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The Reconciliation of Tones and Modes in Seventeenth-Century Italian Treatises

At the end of his article “From Psalmody to Tonality,” Harold Powers observed that the particular path on which he had taken the reader was only one of many possible paths through the seventeenth-century that start with psalm tones and end with the major-minor key system: “it is not the only route from the tonalities of the sixteenth century to those of the eighteenth, but it is one relatively easy to follow” (Powers 1998, 333). The path that he takes is multi-national, starting with Pontio and Banchieri, moving through French theorists, such as Titelouze and Nivers, and ultimately leading to several German theorists, Mattheson in particular. Likewise, Lester 1989 sketched a path that starts with Banchieri’s description of the psalm tones, and that also swiftly turns to German theorists.¹ However, because of the dramatic leaps across national borders, these authors have downplayed the internal developments within the separate regional theoretical traditions. Their plotted courses quickly lead away from Italian theory after introducing Banchieri’s church keys, continuing instead with French and German theory.

Alternatively, some recent authors have focused specifically on Italian theory to trace the beginning of the two-mode system in early seventeenth-century Italian music.² As Brover-Lubovsky 2008 showed, seventeenth-century Italian music theory developed for the most part independently from German and French theory, and that the transition

¹ Lester uses the term ‘church keys’, which corresponds to Powers’ term ‘psalm-tone tonalities’.

² Barnett 1998, for instance, argues that focusing specifically on Italian theorists leads to a better understanding of the musical design of works by early eighteenth-century composers such as Corelli.

from psalmody to tonality was not necessarily a product of outside influence.³ Rather, the development of tonality in Italy was guided by Italian traditions, and it arose as a solution to different problems than those that German theorists sought to answer.

This paper focuses on one issue that had a strong impact on the development of tonality in Italian music theory—that is, the reconciliation of the psalm tones and the twelve modes à la Zarlino and Glareanus. Though the psalm tones and modes were numbered in a similar fashion, the two systems did not necessarily correspond. These two musical systems arose from two disparate histories, one ecclesiastical and the other pseudo-classical,⁴ and thus it was in essence a matter of relating on the one hand a rationally-deduced system (the twelve modes), and on the other a system inherited from church tradition (the psalm tones). Relating these two systems, however, was necessary for the proponents of Zarlirian modal theory. In the seventeenth century, in order to legitimize one’s position as a supporter of the twelve modes, it seems that it would have been necessary to explain how the twelve modes related to the psalm tones. The psalm tones were the organizational backbone of Italian music of the time and were endorsed by the church, and thus it was quite unthinkable to reject the psalm tones. Not all seventeenth-century Italians writers subscribed to the notion of twelve modes, such as Angleria and Penna, who instead saw the psalm tones as being the sole system of

³ In “*Il Cembalo de’ colori, e la Musica degli occhi: Newtonian Optics, Venetian Clouds, and Modal Polarity in Early Eighteenth-Century Music*,” a presentation at the 2009 annual SMT conference in Montreal, she claims that the rise of the major-minor system arose during a period in which there was a growing interest in science, and traces this movement of scientization to Venice, from where it quickly spread to the university in Bologna.

⁴ According to Rudolf Steglich 1911 these two perspectives arise from a *klassische Richtung* and an *abendländische Richtung*, which Atcherson 1960 translates as ‘classical tradition’ and ‘Western church tradition’. Steglich 1911 quoted in Atcherson 1960, 7.

organization for polyphonic composition; but the theorists that recognized both the psalm tones and the twelve modes as legitimate entities, such as Banchieri, Zacconi and Bononcini, gave explanations on how these two systems of organization relate. The explanations on the relationship between the modes and tones varied between authors, but the theory ultimately coalesced in the work of Bononcini, who developed a unified system divorced from ecclesiastical dogma. To show this development, this paper compares the modal theories of the three above-mentioned proponents of twelve-mode theory (Banchieri, Zacconi and Bononcini). As we show, the theory of psalm tones and modes reached its most mature form with Bononcini, just before major/minor tonality arrived on the scene.

