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IS MODE REAL?¹

Pietro Aron, the octenary system, and polyphony

by HAROLD POWERS

In English-language college and music school catalogues one often finds a course listed under the name of „Tonal counterpoint“, whose subject matter we would understand to be polyphonic music by or in the manner of J. S. Bach. Each of the two words in the course title „Tonal counterpoint“, moreover, implies a polar counterpart. The word „counterpoint“ forms a familiar contrastive pedagogical pair with the word „harmony“, and in any college or music school catalogue where „Tonal counterpoint“ appears as a course title one can be sure that „Harmony“ will also appear somewhere as a course title; and though the course title is usually given without any limiting adjective, the expression „Tonal harmony“ is implied. And more than that, when a course is listed as „Tonal counterpoint“ (rather than merely „Counterpoint“), one may well find listed another course entitled „Modal counterpoint“. The adjective „modal“ is included to indicate that the subject matter will be counterpoint not in the style of Bach but rather in the style of Palestrina, or at least some version of the 18th-century Fuxian simulacrum of it. The implication is that Palestrina's counterpoint is „modal“ in the same way that Bach's is „tonal“; the words „modal“ and „tonal“, in short, form another familiar contrastive pair.

Each of these explicitly contrastive pairs—both the two nouns in „harmony“ versus „counterpoint“ and the two adjectives in „modal“ versus „tonal“—is a spurious opposition of terms, spurious in that the terms in each pair are heterogeneous: the notions each identifies belong on different planes of discourse. One of the terms in each pair, in its simplest sense, implies an objectively describable phenomenon—„counterpoint“ and „tonal“—while the other refers to a theoretical construct: „harmony“ or „modal“.

I need not dwell on the familiar (and spurious) coupling „harmony and counterpoint“. The word „counterpoint“ denotes a discipline and a technique: a counterpoint text, be it „tonal“ or „modal“, is at base a cookbook of voice-leading procedures. „Harmony“, to the contrary, connotes a theory about the existential nature of simultaneities and their proper succession, no matter

¹ This essay originated in a paper read at the annual meeting of the Society for Music Theory in Vancouver, November 1985. It has been presented in various revisions several times since, including the colloquium „Tonal coherence in pre-tonal polyphony“ held at Princeton in April 1987. This version was presented at the colloquium „Modus und Tonalität“, held at the Schola Cantorum in Basel in March 1991. Its content, considerably rearranged, will form part of a book in preparation entitled *Is mode real? Tonal coherence in pre-tonal polyphony*, under contract with the University of Chicago Press.

how many rules of thumb for doing exercises may be prescribed by some particular propounder of a harmonic theory. A bass note or a bass line is concrete: a chord root or a labelled chord succession is a construct. Counterpoint texts tend to resemble one another both in the underlying principles of voice-leading they espouse and in the kinds and orderings of rules they provide, but no one could accuse the harmony texts of, let us say, Heinrich Schenker and Hugo Riemann, or of Allen Irvine McHose and Walter Piston – or for that matter, of Arnold Schoenberg, Paul Hindemith, and Roger Sessions – of being mutually compatible, either in premise or in practice.

The contrastive pair of adjectives „modal“ and „tonal“ is similarly heterogeneous: the words do not belong on the same semantic continuum. As an abstract term, „tonality“, without a definite or indefinite article, can of course be very theoretical; we need only recall Fétis's multiple significations for *tonalité* even within the confines of Western European musical history, his evolutionary sequence of *musiques unitonique, transitonique, pluritonique*, and *omnitonique*.² But when the word occurs with either a definite or indefinite article it becomes a simple description: the expression „a tonality“ or „the tonality“, applied to Western classical music of the so-called „common-practice“ period, has no speculative overtones. The adjective „tonal“, as in „tonal music“ or „the tonal system“, carries this same restricted sense in Western music-theoretical discourse, „tonal“ being used to distinguish music that can unequivocally be discussed in such terms as F Major, d minor, or C Major, from music that cannot, such as „atonal“ or „modal“ music.

If we could interview three theorists of the late 19th century, of no matter what ontological or epistemological bias – let us say, Hugo Riemann, F. A. Gevaert, and Ebenezer Prout – and ask each to name the tonality of Beethoven's Pastoral Symphony or Tempest Sonata, their answers would agree: F Major and d minor, respectively. Or if we were to show each a diatonic movement or piece, of the period 1750-1850, with no key signature and a final root-position Major triad having pitch-class C in the bass, they would agree that those rudimentary and purely objective features – diatonic content, no key signature, final C-Major triad – minimally marked „the tonality“ of the item as „C Major“. But let us imagine some item of 16th-century vocal polyphony with the same rudimentary objective markers – that is, diatonic content, no key signature, and a concluding root-position C-Major triad – and let me add even one further restriction: the piece is set in the so-called „chiavette“ (clefs g_2, c_2, c_3, F_3). Now if we could ask three theoretically sophisticated musicians of the late 16th century to name the mode of that piece, we might get three

² F. J. Fetis, *Traité de la théorie et de la pratique de l'harmonie ...* 10^e ed. (Paris 1872): Fetis's fourfold sequence of „tonalités“ is summarized at the end of the preface, xliii, and elaborated in detail in Book III, 151-200.

different answers altogether. Orlando di Lasso's student Leonhard Lechner would call such a piece mode 6, Hypolydian if you prefer.³ Pietro Aron's disciple Aiguino would call such a piece mode 7, that is a variety of Mixolydian with an „extraordinary“ final on c'.⁴ And for Heinrich Glarean's follower Alexander Utendal, the last piece in his „Seven penitential psalms .. plus five themes .. from the prophets .. accommodated .. to the twelve modes of the Dodecachordon“, with the same minimal markers, was Hypoionian, that is mode 12.⁵

Conflicting modal assignments for compositionally ordinary 16th-century pieces, in short, while not common, are by no means unknown and unthinkable, whereas the tonality of any piece from 1750 to 1850 is hardly likely to be controversial; the interesting cases are those few in which a piece begins in one key and finishes in another, of which perhaps the most celebrated instance is the Chopin Second Ballade.⁶ This suggests that modality and tonality may be different kinds of phenomenon, and therefore not related through any of the simple evolutionary sequences to which we are today

³ See Lechner's letter of 8 August 1593 to Martin Crusius, published by Georg Reichert as a supplement to his „Martin Crusius und die Musik in Tübingen um 1590“, *Archiv für Musikwissenschaft* 10 (1953), 210-12; the C-tonality in high clefs as mode 6 is illustrated on p. 211.

⁴ Aiguino, *Illuminato, Ill tesoro illuminato di tutti i tuoni di canto figurato* (Venice 1581), 72. Josquin's „Comment peult avoir joye“, an actual piece so marked and categorized this way by Aron himself as representing mode 7, is discussed below; its tenor is shown in Example 10.

⁵ For a discussion of Utendal's *Septem Psalmi penitentiales, adiunctis ex prophetarum scriptis orationibus eiusdem aramenti quinque, ad Dodecachordi modos duodecim* – in contrast to Lasso's *Psalmi Davidis poenitentialis, modis musicis redditi ... his accessis psalmus Laudate dominum*, composed to represent the traditional eight modes of the Church – see Ignace Bossuyt, „Die ‚Psalmi poenitentiales‘ (1570) des Alexander Utendal“, *Archiv für Musikwissenschaft* 38 (1981), 271-95. Josquin's „Comment peut avoir joye“ – assigned by Aron to mode 7, as noted in note 4 above – was assigned by Glarean himself, with the *contrafactum* text „O Jesu Fili David“, to the Hypoionian mode [mode 12], in Book III Chapter 23 of his *Dodecachordon*.

⁶ The dual tonality is of course part of an overall violent contrast that includes meter, tempo, and dynamic level. The assumption that a piece of music normally belongs to a single tonality ensures that the difference in key between the first and last movements of multi-movement tonal pieces such as Mahler's Fifth Symphony (c# minor and D Major) or Ninth Symphony (D Major/minor and Db Major) are explained away as initial tonicization of leading tone in the one case and of Neapolitan second degree in the other, or otherwise accounted for. The convention of consistency in tonality in our thinking, and of tonality with finality, is so strong that even operas are often analyzed in terms of a single tonality; the first volume on *Der Ring des Nibelungen* of Alfred Lorenz's four-volume *Das Geheimnis der Form bei Richard Wagner* (1924-33) interprets the Eb Major with which *Das Rheingold* begins as dominant of the dominant of the Db Major in which *Götterdämmerung*, as well as *Das Rheingold*, ends.

accustomed, such as: „the modal system was displaced by the tonal system“; or, „modality evolved into tonality“; or, „the ancestors of our Major and minor scales were the Ionian and Aeolian modes“. In two earlier studies I have argued at length that the ontological and epistemological statuses of modes in 16th-century European music vis-à-vis Major and minor tonalities in 18th-century European music are entirely different and incompatible – that they exist on different planes – and I have urged that we abandon the casual and unthinking habit of using modal terms and names with reference to any and all 16th-century polyphonic tonalities, in any and all contexts.⁷ We use a modal term or name at one moment for our own referential convenience, in the next moment with reference to some medieval or Renaissance theorist, and at yet another moment to refer to some manifest compositional representation of a member of an octenary or dodecachordal modal system. The terms „mode“, „modal“ and „modality“, in fact, have come to be used so broadly and so loosely that they have lost their usefulness for musical scholarship of many kinds, not just for Renaissance polyphony, but just as egregiously in discussions of musics outside the sphere of European art music.

In short: the answer to the rhetorical question in my title – „is mode real?“ – is „no“: at least, „no“ in the sense in which the term „mode“ is customarily used in connection with Renaissance polyphony. A 16th-century piece is not in a „mode“ that is part of a „modal system“ in a way analogous to the way an 18th-century piece is necessarily in a „tonality“ that is part of the „tonal system“. That is not to say, of course, that a piece of 16th-century polyphony has no tonality. I would certainly assert that 16th-century tonalities do exist, and that they are not 18th-century tonalities; I only urge that they not indiscriminately and unthinkingly be called „modes“. In the two essays of mine just mentioned (see note 7) I offered the term „tonal type“ to designate tonalities manifested in later 16th-century polyphony. Those tonalities are minimally marked – I stress, only minimally, and only marked, not characterized – by key signature, final triad, and cleffing. The term „tonal type“, and the classificatory concept to which it refers, are of course not mine; they originated with the late Siegfried Hermelink.⁸ I would hope it unnecessary to insist that neither by him nor by me would key signature, cleffing, and final triad be regarded as all there is to a 16th-century tonal type; they are merely indicators of a tonality, like the key signatures and final triads of pieces by Beethoven in F Major, d minor, or C Major. Hermelink had already begun to

⁷ „Tonal types and modal categories in Renaissance polyphony,“ *Journal of the American Musicological Society* 34 (1981), 428-70; reprinted in *The Garland Library of the History of Western Music* (New York 1985), Vol. 4 (Renaissance music 2), 98-140; and „Modal representation in polyphonic offertories,“ *Early Music History* 2, ed. Iain Fenlon, Cambridge 1982, 43-86.

⁸ Siegfried Hermelink, *Dispositiones modorum* (Tutzing 1960), 11-16.

show us how much might be done analytically in his particular frame of reference through his summary study of Palestrina's *cantus* parts in general and his sampling of those of the tonal type $g_2 - \flat - D$ in particular.⁹

A „tonal type“ is not a „mode“. Its minimal markers designate the basic parameters of one or more „pre-tonal“ tonalities, just as a one-flat key signature designates F Major or d minor in „common-practice“ tonal music. The surface manifestations of 16th-century polyphonic tonalities – diatonic substance, triadic texture, distinction of accented and unaccented dissonance, articulation through cadences based on (upper and lower) leading-tone resolutions – are much like those of 18th-century polyphonic tonalities. But while those surface resemblances are certainly part of a general continuity,

⁹ See Hermelink 1960, Chapter 5 (pp. 100-43) in general, and pp. 105-11 in particular. Hermelink's designation of the tonal type $g_2 - \flat - D$ as „H-Dorisch“ is a consequence of his theory that pieces notated in high cleffings, the so-called „chiavette“ – typically $g_2 - c_2 - c_3 - F_3$ – would actually have been sung within an overall compass the same as those notated in standard cleffings – typically $C_1 - c_3 - c_4 - F_4$ – that is, roughly a minor third lower than notated. That the overall range of actual frequencies a choir as a whole had to cover would have been quite narrowly constrained is obviously true, but Hermelink's discussions of notation as transposition make sense only if vocal notation of the time be taken as corresponding to some kind of approximate but actual acoustic compass represented by the notated compass covered in standard cleffing. This in turn implies that the medieval/Renaissance notational frame – what I have called the Guidonian diatonic – was practical rather than conceptual, which was of course not the case. During the late 16th and early 17th centuries the dual conceptual symbolic scheme of *litterae* A-B-C-etcetera combined with *voces* ut/do-re-mi-etcetera, vocal in origin, was imperceptibly shifting over into a pair of practical symbolic schemes tied to the keyboard as model, where the nomenclature of scale degrees did have to be tied to actual pitch levels on whatever organ or other keyboard instrument was being used. The set of *litterae* and the set of *voces* both survived, but divorced from one another: the *litterae* in the nomenclature of Germanic-language musical cultures, the *voces* in the nomenclature of Romance-language musical cultures – but this goes beyond present concerns; it will play a role in the chapter „From psalmody to tonality“ of the book *Is mode real? tonal coherence in pre-tonal polyphony*, in preparation.

