EARLY EXAMPLES OF MIXED-KEYED HORNS AND TRUMPETS IN WORKS OF C. GRAUPNER[1]

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As interest in the horn as an art instrument broadened during the 18th century, composers sought ways to include it more regularly in orchestral music. One of the ways they did this was to write for horns or horn(s) and trumpet(s) pitched in different keys at the same time (hereafter, mixed-keyed horns or brass), thereby combining the resources of more than one harmonic series and increasing the number of open notes available to them. Though writing for mixed-keyed horns or horns and trumpets became commonplace in the latter part of the 18th century, it is unusual in works from the early 18th century.[2] G.F. Handel, N. Porpora (1686-1768), and J.I. Linek (1725-91) were among those in the early 18th century who were aware of the technique, though they made little use of it.[3] One who exploited mixed-keyed brass more fully was Christoph Graupner (1683-1760), the principal court composer in Darmstadt during the first half of the 18th century.[4] Graupner is unique among his contemporaries in developing this technique systematically in his compositions.[5] Since Graupner anticipated the mixed-keyed brass orchestration procedures that became so important in works of late-18th- and 19th-century composers, his own work merits examination.

An extremely prolific composer, Graupner wrote for horn in 153 of his at least 1,442 cantatas, and also in eight overtures, three sonatas, two concertos, one opera and 99 out of 113 symphonies.[6] Not clear from these raw figures is the increasing interest that Graupner showed in the horn as his career proceeded. His early cantatas require the horn only sporadically – the instances sometimes separated by several years – but by the mid-18th century they appear with increasing frequency. When one also takes into consideration the instrumental works – especially the symphonies, which date from late in his life – one observes in Graupner's works as a whole a rapid increase in use of the horn at mid-century.[7] Eventually the horn was used so frequently that it became a standard and integral part of the Darmstadt orchestra and an important tone color in Graupner's orchestral palette.[8]

Graupner's increasing use of the horn indicates that he must have found it to be more versatile and effective in the musical texture as time went on. Adding much to its versatility was the greater availability of horns pitched in many keys, though the different keys were at first not combined. The frequency with which Graupner used horns rose commensurately with the number of keys in which they could be crooked since they could continue to play when there was a change of key between movements or pieces. Extant manuscript literature in Darmstadt shows that F was Graupner's key of choice for horn from the initial occurrence in 1712 until the eighth in 1722.[9] In the latter year horn in D is required for the first time.[10] Graupner soon pressed the advantage of this new horn key, for the same year marks the first appearance in his works of horns in two different keys, D and F, in separate movements in the secular cantata *Jauchze, Darmstadt, sei voll Wonne!* (That is, there is a change of key

between movements.)[11] Moreover, in *Jauchze* one also finds the first instance of horns and trumpets playing together, in the key of D.[12] Horn parts in G show up soon after those in D, in 1724; C, E♭ and A appear later.[13]

While changing horn keys between movements allowed Graupner to employ horns more frequently, his use of mixed-keyed brass allowed still wider applications. Although mixed-keyed brass procedures would have been possible as early as the 1710s had he *combined* the variously keyed brass instruments scored in his early cantatas (horns in F, trumpets in C or D), Graupner appears not to have become aware of or interested in combining brass instruments in various keys simultaneously until 1728, with the sacred cantata *Nun danket alle Gott*.[14] As can be seen in Table I, Graupner employed mixed-keyed horns and trumpets in eighteen works during the period 1728 to 1753. Since he wrote for horn in at least 266 compositions, this represents a small though significant fraction of the total.

With the resources of two, and eventually three different harmonic series, Graupner was free to employ his brass instruments in novel ways. As Table I reveals, Graupner sometimes combined a single horn in F with one in G. A simplified way of illustrating the advantages of this set-up can be found in Figure 1. Here open notes of the F and G harmonic series on horn have been transposed to concert pitch. This yields a virtual scale, Graupner's characteristically conservative use of the fourth through sixth and eighth through twelfth harmonics notwithstanding.[15] By writing for horns a step apart Graupner has effectively filled in the gaps in the middle register of the horns' scale and is thus able to expand the gamut of pitches available in the middle to low register.