Banchieri's Church Keys

There are a few reasons why it is useful to start with Banchieri for understanding the psalm tones as church keys. For one, Banchieri is the first to clearly treat the psalm tones as tonal types rather than as specific melodies. As illustrated by Powers, unlike Pontio's exemplary duos which are based on the actual psalm tone melody, Banchieri's exemplary duos

have nothing to do with the melodic material of the respective psalm tones ... Banchieri's duo's do not *embody* the psalm tones, as Pontio's do, they merely *represent* them; they are not the psalm tones themselves, but rather merely tonal types recommended for polyphonic settings of psalm texts for practical use in the liturgy of the Office when the *soggetti* are not from the psalm tones but are instead invented freely.⁵

Second, in Banchieri's lists of psalm tones each of the psalm tones are shown with only one *differentia* (psalm-tone termination). Designating a single final for each psalm tone

⁵ Powers 1998, 291.

helped to make the psalm tones more consistent and memorable, and it allowed for a hierarchy of finals, where the main point of cadence is on the final that ends the piece, and the secondary points, such as the reciting tone or alternate *differentia*, are the recommended places to make internal cadences. Third, Banchieri's presentations of the psalm tones in *l'Organo suonarino* (1605) and in *Cartella mvsicale* (1614) are some of the first to show the psalm tones under particular transpositions.⁶ In *Cartella*, Banchieri indicates that some of the tones are to be transposed to *cantus mollis* for vocal compositions of *canto figurato*, rather than being in their natural form.⁷ Banchieri's list of psalm tones (Figure 1) thus has three transposed tones: the second tone is transposed up a fourth and has a flat in the signature; the fifth tone is transposed down a fourth though without the addition of a sharp in the signature; the seventh tone is transposed down a fifth and has a flat in the signature. The sixth tone is actually not transposed, but it has a flat in the signature. Powers 1998 explains the transpositions as a compression of the overall range of the tones for the ease of the singers. Untransposed, the reciting tones (*mezi*), which are generally the highest pitches in each of the psalms, spread across a major sixth (F-d), while with Banchieri's transpositions they lie within a fourth (G-c).

⁶ Lester 1989 and Powers 1998 use Banchieri's list of transposed psalm tones as the starting point for tracing the church keys to the modern keys. Powers continues from Banchieri to Nivers, in order to show the origins of the added sharp over the D final in the seventh tone.

⁷ The title of the list in *Cartella* is *Trasportato alle compositioni coriste del Figurato*, 71.

Figure 1: List of psalm tones; Banchieri, *Cartella mvsicale*, 71.



In the diagram (Figure 1) Banchieri gives the points of cadence (marked as *cadenze*) for each of the tones, ordered in either ascending or descending order. The first and last cadence points are on the primary final and the final an octave above, while the middle two points are the internal cadences. For tones 3, 4 and 8, Banchieri supplies an alternate set of cadences. The alternate cadences for tones 3 and 8 are transposed down by a second, albeit with only one added flat, lowering the reciting tone to B \flat , and thus compressing the range of reciting tones further to g- b \flat .⁸ For tone 4, the alternate set of cadences keeps the E final, but shifts the internal cadences from G and B to A and C.

Banchieri's transpositions may have been intended to compress the range of the reciting tones, as suggested by Powers, or perhaps they may simply be derived from a

⁸ Note that for tone 8, the two sets of cadences are both given in descending order, whereas for tone 3, the order changes.

more heuristic method of trying all eight tones in their natural and *mollis* forms and finding which ones fall within the normal vocal ranges. Banchieri demonstrates each psalm tone with a pair of duos (112ff.), one in the *cantus mollis* and one in natural form. Of these sixteen duos, only eight are designated as suitable for human voices—which are the eight shown in Figure 1—while the other eight are ascribed to either high or low instruments. Thus, it is not necessarily the case that Banchieri compressed the ranges of the psalm-tone melodies or their reciting tones, especially since he did not use the psalm-tone melodies in the composition. Rather, it seems that he was more concerned about ranges, which in this case, like the ranges of modes, are defined in terms of modal octave.

One peculiarity about tone 3, which Banchieri does not discuss, is that the alternate cadences are shown in descending order, whereas the first set of cadences was in ascending order. Though Banchieri does not discuss what the significance is in placing the cadences in ascending or descending order, it seems that he is suggesting that the psalm tones, like the modes, are either authentic or plagal, and that the psalm tones, again like the modes, alternate between authentic and plagal forms, so that the even-numbered tones are authentic and the odd ones plagal. Nevertheless, despite this unresolved detail, Banchieri's list of psalm tones (with their endings and transpositions) signals a codification of the psalm tones, as the list remained relatively unchanged throughout the seventeenth century. As will be discussed below, Bononcini, writing sixty years later, used the exact same list of psalm tones.

