto in Dis...* ...1779 in Wallerstein. *Pour Monsieur Dürrschmied* – probably Carl Türrschmidt (1753-1797), a horn player at the Wallerstein Court. (Information generously provided by Thomas Hiebert.)

²¹⁴ Personal correspondence with Thomas Hiebert

In his already mentioned article on horn chords, Kirby states that Weber was wrong in some cases.

It seems quite certain that all the chords cannot have been played as written.²¹⁵

Musicologist Birchard Coar is more hard-hearted and does not seem to care:

None of the chords can be produced exactly as they stand. (...) The chords as given were to serve merely for an indication (...) to think otherwise would be to suppose that Weber was a fool.”²¹⁶

Horn player and composer Michael Mikulka, in his method for multiphonics, has the same idea and even provides no less than five alternatives to the music Weber composed.²¹⁷ Also Warner ten Kate, a professional horn player and scientist working in the acoustic industry, thinks Weber did not fully understand the nature of horn chords. According to him, the cadenza could be played like in figure 3.6:

The musical score is titled "Andante" and is in 3/4 time. It consists of four staves. The first staff is "Voice in E", the second is "Horn in E", the third is "Diff in E", and the fourth is a lower section with three staves: "Vc.", "Hn.", and "Df.". The "Horn in E" staff has fingerings (1-5) and harmonic series numbers (1-5) written above it. The lower section staves have fingerings (1-5) written below them. The bottom of the score indicates the horn's harmonic series: IV, I6/4, V, I.

Figure 3.6

Warner ten Kate, the solo cadenza for horn in Weber's Concertino. The numbers indicate the partials of the harmonic series. Only difference tones are added in the staff at the bottom. The much weaker summation tones are left out for the sake of clarity.²¹⁸

²¹⁵ Kirby, 812

²¹⁶ Coar, 92

²¹⁷ Mikulka, 115-116

²¹⁸ Ten Kate, W.: Personal correspondence

Weber originally wrote his Concertino in 1806 for Dautrevaux²¹⁹ from Karlsruhe, and revised it in 1815 for another German horn player, Rauch²²⁰ from Munich.²²¹ Whether the chords were already there in the lost version of 1806, we do not know. For whomever he wrote the multiphonics, the composer knew the soloist. It is conceivable Weber attempted to write down as adequately as possible the chords he had heard the soloist play on occasion. The horn player would know what to do. I argue it is possible to emphasize one or two harmonics in the tonal spectrum of a horn tone when humming a certain pitch with it. The chordal result of intervals other than 5ths becomes so complicated, that one can benefit from it by provoking a desired remote partial to resonate. Especially when the played note is a stopped one at the very bottom of the horn range, like the F#, the lowest note of the first horn chord in Weber's Concertino, the generated multiple-pitch sonority will be weak and blurred, at the same time providing opportunities to highlight certain overtones. With the tacit knowledge of the virtuoso, the soloist can take advantage of this twilight zone of horn acoustics.

As far as I know, there is one more example of notated multiphonics in classical horn literature. Josef Rudolf Lewy (1802-1881) was one of the great pioneers of the valve horn. However, from the instructions in his demanding 12 Etudes for horn accompanied by piano it becomes clear he kept using the hand horn technique whenever this seemed desirable.²²² In the 2nd and 4th of the 12 Etudes, Lewy wrote horn chords (see figure 3.7).



Figure 3.7
The last bars of Etude II, Andante, by Lewy. Horn in F

²¹⁹ First name and dates cannot be found.

²²⁰ First name and dates cannot be found.

²²¹ Morley-Pegge, *The French Horn*, 147

²²² Lewy, R.J.: *12 Etudes pour le Cor Chromatique et le Cor Simple, avec accompagnement de Piano*. Leipzig, c1849; 2

Again, the notation of the chords raises questions. How should we interpret the g'' that appears over an already sounding interval in the fourth bar of this excerpt and again three bars later? Is this also a matter of highlighting certain overtones?

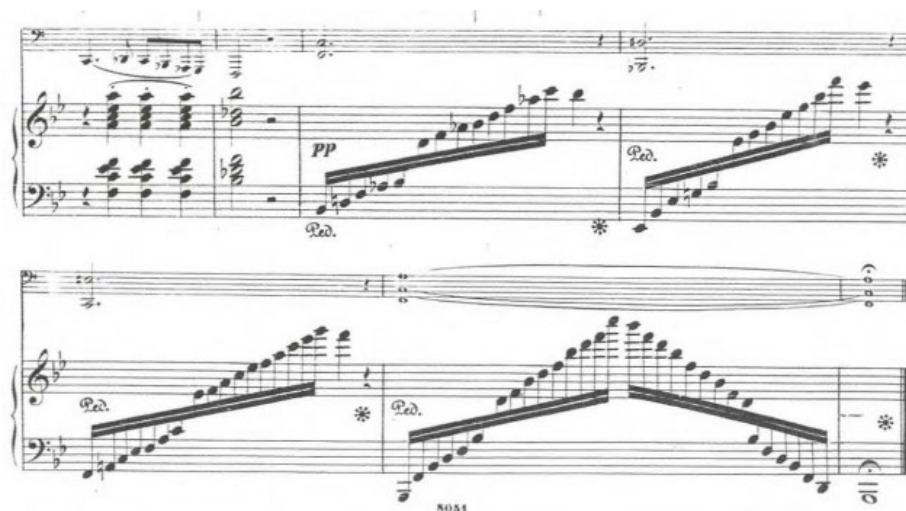


Figure 3.8
The conclusion of Etude IV, Maestoso ed un poco Allegro, by Lewy. Horn in F

Also the final example, figure 3.8, is slightly ambiguous.

In the third bar of the excerpt, Lewy writes a double tone, F – c. Two bars before the end the same double tone comes back, in this case crowned with the resulting summation tone a. (If the F is the 2nd harmonic, the c is the 3rd harmonic, leading to the summation tone of the 5th harmonic, being the written a.) How Lewy expects the a to resonate in the final chord, but not in the first spot, remains a mystery to me.

The above shows, in addition to the ambivalent attitude that horn players and composers had regarding the artistic value of multiphonics, that there was still a lot of unclarity about the possibilities of this extended technique. Except for the double tones noted by Kenn, the examples described above from horn music in and just after Punto's time contain ambiguities and inconsistencies. My conclusion is that wind players often knew what to do to surprise the audience with multiphonic sounds on a brass instrument, and that only a few composers have made attempts to notate this *shoddy trick*.