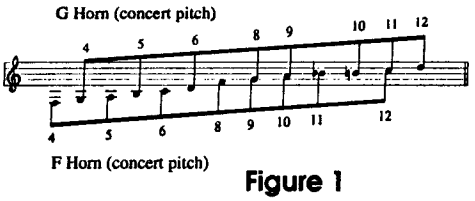
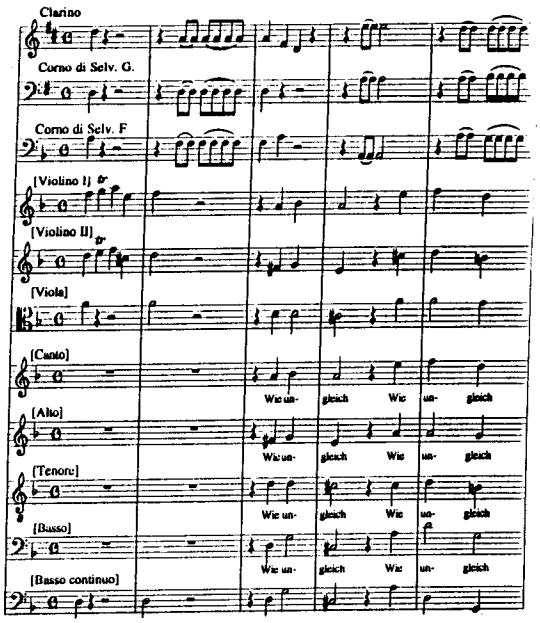


Figure 1
Combined concert-pitch note-gamut for horns in F and G—harmonics 4-6 and 8-12

Graupner often scored together brass instruments keyed a fourth – or more frequently, a fifth – apart. There were specific reasons for choosing these relationships, the most obvious being that with them, brass instruments could participate in the subdominant or dominant key areas more easily. As can be seen from Table I Graupner at times went so far as to combine horns in two different keys with trumpet(s) in yet a third key, the trumpet's open notes adding to those of the horns. By contrast, the few examples of mixed-keyed brass by other composers in the early- and mid-18th century are confined to instruments in two keys a fourth or fifth apart.[16] Table I also demonstrates that Graupner adhered to no rigid formula, but experimented continually with mixed-keyed brass combinations. His innovative procedures of scoring instruments pitched a step apart and with *three* keys in a variety of combinations set him apart from his contemporaries.

The increase in possibilities for open notes resulting from mixed-keyed brass technique allowed Graupner to write for horns and trumpets in two novel ways, which I shall call the "chordal" and "imitative" approaches. The chordal approach simply combines notes from more than one harmonic series to produce intervals or chords, many of which are otherwise not possible on brass instruments confined to the normal series tones, especially in the middle register. A good illustration of this is seen in Example 1, the opening chorus from Graupner's cantata *Wie ungleich ist der Menschen Leben* (1732).[17] Here Graupner calls for *clarino* or trumpet in D, and two horns, a *corn di selv* in G and one in F.[18] As is common in Graupner's scores, the trumpet part is notated at concert pitch while the horn parts are written an octave below concert pitch (see explanation below). In the second measure the trumpet and horns combine to produce a tonic *minor* chord in the mid-range, a chord not common in natural brass writing.[19] On the second beat of measure 3, Graupner abruptly shifts to a tonic *major* chord with an f♯ sounded in both trumpet and chorus, thereby providing a most effective setting of the lines "Wie ungleich ist der Menchen Leben" ("How uneven is man's life"), the juxtaposition of minor and major chords representing the uneven nature of life.



Example 1

C. Graupner: *Wie ungleich ist der Menschen Leben* (1732), opening chorus, mm. 1-5 (see explanation of horn notation in text)

Graupner's notation for horn requires explanation here as it is confusing, though not particularly unusual in 18th-century manuscripts.[20] His notational practices can be divided into two periods. Early scores and scribes' parts from 1712 until 1721 employ what might be called normal horn notation for the time, that is, using treble clef and transposing to C. Later, from 1721 until 1754, Graupner and his scribes use a variety of notational practices. In scores Graupner often uses the bass clef an octave below concert pitch, as seen in Example 1; the individual horn parts, however, are usually written in C in the treble clef, regardless of how they are notated in the score. (Compare the gamut of pitches for F horn in *Wie ungleich* as given in Graupner's score and in the horn part – Figures 2a, and 2b.) No reason for the variety of notational forms is evident, other than that Graupner appears to have

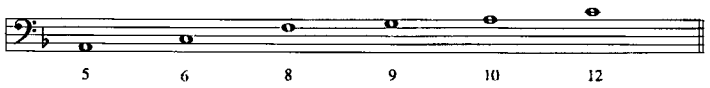


Figure 2a
Pitch-gamut for F horn in Grapuner's score for *Wie ungleich ist der Menschen Leben* (numbers refer to harmonics)