Hermelink himself set great store by his „transposition“ theory, and the general rejection of his arguments on this aspect of the matter has almost completely, and most unjustifiably, overshadowed his revolutionary contribution to theoretical and analytical understanding of Renaissance vocal polyphony. Hermelink's analytical approach to Palestrina, quite properly, is primarily through the shape and structure of melodic contour, compass, and emphasis. The same is also largely true for the analyses scattered through my articles „Tonal types and modal categories“ and „Modal representation in polyphonic offertories“ (references in note 7 above), and the analyses in my essay „The modality of ‚Vestiva i colli‘“, in *Studies in Renaissance and Baroque music in honor of Arthur Mendel*, ed. Robert Marshall (Kassel/Hackensack 1974), 31-46, translated as „La modalità di ‚Vestiva i colli‘“, in *II madrigale tra cinque e seicento*, ed. Paolo Fabbri (Bologna 1988), 189-206. An extension of Hermelink's analytic approach to the works of Orlando di Lasso, suitably adapted to Lasso's rather different approach to the use of vertical sonority in its own right, may be seen in Horst-Willi Gross, *Klangliche Struktur und Klangverhältnis in Messen und Lateinischen Motetten Orlando di Lassos* (Tutzing 1977).

that continuity is not from „the modal system“ to „the tonal system“, nor yet from individual „modes“ to individual „tonalities“; it is a continuity from 16th-century tonalities through to 18th-century tonalities. I would argue that not only do 16th-century tonalities exist, but that certain individual 16th-century tonalities are evolutionarily directly ancestral to certain individual Major and minor tonalities of 18th-century music, not necessarily in one-to-one correspondence, and to several more as well through evolving regular transpositions for keyboard instruments. More than that, I would argue that subtle differences among and within 18th-century tonalities are echoes of more fundamental differences among their ancestral 16th-century tonalities, minimally marked as „tonal types“.

*

A „mode“, in the musical culture and discourse of Renaissance Europe, was first and foremost a theoretical construct, a member of a closed and symmetrical system of musical categories. As I have tried to show in the studies cited in note 7 above, a composition in a given tonal type was often used to represent a mode with whose theoretical requirements its tonal type was compatible. But to say that something *represents* something else, or that something is compatible with something else, is not at all to say that something *is* something else.

There are three quite natural reasons for confusing „mode“ and „tonal type“. In the first place – or perhaps better, in the last place – from the second quarter of the 16th century onward, composers themselves came more and more to make a conscious use of tonal types in an orderly way, to represent the members of modal systems for symbolic or didactic purposes, originally as a reaction to the interest shown by humanists and musical theorists in the idea of modal affect as a necessary or desirable property of music, later on in other ways.¹⁰

In the second place, musical theorists did more than merely propound modal affect as a basis for musical effect; in several notable cases they borrowed, adapted, or modified notions about monophonic modality from medieval traditions and humanistic researches, in serious attempts to account for the pitch relationships and structures of polyphony in purely technical terms. For such purposes, modal theory was the only existing sophisticated analytic theory to which they could turn.

Finally – or better, originally – the ultimate raw material both of monophonic modal theory and of polyphonic compositional practice was the same:

¹⁰ For the use of modal representation as ideological affirmation of Counter-Reformation pieties, see my „Modal representation in polyphonic offertories“, cited in note 7.

it was the conceptual system of pitch relationships to which all musicians were brought up and which all took for granted, a system that was not only pre-compositional but also pre-theoretical. I call this conceptual model the „Guidonian diatonic“, because it was generally attributed to Guido of Arezzo in the later Middle Ages and Renaissance, and it was diatonic. Margaret Bent has called it „musica recta“; in a particularly vivid metaphor, she pointed out that

musica recta is not an arsenal of fixed pitches but denotes a set of relationships to a notional norm of pitch stability that is more like a flotilla at anchor than a Procrustean bed or a pre-tuned keyboard.¹¹

The resemblance of elements in the Guidonian diatonic, musica recta, to elements in the post-17th-century European conceptual model of tonal space, not to mention survivals in later European terminologies, should not blind us to the drastically different premises of the Guidonian diatonic. Those premises flow from its historical origin in vocal music, and are thoroughly confusing if imagined in terms of its post-17th-century successor model for tonal space, a model whose premises are of instrumental origin, with the keyboard as its visual ground.

The Guidonian diatonic is illustrated in Example 1-A, a didactic diagram taken from the *Scintille di musica* of Lanfranco, published in 1533. The essential property of the system is the double nomenclature of Latin letter (littera) and hexachordal syllable (vox). The letters represent the total collection available to musica recta, and all the potential „real“ musical relationships within it. (The „accidental“ sharps and flats of musica ficta have no effect on the „substantive“ relationships of musica recta: the distinction of „accidence“ from „substance“, originating in Aristotelian metaphysics, is fundamental.) The complex of hexachordal syllables (voces) available for each littera denotes the possible melodic roles that a single pitch-position in the general background system, a littera, might have in specific musical contexts. We could call them „melodic“ functions. We could even call them „modal“ functions, but only if we mean „modal“ strictly in its Aristotelian sense of „contingent“. Better still would be to call a vox used in this way a „tonal focus“ (I am grateful to Karol Berger for suggesting this term).

Example 1-B, also from Lanfranco's *Scintille*, shows the diatonic species of the fifth and the fourth, a heritage not from Guido but rather ultimately from Boethius. The species of the smaller perfect consonances became important elements in the late medieval Italian tradition of modal theory first known in the *Lucidarium* of Marchetto of Padua, from which stem the basic modal concepts of Lanfranco, Aron, Tinctoris, and many others.¹² As may be seen in

¹¹ Margaret Bent, „Diatonic ficta“, in *Early music history* 4 (1984), 1-48, p. 10.

¹² cf. the summaries in my essay on „Mode“ in *The New Grove* XII (London 1980), 392-5 and 404-06. The *Lucidarium* has since been edited and translated by Jan W. Herlinger, *The Lucidarium of Marchetto of Padua* (Chicago 1985).

Example 1-B, all three species of the fourth, and the first species and fourth species of the fifth, span loci entirely within the Guidonian hexachord – that is, none contains a tritone – rendering them unproblematic as loci for a melodic tonal focus. The second and third species of the fifth, to the contrary, do contain tritones and therefore require mutation. This ambiguity makes them awkward as hexachordal loci for a vox that is to be used as a tonal focus. But by a curious pragmatic anomaly, Lanfranco's note printed around the corner of the table asserts that the species of the fifth from littera F up to littera c can still be regarded as an instance of the third species of the fifth if the b-natural is replaced with b-flat, even though this makes it identical with the solmization of the fourth species of the fifth from littera G up to littera d: ut-re-mi-fa-sol in both cases. The b-flat is treated as though it were an ad hoc change from *cantus durus* to *cantus mollis*, producing as it were a species merely borrowed from the soft hexachord. Through this literally specious device, the third species of the fifth from littera F up to littera C also becomes a hexachordal species and no longer needs to mutate. This sleight-of-[Guidonian]-hand avoids the tritone above the tonal focus in tonalities that focus on littera F, not uncommon in chant and very common in polyphony, while maintaining the fiction that F is still fa within the Guidonian natural hexachord and therefore still within the traditional tetrachord of finals, D-E-F-G.

The hexachordal species of the fifth and the fourth play crucial roles in the melodic mechanics of 16th-century polyphony; they are essential determinants in the individualities of the various Renaissance polyphonic tonalities. They are also of course basic constructive modules in a number of European modal theories, monophonic as well as polyphonic, though not in all.

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The notion of mode has played a prominent part in Western musical thinking in three historical periods, including the period from mid-15th to mid-17th centuries, but it was always brought into play from elsewhere or earlier, as a fully formed theoretical system, and applied to an equally well established indigenous musical repertory and practice.¹³ The hidden fallacy behind notions of modality in Western music in all three periods when it was prominently in question turns on the familiar confounding of theory with practice, with the curious wrinkle that the theory in question antedates rather than postdates the practice to which it is afterwards proposed as an explanatory

¹³ This hypothesis is outlined in my „Modality as a European cultural construct“, in *Secondo convegno europeo di analisi musicale: Atti*, ed. Rossana Dalmonte and Mario Baroni (Trent 1992), 207-19. [Studi e testi]

program. The octenary modal system of „Gregorian“ chant grew out of the contact of Carolingian Franks with Byzantium, at a time when much of the Frankish liturgical repertory was already in place. „Gregorian“ theories of chant modality continued to be taught for many centuries; by the end of the eleventh century two basic styles had developed. One we may call the „Guidonian“, which was based on final, ambitus, and repercussa (usually identified with the tenor of the associated psalm tone), and which circulated long and widely.¹⁴ Other modal theories arose that incorporated the species of the perfect consonances as well – diatonic octaves, fifths, and fourths, with or without repercussa – but the only consonance-species tradition of lasting significance was the one to which Aron belonged, which first appeared in the early fourteenth century, in the *Lucidarium* by Marchetto of Padua.¹⁵

Until the middle of the fifteenth century doctrines of modality and rules for polyphony coexisted in theoretical writings almost entirely without cohabiting.¹⁶ But with the advent of Italian humanism and the importation of Franco-Flemish musical traditions into Italy, musical theorists began to conjoin modal theory with polyphony; from ca 1475 to ca 1675 Continental writers trying to connect monophonic modal theories with polyphonic compositional practices were legion, the most thoroughgoing being Johannes Tinctoris, Franchino Gafurio, Pietro Aron, Heinrich Glarean, Herman Finck, Gioseffe Zarlino, Gallus Dressler, and Pietro Pontio. There are only three independent lines of thought, however. The modal doctrines of Tinctoris, Gafurio, Aron, and even Pontio belong to that Italian tradition beginning with Marchetto's *Lucidarium* already mentioned. Zarlino's modal constructions are, to put it plainly but truthfully, plagiarized from Glarean. Herman Finck and Gallus

¹⁴ The *Micrologus* of Ornithoparcus (1517) purveys the purely „Guidonian“ modal theory. It was translated into English by John Dowland in 1609. The late appearance of this translation of a long outmoded theoretical tradition, along with the annotation on the „eight Tunes“ (paraphrased from Calvisius) in the second printing of Thomas Morley's 1597 treatise *A Plaine and Easie Introduction to Practicall Musicke* (ed. R. Alec Harman, London 1952/1963, 300-04), are instances of a very late-blooming English curiosity about Continental modal theories, and decisive evidence for English innocence of Continental attempts to use or modify chant theory to explain polyphonic tonality. Jessie Ann Owens has begun exploring English polyphony on the premise that the English were unacquainted with Continental modal theory (or perhaps uninterested), and that they developed their own (non-modal) ways of explaining tonal focusses in polyphony independently. Owens's essay „Towards a critical language for English music ca 1600“ (paper read at Yale University, April 1991) will in due course appear in print.

¹⁵ See Jan W. Herlinger, *The Lucidarium of Marchetto of Padua: a critical edition, translation, and commentary* (Chicago 1985), Tractatus XI, and especially the first part of *capitulum 4* (pp. 394/95-416/17).

¹⁶ See my „Mode as a European cultural construct“, cited in note 13, p. 211.

Dressler constitute a late aftermath of a German „Guidonian“ school of theory, from which Glarean also started.¹⁷ Dressler made the most intimate and coherent of all linkings of multi-part contrapuntal techniques with octenary modal theory in his manuscript treatise of 1563.¹⁸ This fine and original doctrine was unknown in its own day, however, and even Dressler's own *Musicae practicae elementa* (Magdeburg 1571), like the published treatises of most of his German successors, merely follows Glarean.

Of all these writers, then, only Aron and Glarean are of major import as theorists of polyphonic modality, in that 1) their work was well circulated, 2) they presented original and coherent theories linking monophonic modality with polyphonic practice, and 3) they provided copious instantiation for their theories from the polyphonic repertory. In reading their work, however, we must remember that they were theorists; we must treat them with proper respect, as distinguished colleagues from another musical age, not as mere informants. There is neither logical nor historical warrant for adducing writings on mode by such as Aron or Glarean as evidence for how the matter might have been conceived or understood by the many composers whose works they cited so profusely, or by ordinary musicians of the period. Their work is not testimony to common knowledge: quite the contrary, as each made clear more than once during the course of his treatise on polyphonic modality. Their work is creative and highly ingenious theorizing: how things *ought* to be regarded, not how they *were* regarded.

