The New GROVE Dictionary of Music and Musicians

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Mode (from Lat. *modus*: 'measure', 'standard'; 'manner', 'way'). A term in Western music theory with three main applications, all connected with the above meanings of *modus*: the relationship between the note values *longa* and *brevis* in late medieval notation; interval, in early medieval theory; most significantly, a concept involving scale type and melody type. The term 'mode' has always been used to designate classes of melodies, and in this century to designate certain kinds of norm or model for composition or improvisation as well. Certain phenomena in folksong and in non-Western music are related to this last meaning, and are discussed below in §§IV and V. The word is also used in acoustical parlance to denote a particular pattern of vibrations in which a system can oscillate in a stable way; *see* SOUND, §5.

I. The term

1. Mensural notation. 2. Interval. 3. Scale or melody type.

1. MENSURAL NOTATION. In this context the term 'mode' has two applications. First, it refers in general to the proportional durational relationship between *brevis* and *longa*: the *modus* is *perfectus* (sometimes *major*) when the relationship is 3 : 1, *imperfectus* (sometimes *minor*) when it is 2 : 1. (The attributives *major* and *minor* are more properly used with *modus* to distinguish the relation of *longa* to *maxima* from the relation of *brevis* to *longa*, respectively.)

In the earliest stages of mensural notation, the so-called Franconian notation, 'modus' designated one of five to seven fixed arrangements of longs and breves in particular rhythms, called by scholars rhythmic modes. In these stylized patterns both long and breve could have two possible durations: if the shortest breve is assigned the value 1, the breve could be 1 or 2, the long 2 or 3; for example: B L + B L (12 + 12), L + L (3 + 3), B B + L (12 + 3) and B B B + B B B (1 1 1 + 1 1 1).

See also NOTATION, §III, 2(vii), 3, and RHYTHMIC MODES.

2. INTERVAL. Hucbald (*c*840–930) listed nine 'modes' in his *De harmonica*, ranging from semitone to major 6th by semitonal increments, giving examples from the chant repertory for each (*GS*, i, 105). His discussion was transmitted verbatim through Berno of Reichenau (*d* 1048; *GS*, ii, 64). In chapter 4 of his *Micrologus* (*c*1026) Guido of Arezzo gave six 'modes' 'by which the scale degrees are linked' from the semitone to the 5th with the exception of the tritone. He then mentioned an expansion to eight, adding the major and minor 6ths, and to nine, including the octave. Wilhelm of Hirsau (*d* 1091; *GS*, ii, 173f) reported both traditions – Guido's six 'modes' and Berno's nine – replacing the word 'modes' with 'intervals', and he added examples from plainchant for the minor 7th and the unison. (Further references to early traditions for *modus* meaning 'interval' may be found in Vivell's edn. of Frutolfus of Michelsberg's *Breviarium*, p.64, n.11.) The designation of interval by *modus* was repeated in manuals and treatises of later times, especially in Germany. In book 1 of Ornithoparchus's *Musicae activae micrologus* (1517) chapter 7 is entitled 'De modis seu intervallis', which in Dowland's translation of 1609 became 'Of Moodes, or Intervals'. As late as 1716 J. H. Buttstett, objecting

to calling the unison an interval, repeated an old tradition that 'The unison is not a *mode* but rather the first foundation of other *modes*, as [is] unity of the numbers' (*Ut, mi, sol, re, fa, la*, p.29).

3. SCALE OR MELODY TYPE. It is essential to distinguish between 'mode' as a concept in the history and theory of European music and 'mode' as a modern musicological concept, though the latter naturally grew out of the former. As an indigenous term in Western music theory the term is applicable in three separate successive historical stages: to Gregorian chant, to Renaissance polyphony, and to tonal harmonic music of the 17th century to the 19th. These three stages of modality in European music were historically continuous in the higher levels of a single musical culture.