Relating the Psalm Tones to the Twelve Modes

As the set of psalm tones came to be used in the late sixteenth- and early seventeenth-centuries as a collection of musical norms defined by signature, ambitus, and

internal and final cadences, the psalm-tone system began to conflict with the modal system. Actually, in the sixteenth-century there had already been much discussion on relating the eight modes, by which the antiphons were classified, to the eight psalm tones with their various *differentiae* (such as Aron, who blended the modes and tones without ever acknowledging that there were two systems at play). However, the shift in the early seventeenth-century to conceptualizing the psalm tones as tonalities, and the emergence of the 12-mode system as an active component in Renaissance theory, fueled the problem even more, necessitating some kind of reconciliation between these psalm-tone-based and mode-based approaches. For some writers, such as Angleria and Penna, the solution was to reject the twelve modes and to argue that the eight psalm tones were the sole system that should be considered in polyphonic music. Others, such as Zacconi, Banchieri and Bononcini, situated the psalm tones into the system of modes, arguing that the psalm tones are particular instances of some or all of the modes.

Zacconi

In volume II of *Prattica di musica* (1622) Zacconi expounds upon the basic premises that were set forth in volume I, which appeared 30 years before.⁹ In both volumes Zacconi is adamant about the distinction between the twelve modes and psalm tones, calling the former *tuoni armoniali* and the latter *aeri d'Salmeggiare*. However, only in the second volume does he attempt to elucidate on the relationship between the two. The term *aeri d'Salmeggiare* is used, according to Zacconi, as to differentiate the psalms from the true modes; that is to say, Zacconi invented the term to clearly

⁹ Dodds 1998 also discusses Zacconi's description of the psalm tones.

distinguish the psalm tones from the modes, avoiding terms that he claims that others use, such as *tuoni*, *systemi*, or *modi*.¹⁰

Towards the beginning of his exposition on the origins of the psalm tones, Zacconi argues that there are not actually eight or nine psalm tones, but twelve.

Veduto questo, è da sapere; che nella Chiesa Santa di Dio eßendoui tutti i sudetti 12. Tuoni, cosi vi sono i loro aeri da Salmeggiare, cauati dall'istesse modulationi. E quantunque non tutti siano usati, & praticati, con tutto ciò vi sono tutti formalmente. Veniamo al fatto particolare. Hò detto primieramente che eßendo 12. li Tuoni, 12. anco sono gl'aeri da Salmeggiare. Otto de quali sono i praticati, & i communi, e Quattro i poco praticati, e meno conosciuti.

With that said, there is this to know: that in the church of God, as there are the twelve afore-mentioned modes, there are also twelve psalm tones, formed from the same manners of motion [*modulationi*]. Although not all are used, all are present formally. Here we arrive at the crucial point: as I said before, as there are twelve modes, there are also twelve psalm tones. Eight of the tones are used and commonly known, and four are seldom used and less known.¹¹

The four added tones are shown as Figure 2. Zacconi seems to be dancing on the edge of acceptable discourse, as he is essentially claiming that the church authorities were mistaken. To make his argument, he gives examples from the literature, showing that some particular ferial, albeit less well-known, psalms are in fact distinct from the eight. One of the four new psalms is already well known—the ninth tone, which is the *tonus peregrinus*—while, according to Zacconi, the other three (the tenth, eleventh and twelfth tones) derive from the fourth, third and sixth tones, respectively. Zacconi does not describe the differences between tones 10-12 and their related tones, but he does defend the existence of these three by arguing that there are already similarities among the first

¹⁰ Zacconi *Prattica di Musica*, 43.

¹¹ Zacconi, *Prattica*, 43. All translations are by the author unless noted otherwise.

eight tones—such as the second, fifth and eighth tones, which all share the same intonations.¹²

Figure 2: Tones 9-12; Zacconi, *Prattica di musica*, 43-44.

The figure displays four musical staves, each representing a different tone. The staves are labeled on the left as follows:

- Nono Tuono:** The first staff, with the text "exitu Israel de Aegypto Domus Jacob de populo bar baro." below it.
- Decimo Tuono:** The second staff, with the text "Confitebor tibi Domine in toto corde meo In consilio iustorum & congregatione." below it.
- Undec. Tuono:** The third staff, with the text "Domine probasti me, & cognouisti me tu cognouisti, &c. & resurrectionem meam." below it.
- Duodec. Tuono:** The fourth staff, with the text "Laudate Dominum omnes gentes. Laudate eum omnes populi." below it.

Each staff contains a sequence of notes on a five-line staff, with some notes marked with a diamond symbol. The notes are connected by stems, and the staves are separated by vertical bar lines.