By the last quarter of the 16th century composers were cognizant of two basic modal theories, each with two or more varieties. The basic modal system occasionally represented by the great masters – Rore, Lasso, and Palestrina – had the eight modal categories of traditional chant theory.¹⁹ Various lesser musicians from time to time composed works demonstrating their interest in one or another of the current twelve-mode systems; Alexander Utendal's „Penitential Psalm and Prayers from the Prophets“ cited above (see note 5) is one instance; Claude Le Jeune's *Octenaires* is another. Pieces in one or another tonal type were often composed, in short, to represent a mode in one or the other of the basic modal systems – but as I noted earlier, to *represent* something is not the same as to *be an instance* of that something. Let me offer a pair of illustrations.

In Example 2-A/B are reproduced two tabulations from the essay cited in note 6. Example 2-A lists the tonal types of a group of pieces many theory teachers, including myself, have used as models for students. They are the

¹⁷ Cf. *The New Grove* s.v. „Mode“, 399, 403-04.

¹⁸ *Praecepta musicae poeticae* (MS treatise from 1563/64), ed. Bernhard Engelke, *Geschichts-Blätter für Stadt und Land Magdeburg* 49/50 (1914-15), 213-50.

¹⁹ For a detailed survey of octenary modal collections, with references to primary and secondary documentation, see my „Tonal types and modal categories“ *passim* (reference in note 7).

first twelve items, the texted ones, in Lasso's *Cantiones* for two voices of 1577. The table shows the minimal markers of the tonal types. The natural and flat signs under the rubric „system“ denote b-natural versus b-flat, that is, no signature or a „one-flat“ signature, for *cantus durus* (the „b-natural“ system) versus *cantus mollis* (the „b-flat“ system). The cleffings belong to two sets of relative compasses. The „standard“ combination (SATB) is present in the c_1/c_3 of items 1-2 and 6, and in the c_4/F_4 of items 8-9 and 11-12. These clefs slice out compasses from the Guidonian gamut that are relatively lower than the compasses cut out by the „chiavette“ combination, present in the g_2/c_2 of items 3-4 and 5, and in the c_3/F_3 of items 7 and 10. The letter names of the final octaves or unisons need no explanation. One can see from this table that the distribution of members of the three classes of minimal marker – b-natural versus b-flat, low „standard“ clefs versus high „chiavette“, and the four pitch-classes D, F, G, and A used as finals – groups the pieces into eight different tonal types. These tonal types are being used to represent the eight modal categories of the Church's traditional system. The four contrasted concluding pitch-classes represent the four regular finals; three of them (D, F, and G) are also instances of those finals, or of their octave equivalents. The contrasted cleffings, cutting out higher versus lower compasses, represent the ambitus contrast of authentics versus plagals; note that the plagal mode 2 is in fact being represented as transposed an octave higher: it is not the literal tessitura that matters, only the fact of the contrast.

Example 2-B shows seven tonal types used in another Lasso collection, minimally marked in the same three features: signature, cleffing, and final. They too represent the eight modes of the Church's system in order – for that we have the testimony of Lasso's student Leonhard Lechner²⁰ – but the manner of representation is quite different from that of the didactic duos tabulated in Example 2-A; only modes 5, 7, and 8 are represented the same way. Modes 3 and 4 – authentic and plagal E-modes, Phrygian and Hypophrygian – are collapsed together in this representation, a practice not uncommon in modally ordered collections when the regular final E is being used.²¹ The tonal types representing modes 1 and 2 have appropriate tessituras for representing the authentic/plagal contrast registrally, but the final is G and the system for both is *cantus mollis* with its b-flat signature. Finally, what represents the authentic/plagal contrast for modes 5 and 6 is not contrasting tessitura cut out by contrasting cleffings, for the cleffings – and therefore the tessituras – are the same. The authentic-plagal contrast is marked instead by contrasts in system and final: mode 5 is represented by a high-tessitura quasi-F-Major, mode 6 by a high-tessitura quasi-C-Major. Example 2-C shows the beginning of one of the two pieces representing mode 6 in this set, Lasso's „Surrexit pastor bonus“.

²⁰ Reference in note 3.

²¹ See also Tables 4 and 6 in „Tonal types and modal categories“ (reference in note 7).

One sees from Examples 2-A/B how a single composer might use more than one tonal type to represent a single mode.²² The contrary is also possible: as in the case of the quasi-C-Major tonal type shown in Examples 2-C and 9, a single tonal type may also represent more than one mode, though far less readily, and never to my knowledge by the same composer or even in the same milieu. But it is theoretically possible, and other instances can be cited.²³ It is necessary only that the musical characteristics of a tonal type used compositionally to represent a mode not be incompatible with the traditional theoretical characteristics of that mode.

The use of polyphonic tonalities to represent Church modes intentionally, self-consciously, and consistently arose fairly late in the Renaissance. The earliest instance of which I would feel completely confident is Rore's first book of madrigals, in which the eight modes are represented in order.²⁴ This collection was published in Venice in 1542 – that is, 17 years after the appearance of Aron's treatise, also published in Venice (in 1525), and only five years before Glarean's treatise was published in Basel in 1547. Though the notion of regarding modality as an attribute of polyphony had been gaining ground ever since the latter part of the 15th century, as most familiar to us in Tinctoris's rather feeble claims in 1477, Aron's *Trattato della natura et cognitione di tutti gli tuoni di canto figurato* was the first both to present and instantiate an argument for the case; Glarean's *Dodecachordon* was the second.

²² For summaries of two ways of representing mode 2 and three ways of representing mode 1, see „Tonal types and modal categories“ (reference in note 7), 440 (after Hermelink) and 451-52.

²³ Example 9, one of Aron's citations discussed below, is set in this same quasi-C-Major tonal type, but Aron proposed it as an instance not of mode 6 but of mode 7. By theorists of the dodecachordal system Example 2-C would of course be considered to be an instance of the Hypoionian mode. It is thus cited, for instance, by Seth Calvisius in his *Exercitationes musice* (Leipzig 1600), 44; Calvisius was following Glarean's ordering (and Zarlino's in the 1558 first edition of his *Istitutione harmoniche*) where the Hypoionian comes last, in the position of mode 12.

The high-clef quasi-a-minor tonal type is another case in point, discussed in „Tonal types and modal categories“ on pp. 463-66. It represents mode 1 in Palestrina's *Vergine* cycle of spiritual madrigals, as shown in Table 5 of „Tonal types and modal categories“ (p. 450), and mode 3 in Tylman Susato's *Premier livre des chansons à 3 parties*, as shown in Table 2 (p. 445).

²⁴ That Rore's first book of madrigals was ordered so as to represent the modes of the octenary system was first pointed out by Bernhard Meier in the preface to his edition *Cipriani Rore Opera Omnia II* (CMM 14, 1963). Meier's earlier „Bemerkungen zu Lechner's ‚Motectae sacrae‘ von 1575“, *Archiv für Musikwissenschaft* 14 (1957), 83-101, was the first in a long series of distinguished publications that have radically altered modern views of 16th-century modal thinking, by objective demonstrations of how certain collections of vocal polyphony had been consciously ordered so as to represent the modal categories of the octenary system.

In short, polyphonic compositional practice and polyphonic modal theory are in principle completely independent of one another, and have a common historical basis only in their primitives, in the underlying tonal system of the Guidonian diatonic. Their convergence in the 16th century needs to be examined in the domains of practice and theory separately, and with different kinds of intellectual tools. In the second part of the 16th century composers were doing it their way, using polyphonic tonal types as representations of modes, and we can deal with that analytically. In the first part of the 16th century theorists were doing it their way – theoretically – and it is to their way (at last) that I now turn.

*

It needs to be stressed again and again that the theories of polyphonic modality propounded by Aron and Glarean were not in any sense mere reporting of common knowledge. Neither were they in any sense empirical or inductive efforts to arrive at truths not yet fully grasped. Very much to the contrary: they are theories complete and fully formed; the tonalities of polyphonic practice are described and interpreted not by analysis of that practice but by instantiations *from* that practice. Indeed Glarean himself, in scattered bits of actual reporting *en passant*, indicated that ordinary musicians were thinking in terms of only three tonalities, focussed on *ut*, *re* and *mi*.²⁵ Cristle Collins Judd has recently published a full-scale and completely convincing theoretical-historical demonstration of the musical reality of *ut/re/mi* tonality, in her „Modal types and Ut, Re, Mi tonalities: Tonal coherence in sacred vocal polyphony from about 1500“.²⁶

Glarean was a Catholic humanist. He referred his construction of twelve modes to Boethius's species of the consonances – Glarean was an early editor of Boethius's works – but it was also influenced by, in a sense justified by, a dodecachordal construction of the monk and abbot William of Hirsau, as well as by the references to modes beyond the Gregorian eight (*toni medii*) by

²⁵ Three explicit references may be found in the course of discussions in Book II of Heinrich Glarean, *Dodecachordon* (Basel 1547), English translation by Clement Miller (n.p. 1965), as follows: Book II Chapter 1 (p. 65, Miller translation p. 103); Book II Chapter 7 (pp. 76-7, Miller translation pp. 114-15); Book II Chapter 20 (pp. 115-16, Miller translation pp. 153-54). In Book I Chapter 12, *ut*, *re*, and *mi* as three and only three tonal foci are mentioned (p. 31, Miller translation p. 70); in Book III Chapter 16 (p. 288, Miller translation p. 256) there is a reference to the *ut* tonality only.

²⁶ Cristle Collins Judd, „Modal types and Ut, Re, Mi tonalities: Tonal coherence in sacred vocal polyphony from about 1500“, *Journal of the American Musicological Society* 45 (1992), pp. 428-67. This study is the underpinning of her dissertation for Kings College (London), entitled *Aspects of tonal coherence in the motets of Josquin*.

Berno of Reichenau. Glarean had read both these 11th-century authors in a manuscript to which he had access in the years 1530-36, where he also was able to read Boethius and other authors.²⁷ Glarean's reverence for the traditional music of his church is evidenced in the extraordinary chant analyses contained in Book II of the *Dodecachordon*, and of course for his first eight modes he retained the Church's names, the same spurious Greek names they had been carrying since the time of the 9th-century *Alia musica*. His humanistic scholarship enabled him to extract appropriate Greek names for the remaining four modes from carefully selected passages in Classical literature.²⁸ The musical repertory from which Glarean culled passages as instances for his modal system was wide-ranging, in chant as in polyphony; even so, he could find no suitable examples for one or two of the modes in his construction and had to ask friends and colleagues to compose some for him.²⁹

Aron, who was a cantor and magister of characteristically medieval scholastic bent, had set himself a harder task. Rather than synthesize a theory and then hunt up, or cook up, illustrations for it, he undertook to apply an already existing theory in toto to any and all written polyphony as found in the repertory of his time. The repertory sample he used comprised the contents of most of the Petrucci and Antico prints of the first quarter of the 16th century, presumably those he had in his library. The theory was the late medieval Italian tradition of chant theory that started with Marchetto's *Lucidarium*. Aron's claim, like Glarean's, was universal: every piece of written polyphony can be accommodated by the system, that is, can be assigned to one of the eight modal categories; and modality as it is described in the octenary system is a property inherent in all polyphonic music, as well as in chant. Unlike Glarean, however, Aron was prevented by his assumptions and his method from adjusting either the theory or the repertory to fit the other. Both were givens, and they had to be made to fit together, without residue.

²⁷ See the last page of Glarean's preface to the *Dodecachordon* (Basel 1547), Clement Miller translation p. 40; and Martin Gerbert, *Scriptores ecclesiastici de musica* II (1784), 154.

²⁸ For an account of how Glarean justified his system of six modal pairs from Plato, and his new pseudo-Greek names for the four added to the traditional eight from Aristoxenos and Atheneus, see *The New Grove* XII, my essay „Mode“, 407-09.

²⁹ Cf. Glarean, *Dodecachordon* Book III, Chapters 14 (Hyperaeolian versus Hypophrygian), 15 (Hypolydian), and 21 (Lydian). The composers Sixtus Dietrich and Gregory Meyer were called upon several times, Gerard of Salice once.

For the „true Lydian“ – the F-authentic modal scale with b-natural – Glarean was also able to use compositions by Senfl and Isaac.

Particularly interesting is a pair of polyphonic settings by Gregory Meyer of the Communion melody „Qui mihi ministrat me sequatur“, from the second Mass for the Common of a single martyr not a bishop: *Dodecachordon*, Book III, Chapter XXI, pp. 336-41; Miller translation, Vol. II, pp. 261 and 416-19. One of the settings is in „true Lydian“ (an F-tonality with b-natural), the other in transposed „Ionian“, i.e., an F-tonality with b-flat, which was the usual representation of „Lydian“/mode 6 for 16th-century composers of vocal polyphony.