The nucleus of the concept of mode in its basic Western form may be illustrated in two early 11th-century Italian formulations: 'A tone or mode is a rule which distinguishes every chant in its final [scale degree]' (*Dialogus de musica*, *GS*, i, 257); and 'The first degree A and the fourth, D, are alike and are designated "of a single mode" because both have a tone beneath and [have] tone–semitone–tone–tone above. And this is the first "similarity in the scale degrees", that is, the first mode' (Guido: *Epistola de ignoto cantu*, *GS*, ii, 47). The famous definition from the anonymous *Dialogus* emphasized both the classificatory function of mode and the primacy of the final scale degree; Guido here stressed the scalar–melodic environment of any given scale degree, thus providing a structural definition for mode. These and other elements of mode and modality had a considerable earlier and subsequent history in medieval theory and practice, but they epitomize the two most important features: classification, and tonal structure.

In the first part of the 16th century theorists began to use first the eight medieval modes of Gregorian chant and then also an extended system of 12 modes to account for such features of polyphonic music as the choice of cadential pitches and of pitches for the opening imitative entries, as well as to specify aspects of range and contour in individual melodic lines. How real these theories of polyphonic modality were for 15th-century musicians is moot; but from the mid-16th century until well into the 17th polyphonic modality was a central feature of many repertories as well as of many theories. Finally, during the 17th century various systems of polyphonic modes played complex roles in the development of theoretical systems made up of pairs of major and minor keys in what has come to be called tonal HARMONY or harmonic TONALITY.

All three stages of European modal theory emphasized the classificatory and scalar aspects of mode, though one can observe or infer important melodic and motivic features that may be called 'modal' in some phases of medieval and Renaissance theory and practice. But in the 20th century the use of the term 'mode' in English has been broadened to the extent that melodic type and motivic features are now given equal weight with scale type in musicological parlance. The broader concept came into the scholarly literature during the first quarter of the 20th century in studies of eastern Mediterranean musical styles and Eastern Christian liturgical music, from which it has become the basis of the common understanding of 'mode'. A new basic definition from Idelsohn's *Jewish Music* (1929) was given wide currency in the English-speaking world when it was taken over by Reese for his *Music in the Middle Ages* (1940, p.10): 'A MODE . . . is composed of a number of MOTIVES (i.e. short music figures or groups of tones) within a certain scale'. In Winnington-Ingram's *Mode in Ancient Greek Music* (1936) both the scalar and the melodic aspects of mode are summarized, in a broad geographical and cultural context that includes both the historical Western definition and the then new aspects proposed by Western scholars of Eastern music:

> Mode is essentially a question of the internal relationships of notes within a scale, especially of the predominance of one of them over the others as a tonic, its predominance being established in any or all of a number of ways: e.g., frequent recurrence, its appearance in a prominent position as the first note or the last, the delaying of its expected occurrence by some kind of embellishment. [p.2]
>
> Mode may be defined as the epitome of stylized song, of song stylized in a particular district or people or occupation; and it draws its character partly from associations contracted in its native home, reinforced perhaps by the sanctions of mythology. This is true of the Chinese *tyao*, the Indian *rāg*, and the Arabian *maqam*; and probably of the [ancient] Greek [*harmonia*]. [p.3]

To the terms above, for which 'mode' is used as a translation, should be added 'echos', used in medieval Greek Christian music theory to describe the direct model for what became the mode of Gregorian chant theory. To the oriental technical terms one might add Persian *dastgāh* or *āvāz*, *paṭĕt* in Javanese gamelan music, and Japanese *chō* – with its usual enclitic, *chōshi* – a word cognate with Chinese *tyao*, and written with the same ideograph.

Taking the term in the modern, twofold sense, mode can be defined as either a 'particularized scale' or a 'generalized tune', or both, depending on the particular musical and cultural context. If one thinks of scale and tune as representing the poles of a continuum of melodic predetermination, then most of the area between can be designated one way or another as being in the domain of mode. To attribute mode to a musical item implies some hierarchy of pitch relationships, or some restriction on pitch successions; it is more than merely a scale. At the same time, what can be called the mode of a musical item is never so restricted as what is implied by referring to its 'tune'; a mode is always at least a melody type or melody model, never just a fixed melody. This polarity of scale and tune is an instance of the familiar opposition of general to specific, which in music is often thought of as a contrasting of theory with practice. When modes (or their equivalents) are construed as primarily scalar, they tend to be used for classifying, for grouping musical entities into ideal categories. When the melodic aspects of modality are its predominant features, then modes are seen as guides and norms for composition or improvisation.