Having established that there are twelve psalm tones, Zacconi proceeds by comparing each of the psalm tones to its corresponding mode of the same number.¹³ From this Zacconi observes that eight of the twelve psalm tones relate to their corresponding modes, but four do not (see Table 1a). The four that do not correspond—tones 3, 4, 7 and 8—therefore have two ways of proceeding (*maniere con le quali dette cantilene si possono modulari*, 47): one according to the psalm tone, and one according to the mode (see Table 1b). Unfortunately, Zacconi does not expound on the exact differences of these two ways of proceeding (hence the question marks in the table). Nevertheless, because four tones do not relate to their corresponding mode, Zacconi

¹² Zacconi, *Prattica*, 44. Here, it seems that Zacconi is looking the psalm tones squarely in the face, trying to make sense of the ordering of the psalm and magnificat tones. In reference to all the similarities among the tones, he asks, “how have we not confused these?” [*come non gli haveressimo noi confusi?*]

¹³ Zacconi assumes the reader knows the first eight psalm tones, and thus never shows them, so it is not clear if he is using Banchieri’s transpositions.

claims that there are in fact sixteen *maniere* ('manners of modulation')—that is, twelve plus four. Furthermore, Zacconi says that two more *maniere* can be added: the seventh tone can end with the *differentia* on D instead of A, giving what Dodds calls a diatesseron ending,¹⁴ and the eighth tone can end on C instead of G. These two additions raise the total number of 'manners of modulation' to eighteen.

Table 1a: Zacconi's correspondences between the twelve tones and the twelve modes.

Mode/Tone	1	2	3	4	5	6	7	8	9	10	11	12
			*	*			*	*				

* indicates that the mode and psalm tone do not correspond

Table 1b: Possible options for those that do not correspond.

	As Mode	As Psalm Tone
Tone 3	e-b-e ¹	e-a-e ¹ ?
Tone 4	B-e-b	?
Tone 7	g-d ¹ -g ¹	a-d-a ¹ ?
Tone 8	d-g-d ¹	g-c ¹ -g ¹ ?

Zacconi's approach, then, is to place the modes and the psalm tones side-by-side, and to count the number of discrepancies. Though he was surely aware of the effects of transposition—he writes on how one can turn the first mode into the ninth by adding a flat in the signature—his method of comparison does not attempt to explain the psalm tones as transpositions of modes unless they have the same number. Overall, his style appears to carry some of the older tradition of comparing modes to tones, and does not hold strictly to the octave-species, as does Bononcini's approach.

¹⁴ Dodds 1998, 133. Having A as the final is a clue that Zacconi is in fact not referring to the *cantus mollis* form of the seventh tone, as it would be with Bachieri's transpositions.

Banchieri

In *Cartella mvsicale* Banchieri is explicit about the distinction between the psalm tones and the twelve modes, in that he calls the former *tuoni* and the latter *modi*.¹⁵ He relates the two in his exposition on the twelve modes (112-137), making the connection between tones and modes in a couple paragraphs of text,¹⁶ in the titles of the exemplary duos and in a diagram (Figure 3 below) following the duos. For each of the twelve modes, Banchieri gives a single duo shown twice—once in *cantus mollis* and again in natural form—followed by a table of imitation points, principal degrees and finals, in both the *mollis* and natural forms.¹⁷ In the title of each of the twelve duos, Banchieri gives the tone to which the mode corresponds—e.g. *Duo del decimo modo Plagale, & corrisponde al Settimo Tuono*.

Table 2 lists all of the correspondences Banchieri makes in these twelve duo titles. As can be seen, not all of the modes correspond to a tone, in particular modes 3-7. Moreover, Banchieri does not relate any of the twelve modes to the third and fourth tones, though he includes the *tuono misto*.¹⁸

¹⁵ For the most part, Banchieri is consistent with the uses of *tuono* and *modo*, but as Dodds mentions, he is not totally consistent (see Dodds 1998, pp. 111-112 for one such inconsistency).

¹⁶ Some of the following discussion on Banchieri has been already covered in Powers 1998, Dodds 1998 and Barnett 1998, but will be presented again for clarity. Dodds 1998 translates and discusses this passage of text. See pp. 141-143.

¹⁷ These latter terms, translated from '*modo di fugare, corde, e cadenze*' come from Powers 1998, where he uses them in his discussion of pp. 84-87 of the *Cartella*.

¹⁸ The *tuono misto* is the *tonus peregrinus*, which is normally set to Psalm 113 *In exitu Israel*.

Table 2: Correspondences of tone and mode in Banchieri's *Cartella mvsicale*.

Mode	1	2	3	4	5	6	7	8	9	10	11	12	
Tone	1	2	no correspondence					8	tuono misto	7	5	6	

There are a couple of contradictions within Banchieri's exposition. First, in the short passage that explains the relationship between modes and tones, Banchieri states,

Ma parmi però bene avertire il novelso Compositore, delle difficoltà con diligente esame ricercate, che sopra essi scorrino, & che realmente in ogni compositione, gl'otto overo nove Tuoni Ecclesiastici entrano ne gli dodeci modi, & gli dodeci modi, volendogli praticabili a più di due voci, non eccedono gli otto, ò nove Tuoni, si come della quatro corde cadenziali, che sono Superiore, Mezzana, Indifferente, & Finale, condòsce così ne gli' Autentici ascendenti, come ne gli Plagali discendenti.

