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Mean as they come

Clues in the elucidation of Handel's harpsichord temperament

According to some recent research, it would appear to be very likely that Domenico Scarlatti's sonatas were written for regular—but not necessarily strict—meantone. Carl Sloane, author of this research, here argues that the same principle can apply to the keyboard music of George Frideric Handel.

In articles published elsewhere¹ I have argued the case for meantone interpretation of Scarlatti's music, but the main points are as follows:

- the large drop in the incidence of E^b and E majors as tonics—these being the most elementary keys having false notes in meantone
- the approximate juxtaposition in the Venice and Parma manuscript copies of the sonatas in A^b major and B^b minor on the one hand and B major and C[#] minor on the other, suggesting that these keys required retuning of an enharmonic note when used as tonics—

by extension, F[#] major would require the retuning of two notes

- the general correspondence between the apparent retuning and the key classification of Gasparini—A^b is not included in Gasparini's list²
- specific contemporary evidence for the use of meantone: in particular a treatise by Antonio Soler

I believe that the findings for Scarlatti can be extrapolated to show that Handel probably also had meantone in mind for his harpsichord music.

A Bone of Contention

Figures 1(a), (b) and (c) show the frequency distribution of major keys in Scarlatti (corpus), his thirty *Essercizi*³ and Handel⁴ respectively. It is exceedingly unlikely that the total absence of C in the *Essercizi* and the almost total absence of D in the Handel are due to temperament, but the absence of E^b in both cases is certainly suggestive of meantone, since the chord on A^b would contain both the 'wolf' fifth and a poor major third.

Figures 2(a), (b) and (c) show the distribution of minor keys in Scarlatti's corpus, the *Essercizi* and Handel. Neglecting those keys in the corpus which presumably involved retuning—B^b minor and C[#] minor—the ambit of keys is the same in all three groups. The similarity between figs. 2(b) and 2(c) is certainly very striking, especially as regards the great prominence of D and G minors, as is the high proportion of F and C minors in the corpus versus that in the *Essercizi*. It is also surprising that 56% (17/30) of the sonatas in the

Essercizi are in a minor key versus 28% (156/548) in the corpus. In Handel, the proportion is even higher, at 60% (116/193).

Whilst the small number of sonatas in the *Essercizi* no doubt weakens the argument somewhat, the minor-key distribution is just what might be expected from a composer using meantone, in which C minor has one false note—A^b—and F minor two—A^b and D^b. It may be that the increased incidence of F and C minors in the corpus reflects a change from more or less strict meantone to an attenuated version—which would suggest a relatively early date for the *Essercizi*⁵—or that in preparing the *Essercizi* for publication, Scarlatti was anticipating the use of strict meantone by purchasers.

The prevalence of minor keys in general in the *Essercizi*, as well as in Handel, might be due to a variety of factors but on the assumption that meantone was used it could be explained

Fig. 1a

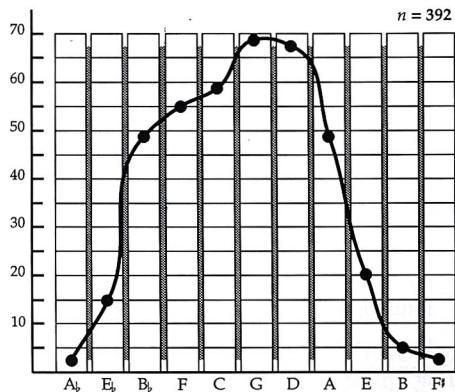


Fig. 1b

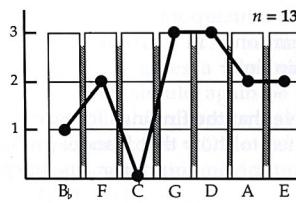


Fig. 1c

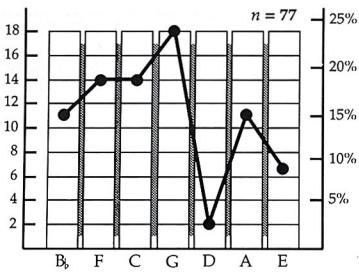


Figure 1: Major Keys

at least partially by a feature of the minor triad—the approximate coincidence of three different harmonics at a pitch two octaves and a fifth above the fundamental—which would seem to confer a degree of resistance to the effects of tempering.⁶ This phenomenon would ameliorate chords such as F, B flat and E flat minors, in which the thirds are severely mistuned, and possibly also good minor chords which in strict meantone have fifths tempered by the relatively large amount of $1/4$ comma. At the relevant pitch, beats from the fifth are formed by the sixth harmonic of the fundamental and the fourth harmonic of the fifth, and would be relatively weak in any case. In the minor triad,