The opposition of mode as class and mode as musical function is reflected in contrasts of emphasis observed in other aspects of modality. Modal systems used for classification are closed and often symmetrical in some way as well; they are constructions used for ordering purposes, and may well have origins and associations that have nothing essentially to do with any musical properties of the repertory to which they are actually applied. Musically functional modal systems, on the other hand, have to be open-ended and capable of making room for new musical modes, which may come into the system through borrowing, variation, proliferation, inspiration, and in many other ways. In this same vein, a modal

system may be a rational construction, devised or revised by the learned; or it may be a traditional assemblage of musical entities used and retained by the working musician. And further, the possession of modality may be construed as a natural musical property, inevitably inherent in all music of the culture; or modality may be regarded as a property of a particular repertory, not necessarily applicable to other kinds of music in the culture.

II. Medieval modal theory. Medieval Christian music of the West is the oldest musical style from which theory and repertory survive in sufficient quantity for comparative examination over time. Gregorian chant is a body of monophonic music melodically characterized by general open-ended modality and theoretically classified into a closed symmetrical system – the eight church modes. For ripeness of age combined with richness of intelligible sources, both musical and theoretical, it is unmatched. For these reasons, as well as because they are the ultimate source of all later Western notations of mode, chant theory and Gregorian chant provide the best paradigm for study and illustration of most aspects of mode and modality, both historically and systematically.

1. The elements: (i) The Hellenistic model: tone, mode, trope (ii) The Byzantine model: oktōēchos. 2. Carolingian synthesis, 9th–10th centuries: (i) The Boethian double octave and the modes (ii) Octave species and the Hellenistic names (iii) Melodic types and modal orientation. 3. 11th-century syntheses: (i) Italian theory of modal functions (ii) Reichenau theory of modal species and locations (iii) Authentic–plagal distinctions. 4. Mode in the later Middle Ages: (i) Modal quality and hexachord syllables (ii) Italian modal theory in the 14th and 15th centuries (iii) Expansion of the tonal system.

1. THE ELEMENTS. Modal theories in the West originated in a confluence of the Western chant repertory that had already existed in oral tradition in pre-Carolingian times with two main strands of theory imported during the 8th and 9th centuries from outside the practical traditions of that time. The first strand and the fundamental component of Western modal theory was a system of eight modes borrowed from Eastern Christianity, as reported in the earliest Carolingian sources. The rest of the theory was erected on this foundation with the aid of a congeries of patterned schemes and abstract terms originating with the musical systematists of the Hellenistic era – Ptolemy of Alexandria and others – and transmitted to the medieval West by Martianus Capella, Cassiodorus, Isidore of Seville and especially Boethius. The essential contributions to modal theory of this second strand were: (*a*) a precise means of measuring and demonstrating intervals of the diatonic scale using the monochord, a one-string instrument of ancient repute with a movable bridge; (*b*) a system of names for the resulting pitches, based on the diatonic tetrachord, along with the notion of using letter designations of some sort for the pitches of the whole system; (*c*) the idea of scale types, the species of the octave, along with a set of Greek names for them; and (*d*) the species of the smaller perfect consonances, the 4th and 5th.

(*i*) *The Hellenistic model: tone, mode, trope.* Making distinctions among various aspects of the modal continuum in the sources of chant theory is complicated by the use of three different terms that came to cover more or less the same phenomena: 'tone', 'mode' and 'trope'. 'Tone' and 'trope' are Latinized Greek, 'mode' is pure Latin. These terms are often found in pairs or as a set, in contexts implying synonymity, as well as alone; and each of them has not only one or more significances in the realm of modality, depending on the source, but also at least one other, quite different meaning in medieval theory.