That being so, the interesting questions are not what assignments Aron made for which pieces, or even whether his theory makes sense in our terms, for in many respects it does not. What is interesting is whether it makes sense in his terms, which it does, and brilliantly, sometimes with what a couple of centuries later would be called Jesuitical casuistry. For us, then, the question is not, what did he do? but rather, how did he do it? not what modes the pieces are said to be in, but rather, how did he arrive at those assignments?³⁰

The first three chapters of Aron's treatise outline general principles for attributing a mode to any polyphonic piece. In the succeeding four chapters, 4 through 7, the principles are demonstrated in action. Each one of these four chapters deals with one authentic/plagal pair of modes, giving a list of those positions in the Guidonian diatonic at which compositions to be attributed to one or the other mode of the authentic/plagal pair can terminate. For each of the terminal positions is given a list of one or more pieces said to embody either the authentic or the plagal mode of the pair. These first seven chapters are the wholly original part of the treatise; they are the ones translated by Oliver Strunk.³¹

Chapters 8 through 24, all very short, list medial cadence points and initial degrees, mode by mode, all in correspondence with received chant-theory traditions, and with no citations even to chant, let alone polyphony. Chapter 25 is devoted to a discussion of modal ethos, again in line with medieval traditions, and without instances; it is reproduced, with translation, as Appendix I. The concluding Chapters 26 through 45 are on another subject altogether: Aron described procedures through which every pitch-position in the Guidonian diatonic can acquire any one of the six hexachordal functions; any hexachordal syllable (*vox*) that does not already pertain to a letter-name position (*littera*) „naturalmente“ (i.e. as part of *musica recta*) can be given to it „accidentalmente“ (i.e. as part of *musica ficta*); in either case, the presence of a *vox* (hexachordal syllable) attached to a *littera* (letter name) implies the potential existence of the whole hexachord of which that *vox* is a part. For example, if *d la sol re* were to be signed as „*mi*“, the implied hexachord would be *bb-c-d-eb-f-g*; if it were signed „*fa*“, the hexachord implied would be *a-b-c#-d-e-f#*.

³⁰ In what follows, references to Aron's *Trattato* are by Chapter number, and in English translation. The original text has been reprinted in facsimile by Forni (Bologna 1970) and should be easily available. The English translations are mine, though I have used Oliver Strunk's translation in his *Source readings in music history* (New York 1950, 205-218) wherever possible. All but one of the examples from polyphony come from Petrucci prints available in facsimile.

It should be noted that arguments Aron presented in his *Trattato* need not and in fact do not have any connection with arguments bearing on polyphony presented in his *Thoscanello in musica*.

³¹ Reference in note 30.

Aron's citations of polyphonic compositions in Chapters 4, 5, 6, and 7 rest on the principles set forth in a particular order in the first three chapters. Chapter 1 outlines the modal theory; in the brief chapter 2, modal theory is linked to polyphonic texture; in chapter 3 general criteria for specific applications are spelled out, though one or two more criteria rise to the surface out of the specifics in chapters 4 through 7.

The determinants of mode, as set forth in Aron's chapter 1, are *final* and *species*. Under some circumstances the final is the governing determinant, under others the species. Modal finals can be either regular – that is, according to rule – or irregular. Regular modal finals are found at four and only four positions in the Guidonian diatonic, as seen for instance in Example 1-A; they are D sol re, E la mi, F fa ut, and G sol re ut.³² When a composition terminates at one of these four positions, it has done so at a regular final, which, as Aron put it, has three kinds of modal force: a regular final is „necessary, rational, and governing to every tone“ – though as we shall see, an exception has to be made for G sol re ut under certain circumstances. Terminal positions other than these four are called irregular. Below the regular finals are Gamma ut, A re, B mi, and C fa ut; a la mi re, b fa/b mi, and c sol fa ut are above the regular finals.

The diatonic species of the fifth and fourth also determine mode. They can determine it regularly – that is, in conjunction with one of the four regular finals – or irregularly, when the composition terminates somewhere other than at one of the four regular finals. The diatonic species are defined as illustrated in Example 1-B. The species of fourth and fifth sometimes turn out to be modal determinants in rather unexpected ways, as we shall see, coordinated with rather than associated with a regular final, and much more broadly than appears in Example 1-B or from a superficial reading of the definition in Aron's Chapter 1.

³² Note that a fundamental distinction between „final“ and „termination“ pervades Aron's discussion. By „termination“ Aron means simply the position in the Guidonian diatonic at which a musical line finishes, the concluding note in the tenor so far as the *Trattato* is concerned, as we shall see. By „final“ he means the „modal final“, which by the 11th century had been defined as the overriding determinant of the mode – the tonality – of a completed musical entity. In Chapter 11 of his *Micrologus*, Guido of Arezzo adduced five brief arguments in support of the proposition that the note at which a chant finishes was the determinant of the mode of that chant, thus a „modal“ final. The arguments are interestingly amplified in the Anonymous Commentary from later in the 11th century (ed. Cölestin Vivell, Vienna 1917, pp. 36-40; ed. Jos. Smits van Waesberghe, Amsterdam 1957, pp. 132-36; and see further my essay „Mode“ in *The New Grove* XII, p. 384).

From the 11th century on, in the Western tradition to this day, there has been a pervasive logical confusion between the function „finality“ and the function „tonicity“. The former has to do with time, with succession of pitch, with arrival; the latter has to do with pitch hierarchy and is timeless. (See also note 6 above.)

Summarizing the matter more baldly than Aron ever needed to do, modal finals are defined solely according to their position in the background Guidonian diatonic, or to put it still more baldly, by their letter names only. The regular finals are only D [sol re], E [la mi], F [fa ut], and G [sol re ut]; none other can be substituted and still be regular. The species, to the contrary, are defined solely by their hexachordal structures, or to put it in more modern terms, solely by their aggregate intervallic content. Any collection of five adjacent positions intervallically related (reading upward) as T-S-T-T (tone-semitone-tone-tone) – in other words, that can be solmized with re/mi/fa/sol/la – is a first species of the fifth no matter where it is located in the Guidonian diatonic; similarly, any collection of four adjacent positions intervallically related S-T-T, solmized mi/fa/sol/la, is a second species of the fourth no matter where it is located; and so on.

Returning to Aron's own definitions in his Chapter 1, one notes that the higher set of irregular finals – that is, a la mi re, b fa/b mi, and c sol fa ut – occur at the place where the upper boundaries of the first three species of the fifth associated with the regular finals coincide with the lower boundaries of the three species of the fourth above them. „It follows then“, wrote Aron, „that the final in the aforesaid positions ... is also necessary“. Aron went on to say of these three irregular finals that they are „considered in two ways, first with respect to confinality [*quanto alla confinalità*] and second with respect to the differences of the psalm-tone endings [*rispetto alle differenze de gli seculorum*]“.

Confinality designates modal finals that are the hexchordally equivalent tones next above the regular finals in the natural system of the Guidonian diatonic, that is, a re above D re, b mi above E mi, and c fa above F fa. In making his specific modal attributions, Aron never explicitly invoked confinality, and rarely even referred to it in passing, though as we shall see, confinality may have been an unspoken criterion for the modal assignment in one exceptional instance (Example 5). In another instance (Example 7) Aron might have invoked confinality, but there and elsewhere he always invoked the ending pitch of one or another of the „differences“ for the psalm-tone associated with the mode in question; I shall refer to these henceforth as „psalm-tone pseudo-finals“. In other words, wherever possible Aron would assume a „regular“ modal ambitus (which entails the „regular“ modal final degree associated with it authentically or plagally); then he would explain an irregular termination as equivalent to the last note of a psalm-tone difference.³³ For pieces terminating at irregular positions that cannot be confinals, yet where no psalm-tone pseudo-final could be proposed either, because no

³³ Psalm-tone differences – the variable formulae used to conclude each of the eight recitation tones for the psalms that are associated in chant practice with the eight modes of chant theory – come in very handy as pseudo-finals, since most psalm-tones have terminations at several different positions in the Guidonian diatonic.

psalm-tone difference happens to conclude at the pitch-position in question, there could obviously be no modal final of any kind at the termination. There being no modal final, the mode of such a piece could only be determined from the ambitus and the species of the fifth and fourth (examples 8, 13, and 14). In short, a *terminal degree* (in the order dimension) that cannot be a *modal „final“* (in the pitch dimension) is irrelevant to the modal assignment of a piece.

Aron's Chapter 1 concludes with a familiar Aristotelian/Scholastic analogy used to explicate the relationship of species to final, in which the species are defined as the formal cause of a mode, and the final as its final cause. Aron did not extend the analogy so far as to suggest material and efficient causes for a mode, but it is easy enough to do so: the material cause would be the Guidonian diatonic itself, the efficient cause the composer or the singer.

The problem of applying a monophonic modal theory to a polyphonic texture was handled theoretically in several quite different ways in the 16th century. The Antwerp composer and editor Tylman Susato arranged his anthologies of chansons and motets so as to represent the traditional eight modes in order. His epistemological assumption was the same as Aron's: every polyphonic piece that came his way was to be assigned to one of the eight modes; or conversely, the octenary system was taken to be sufficient as well as necessary for the ordering of the entire repertory of polyphony. Susato's rationale for his various modal assignments, however, differed significantly from Aron's. It corresponds in fact with the kind of representational principle found in modally ordered collections of polyphony by Rore, Lasso, and Palestrina; pieces in the collections are grouped according to three „minimal markers“: cleffing (high clefs vs. low clefs); system (*cantus durus* vs. *cantus mollis*); and final for the whole polyphonic texture. In short, Susato used appropriate polyphonic tonal types to represent the modes of the octenary system.³⁴

The two seminal theorists of polyphonic modality, Aron and Glarean, had different solutions for the problem of connecting a monophonic modal theory with a polyphonic musical texture. Glarean's solution was to assign a mode to each one of the separate voices in the polyphonic texture and then to analyze the way the modes so assigned to each voice correspond and contrast with one another (normally as authentic and plagal for the same final). Aron's solution was more old-fashioned. In Chapter 2 of the *Trattato* he simply asserted that the tenor is the sole bearer of modality in a polyphonic composition, unless there is a plainsong melody in some other voice and none in the tenor. His arguments for this unoriginal position were two. The first is that

³⁴ See Tables 2 and 15 in my „Tonal types and modal categories“ (reference in note 7), pp. 445 and 468-69.

the highest voice cannot suitably carry the mode in polyphony because it is too far away from the lowest voice – the same argument would presumably also exclude the lowest voice as modal carrier – and because the highest voice would have to go off the top of the Guidonian gamut; it would have to „run an accidental course“ as Aron put it – a course requiring pitch substance outside the system of *musica recta* – in order to complete the upper reach of the *ambitus* in mode 7. Secondly, he argued – or rather stated – that the tenor is the basis of the polyphonic texture. In his words, „it takes and holds (!) the *concentus* of the *harmonia*“, and „each of the other parts is governed by the tenor“. ³⁵

Methodologically speaking, the most important feature in this chapter 2 of Aron's is not its content but its position in the general argument. Aron's acceptance of the tenor as the voice exclusively determining modality comes *after* his explanations regarding finals, pseudo-finals, and species. In other words, he presented his adaptation of the medieval Italian theory of monophonic modality in its entirety first; only then did he introduce a premise allowing him to apply that theory, so to speak, to polyphony monophonically.

One might think that once he had finessed the problem of the polyphonic texture Aron's difficulties would have been over. But Aron's intention in the *Trattato* was to deal with real music – unlike Tinctoris, who made up the music examples he used to illustrate modal characteristics – and even just the tenor parts in Aron's chosen repertory sometimes present formidable obstacles to being understood in terms of the Italian octenary modal theory. In his third chapter, therefore, Aron set forth general principles for identifying the modes of polyphonic compositions – that is, the modes of their tenors – in terms of the propositions laid out in his first chapter. His first principle is that when a composition (that is, a tenor) terminates with one of the regular finals – D sol re, E la mi, F fa ut, or G sol re ut – that regular final determines the modal attribution, in conjunction with the species proper to it.

A termination at D sol re, according to Aron, always denotes mode 1 or mode 2, since none of modes 3 through 8 has a psalm-tone difference ending at D sol re, and therefore D sol re can never be interpreted as a pseudo-final in one of the other six modes. Even if its species be drawn mostly from some other mode, a composition terminating at the regular final D sol re is nonetheless to be regarded as being in mode 1 or mode 2, with a „commix-

³⁵ Needless to say, this does not mean Aron thought the tenor was the first voice to be composed, to which others would be added *seriatim*. To judge from his repertorial sample, not to mention Book II of the *Thoscanello in musica*, he will have thought in terms primarily of a superius-tenor nucleus, the tenor simply being the modal voice, with harmonic support to the superius-tenor pair from a contratenor bassus, and in four-voice textures, a contratenor altus filling in.

ture“ of species from the other mode.³⁶ The same principle applies to pieces terminating at E la mi: that pitch-position is the regular final for modes 3 and 4, and none of the other modes has a psalm-tone difference terminating there. And though Aron pointed out that terminal position F fa ut could act as a pseudo-final for modes 1 and 4 – there being psalm-tone differences for both the first and fourth psalm tones that finish there – in fact he never needed to account for terminal F fa ut as anything but a regular final.