But it still seems to me wise for the new composer to take note of the difficulties that arise in the modes with a diligently conducted examination, and to note that actually, in every composition, *the eight or nine ecclesiastical tones enter into the twelve modes*, and the twelve modes—if one wishes to use more than two voices—do not exceed the eight or nine tones, with respect to the four cadential notes: the superior, middle, indifferent and final. This is seen both in the ascending authentic modes and in the descending plagal ones. [emphasis mine]¹⁹

Banchieri seems to be suggesting a complete correspondence between the modes and the ecclesiastical tones; that is, all eight (or nine) tones can be explained as instances of some of the twelve modes. However, as just pointed out in Table 2, tones 3 and 4 do not correspond to any of the twelve modes. Banchieri does not comment on the origins of tones 3 and 4, but by not attributing them to any mode he is perhaps suggesting that they lay outside of the twelve modes, as was suggested by Zacconi.

Second, in the diagram that precedes the previous quote (*Cartella*, 136), shown as Figure 3, the eight tones are shown as systematically alternating between ascending and descending forms, suggesting that the odd numbered tones are authentic and the evens are

¹⁹ Translation from Dodds 1998, p. 107.

Banchieri observed a parallelism between the psalm tones and the modes, and pointed out that only a certain few of the modes are actually used in the church performance tradition. Whereas Zacconi attempted to mediate tones and modes by comparing them side-by-side, Banchieri explained the tones in terms of instances of modes at certain transpositions levels. For him, the number of the mode that the tone corresponded was not based on a predilection for relating tones to modes of the same number. Nevertheless, if one considers Zacconi's tones 10-12 as being derived from tones 4, 3 and 6, respectively, then it becomes apparent that Zacconi's and Banchieri's explanations are actually closer than one might expect (see Table 3).

Table 3: Comparison of correspondences by Banchieri and Zacconi

Mode	1	2	3	4	5	6	7	8	9	10	11	12
Banchieri's Tones	1	2						8	tuono misto	7	5	6
Zacconi's Aeri	1	2			5	6			tuono misto	4	3	6
										"A"	"C"	"C"

Though the two do not agree on modes 5-6 and 8, there is a notable connection between how they explain modes 10-12. While Banchieri associates mode 10 with the seventh tone and Zacconi associates it to the fourth tone, they both make a connection to an A ending—that is if one considers Banchieri's seventh tone in natural form rather than in *cantus mollis*. As for mode 11, they both relate it to a tone with a final on C. Banchieri relates mode 11 to the fifth tone, which as mentioned above is transposed from F, while Zacconi, in contrast, relates mode 11 to the third tone, which has C as the reciting tone. Thus, although their methods of comparing modes and tones are on the surface quite different, the results are surprisingly close.

Bononcini

Bononcini discusses *tuoni* in Part II of *Musico pratico*. Despite his strict adherence to 12-mode theory, Bononcini does not use the term *modo*, but instead uses *tuono* for both the twelve modes and the psalm tones, though often he uses the full term *tuono ecclesiastico* for psalm tones in their melodic form. Bononcini does not actually refer to the psalm tones as tonalities, but instead speaks of commonly-used tones (*tuoni ordinariamente praticati da Compositori*).²¹ In the chapter on the tones ‘ordinarily used by composers’ (chapter 17) Bononcini has not yet mentioned psalms (i Salmi), so the connection between Banchieri’s list of psalm tones and Bononcini’s list is particularly striking: the two lists are essentially the same, yet for Bononcini the tones no longer carry the context of their liturgical function. Because of the close correspondence between the two, it is reasonable to think that they are related, and that perhaps the notion of psalm tones as a set of tonalities spread from the church to the public arena in the course of the seventeenth century.

Bononcini’s discussion is laid out into three consecutive parts: on the twelve modes, on the tones ‘ordinarily used by composers’ and on the psalm tones. In a couple of paragraphs that begin the chapter on the tones ‘ordinarily used by composers’ (chapter 17), and in a series of exemplary duos that follow, Bononcini relates each of the eight tones to one of the twelve modes. The finals and signatures of the tones given here by Bononcini correspond exactly with Banchieri’s tones, shown above as Figure 1. For the fourth tone Bononcini uses Banchieri’s alternate set of cadences, which has internal

²¹ Bononcini, *Musico pratico*, 132. Similarly, in *La regola Angleria* Angleria discusses *tuoni secondo l’uso moderno*; Angleria, p. ??.

cadences on A and C. The classification schemes of both Banchieri and Bononcini are shown in Table 4. As can be seen, both authors do not find any correspondence for modes 3-7, and of the seven remaining modes they agree to which tones modes 1, 2, 8, 11 and 12 correspond, though they differ over modes 9 and 10.