The Greek terms 'tone' and 'trope' occur Latinized in the writings of Martianus Capella and Cassiodorus, respectively; the three terms appear together, and synonymously, in book 4 chapter 15 of Boethius's *De institutione musica* (early 6th century). For Boethius, as for his Hellenistic sources, tones or modes were simply devices for transposition; they had nothing whatsoever to do with the church modes:

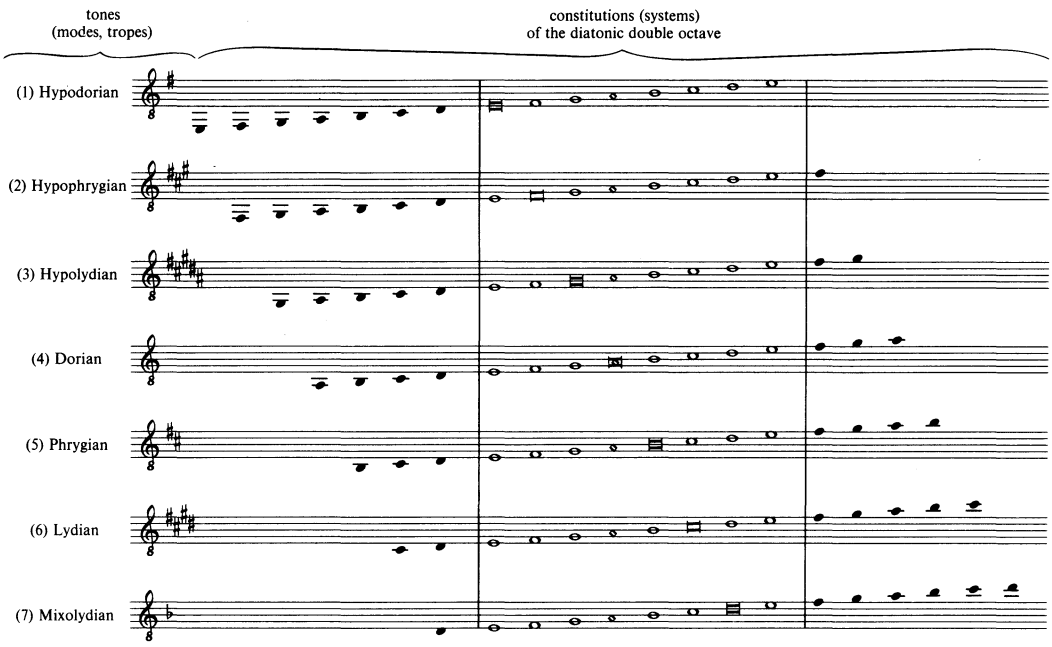
> From the 'species' of the 'consonance' of the 'octave' arise what are called 'modes', which same they call 'tropes' or 'tones'. 'Tropes', moreover, are 'constitutions' differing by lowness or height in the entire dispositions of the pitches. A 'constitution' in fact is, so to speak, a whole framework for melody [*modulationis corpus*] consisting of a linking together of the [fixed ends of the] 'consonances' – that is, of either the octave, the 11th, or the double octave – . . . with the interstitial pitches . . . which are interposed in between. If then one makes the 'constitutions' all higher or all lower, following the aforesaid 'species' of the 'consonance' of the octave, one gets seven 'modes', whose names are: Hypodorian, Hypophrygian, Hypolydian, Dorian, Phrygian, Lydian, Mixolydian.

Ex.1 is a translation into modern staff notation of Boethius's instructions for deriving his 'modes', 'tropes' or 'tones'. The (diatonic) species of the octave to which he referred is the distribution of tones and semitones filling in an octave consonance by step. The (diatonic) 'constitution' – a translation of the Greek *systēma* – of the double octave can be thought of as transposed to seven different relative pitch levels in such a way as to generate the seven possible diatonic octave species at the same relative pitch level, here shown as the octave *e*–*e′*. In terms of the staff notation, as the movable double octave shifts its position here and there against the stationary 'characteristic' octave span *e*–*e′*, some of the interstitial degrees of the scale between *e* and *e′*, though they can keep their letter names, have to be sharpened or flattened, shown here by a modern key signature. (In ex.1 round semibreves show the 'characteristic' octave containing the octave species with the same name and number as the key of transposition, square breves show the movable 'dynamic *mesē*', with which other note names also move, and the diamond-shaped semibreves on *a* and *a*♯ show the fixed 'thetic *mesē*'.)

There was of course no implication in Boethius's description of any actual musical function. Neither *mesē* nor boundary notes nor any other note was deputed to a musical role such as tonic or final. There was on the other hand a necessary connection between the particular transposition of the movable double octave and the particular distribution of tones and semitones within the stationary characteristic octave; this was indeed the whole purpose of the scheme. In book 4 chapter 15 Boethius had already listed and numbered the seven diatonic octave species; transposition keys were modes that generated those octave species within the characteristic octave and were named for them.