G sol re ut is the regular final for modes 7 and 8. There was a serious problem for Aron, however, in pieces that terminate at this regular-final pitch-position that also have a b-flat signature; here there is a logical conflict in criteria for the modal assignment for whose resolution neither psalm-tone pseudo-final nor commixture of modes could be proposed.

There are of course many pieces in Aron's sample repertory with a b-flat signature, and for Aron the b-flat signature automatically transforms the species of any fifth or fourth containing the degree b fa/b mi no matter what the final may be. But there are no pieces with both b-flat signature and termination at E la mi in Aron's repertory sample, and Aron was able to argue that pieces with b-flat signature that terminate at D sol re or F fa ut are still governed by the regular finals unaffected by the altered species, in the following ways. In the case of modes 1 and 2 the characteristic re/mi/fa/sol/la species of the fifth arising from the regular final D sol re is not affected by the flat, as Aron pointed out in Chapter 4. And in chapter 6, on modes 5 and 6, he observed that, in order to avoid a tritone in the modal species of the fifth ranging upward from the regular final F fa ut, composers consistently used the b-flat signature, even though in so doing, as Aron put it, „they distort the third species of the fifth into the nature of the fourth species“. Note, however, that the species is said to be only distorted, not transformed; in Example 1-B, we have already noted that in Lanfranco's note printed around the corner of his table, the ut/re/mi/fa/sol species of the fifth between F fa ut and c sol fa ut continues to be called the third species of the fifth, though it has b-flat rather than the b-natural proper to that species, and therefore the intervallic structure T-T-S-T, which (strictly speaking) should be designated as the fourth species of the fifth.

³⁶ The notion of „*tonus commixtus*“ is one of the most useful tools in the late medieval Italian theory of monophonic modality. In his own *Lucidario* (Venice 1545) Aron rejected a proposition from Marchetto's *Lucidarium* in which Marchetto had objected to the absolute modal primacy of the regular finals. Marchetto had written that it would be senseless to call a piece that had the species of mode 3 throughout and then simply tacked on a D sol re at the end, mode 1 rather than mode 3 (Marchetto of Padua, *Lucidarium*, ed. Jan W. Herlinger, Chicago 1985, pp. 392-3). Aron invoked Marchetto's own concept of *tonus commixtus* against Marchetto's own example (Aron, *Lucidario*, the „resolutione“ to „oppenione iiii“), saying that the mode of such a piece should be deemed „primo commisto“.

The matter of the b-flat signature with regular-final G sol re ut could not so easily be explained away: the b-flat is within the species of the fifth, it is a species of the fifth that arises from the regular final in question, and there is no question of a tritone to be smoothed over. For one of Aron's instances see Example 3, the tenor of one of the best-known chansons of its day. In every respect but one it is an unequivocal and beautiful representation of mode 2, or if you prefer, the Hypodorian mode. It has the proper re/mi/fa/sol/la species of the fifth attached to its final and principal tonal focus, with the customary upper-neighbor „fa super la“; its compass is precisely plagal, exploited in a balanced manner above and below the final; it even shows traditional features of chant modality that Aron did not use for his assignments, such as a *repercussa* at fa above the modal final re, characteristic for mode 2. Only the contradictory modality of solmization syllable „re“ at the regular-final letter-position G sol re ut is awkward. Aron explained the matter in his chapter 4, on modes 1 and 2:

Though the position is a regular final for modes 7 and 8, the signature .. distorts its proper and natural form or composition .. in acquiring the species pertinent to modes 1 and 2 the [regular] final weakens [*patisce*] and becomes arbitrary and quasi-regular *per se*, incompatible with modes 7 and 8, yet necessary for modes 1 and 2.

G sol re ut is necessary since it is after all a regular final, but it is not governing, for if it were, Hayne's tenor would have to be called mode 8.

Nowadays we would regard the tenor shown in Example 3 as a melody embodying mode 2, the Hypodorian, that has simply been transposed up a fourth from the „regular“ position for mode 2 with final at D sol re. Even only a century after Aron's time we would be right so to see it; in Aron's time we would be quite wrong. In the medieval view of the Guidonian diatonic, the term „transposition“ denotes the shift of a melody or melodic locus from one region to another within the diatonic scale with b-natural; for example, a melody shifted from the span D re/c fa up to the span a la/gg sol would be deemed „transposed“ even though in one place its scalar structure would be different in the „transposed“ locus.

This being so, in Aron's terms the tenor of *De tous biens plaine* is in no way a transposition. Instead, the b-flat signature effects a change from one Guidonian sub-system to another, from *cantus durus* to *cantus mollis*. In medieval terms – and Aron's terms are medieval – Example 3 is an instance not of a „transposition“ of mode 2 but rather of a „transformation“ of mode 8; that is, what should have been a mode 8 tenor with its regular final at G sol re ut has been transformed by the b-flat into a mode 2 tenor.³⁷ Thus even though the

³⁷ For a summary discussion of the medieval senses of „transposition“ and „transformation“, see my „Tonal types and modal categories“ (reference in note 7), footnote 1 on p. 429.

degree at which the piece terminates is a regular final, and should therefore have absolute determining power for the mode of the piece, here (and here only) the regular final that terminates the tenor must yield entirely to the species in the modal determination.

Following the discussion of regular finals in his chapter 3, Aron listed the three irregular terminations above the regular finals, about which he wrote as follows:

Some other [compositions] terminate at a la mi re, b fa/b mi, or c sol fa ut. Because these positions are irregular [these compositions] are considered by us according to the *processo*, the species, and the psalm-tone pseudo-finals [*differenze degli seculorum*], which will govern and will give true knowledge of the mode.

Aron's listing of *processo* as a modal determinant, syntactically coordinate with species and psalm-tone pseudo-final, points toward his not infrequent invocation of *processo* as a modal criterion independent of species and psalm-tone pseudo-final. The noun *processo*, and the verb *procedere*, occur many times in the course of Aron's specific discussions; *processo* is cognate to the Latin *processus*, a term that appears from time to time in chant theory as a synonym for ambitus. Aron's usage throughout the treatise shows that he understood *processo* as ambitus, and that *procedere* means to move around in an ambitus, a given defined overall compass.³⁸ In the late medieval Italian tradition of modal theory to which Aron belonged, the ambitus of a mode is normally understood as the composite of its „proper“ species of fifth and fourth in appropriately authentic or plagal disposition above or above and below the modal final, respectively. Aron, however, sometimes chose to use *processo* (the concept of ambitus) in its purely Guidonian sense, as the undivided span within which the melodic activity in a given mode is comprised. Within the span covered by a *processo* so understood, the modally relevant species of the smaller perfect consonances could be distributed independently of the location of the terminating degree of the piece, and (surprisingly) in either vertical disposition, as we shall see.

After discussing the modal role of the regular finals (with and without flat signature) and listing the modal determinants for pieces with the irregular terminations a la mi re, b fa/b mi, and c sol fa ut, Aron continued his chapter 3 by identifying the degrees an octave above the regular finals as being „of the same nature as the aforesaid regulars“. The only relevant citations later on, however, are in Chapter 4 on modes 1 and 2, of pieces whose tenors end on d

³⁸ See for instance Jacob of Liege *Speculum musice* Book VI: ... principia, processus et cantuum distinctiones a finali voce regulantur (Chapter 40)

Dico ulterius illum cantum irregularem, quantum ad medium vel processum qui plus ascendit vel descendit quam sibi recordat regula ...(Chapter 77)

It is worth remembering the etymology of *ambitus* as well as *processus*, both of which imply not so much a given and measured space as rather motion through space, wandering freely in the case of *ambitus*, in the case of *processus*, directed and controlled.

la sol re. Chapter 3 then concludes with brief general guidelines for assigning modes to anomalous pieces: pieces whose species are too jumbled to be helpful in determining the mode can be judged modally only if they have a regular final and no b-flat signature; pieces with conflicting signatures in bass and tenor are unsuitable, „except when considered and with planned artifice“;³⁹ pieces with signatures of two or more flats can be judged only by the species even if they terminate at a regular final position.⁴⁰

From Aron's first three chapters, with the help of occasional comments in chapters 4 through 7, we can see that he used five basic criteria, in two kinds, to identify the mode of a polyphonic tenor, and thereby of a whole piece. There were three kinds of modal final that might be applied to the termination: regular final; confinal; and psalm-tone pseudo-final. And there were two aspects of the melodic course: the species of the fifth and the fourth; and the overall compass, the *processo*. Aron's criteria sometimes, indeed usually, operate together. It must be stressed nonetheless that they are logically independent variables, and are sometimes applied independently in ways that may seem to us rather strange. Most of the modal assignments Aron proposed have presented no serious problem to modern scholars, even if they have been seen from angles that were not Aron's angles; we have already noted this in the case of Hayne's *De tous biens plaine* (Example 3), which we would regard as a transposition (in the modern sense) of mode 2 by an upward fourth, while he regarded it as a transformation in register of mode 8. Yet from his point of view or from ours, the tenor of *De tous biens plains* can represent only mode 2; most of Aron's modal assignments can be similarly understood on the basis of our own familiar assumptions about polyphonic modality, without considering that Aron might have reached them by a different route. Some of Aron's assignments have proven rather puzzling, however, and a proper understanding of Aron's approach to polyphonic modality must include a satisfactory interpretation of these hard cases as well as of the easy ones, and will in fact lead to more appropriate interpretations even of the easy cases.

I want first to explicate Aron's application of his classificatory method to some polyphonic compositions with tenors terminating at the three irregular final positions a la mi re, b fa/b mi, and c sol fa ut, where the final is still „necessary“ (Examples 4-5 and 7-12). To conclude, I shall examine two pieces that terminate, as it were, altogether outside the pale (Examples 13 and 14). All these examples along with Examples 3 and 15, show tenors from Aron's

³⁹ By „artifice“ Aron meant such devices as canons at the lower fifth and the like. Yet later on he cited a piece for mode 8 that is without any such artifice yet has conflicting signatures between the bass and upper voices (including the tenor), and other curious problems as well. See Example 14 below, and the accompanying discussion.

⁴⁰ Among the pieces Aron cited as instances of this type is „Le serviteur“, the only polyphonic composition actually cited by Tinctoris in his *Liber de natura et proprietate tonorum* (in Chapter 24).

sample repertory. Example 9 is from the 1521 *Motetti et canzoni* attributed to Antico; all the rest are from Petrucci's *Odhecaton*, *Canti B*, and *Canti C*; all were published in Venice, like Aron's treatise itself. In all the compositions illustrated here by their tenors the superius part finishes an octave above the tenor. The cadential octave is established in the usual way, preceded by a major sixth resolving outward, and in all but one case the pre-cadential sixth arises as the result of the usual 7-6 suspension. The cadential octave of superius and tenor is supported by the lowest voice an octave below except in Examples 13-15, where bass and tenor form a unison. Where there is a fourth voice it fills in.

*

The compositions whose tenors appear as Examples 4 and 5 are the only instances cited for a *la mi re* as a termination in modes 1 and 2, discussed in Aron's chapter 4.

Some other tenors terminate at a *la mi re*. It is necessary to consider and examine whether their *processo* is appropriate and reasonable for that ending, because if [a tenor] ends irregularly terminated for modes 1 and 2 and does not proceed with its proper form, it could easily not belong to the former [mode 1], even though a *la mi re* is [both] irregular final and a termination for its psalm-tone [that is, both confinal and pseudo-final]. That is because modes 3 and 4 have the same place for the psalm-tone difference, as you will understand later on. [And indeed, in his chapter 5 on modes 3 and 4, Aron cited several pieces terminating at a *la mi re*]. If then in this way of reasoning you find its form appropriate, it will be called mode 1, like *La plus des plus* of Josquin, which from the course of its species of the fifth and its ascent is mode 1. And *Si mieulx* of Loyset Compère is mode 2, as is manifestly to be understood.

One sees in Example 4, the tenor of Josquin's *La plus des plus*, that the first species of the fifth, *re/mi/fa/sol/la*, is all-pervasive, and that it occurs, moreover, in two places: in the natural (second) hexachord arising from C *fa ut*, with the melody running about between D *sol re* and a *la mi re*; and in the hard (third) hexachord arising from G *sol re ut*, with the melody running about between a *la mi re* and the higher *e la mi*. Clearly the terminal position a *la mi re* is fully supported by the species of the fifth proper to modes 1 and 2; at the same time, the overall compass is the regular *ambitus* for mode 1, covering a span from C *fa ut* (the *subtonium* below the regular modal final D *sol re*) to the higher octave of the regular final at d *la sol re*, extended up to a third beyond (as permitted *licentialiter* in chant theory). The a *la mi re* that ends the tenor, then, is to be understood as a psalm-tone pseudo-final, within the regular *ambitus* of mode 1, i.e., (C)D...d(ef).