Table 4: Comparison of modes used by Banchieri and Bononcini to describe the tones .

	Banchieri	Bononcini
Mode	Tone	Tone ‘ordinarily used by composers’
1	1	1
2	2	2
3		
4		
5		Do not correspond
6		
7		
8	8	8
9	<i>tuono misto</i>	7
10	7	3 and 4
11	5	5
12	6	6

Table 5 reorders Table 4 as to show the tones in terms of mode, adding the finals and signature for each tone. Though Banchieri did not relate tone 3 and 4 to any of the modes, Bononcini explains tones 3 and 4 as being two versions of mode 10.²² Because of this duplication, Bononcini has covered the eight tones (excluding *tuono misto*) with only seven modes, and thus he concludes that there are seven, and not eight, tones ‘ordinarily used by composers.’ Furthermore, while Banchieri related tone 7 to mode 10, Bononcini

²² Berardi, in his *Miscellanea mvsicale* (1689), makes a similar connection: he finds a likeness between modes 3 and 10. Even though Berardi’s exposition on the modes adheres strictly to twelve-mode theory, and though he is referring to mode 3 and not tone 3, he is able to make the connection between modes 3 and 10 since he sees A as being a potential final for mode 3, and obvious cross-over from the psalm tones.

relates it to mode 9, which Banchieri used for *tuono misto*. In short, although both Banchieri and Bononcini use the same seven of the twelve modes, they parse them out differently to the various tones.

Table 5: Comparison of tone assignments by Banchieri and Bononcini.

Tone	Banchieri		Bononcini	
	Mode	Final	Mode	Final
1	1	G (♭) and D (↓4)	1	D
2	2	G (♭) and D (↓4)	2 (↑4)	G (♭)
3			10	A
4			10	E
5	11	F (♭) and C (↓4)	11 (↓8)	C
6	12	F (♭) and C (↓4)	12 (↓5)	F (♭)
7	10	D (♭) and A (↓4)	9 (↓5)	D (♭)
8	8	C (♭) and G (↓4)	8	G
<i>tuono misto</i>	9	D (♭) and A (↓4)		

Table 6 gives the correspondences between the modes and tones given by Banchieri, Zacconi and Bononcini. As can be seen, Bononcini's description of the tones is very similar to Banchieri's, and less similar to Zacconi's, though both Zacconi and Bononcini relate mode 10 to the fourth tone, which has cadence points on A, C and E.

Table 6: Correspondences between tones and modes by all three authors

Mode	1	2	3	4	5	6	7	8	9	10	11	12
Banchieri's Tones	1	2						8	<i>tuono misto</i>	7	5	6
Zacconi's Aeri	1	2			5	6			<i>tuono misto</i>	4	3	6
Bononcini's Tones	1	2						8	7	3 & 4	5	6

Even though for Bononcini mode 10 'serves in place' for both tones 3 and 4, the two tones are treated differently; but the difference is subtle. For Bononcini tones 3 and 4

both have cadences on A, C and E, are both labeled as plagal—and thus theoretically have the impulse towards having descending subjects—and they both have an e-A-E octave species (unlike Banchieri, see Figure 1). The only difference between the two is their final. Whereas according to Banchieri tones 3 and 4 could have been described as a sort of collateral pair, Bononcini's model suggests two kinds of endings for the same modal species, one on the top note of the modal fourth, and one on the bottom. The exemplary duos for tones 3 and 4 illustrate well just how close tones 3 and 4 are for Bononcini (see Figures 4a and 4b).²³ The two duos are exactly the same, internal cadences and all, except that the duo for tone 4 has an extra cadential passage that leads from the cadence on A to another cadence on E. In modern terms, the difference is a matter of having a full cadence or a half cadence.²⁴ Because of the extreme closeness between the third and fourth tones, then, differing by only the final cadence, Bononcini claims that these two tones are both instances of mode 10, and that for this reason there are only seven 'commonly-used' tones, and not eight.

²³ These two duos are also discussed in Barnett 1998.

²⁴ Barnett 1998 gives an excerpt from Corelli's Op.1 no. 4 as an example of a piece that is marked as a tone 4 piece, and that, in modern terms, is an A-minor piece that ends on the dominant.

Figure 5a: Duo for tone 3; Bononcini, *Musico pratico*, 134.

Duo del Decimo Tuono nelle sue proprie Corde naturali, che serue in luogo del terzo

Figure 5b: Duo for tone 4; Bononcini, *Musico pratico*, 135.