Fig. 2a

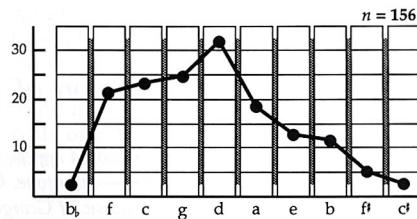


Fig. 2b

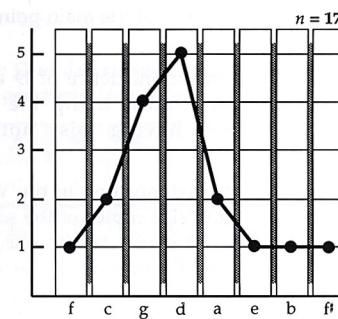


Fig. 2c

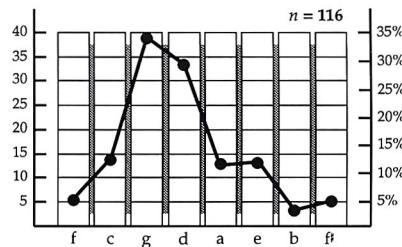


Figure 2: Minor Keys

the added presence of the fifth harmonic of the minor triad at the same pitch should have a 'buffering' effect. I am unable to make up my own mind as the significance of this, but it does seem that the tempering of the fifth is more evident in the major triad than in the minor—the beats which a tuner would listen for in tuning a fifth are an octave lower and are not affected in either case.

To what extent Scarlatti or Handel might have retuned notes for F minor and E major in strict, as opposed to attenuated, meantone is impossible to say.

With regard to the quantitative differences between types of meantone, strict ($1/4$ -comma) meantone gives a difference between enharmonic notes of about 41 cents and a wolf fifth 36 cents wide. The corresponding values for $1/6$ -comma meantone are 20 and 16 cents, a marked improvement.

The preference for G and D minors may be due on the subdominant side to the effect of the false notes in C and F minors, as outlined above, and on the dominant side to the poor major chord on II or the poor dominant major key.

The wolf fifth of strict meantone results in two minor sevenths—on B \flat and E \flat —which are very close in size to the natural seventh (7/4) or conversely to two wide tones, and it is tempting to see this as the reason for the prevalence of two keys, but I am unable to find any evidence, at least in Handel's music, to substantiate such an assumption.

In summary then, the evidence presented above points to the use by Handel of meantone, probably tending to strict meantone rather than to one of the attenuated varieties.

Notes

Counting of pieces: the Scarlatti sonatas were counted separately rather than in pairs and the Handel pieces were counted by movement as in *The New Grove*, i.e., grouping into suites was ignored. This seemed preferable for two reasons: it is known that many of the published suites were assembled from single movements or 'lessons' and it seems perverse to give an entire suite the same weight as a single movement. It is perhaps significant in this regard that the major key distribution is closer to what would be expected when single movements are counted—in the contrary case C major is under-represented. Even if suites are counted, the prevalence of G and D minors is still in evidence, although less pronounced.

- ¹ Sloane, C. 'The case for meantone in Scarlatti', *Continuo* Dec. 1992, pp. 16–17
- ² Gasparini, F. *L'armonico pratico al cimbalo*, Venice 1708, pp. 83–85
- ³ Sheveloff, J and Boyd, M. 'Domenico Scarlatti', *Italian Baroque Masters*, New York/London 1984, pp. 353–61
- ⁴ Hicks, Anthony. *Handel*, ed. Dean, W. New York/London 1982, pp. 157–65
- ⁵ Clark, J. 'Domenico Scarlatti and Spanish Folk Music', *Early Music* vol. 4/1 1967, pp. 19–21
- ⁶ Sloane, C. 'Effects of tempering on relative major and minor chords', *Journal of Sound and Vibration (JSV)* vol. 147/2 1991, pp. 359–60
- _____. 'Corrections to "Effects of tempering . . ."', *JSV* vol. 155/2 1992, pp. 373–74
- _____. 'A further note on tempered minor chords', *JSV* vol. 170/2 1994, pp. 261–62

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