Aron may have thought the tenor of Loyset Compère's *Si mieulx* belonged to mode 2 „come manifestamente si comprende“, but for this modern reader at least, the matter is by no means as self-evident as the assignment of *La plus des plus* to mode 1. This is in fact the hardest of the hard cases, and the only one for which I find no completely satisfactory interpretation simply from an unforced reading of Aron's text.

The tenors of *La plus des plus* (Example 4) and *Si mieulx* (Example 5) have the same termination at a la mi re, and the *processo* of each spans the same eleventh from C up to f that is cut out from the Guidonian diatonic by the tenor clef on a five-line staff. Thus the irregular termination at a, as a psalm-tone pseudo-final, and the ambitus as well, might both have been invoked in support of an assignment of *Si mieulx* to mode 1. The species of fifth and fourth that one sees manifested in Example 5, however, are not at all those that characterize mode 1 as illustrated in *La plus des plus*: the re/mi/fa/sol/la species of the fifth is weak or subordinate, while the ut/re/mi/fa species of the fourth, with c sol fa ut as its predominant pitch, dominates most of the longer phrases. Aron might have interpreted the irregular termination of *Si mieulx* as a psalm-tone pseudo-final for mode 3 or mode 4, rather than mode 1 – there is a psalm-tone difference on a la mi re for mode 3 and for mode 4 as there is for mode 1 – but this would be open to the same objections as a mode 1 assignment: the species are wrong, nor is the *processo* spanning the 11th from C to f anywhere nearly so easily referable to mode 3 or mode 4 as it is to mode 1.

It looks almost as though Aron assigned *Si mieulx* to mode 2 *faute de mieulx*: it couldn't be mode 1, nor mode 3 or 4, so by elimination it had to be mode 2, „come manifestamente si comprende“. But by all three criteria just mentioned – psalm-tone pseudo-final, species, and *processo* (ambitus) – that assignment seems at first incomprehensible. The termination at a la mi re cannot be a psalm-tone pseudo-final because there is no *differentia* there for the second psalm-tone, in any tradition. The species exhibited in Loyset Compère's tenor are as inappropriate for mode 2 as they would be for mode 1; and the ambitus from C up to f is much too high for the „regular“ compass of mode 2 from A re to a la mi re above and below the modal final D, with a degree extension at either extreme *licentialiter*.

We could take it, however, that Aron meant us to understand the terminal a la mi re of *Si mieulx* as an instance of confinality. And since it is allowed that a confinal can have the authority, borrowed as it were, of a regular final, then we might have an instance here of a „transposition“ (in the medieval sense) of mode 2 from its „regular“ locus in the Guidonian diatonic to a locus a fifth higher (as opposed to the „transformation“ from mode 8 to mode 2 that is illustrated in Example 3). The problem of identical compasses and identical terminations for the differing modal assignments of Examples 4 and 5 would then disappear. Example 4 exhibits an authentic ambitus and the proper species of the fifth for mode 1; it is only that the composition ends not at the regular final but at a pseudo-final, a position where several of the first psalm-tone ending-formulae terminate. In Example 5, to the contrary, a la mi re might be taken as a true confinal, functioning with the borrowed authority of a regular final; in that light it is congruent with a number of chant melodies and melodic types that terminate at a la mi re. The familiar instances are the „second mode transposed“ antiphon melodic type exemplified in *Benedicta*

tu, *O mors*, and so many other antiphons of the Advent and Lenten seasons, and the so-called Gradual „*Justus ut palma*“ melodic type, also designated „mode 2 transposed“ in chant theory. The Gradual shown in Example 6, „*Ostende nobis Domine*“ for Friday in Ember Week of Advent, is an instance of the latter. Graduals of this type dominate the Advent and especially the Easter seasons and so would have been among the most familiar to Aron and to his projected readership. As may be seen at a glance over Example 6, „*Ostende nobis Domine*“ terminates at a *la mi re*, and its *processo* runs the gamut from C *fa ut* to *f fa ut* an eleventh higher. A perhaps subliminal analogy with Loyset Compère's tenor is rendered even more plausible by the strong emphasis in both on *c sol fa ut* a minor third above the final. And though Aron never invoked the notion of *repercussa* in his modal ascriptions – it was not a part of the Marchettan theory that he had inherited – mode 2 melodies like „*Ostende nobis Domine*“ are strongly characterized by that *re/fa* interval, a/*c* as well as *D/F* in the Guidonian gamut. (The note *d la sol re* is also strong in the Gradual and the tenor voice of *Si mieulx*, but much less so in the latter, and the strong *G* in the chanson tenor has no counterpart in the Gradual until the very end, where it comes to the fore as a boundary tone in the second half of the melisma approaching the concluding a *la mi re*.)

But if some such combination of arguments by elimination and by analogy make it plausible for the a *la mi re* concluding the tenor of *Si mieulx* to be interpreted as a confinal, despite Aron's otherwise complete avoidance of confinality in favor of psalm-tone pseudo-finals – the „*differenze degli seculorum*“ – as a way of accounting for modally irregular finals, then the *processo* of Loyset Compère's tenor, the compass of the whole, is distributed above and below the final in a balanced fashion, in short, it is a plagal ambitus. In this way the tenor of Loyset Compère's *Si mieulx* might be interpreted as an instance of „mode 2 transposed“ from its „regular“ location, with a modal final „quanto alla confinalità“ that is nonetheless „necessary, rational, and governing“.

In this rationalization, in short, the terminating scale degree a *la mi re* of the Guidonian system would be supposed to function in *La plus des plus* as a pseudo-final, but in *Si mieulx* as a confinal; as a consequence one and the same actual compass is in the one instance authentic, in the other plagal. In the first case, the species that compose the ambitus support the supposition that *La plus des plus* represents mode 1 with a pseudo-final; in the second case, the borrowed authority in the confinal would override any impropriety in the species, and *Si mieulx* could then be regarded as mode 2 transposed, with some commixture of species from other modes.

The difficulty with this otherwise reasonable argument is, as noted earlier, that in none of his other modal assignments has Aron invoked confinality as an argument for modal governance of a tenor by an irregular termination. Indeed, in one case – see example 7 below and the accompanying quotation and discussion – Aron specifically rejected a possible confinal scale degree as

a „regular“ conclusion because „neither species nor appropriate psalm-tone ending formulae can be taken there“.

In his chapter 5 Aron proposed the degree a la mi re as a psalm-tone pseudo-final for several pieces in modes 3 or 4, attributing Josquin's well-known *Miserere a 5*, for instance, to mode 3. When there is a b-flat signature, however, a la mi re cannot be a psalm-tone pseudo-final; in principle, chant theory does not provide for „transformed“ psalm-tones. In a piece with a b-flat in the signature where the species mi/fa/sol//re/mi – (a/b-flat/c//d/e) – and mi/fa/sol/la – (e/f/g/aa or E/F/G/a) – are associated with a termination at a la mi, an assignment to mode 3 or mode 4 would be appropriate „because its regular composition is clearly seen“; since the *processo* [of a tenor] is not likely to extend up through the higher species of the fourth, however, it is the degree of extension in the lower part of the compass only that will determine the choice between authentic or plagal for such a tenor. According to Aron, it should usually be mode 4, and his citation is an anonymous *O Maria rogamus te* from Petrucci's *Motetti C*.

In his chapter 6 Aron mentioned the degree a la mi re as psalm-tone pseudo-final for mode 5, since the principal *differentia* (in most schemes the only one) for the fifth psalm-tone terminates there; he cited no specific instances for it, but pointed out that it would be required in [polyphonic] Magnificats and Psalms. In that passage, as in the one quoted earlier for a la mi re terminating pieces assigned to mode 1 or mode 2, Aron reminded his readers that *processo* [including the species incorporated] will determine to which of its many modal possibilities a composition terminating at a la mi re should be assigned.

Psalm-tone pseudo-finals are often invoked in Aron's discussions of specifics; confinality, to the contrary, is rarely mentioned, as already noted. The only place where the notion of confinal is brought into a discussion of specifics even long enough to be rejected is in Aron's Chapter 6, on modes 5 and 6, in which he wrote that where that particular authentic-plagal pair is concerned,

Any [piece terminating] in c sol fa ut [sc. that has the proper *ambitus* and/or species] will be ascribed to mode 5, whether or not there is a b-flat [signature], as in *Si sumpsero* of Obrecht [whose tenor is shown in Example 7]. This one is [mode 5] only because of the psalm-tone termination sometimes found in plainsong. Even though [both] mode 5 and mode 6 may be regularly concluded through confinality [at c sol fa ut], mode 6 is nonetheless not possible in such a position because neither species nor appropriate psalm-tone ending formulae can be taken there.

For the tenor of *Si sumpsero* (Example 7) Aron's concluding observation is perfectly clear. There is no variant ending formula for the sixth psalm-tone that ends at c sol fa ut, so that c sol fa ut cannot ever be a pseudo-final for mode 6. At the same time, the b-flat signature produces the first species of the fourth (sol/fa/mi/re) between c sol fa ut and the G sol re ut below, instead of the third species of the fourth (fa/mi/re/ut) that is proper to mode 5; therefore c sol fa ut in *Si sumpsero* cannot be taken as the confinal of a Guidonian

transposition of mode 6 either. What is not necessarily obvious is why a similar tenor with b-natural rather than b-flat might not be an instance of a Guidonian transposition of mode 6, with c sol fa ut as confinal, as it is in so many chant pieces, and by extension, in polyphonic pieces like the one illustrated in Example 2-C. But as we shall see shortly, Aron preferred another way of dealing with tenors in *cantus durus* terminating in c sol fa ut. Furthermore, Aron never explicitly invoked confinality to explain a modal assignment, and the only unexplained assignment that seems as though it might require confinality as a rationale is Aron's ascription of Loyset Compère's *Si mieulx* to mode 2, as discussed above.

Aron's modal assignments for the two pieces terminating in b-flat whose tenors appear in Examples 8 and 9 is particularly revealing of his method. He wrote:

There will be others assigned to mode 5 when they end in b fa/b mi. This is not the case if the signature of the b-flat is removed, which in this position generates its own composition, as much ascending as it does descending, from which the termination here [at b-flat] is rational, necessary, and governing, the thing through which is recognized its proper form, as the chanson *La regrette* [Example 8] composed by Hayne demonstrates, which is mode 5 with respect to species, cadences, and continuous ascent [to the full extent of its ambitus]. But *O admirabile commercium* of Josquin [Example 9] is ascribed to the sixth [mode], along with a few others like it that are found, albeit rarely.

In the theory of the Guidonian diatonic the scale-degree variety b-flat never quite lost a slightly disreputable aura. Though by Aron's time b-flat had long since come to be regarded as an essential part of *musica recta*, there was always a tinge of the accidental lingering on from its ancestry in the conjunct *synnemenon* tetrachord of the Lesser Perfect System of Hellenistic theory.⁴¹ Aron's characterization of b-flat here as „rational, necessary, and governing“ seems at first astonishing. This threefold power is otherwise outwardly reserved to the lords of the octenary system, the four regular finals. The scale-degree b-flat is of course not a regular modal final, nor could it be a confinal, for it has no hexachordally equivalent regular final a fifth below. But in that case the tenor of Hayne's *La regrette*, despite its termination, must be construed as running an ambitus perfectly proper to mode 5, between the regular final F fa ut and its upper octave, with the *subsemitonium* below and a small extension above. Yet the terminal b-flat, within its regular mode 5 ambitus, cannot be construed as a psalm-tone pseudo-final, since there is no psalm-tone terminating at b-flat.

What the b-flat in the tenor of *La regrette* does very frequently is divide the F-f octave into a third species of the fifth above it and a third species of the fourth below it: fa/sol//re/mi/fa above and fa/mi/re/ut below. These are of course the species formally pertinent to modes 5 and 6. Now as Aron pointed

⁴¹ Cf. my essay „Mode“ in *The New Grove* XII, 380-81, on the *synnemenon* tetrachord as the origin of „b-flat“, and Guido's *Micrologus* Chapter 8 on the systemic awkwardness of b-flat.

out, it is the b-flat in this tenor that generates those species, b-flat/c/d/e/f and b-flat/a/G/F; therefore it has authority over them, and in that sense takes precedence of them. It has been made (by the composer) their efficient cause, so to speak. Since the species are always necessary, rational, and governing, unless they are in conflict with a proper modal final that is not compatible with them, the lowly b-flat that generates those species in this tenor – that is, the efficient cause of those species – is *a fortiori* also necessary, rational and governing. But it is still not a modal final of any sort whatever, so the ambitus remains the regular ambitus of mode 5. Within this regular ambitus, moreover, the normal distribution of the species for mode 5 is inverted: the species of the fifth is above, the species of the fourth is below. If b-flat could somehow be given status as a final, this distribution of the species would then be plagal, and *La regrette* would be in mode 6. But there is no modal final here, and therefore no basis for calling what is otherwise a regular authentic ambitus, plagal. Authenticity and plagality are functions of the mutual relationship of ambitus and final, and the only degree here that has any status as a modal final, in the absence of any kind of final at the terminal position, is the regular modal final F fa ut, even though F fa ut happens not to be the place where the piece ends. So while the species exhibited in Example 8 pertain to both mode 5 and mode 6, and are even distributed as though in mode 6, the regular ambitus, the *processo*, confirms the melody as proper only to mode 5 and not to mode 6.