Duo del Decimo Tuono nelle sue proprie corde naturati, che serue in luogo del quarto

Cadenza finale del quarto Tuono

Returning back to the final cadence of the tenth tone, Bononcini requires a different treatment for the cadence on E as cadences on other pitches. In the following passage he warns that one cannot make a regular 4-3 cadence on E in more than two voices, as is possible over finals on D, C, A, G and F, which naturally have a whole step over the final. He then gives some examples on how cadences on E should be made in more than two voices if the *tuono* has an F \sharp .

Notisi, che non si può far cadenza regolare di quarta, e terza (particolarmente nello stile à Capella) se non in quelle corde, dopo le quali immediatamente verso l'acuto segue l'interuallo d'un tuono naturale, come quì:

[Figure]

che facendola in questa corda E, *nel terzo*,

Take note that one cannot make a regular cadence of the fourth and third [4-3 susp] (particularly in the à Capella style) if on those notes the interval of a natural *tuono* does not immediately follow in ascent, as shown here.

[see Figure 6a]

When this happens on the note E in the

quarto, e nono, decimo, undecimo, e duodecimo Tuono nelle sue corde naturali, farà irregolare, poiche e cadenza *del primo, secondo, settimo & ottavo Tuono* trasportati vn tuono più alto, le quale non è regolare d'alcuno de i sudetti Tuoni, *terzo, quarto, nono, decimo, undecimo, e duodecimo*; mà volendo, che sia regolare, si deue fare nel secondo modo à più di due voci, & in quest' altra corda B, *nel terzo, quarto, settimo, & ottavo Tuono* nelle sue corde naturali,
[Figure]

si deue fare nell'istessa maniera per essere corda regolare di ciaschedun di loro, e la cadenza finale del terzo, e quarto Tuono à più di due voci si deue fare in vno di questi modi.
[Figure]

third, fourth, ninth, tenth, eleventh and twelfth tones having natural notes [without \flat], it will be irregular since it is a cadence of the first, second, seventh and eighth tones transposed a tone higher, which is not regular in any of the afore-mentioned tones—the third, fourth, ninth, tenth, eleventh and twelfth tones. If one wants it to be regular, it has to be done in this second way [referring to Figure 6b] in more than two voices on the note B, in the third, fourth, seventh and eighth tones having natural notes.

[see Figure 6b]

One must do it in the same way [for E] to be a regular note in each one of them, and the final cadence of the third and fourth tones with more than two voices must be done in one of the following ways.²⁵

[see Figure 6c]

For Bononcini, a 4-3 cadence on E may be regular—that is, naturally occurring in the mode—when the mode is transposed so that it has an F \sharp , but not in the modes with a natural sign in the signature which have E as a final or internal cadence point. For the latter modes, the cadence on E must be treated like the ones in Figure 6c, which have an approach to the final in the bass either by a semitone or a fourth down (or fifth up). According to Bononcini, the cadence on E does not have to be a phrygian cadence, with the F-E motion happening in one of the voices, and a D-E motion in another, such as the first cadence in Figure 6c; the cadence on E can be made in other ways, such as the second cadence in Figure 6c, which is a cadence with an F \sharp that passes up to G \sharp (though here with a C \flat -B motion), and the third, which is a simple cadence with a 5/3 moving to

²⁵ Bononcini, *Musico pratico*, 130-2.

another 5/3. For Bononcini, then, the fourth tone does not necessarily need to end with a phrygian cadence, but can end with a number of possible cadences.

Figure 6a: Bononcini, *Musico pratico*, 130.

Figure 6a shows a musical score for three staves. The top staff is in treble clef, the middle in bass clef, and the bottom in a lower bass clef. The music consists of a sequence of notes with various accidentals. Fingerings '4 3' are indicated below several notes in the bottom staff.

Figure 6b: Bononcini, *Musico pratico*, 131.

Figure 6b shows a musical score for three staves. The top staff is in treble clef, the middle in bass clef, and the bottom in a lower bass clef. The music is divided into two first endings, labeled '1.' and '2.'. A 'misprint?' annotation is placed below a note in the middle staff. Fingerings '4 3' and '7 6' are indicated below the bottom staff.

Figure 6c: Bononcini, *Musico pratico*, 131.

Figure 6c shows a musical score for three staves. The top staff is in treble clef, the middle in bass clef, and the bottom in a lower bass clef. The music consists of a sequence of notes with various accidentals. Fingerings '7 6', '5 #6', and '5 3' are indicated below the bottom staff.

Turning back to the five modes that were not given any correspondences to tones ‘ordinarily used by composers’ (modes 3-7), Bononcini gives the following explanation as to why these modes are not commonly used.