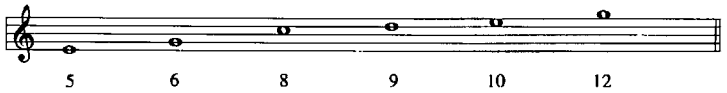
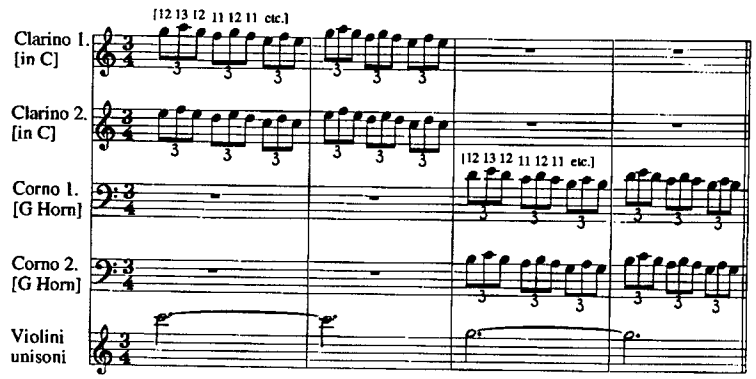


Figure 2b
Pitch-gamut for horn in F as notated in part for Graupner's *Wie ungleich ist der Menschen Leben* (numbers refer to harmonics)

preferred to compose his scores at concert pitch and players preferred to read from parts written consistently in C in the treble clef.

Example 2 illustrates Graupner's second approach, using mixed-keyed brass imitatively, in an overture from ca. 1741-43.[21] Here a statement by two trumpets in the tonic key is echoed by two horns in the dominant in concertante style (again, the horn parts are shown as Graupner notated them, in the bass clef one octave below sounding pitch). The procedure is straightforward: by employing the same harmonics on differently-pitched instruments one effects a restatement in a new key, or emphasizes a new harmony – something not as easily done with horns and/or trumpets in the same key. Variants of the imitative approach also occur, for example when instruments respond to each others' lines but do not repeat them exactly. In addition, the imitative approach highlights timbral differences between shorter and longer instruments, whereas the chordal approach emphasizes a blend of

instruments' timbres. It should be mentioned that in practice, aspects of the two approaches are often combined; the examples presented here were chosen to illustrate each of the approaches in isolation.



Example 2
C. Graupner: *Ouverture a 2 Clarin, 2 Corn di Selv, 2 Violin, Viola e Cembalo* (c. 1743), *Chaconne*
(numbers in brackets refer to harmonics)

Another way in which some 18th-century composers increased the horn's repertoire of notes was to require tones outside the harmonic series (non-series tones) that required lipping or hand-stopping. The examples from Graupner's music presented here, however, include no non-series tones, and this is essentially representative of his writing for horn. There is even a certain avoidance of the 11th harmonic, a tone Graupner's contemporaries routinely used for a written f'' or f♯''. Most importantly, I found no examples of non-series tones used in a solo context. When non-series tones are called for (and they are quite rare) they usually are a result of doubling the soprano line in a chorale at the end of a cantata. Based on an examination of Graupner's horn writing, then, the Darmstadt hornists appear not to have engaged in extensive lipping or hand-stopping of tones.

Works by other composers in the Hessische Landes- und Hochschulbibliothek in Darmstadt indicate that Graupner knew of certain advanced horn-playing techniques, but for some reason he did not adopt them. For example, copies in Graupner's own hand of

works by Telemann, J.F. Fasch, and the Graun brothers show that he was aware of a very virtuosic style of horn writing using the highest portion of the instrument's compass, as well as many non-series tones – including notes in the extreme low register.[22] Graupner's reluctance to use these styles may have had to do with the abilities of his horn players or perhaps to aesthetic preferences on his or his horn players' parts.

As we have seen, Graupner's solutions to the limitations of the natural horn (and trumpet) were mixed-keyed brass procedures utilizing two and three keys and instruments pitched a step apart. These were his most innovative brass devices. Because Graupner's cantatas and orchestral works were not published in his lifetime and their dissemination was slow, direct influence on other composers is not clear.[23] Nevertheless, Graupner's various uses of mixed-keyed brass during the period 1728 to 1753 clearly foreshadow the eventual widespread adoption of this important technique: many late-18th- and 19th-century composers use both the chordal and imitative mixed-keyed brass approaches employed by Graupner. Among composers at mid-century who employed the technique briefly were J.F. Fasch (1688-1758), N. Jomelli (1714-1774), and Leopold Mozart;[24] soon other composers began to use it on a more regular basis. For example, F.J. Haydn first used mixed-keyed horns in 1765 in his Symphony in D Hob. I:35, the "Hornsignal," with pairs of horns in G and D, and later in other works. Leopold Mozart's use of the technique in the 1750s and 60s may well have inspired his son to use it.[25] W.A. Mozart first employed mixed-keyed horn writing at the tender age of fourteen, in *Mitridate,* K. 87 (1770): here there are four horns, two in A and two in E. He continued this practice in such mature works as his Symphony No. 40, K. 550 in G minor (1788) with single horns in B♭ alto and G.[26]