Josquin's tenor shown in Example 9, conversely, is assigned by Aron to mode 6. Logically that should contradict my interpretation of his reading of Hayne's tenor in Example 8. As in *La regrette*, so in *O admirabile commercium* the ambitus of the tenor runs from F fa ut up to its higher octave (here not beyond it); and though the terminal b-flat, like the terminal b-flat of Hayne's tenor, clearly dominates the species used in the melody, it too can play no modally determining role directly, in its own right, since b-flat can be neither regular final, confinal, nor psalm-tone pseudo-final.

The e-flat that is included in the signature of the tenor shown in Example 9 also appears in the alto and bass parts (not in the superius) in the Antico print that will have been Aron's source for the composition. The e-flats eliminate notationally what would otherwise have been a prominent tritone above b-flat that would have been corrected in performance in any case, and they frequently „distort the third species of the fifth into the nature of the fourth [species of the fifth]“, again reading upward from b-flat. But in Aron's terms, given that the choice is mode 5 or mode 6, a transformation of the third species of the fifth to the fourth would have no more effect on the modal assignment of the piece than the terminating b-flat. The species of the fourth and the fifth in Example 9 can pertain either to mode 5 or to mode 6, and we have seen from *La regrette* that their vertical distribution, in the absence of a modal final at the termination, need not be relevant. Though one might argue that the predominance of the species of the fourth ut/re/mi/fa at two

positions, both at F/G/a/b-flat and at b-flat/c/d/e-flat, is not inappropriate to mode 6, the absence of any kind of modal final, combined with the regular authentic *ambitus* from F fa ut to its upper octave, argue as strongly for mode 5 as they do in the case of *La regrette*.

Why, then, is *O admirabile commercium* assigned to mode 6, if neither the terminal degree nor the distribution of the species above and below it are relevant to the assignment? Simply because the tenor of *O admirabile commercium* is a mensural version of a chant melody. As we noted in connection with Aron's chapter 2, the only thing that can override the tenor as the modally determining voice is the appearance of a chant melody in another voice and not the tenor. *O admirabile commercium* is a well-known mode 6 Vespers antiphon for the Feast of the Circumcision that was often used as the basis for polyphonic compositions. The modal category of a chant melody, *a fortiori* when it is in the tenor as it is here, takes absolute, unquestioned precedence over any other consideration in determining the mode to be ascribed to any polyphony based upon it, not only for Aron but for any theorist or composer expounding or representing an octenary system derived from chant theory; so the assignment of Josquin's motet on *O admirabile commercium* to mode 6 calls for and received no argument. What Aron meant by or would have been able to make of „those others like it that are found, albeit rarely“, we shall never know; *O admirabile commercium* is the only one he cited.

Aron's chapter 7 is devoted to modes 7 and 8, Mixolydian and Hypomixolydian if you prefer. Examples 10 through 14 are tenors terminating with pitch-class C. Examples 10, 11, and 12 terminate at c sol fa ut, Examples 13 and 14 at C fa ut. Of the pieces whose tenors may be seen in Examples 10, 11 and 12, and three more besides, Aron wrote as follows:

these ... will be ascribed to mode 7 or mode 8, in light of the psalm-tone ending formula and the *processo*; the psalm-tone ending formula is often seen terminating at this position [both the seventh and the eighth psalm-tones have *differentiae* terminating at c sol fa ut], and that being so, if a given song has a *processo* appropriate to the mode, it will unquestionably be mode 7 with respect to its termination, or mode 8 – and all the more reasonably so if it has the signature b-flat, which will give rise to the proper composition, that is, to ut/re/mi/fa/sol and re/mi/fa/sol, and sol/fa/mi/re/ut and sol/fa/mi/re, the proper forms [of the species] for modes 7 and 8.

Josquin's „Comment peult avoir joye“, whose tenor is shown in Example 10, is easily assignable to mode 7 on these grounds. It has a pseudo-final appropriate either to mode 7 or mode 8, and it has a perfectly regular mode 7 *ambitus*, from G sol re ut to the higher g sol re ut. Though the lower species of the fourth into which the pseudo-final divides the regular *ambitus* is inappropriate, it hardly appears; the only prominently exploited species is the fourth species of the fifth, running between ut and sol – though to be sure, the species lies in the higher natural hexachord arising from c sol fa ut rather than in the hard hexachord arising from the regular final G sol re ut. But we have already seen that the vertical positioning of the species is not directly

relevant to their governing force unless they are attached to a regular final. So in Aron's terms, the tenor of Josquin's *Comment peult avoir joye* is unmistakably an instance of regular mode 7, the Mixolydian: it strongly emphasizes the fourth species of the fifth ut-re-mi-fa-sol; it lies entirely within the G-g ambitus proper to mode 7; its termination at c sol fa ut is a pseudo-final, since the seventh psalm-tone has *differentiae* ending there.

This composition has a certain notoriety in the scholarly literature, in that the only source that has all voices fully texted is Glarean's *Dodecachordon*, where the text is in Latin, beginning *O Jesu fili David*. Glarean of course cited this piece as an instance of his Hypoionian mode, that is, mode 12. The composition, moreover, is a perfect instance of the quasi-C-Major tonal type also illustrated in Example 2-C, a tonal type often used by Lasso and other Netherlands masters to represent mode 6. This piece, in short, is one of those that we might have shown to Aiguino Illuminato, Alexander Utendal, and Leonhard Lechner, that they would have identified as mode 7, mode 12 (or rather Hypoionian), and mode 6, respectively (see pp. 2-3 and notes 3, 4, 5 above).

Example 11 is another instance of the type. I include it only because in Strunk's translation it is cited as an instance of mode 8 rather than of mode 7. The distinction between Examples 10 and 11 would be a very subtle one indeed, but Aron was not making it. The syntax of Aron's text at that point makes Professor Strunk's reading plausible, but the syntax would also allow „Je cuide si ce temps“ to go the other way, and the grammatical concordance requires it to do so.⁴²

That leaves Example 12 as Aron's only unmistakable instance for mode 8 with a termination at c sol fa ut. Aron's comment was „*L'oserai dire* [is] mode 8, and not mode 7, as its form and continuing *processo* show you“, the terms „form“ and „*processo*“ denoting species and melodic ambitus as usual. A century after Aron's time, the tenor shown in Example 12 would have been regarded simply as a transposition upward by a perfect fourth of the regular mode 8, the Hypomixolydian, a transposition effected by the b-flat signature – and so it would seem also to our way of thinking. But our way of thinking is not Aron's. As we have seen in the tenor shown in Example 3, a b-flat in the signature can cause a modal transformation under certain circumstances, but – as we saw with Example 8 – never a Guidonian transposition. Put another way, a b-flat *must* affect the solmization of certain positions in the Guidonian diatonic, and *cannot* affect their letter names. Thus Aron could not have thought of the tenor shown in Example 12 as a transposition in our sense of the word, even though his assignment to mode 8 is what it would have been

⁴² Onde gli presenti canti cioe Mes pensies di Compere, Madame Helas, Cenent peult di Iosquino, et Mittit ad virginem non altrimenti che del settimo son chiamati, et Je vide sece tamps &t Loserai dire del tuono ottavo et non settimo come la sua forma et continuo processo ti dimostrano &c.

had he done so. Nor could that tenor with its b-flat represent a transformation of mode 7 into mode 1, as Example 3 represents a transformation of mode 8 into mode 2, even though the ambitus is exactly the same as that in Josquin's *Comment peult avoir joye* in Example 10, which Aron had assigned to mode 7; the terminating c sol fa ut rules out that possibility, since c sol fa ut can be neither confinal nor psalm-tone pseudo-final for mode 1. And needless to say, it cannot be a pseudo-final in regular mode 8 since the *processo* is that of mode 7. The degree c sol fa ut is of course a pseudo-final in regular mode 5 with a b-flat signature, as we saw in Example 7, but the tenor in Example 12 could hardly be deemed to have the regular ambitus for mode 5 either, when it does not even reach down to the regular modal final at F fa ut.

So with transposed ambitus and transformed ambitus, not to mention regular ambitus, all ruled out, the c sol fa ut terminating the tenor in Example 12 can be modally relevant only in terms of the species that it articulates. They are, the first species of the fourth below c sol fa ut and the fourth species of the fifth above it: sol/fa/mi/re in the soft hexachord for the end of the first and fourth phrases and the beginning of the second and fifth; and sol/fa/mi/re/ut in the higher natural hexachord for the climactic third phrase and at the very end. In the opening motive and its three recurrences the species of the fourth ut/re/mi/fa is exploited, but it is embedded in a larger melodic context.

The two species into which c sol fa ut divides the octave-spanning *processo* in the tenor of *L'oserai dire* (Example 12) are those proper only to modes 7 and 8; for both these modes c sol fa ut is available as a psalm-tone pseudo-final. But if *Comment peult avoir joye* with its b-natural and its heavy emphasis on the proper species of the fifth sol/fa/mi/re/ut is to be mode 7, then *L'oserai dire* with its b-flat, its notable emphasis on the proper species of the fourth sol/fa/mi/re, and its relatively attenuated exploitation of the species of the fifth above the pseudo-final, must be mode 8. And let us recall again that while Aron's modal ascription in this instance is the same as ours would be, the route to that ascription will have been quite different, just as it was for Examples 3 and 9.

By now it should come as no surprise to learn that the terminating low C fa ut in the tenors shown in Examples 13 and 14 can have no bearing whatsoever on Aron's modal assignments: C fa ut is not one of the four regular finals; being below the regular finals rather than above them, it is not a confinal; nor can it be a pseudo-final, there being no psalm-tone with an ending formula terminating there. About such tenors Aron wrote as follows:

... when they terminate in C fa ut, for the aforesaid reasons [„because we clearly see them going along in what the proper and regular modes naturally require“, that is, they have an appropriate *processo*], and also because they do not have the appropriate species of the fourth [appropriate that is to mode 7], they will then be called mode 8 by us, and not mode 7.

By these criteria Example 13 presents no problem. The fourth species of the fifth, running about between ut and sol, dominates the melody, though it lies in the natural hexachord arising from the terminal C fa ut rather than in the

hard hexachord arising from the regular final G sol re ut; this species would be appropriate either to mode 7 or to mode 8. But the *processo* as a whole does not reach the octave above the regular final G sol re ut – it does not show any species of the fourth appropriate exclusively to mode 7 – and moreover, it has a normally extended regular ambitus for mode 8, nicely balanced plagally around the regular final G sol re ut. To put it another way, if the tenor shown in Example 13 had terminated at G sol re ut – as for instance it does at the penultimate phrase – the assignment to mode 8 would be obvious. The actual termination at low C fa ut is neither regular final, nor confinal, nor pseudo-final, and has no bearing on the modal category to which the tenor is to be assigned. The tenor in Example 13 represents regular mode 8, whose regular final is at G sol re ut, which in turn divides the *processo* and bounds the species used; it just happens to terminate at a position that under no circumstances, in Aron's terms, can be deemed a modal final or have any bearing on the modal assignment except as lower boundary to the fourth species of the fifth.⁴³

Aron assigned De Orto's setting of *Mon mari m'a diffamé*, evidently as printed in Petrucci's *Canti B*, to mode 8 as well; its tenor is shown in Example 14. The ending at low C fa ut leaves the tenor without a terminal modal final, as in the tenor of *E la la la* in Example 12, so that once again the last note of the piece is irrelevant to the determination of its mode, which will therefore have to be made according to the species and the *processo*.

Up until the end of the first line the tenor in Example 14 might have made a nice instance for mode 2, or possibly mode 1, but the sol/fa/mi/re/ut species of the fifth that is worked over in the antepenultimate and penultimate phrases rules out any such assignment. The *processo*, considered by itself, comes closest to that of regular mode 6, extended one degree below and short one degree above; that assignment could also be supported by the way the first and fourth phrases in line 1 work the third species of the fourth, ut/re/mi/fa above F fa ut, F fa ut being the regular final for mode 6. But there is no fa/mi/re/ut species of the fourth below F fa ut. This species, in that position, is the one that would lend a mode 6 representation its characteristic plagality; it is not only utterly lacking, it is flagrantly contradicted in the second, third, and fifth phrases in line 1. These three phrases work the first species of the fourth,

⁴³ Later in the century compositions embodying this particular quasi-C-Major tonal type would come to be regarded as representing mode 5 in most octenary systems, and of course mode 11 in Glarean's dodecachordal system. Cf. pp. 206-08 and Table V in my essay „Monteverdi's model for a multimodal madrigal“, in *In cantu et in sermone: for Nino Pirrotta on his 80th birthday*, ed. Fabrizio Della Seta and Franco Piperno (Firenze 1989), 185-219.

sol/fa/mi/re, in its regular position for mode 8, from the mode 8 regular final G sol re ut down to D sol re below. The sol/fa/mi/re/ut fourth species of the fifth worked over in the antepenultimate and penultimate phrases would also support a mode 8 assignment, as it does for the tenor of *E la la la* in Example 13. Thus in all phrases of the tenor of *Ma mari m'a diffamé* except the first, fourth, and last, species appropriate to mode 8 are being exploited.