(*ii*) *The Byzantine model: oktōēchos.* From the 6th century to the 9th, when the repertory of Western liturgical song achieved its basic forms, there is no record of descriptive or theoretical sources, and of course no notated music. During this period a system of eight modal categories, for which there was no genuine precedent in Hellenistic theory, came to be associated with the rapidly stabilizing repertory of Western liturgical song. This system was proximately of medieval Greek origin,

Ex.1



as indicated by the non-Hellenistic Greek names of the modes in the earliest Western sources from about 800.

The origins of the Eastern Christian system of eight modes – usually called *oktōēchos* – are not entirely clear; but it seems more than probable that it was not delimited purely or even primarily by musical criteria. In any case, the octenary property of the modal system of Latin chant in the West was of non-Latin origin; the idea of an eightfold system of modes in a four-by-two matrix was adopted by Carolingian theorists to an existing body of traditional liturgical song with which it had not originally been associated. The eightfold system was of Eastern provenance, originating probably in Syria, and was transmitted from Byzantine sources to the Carolingian clergy during the 8th century.

Looked at in this way, that which is musically consistent between the modal system and the repertory of medieval Latin liturgical song is not to be explained as the natural reflection of an inherent homology (with minor inconsistencies) between a natural melodic modality in the chant and the closed and symmetrical system of the eight modes. The consistencies, rather, are the result of medieval classification, adaptation and adjustment, which took full advantage of existing modalities of the chant repertory, and brought the borrowed eightfold system into as much harmony as possible with existing melodies, melody types and psalmodic practices. The result was on the whole successful but there were numerous discrepancies; in most cases these were easily managed, but there were many cases in Latin liturgical song where a satisfactory fit was never really achieved. Attempts by medieval theorists to deal with conflicts between chant practice and modal theory furnish essential insights into the processes of medieval musical thought; the dozens of discussions and analyses of individual items provided by the theorists embody useful paradigms for modal analysis in general.

'Tone' was defined and a system of eight tones outlined by the beginning of the 9th century, in the first part of 'De octo tonis', incorporated in chapter 8 of the *Musica disciplina* of Aurelian of Réôme. Presumably the 8th-century or earlier Greek model for the Carolingian system was ordered like the Byzantine *oktōēchos*, that is, the four principal modes first, then the four plagals. The Latin modes, however, from the outset were grouped the other way, with the authentics and plagals paired (see Table 1).

TABLE 1: The modal system of Latin chant

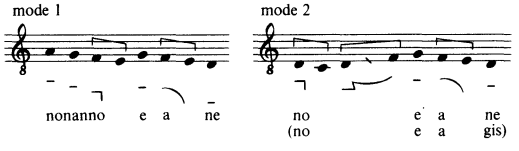
1	protus	authentic / plagal
2	deuterus	authentic / plagal
3	tritus	authentic / plagal
4	tetrardus	authentic / plagal

2. CAROLINGIAN SYNTHESIS, 9TH–10TH CENTURIES. The writings of later 9th-century theorists brought back Boethius's terms 'trope' and 'mode', but now (like 'tone') to designate members of the system of church modes. First and foremost among these writings is the treatise *De harmonica* attributed to Hucbald (*GS*, i, 104–21; see Weakland, 1956). This work brought together in a brilliant synthesis the three fundamental and, so far as the sources indicate, previously disparate strands of modal theory: the chant, the *oktōēchos* and Hellenistic theory (after Boethius).

(i) The Boethian double octave and the modes.