Mixed-keyed horn (and brass) procedures survived in various guises well into the valve era. This is clear in the scores of many 19th-century composers in which horn parts are written in two or more keys. In some of these works a combination of valve and hand-stopping technique was likely used – for example, employing the valves to effect a quick crook change.[27]

Given the advantages of mixed-keyed brass as employed in works of Graupner and latter-18th- and 19th-century composers, why did early-18th-century composers not employ the technique more often? As is evident from the works of Handel and others cited earlier, a number of composers writing in the early 18th century knew of this possibility, but showed little interest in it. Severable plausible explanations come to mind. One is that early 18th-century composers simply did not have the requisite number of players or instruments at hand to employ mixed-keyed brass, especially where hornist and trumpeter were one and the same. But as we have seen in Graupner's works, the technique was possible even with as few as two players playing in some of the most common keys for brass instruments of the time – for example, horn in F or G with trumpet in C or D, or one horn in G with one horn in F. Moreover, any of a number of early-18th-century composers who wrote for pairs of horns and trumpets together could have scored for mixed-keyed brass.[28] They did not, however.

Since lack of instrument or player did not necessarily hinder early-18th-century composers from using mixed-keyed horns (or trumpets), there must have been other

reasons. One may have had to do with traditional horn writing practice. Given that a pair of horns (and hornists) was the norm, composers would have been forced to use individual horns in different keys to employ mixed-key procedure, and this presented certain problems. For example, when single horns are pitched in different keys they cannot as readily play hallmark figures such as "horn fifths" or conjunct melodies in thirds that were the stock-in-trade of traditional horn writing. Moreover, individual horns in different keys could not as effectively reinforce the tonic key in ritornellos due to one horn "laying out" on many pitches. Also, with horns playing in more key areas and thus more continuously in a composition, the usual timbral contrast between brass-dominated tonic and brass-tacet non-tonic sections that had become standard treatment for horns and trumpets was lost. Finally, crooked in different keys, horns and trumpets could not double each other's lines or echo each other as easily in the same key as was common in early-18th-century practice. Therefore, though using horns in more than one key made the horn more flexible in terms of the keys it could play in, it also undermined many traditional horn-writing procedures. One might say that horns, or horns and trumpets, in the same key are in a sense naturally more harmonious or consonant with each other than those in different keys; mixed-keyed horns or trumpets were not "matched." Very likely mixing timbres of instruments – especially with single instruments – of different length did not suit early-18th-century composers' sensibilities nor the aesthetic of the period.

Because of these strong early-18th-century brass-writing traditions, the emergence of mixed-keyed horns and trumpets signifies a departure from then-current orchestration practice. In other words, instead of writing idiomatically using the limited open-note possibilities on horn or trumpet in a single key, composers employing mixed-keyed brass could more easily *orchestrate* their music selecting open pitches available from a combination of instruments. This new orientation became more common as the 18th century progressed. As Bryan has noted, W.A. Mozart appears to have sought a "much fuller harmonic sound" with the combination of horns and trumpets in different keys with oboes in his *Litaniae de venerabili* of 1772.[29] Composers were especially attracted to mixed-key horns because it increased their options in writing for the horn and offered a "greater depth of expression" in using the instrument more frequently.[30] This was doubtless a factor in Graupner's interest in mixed-keyed brass.

The many keys in which the horn was crooked by the middle of the 18th century naturally made it better suited to a wider variety of mixed-keyed applications than the trumpet, and this eventually had a direct impact on orchestration and even on the constitution of the orchestra. In contrast to the common practice of using double winds in trumpet and woodwind sections in the 18th and early 19th centuries, use of four horns in the orchestra – often in mixed-keyed pairs – was already prevalent in the latter part of the 18th century.[31] By the early 19th century this became even more common.[32] Though it is clear that at times composers employed four similarly crooked horns purely for the sonic effect of full-voiced (usually tonic) chords, grounds for the eventual standardization of four horns in the orchestra in the 19th century can also be found in the procedure of crooking pairs of horns in two or more keys simultaneously. With two mixed-keyed horn pairs, as