Given that the termination is irrelevant to the modal assignment, one begins to see how Aron might have arrived at mode 8 as the most plausible assignment in his terms for this curious tenor. At any rate, his assignment illuminates the conflict of rational versus empirical modal theorizing with particular clarity. Not only does it contrast with the *ad hoc* classificatory practices of such as the editor Tylman Susato – not to mention the principles of modal representation evidenced in the modally ordered collections of the great masters – it conflicts even more drastically with our own latter-day biases about polyphonic modality. To begin with, consider now the last phrase in Example 14. It is evident that any singer would have to sing the antepenultimate note a perfect fourth higher than the low B-flat that precedes it, as fa rather than mi, as E-flat rather than E. A look at the other voices would then turn up a bass with E-flat actually in its signature, along with the B-flat that all the other parts have. Because of that bass, the pitch-class E-flat will normally have to be sung in most places in the other voices where the pitch-class E is written. That includes the tenor as well, which may well turn out to need E-flat sung throughout in actual performance. In that case we would regard the tenor – and the piece to which it belongs – as a fictive mode 1, with modal final at C, solmized „re“: the phrases at the end of the piece would be solmized with la/sol/fa/mi/re, the first species of the fifth; and the motive in phrase two that returns in phrases three and five would be solmized with la/sol/fa/mi, the third species of the fourth. We would probably call the piece as a whole Dorian transposed to C.

There is a setting of this tune in Petrucci's *Canti C* with the melody one degree higher in the Guidonian diatonic, without any b-flat signature, with its tenor terminating at D sol re, the regular final for modes 1 and 2, and so on; that tenor is shown in Example 15. We would call this one „Dorian“ (untransposed) at the end, with strong „Phrygian“ overtones throughout the first half;⁴⁴ Aron would have assigned it to mode 1 without further ado, possibly adverting to a commixture of mode 3. But the version of *Ma mari m'a diffamé* before Aron's eyes was the version in *Canti B* that is shown in Example 15, and any and all E-flats that might arise in performance – and there would be many – would nonetheless do so only as *musica ficta*. *Musica*

⁴⁴ Bernhard Meier has discussed a number of Josquin motets in terms of the „commixture“ of „Dorian“ and „Phrygian“, on pp. 69-79 of his „The *Musica Reservata* of Adrianus Petit Coclico and its relationship to Josquin“, *Musica Disciplina* 10 (1956), 67-105.

ficta that might arise out of the exigencies of performance, not to mention the existence of other sources for the piece notated at a different place in the Guidonian diatonic, can have no bearing on the rationale for Aron's assignment of this tenor, in this source, notated this way. In these chapters of his *Trattato di utti gli tuoni di canto figurato*, Aron was dealing with *musica recta*, not *musica ficta*, and *musica recta* does not include any E-flats.⁴⁵ And in this position in the Guidonian system the tenor has no modal final. And the majority of the species seem to call for an assignment to mode 8.

*

Needless to say, a proper understanding of Aron's assignment of tenors in polyphonic compositions to this or that modal category is not going to help us directly to a proper understanding of Renaissance tonalities in compositional practice, either in the hard cases or the easy ones. Quite to the contrary, any attempt so to use Aron's work can only lead to misrepresentations of the compositional tonalities or a misprision of the theoretical method. What a proper understanding of Aron's approach can give us is a cautionary understanding of Renaissance writings on tonal structure in general. In Aron's modal classifications we can see exemplified more perspicuously than anywhere else how very different a rational approach to Renaissance tonalities can be from an empirical approach or an historical approach. Aron's theory exhibits the strangeness of pure reason in strikingly vivid ways. But in the realm of modal theory Glarean and Zarlino, and others too, are also best understood in this way. The significant difference between Aron's and Glarean's theories about modality for polyphony is not the difference between eight modes and twelve modes; it is not even the difference between accounting for only one of the voices modally and trying to account for all of them; and it certainly is not the difference between a modal theory that did not incorporate alleged ancestral forms of our Major and descending melodic minor scales and one that did. It is the difference between a purely medieval construction on Aron's part and a medieval construction conflated with a classicizing humanism on Glarean's.

And above all, theorists from other musical cultures, including ones ancestral to our own, should be allowed to speak as much as possible in their own voices, and we should do them the courtesy of regarding them as advocates rather than witnesses. We may need to explicate or interpret their briefs but we should not rewrite them. We can learn nothing from our distinguished predecessors if we take their elegant and novel constructions as mere descrip-

⁴⁵ As Aron pointed out at the end of Chapter 3 of his *Trattato*, pieces with signatures of two or more flats can be judged only by the species, as in the case of (among others) „Le serviteur“ (cf. note 40 above).

tions of the commonplace. There are crucial differences between them and us in musical premises and methodological presuppositions alike, but the ingenuity with which they worked out their hypothetical models and theoretical fabrications is right up there with the fancies and elaborations of the tonal and atonal theorizing with which we are more familiar. Plus ça change ...

APPENDIX I

Modal affect in Chapter 25 of Aron's *Trattato della natura et cognitione di tutti gli tuoni di canto figurato* (Venice [1525])

(translation and italics, noting key words in the affect tradition to which Aron's list belongs, are mine)

1. Impero che alcuna volta si richiede *letitia gaudio et hillarita* di animo, et alhora e cosa ragionevole si adoperi el primo tuono, el quale di sua natura e *mobile et abile commovere* et excitare *tutti gli affetti* dell'anima.
Inasmuch as sometimes gladness, joy, and happiness of spirit are wanted, then it is a reasonable thing if you take up the first tone, which by its nature is versatile and apt for moving and arousing all the affects of the soul.
2. Alle volte lhuomo e costituito nelle *lacrime et lamentatione*, alhora el cantore perito della arte lasciando el Primo piglia el Secondo tuono, qual per esser gravi meglio hara *aquietare lo afflitto e languente spirito* et tal tuono possiamo dire havere usato gli antichi ne gli funerali exequi quando accompagnano gli defunti alla sepultura con canti et suoni, si come testimoniano gli autori.
At times man is disposed to tears and lamentation; then the skilled and artful singer, leaving the first, takes the second tone, which in being low will better soothe the afflicted and languishing spirit; and we can say that the ancients have used this tone in funeral services, when they accompany the dead to the tomb with songs and instrumental music, as the [ancient] authors testify.
3. Accade ad altri tempi che la animosità et *iracondia* e necessaria, si come saria a uno Capitano per excitare se medesimo et gli suoi soldati et spaventare gli inimici, a questo tempo sia cauto el cantore in adoperare el terzo tuono, perchè molto infiamma et accende il spirito ad ira.
It happens at other times that animosity and wrath is necessary, as it will be for an officer, to arouse himself and his soldiers, and frighten the enemy; at that time, let the singer take care to take up the third tone, because it inflames and kindles the spirit to anger.
4. Ma quando gli huomini si daranno a gli piaceri, bisognerà postponere el preditto et eleggere el quarto, perchè quello si accomoda mirabilmente al riposo et tranquillitate.
But when men give themselves up to pleasures, it will be necessary to put aside the aforesaid [tone] and choose the fourth, because it is wonderfully accommodated to rest and tranquillity.

5. Se pure la sorte dara al cantore che el sia inanzi persone fastidiate et piene di affanni, potra tentare con el quinto tuono di levare qualche malinconia, perche si come testifica Guidone [!] el quinto e *delettabile modesto allegro et atto a scacciare le ansietà e fastidi*.
6. El sesto opera et produce contrario effetto cioe *lacrime et pietà*, quale si debbe mettere in exercitio et adoperarsi quando siamo in casi dove *conviene inducere* gli huomini a *pianto lacrime* et compassione, come saria negli giorni della Settimana santa et altri simili tempi.
7. Alcuni luoghi hanno persone appetenti et desiderosi *parte di lascivia, parte di modestia et giocondità* et appiacere come alle nozze suole accadere, et in questo tempo ben quadrerra el Settimo.
8. Et similmente lo ottavo convenira a gli allegri et *giocondi* convivi, dove siano persone affabili et approbate quali vogliono appiacere, ma non tale che venga agli atti lascivi et petulanti.

Questi sono gli effetti degli tuoni diversi et varii et secondo la diversità degli luoghi tempi et persone hanno ad essere adoperati altrimenti el musico parrebbe indotto et ignorante se non sapessi agli suoi tempi accommodare gli detti tuoni.

Still, if chance has it that the singer be before persons troubled and full of anguish, he can try with the fifth tone to alleviate some of the melancholy, because as Guido testifies, the fifth is delightful, modest, lively, and apt for driving away anxieties and troubles.

The sixth works to produce a contrary effect, that is, tears and piety; it ought to be put into effect and taken up when we are in circumstances where it is necessary to bring men to tears and compassion, as it will be in the days of Holy Week and other like seasons.

Some places have people who are lusty and desiring partly wantonness and partly cheerfulness and diversion, as usually happens at weddings, and at that time the seventh will fit in well.

And the eighth will likewise suit lively and cheerful gatherings, where there may be agreeable and tasteful persons wanting diversion, but not such as would come to wanton and impertinent actions.

These are the effects of the various and diverse tones; they have to be taken up according to diversity of time, place, and person; otherwise the musician will seem uneducated and ignorant, if he know not how to accommodate the aforesaid tones to their occasions.

Tonal plan of Lasso's ... *ad duas voces cantiones* (Munich 1577), 1-12

duo no.	system	ambitus	finals	mode
1	b	c ₁ c ₃ — —	d'/d'	1
3	b	g ₂ c ₂ — —	d''/d'	2
5	b	g ₂ c ₂ — —	a'/a	3
6	b	c ₁ c ₃ — —	a'/a	4
7	b	— — c ₃ F ₃	f/f	5
8	b	— — c ₄ F ₄	f/F	6
10	b	— — c ₃ F ₃	g/g	7
11	b	— — c ₄ F ₄	g/G	8

Example 2 A: (after Harold Powers, „Tonal Types and modal categories“, *JAMS* 34 [1981])

Tonal plan of Lasso's *Sacrae Cantiones* of 1562 in the earliest edition, Nürnberg 1562, reprinted many times (1562a)

motet nos.	system	ambitus*	final	mode
1-4	b	g ₂	G	1
5-10	b	c ₁	G	2
11-14	b	c ₁	E	3/4
15-18	b	g ₂	F	5
19-20	b	g ₂	C	6
21-23	b	g ₂	G	7
24-25	b	c ₁	G	8

*g₂ = g₂ c₂ F₃ Q / c₁ = c₁ c₃ c₄ F₄ Q

The fifth voice (Q) is normally an inner voice, except in nos. 4, 19 and 20, where it is a second g₂.

Example 2 B: (after Harold Powers, „Tonal Types and modal categories“, *JAMS* 34 [1981])

g₂
Surrexit pastor bonus etc.

g₂
C₂
Surrexit pastor bonus etc.

C₃
F₃

Example 2C: Lasso 1562a, incipit of no. 19, (mode 6)

Tenor
De tons biens plains

Example 3: (Hayne)

Tenor
Zaplus

Example 4: (Josquin)

Tenor
Semlentz

Example 5: (Compère)

Grad.
2.

O

Stende no-bis Domine

mi-se-ri-cordi-am tu-

am

et sa-lu-ta-re

tu-

um

da

no-bis

∩ Be-ne-di-xisti Dō-

mi-ne ter-ran

tu-

am a-verti-

sti

cap-ti-vi-tá-

tem Ja-cob

Example 6: Gradual in „mode 2 transposed“ (Friday in Ember week of Advent)

Tenor

Example 7: Si sumpsero (Obrecht)

Tenor

Example 8: La regretee (Hayne)

TENOR

O admirabile admirabile commercium creator generis humani humani anima tum. corp' sumēs de virgine nasci dignatus est et procedens homo sine semine Largitus est nobis suam de - - itatem

Example 9: (Josquin)

Tenor

Example 10: Comment peult (Josquin)

Tenor

Se cuide fece r. impo

Example 11

Tenor

Lo stray tite

Example 12

Tenor

fates lui bona ciera

Example 13. E La La La/Fates lui ...

Tenor

Example 14: Mon marie ma deffamee (De Orto) (Petrucci Cauti B, and cf. Example 15)

Tenor

Mon marie ma defamee

Example 15: Mon marie ma defamée, as in Petrucci's Canti C (cf. Example 1)