Il terzo, e quarto Tuono non vengano vsati perche à più di due, ò trè voci non

The third and fourth modes are not used because they are not realizable

sono bene praticabili, per mancanza della quinta perfetta nella cadenza di questa corda B regolare de i detti Tuoni: Il quinto, e sesto non si praticano, perche sono troppo aspri, per la relazione del Tritono, che si ritrova trà la loro corda finale F, e questa B, e per vltimo il settimo vien tralasciato, per essere quasi vniforme all'ottauo, non essendoui altra differenza, che la sopra descritta nell'accennato Decimosesto Capitolo;

in more than 2 or 3 voices due to the lack of the perfect fifth on the cadences of the regular note B. The fifth and sixth modes are not used since they are too harsh, due to the tritone relation found between the final note F and the B. Lastly, the seventh mode is omitted since it is almost uniform with the eighth, having no differences except what was described before in Chapter 16.²⁶

Bononcini makes it clear that mi- and fa-tonalities are not viable tonalities for polyphonic writing because of the B-F interval. However, Bononcini makes no remark on the fact that there is still the problem of the B-F interval in the seventh and eighth modes when forming a cadence on the mediant in more than two voices, as he did in his exemplary duos for the modes (119ff.). Instead he takes issue only with the seventh mode, and not the eighth, as being too similar to the other.

Nevertheless, Bononcini's comment is provocative, in that in it he observes that in polyphonic music there are only seven usable modes. For Bononcini these seven modes are not just those used in church music, but are the modes that make up the tones 'ordinarily used by composers.' Whereas for Banchieri these seven modes were merely descriptions of the eight tones, and thus were intended for liturgical use, for Bononcini these seven modes are the modes to be used when writing for more than two voices, whether or not the music is intended for church service.

Despite Bononcini's attempts at a clear and systematic presentation of the tones in relation to modes, he acknowledges some common exceptions. At the end of chapter on

²⁶ Bononcini, *Musico pratico*, 141. The difference found in his Chapter 16 to which Bononcini is referring here is the authentic-plagal distinction and the direction of the subject (up for authentic, and down for plagal).

the transposition of modes (ch. 20), in which he demonstrates how to apply correct signatures when making transpositions by certain intervals, Bononcini recognizes four exceptions (see Table 7). Two exceptions occur when transposing down by second, two more when transposing down a minor third, and all exceptions have one too few of the given accidental. For Bononcini, these exceptions are not given only to accommodate the tradition as exemplified by the works of other composers, as he also uses these exceptional transpositions in his own compositions. For example, in Bononcini's *Sonate da chiesa*, op. 6, the twelfth sonata, which is in the twelfth mode transposed up a minor third with the final on E \flat , only has two flats in the signature.²⁷

Table 7: Exceptional signatures when transposing the ‘commonly used’ tones; Bononcini, *Musico Prattico*, 148.

Mode	Natural Final/Signature	Transposed	Becomes Final/Signature
1	D \sharp	$\downarrow 2$	C \flat
8	G \sharp	$\downarrow m3$	E $\sharp\sharp$
11	C \sharp	$\downarrow 2$	B \flat
12	C \sharp	$\downarrow m3$	A $\sharp\sharp$

Conclusion

Banchieri's explanation in the *Cartella*, though short, became a model for others, particularly Bononcini, on how to relate tones and modes, a model that explained the psalm tones as instances of certain modes at certain transpositions. Unlike Zacconi, Banchieri did not try to match up the tones and modes side-by-side, but held to the idea that the psalm tones were not necessarily in the same order as the twelve modes. In this way, Banchieri explained the tones as being instances of seven of the twelve modes,

²⁷ See Barnett 1998 for a table of the finals and signatures used in the *Sonate*.

despite the fact that he corresponds the modes to only six of the eight psalm tones.

Bononcini's account of the tones 'commonly used by composers,' like Banchieri's psalm tones, drew on only seven of the modes. However, with Bononcini, all eight of the psalm tones are covered, including the third and fourth tones. Bononcini classified the fourth tone as being the same as the third, but with a 'half cadence' ending, thus clearing any remnants of the fourth tone as being a mi-tonality.

There are, then, several developments within this period in the seventeenth century, some of which are: 1) the explanation of tones as instances of modes; 2) a hammering down of the relationship between signatures and transpositions; and 3) a growing trend towards classifying a large number of modes to a smaller number of usable modes. What is needed to continue this story of the tones into the eighteenth century is an investigation of how this feeds into later theories of *tuoni* as the major-minor system begins to arise in Italy. There may or may not be a strong connection between Bononcini and later Italian writers, such as Geminiani, but nevertheless, it deserves attention.

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