(a) The systems of tetrachords. The opening demonstrations in Hucbald's treatise – interval size, a diatonically filled octave, and even a diatonic aggregate that became the hexachord – refer solely to examples from plainchant. They were meant to appeal to his readers' experience, which would make theoretical distributions of tones and semitones immediate and perceptible. Drawing on experience in the same way, he introduced the diatonic two-octave scale transmitted by Boethius. First listing the tones and semitones of the Boethian double octave, Hucbald then followed Hellenistic theory a step further by describing his double octave in terms of the system of four descending tetrachords structured tone–tone–semitone. His example for this tetrachord as a familiar audible entity is the first four notes of the *Noeane* formula for the authentic protus (see ex.2, from

Ex.2



Aurelian, *Musica disciplina*, chap.9). He then gave a diagram of the tone–tone–semitone tetrachords of the descending double octave in terms of this familiar melodic figure, as shown in Table 2*a* (from Weakland, 1956, fig.iv – the Latin letter names are not Hucbald's): two pairs of conjunct tetrachords separated by a tone and with a tone added at the bottom.

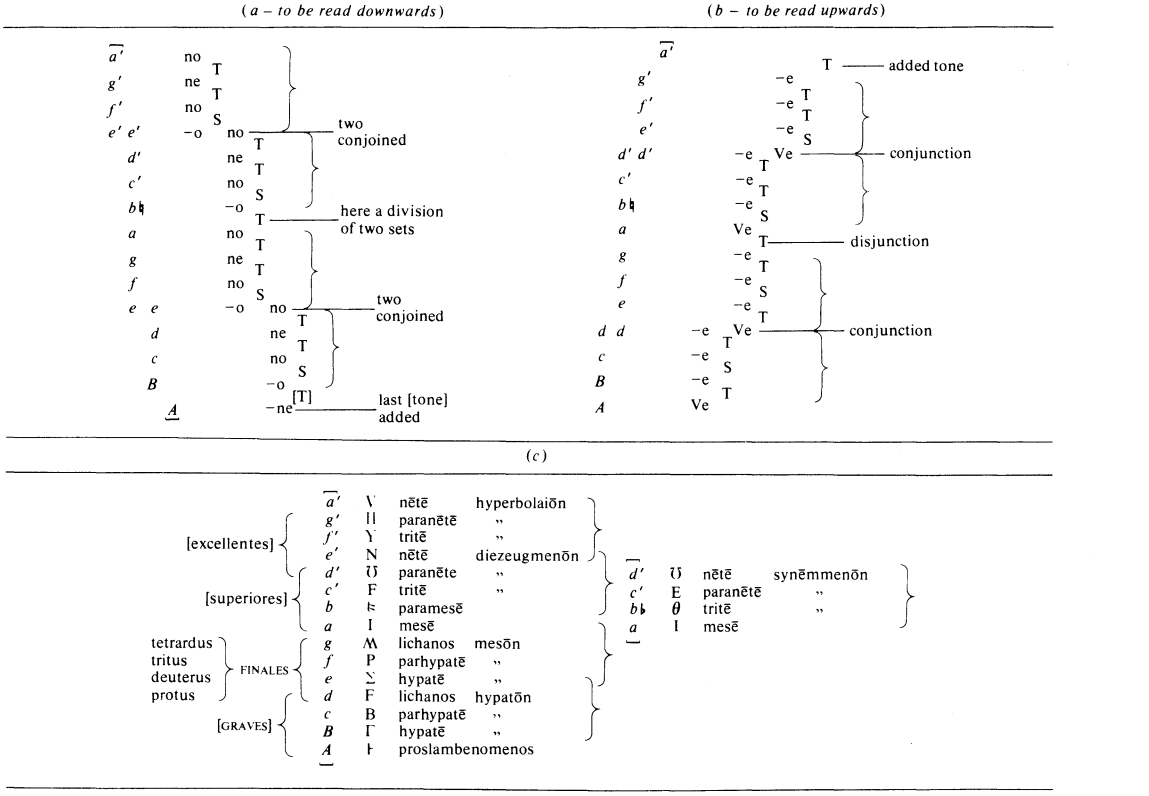
Hucbald showed (*GS*, i, 112) that the framework behind the double octave does not depend on the Boethian (i.e. Hellenistic) tetrachordal disposition for its aural construction:

> If on the other hand, completely apart from the first set of tetrachords [tone–tone–semitone descending or ascending], you should wish to build up [a double-octave system] on the place '*Ve*nite', taken from the invitatory *Christus natus est nobis*, then you deduce, by tone–semitone–tone [two tetrachords from '*A*'], up to the seventh [degree], where, with disjunction of a degree upwards, you arrange two [more] tetrachords on the path [already] set forth, adding one degree besides at the top, according to the subjoined diagram.

