"Mean Counterpoint and Temperamental Choices in the Early Baroque"
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Additional Questions:

Alon Schab: Is there any chance that the RSC stems from chiavette considerations rather than meantone considerations?

Evan Campbell: Thank you for the question, Alon. If in person, I would ask you to expand on this intriguing suggestion. Since this format does not allow that luxury, I am assuming that you wonder whether transposition implied by cleffing inspired Banchieri's rule of strict counterpoint (RSC). For consistency, I will rely here on Banchieri's rule for chiavette transposition (*Cartella musicale*, 1614). He notes that a high clef piece with a flat should be transposed down a 4th and the flat removed; a high clef piece with no flat should be transposed down a 5th with a flat added.

Comparing Banchieri's rule for chiavatte transposition to his RSC is very fruitful indeed. If, for example, a high clef piece with a flat signature (*cantus mollis*) includes a G-sharp, a downward transposition by 4th would transform this into a D-sharp—a pitch not available in the standard meantone gamut. Similarly, if a high-clef piece with a natural signature (*cantus durus*) includes an E-flat, transposition a 5th lower would yield an A-flat. Again, this pitch lies outside the standard meantone gamut.

Therefore, it is possible that Banchieri's RSC is meant to avoid problems when transposing in accordance with the chiavette tradition. It is curious, however, that Banchieri does not relate these two rules in his treatise, despite discussing transposition multiple times. I am very thankful for your suggestion, however, and will follow this up more thoroughly. "

Dávid Budai: Are the limitations (of used semitones) because of meantone temperament, or the used Gamut (hexachords)?

Evan Campbell: Interesting question, Dávid. As with the question above, I wish we were in person and I could ask you to expand a bit more. In lieu of that possibility, I am going to assume you are referring to a hexachordal gamut like that described by Eric Chafe. In that case, it is true that the meantone gamut matches the 12 pitch classes of his theoretical modal-hexachordal gamut. I do not believe, however, that this type of hexachordal gamut predates the meantone gamut. As such, I think the limitations I describe are related to the meantone gamut, not the hexachordal gamut.

Expanding on that point, it seems unlikely to me that temperament was devised to account for a theoretical gamut like that proposed by Chafe—a gamut that is not described in treatises. Rather, meantone temperament seems to have been inspired by the sound of pure thirds. Pietro Aron makes this explicit as early as 1523 in his treatise, *Toscanello in musica*, where he describes a process for tuning based on "sonorous and just" thirds. As noted by James Murray Barbour, Aron's tuning process results in a species of meantone temperament. Since meantone

temperament predates Chafe's hexachordal theory, I would argue that the limitations I describe relate to the former, not the latter.

If your question was about hexachordal solmization instead of Chafe's hexachordal gamut, that requires a different answer. In that case, I would direct you to Stefano Mengozzi's scholarship, which questions the significance of hexachordal thinking in the Renaissance (and even earlier). His article, "'Si quis manus non habeat': Charting Non-Hexachordal Musical Practices in the Age of Solmisation," is a great place to start.

If you would like to discuss solmization in relation to the meantone limitations I describe, or if I misinterpreted your question, please send me an email. I'd love to hear your thoughts and share some of mine: campbeel [at] potsdam [dot] edu

Andrew Chung: Thanks Evan! I'm curious about your thoughts on a speculativa/practica split regarding how much can be known about the performance practice of workaday musicians in small churches, for instance, who seem to have been informally tempering organs in the 15th and 16th centuries simply to make the instruments work, before various meantone schemes were proposed and formalized.

Evan Campbell: Thanks for the question, Andrew. I would defer to scholars such as Mark Lindley, Bruce Haynes, James Murray Barbour, and Paul Poletti, who have written extensively on this topic. I will say that these authors generally agree that Italian workaday musicians were likely using some species of meantone temperament in these earlier centuries. Lindley presents evidence of meantone temperament in the 15th century, for example, in his article "Fifteenth-Century Evidence for Meantone Temperament."

Concerning the early 17th century, Banchieri provides a "practica" method for tuning keyboards in his treatise, *Conclusioni nel suono dell'organo* (1609). He describes a process that begins by using fifths and octaves for diatonic pitches and ending by using thirds to tune accidental pitches. Specifically, he notes that the sharps (F-, C-, and G-sharp) are tuned at the end in relation to diatonic notes a third below—e.g. F-sharp would be tuned in relation to D below. Flats (B- and E-flat) are tuned in relation to diatonic notes above—e.g. B-flat would be tuned in relation to D above. As Lee Garret notes, Banchieri's method results in a species of meantone, although we cannot be sure which species.

Megan Long: Thanks, Evan, for an interesting talk. In response to Todd's question, David Crook has shown how tonal compass is fixed to cantus throughout Lasso's corpus — so there's certainly some evidence from the repertoire that Banchieri's principle holds regardless of whether it was explicitly articulated by other theorists.

Evan Campbell: Absolutely, Megan. And for those interested, David Crook presents his convincing argument in the essay, "Tonal Compass in the Motets from Orlando di Lasso" in *Hearing the Motet: Essays on the Motet of the Middle Ages and Renaissance*, edited by Dolores Pesce. In the same essay, he notes that rare pitch classes (E-flat in *cantus durus* and G-sharp in

cantus mollis) should be identified as special moments by analysts, and provides examples of some rare moments in compositions by Lasso and Palestrina.

Near the end of the essay, Crook hypothesizes that the tonal compass of *durus* and *mollis* resulted from the accidentals that are required to form cadences (6th-8ve). Thus, accidentals were added to the traditional Guidonian diatonic for this purpose. This may be the case, although I think temperament provides a more compelling argument for the specific accidentals that were available. Combined with Banchieri's RSC, certain accidentals are limited to certain signatures. These two limitations account for Crook's observations regarding Lasso and Palestrina, as well as later composers such as Monteverdi and Cozzolani.

Anna Yu Wang: I really appreciated your take here, Evan, thank you. I'm curious about how these mean tone limitations give rise to an "almost-but-not-quite" tonal sound--is it purely in the compromises that have to be made regarding the intervals at which each sequence module starts?

Evan Campbell: Great question, Anna. When I use the term "almost-but-not-quite tonal" I am referring to situations where our tonal expectations are thwarted by meantone limitations. Using Cozzolani's modular sequence as an example, much of her sequence traces a large-scale descending 5^{th} pattern: G to C to F, and then surprisingly, F again! This break in the sequence correlates with a measure of free counterpoint, leading to a final sequential repetition a 6^{th} higher. Cozzolani's contrapuntal adjustment avoids violating Banchieri's RSC, but destroys the uniformity of the descending 5^{th} sequence. Consequently, her meantone adjustment thwarts our tonal expectations: we expect the descending 5^{th} sequence to either continue or end, but not to get "stuck" and then continue by 6^{th} instead of 5^{th}.

More abstractly, meantone limitations are like a container and counterpoint is composed inside. When counterpoint bumps up against the sides of the container, it requires adjustments to avoid spilling over beyond the limitations of meantone temperament. Often, these adjustments conflict with our tonal expectations, which I would argue are rooted in temperaments that became popular after meantone temperament (e.g. irregular, well, and equal). Put another way, as features like sequences, prolongation, and cadential progressions begin to form around 1600, we hear them as nascent tonal elements. They first arise, however, in a meantone system and often behave differently than we expect. The result is the "almost-but-not-quite tonal" sound of early Baroque music.