Table 2*b* is a reconstruction of his diagram (garbled in *GS*, i, 112) according to Hucbald's instructions and following the model of Table 2*a*.

Hucbald drew special attention to the use of the contrasting tetrachords *diezeugmenōn* and *synēmmenōn* over the *mesē*. Changing from one to the other – modulation by system (*metabolē kata systēma*) in Greek theory – was used by early theorists of plainchant to allow a contrast of high versus low varieties in the degree of the scale above the *mesē*: *paramesē* versus *tritē synēmmenōn*, later designated by the contrast of *b*♮ versus *b*♭ above *a*. Theogerus of Metz summed up the usage as it was changing to the more familiar one: 'Some musicians however do not apply the tetrachord *synēmmenōn*, but only one degree, and call it soft [*unam chordem . . . mollem*]' (*GS*, ii, 187). The particular and predominant use in the tritus modes of the tetrachord *synēmmenōn* to which Hucbald drew attention (*GS*, i, 114) is a reference to what in later times was considered

TABLE 2



the particular and predominant importance of *b*♭ in the F modes 5 and 6. Hucbald's adaptation of the Boethian double octave and tetrachord is shown in Table 2*c* (after *GS*, i, 112, 115, 119, with Roman letters for degrees of the scale and Latin names for tetrachords added in square brackets, taken from later authors).

(*b*) Tetrachordal degrees and modal quality. The Boethian double octave plus the tetrachord *synēmmenōn* is now set forth as a descriptive foundation for modal theory (*GS*, i, 119), and its systemic assumptions and properties endured for hundreds of years:

The four [degrees] after the first three, that is *d*, *e*, *f*, *g* [after *A*, *B*, *c*] are appropriate for ending the four modes or tropes, which they now call 'tones' – that is, protus, deuterus, tritus and tetrardus – so that each of these four degrees may govern a pair of tropes subject to it: a principal, which is called authentic, and a collateral, called plagal:

lichanos hypatōn [*d*]:	authentic/plagal protus:	[modes] 1 and 2
hypatē mesōn [*e*]:	authentic/plagal deuterus:	[modes] 3 and 4
parhypatē mesōn [*f*]:	authentic/plagal tritus:	[modes] 5 and 6
lichanos mesōn [*g*]:	authentic/plagal tetrardus:	[modes] 7 and 8

– so that every song, whatever it may be, however it may be twisted this way and that, necessarily may be led back to one of these four. And thence they are denoted 'final', because all things which are sung may take an ending in [one or another of] them. We notate them briefly, put into the notation already at hand [Boethius's letters]: in descent [*g*, *f*, *e*, *d*]; in ascent [*d*, *e*, *f*, *g*].

On their pattern [four] other tetrachords bring forth no less the intervals or quality of the sounds: of these [tetrachords] one comes out below [the finals] and three above. The addition of the examples above shows all these sufficiently [i.e. the tetrachord demonstrations, and especially the demonstration represented by Table 2*b*].

Table 2*c* follows Hucbald's diagram in marking the 'tetrachord of the finals', and in labelling each final degree according to its assigned modal quality of protus, deuterus, tritus or tetrardus. The fifth tetrachord *synēmmenōn*, though it had a Latin translation 'coniunctarum', continued to bear its Greek name as a rule.

Hucbald drew attention (*GS*, i, 119) to the parallel modal quality of equivalent degrees in the tetrachord of the *finales* and the one above it:

The fifth steps above [i.e. *a*, *b*♮, *c′*, *d′*, above *d*, *e*, *f*, *g*] are always linked to these four [finals] by a sort of connective bond, such that most melodies may be found leaving off in them quite as though by the rule [i.e. as well as in the 'regular' finals] – contravening neither reason nor perception on this account, and going on correctly under the same mode or trope. In this way, therefore, are associated together [*socialiter continentur*] *d* with *a*, *e* with *b*♮, *f* with *c′*, which are distant one from the other in the fifth place.

The relationship of modal equivalence between *d* and *a*, *e* and *b*♮, *f* and *c′* was described again in the 11th century in chapter 8 of Guido's *Micrologus*: '*d*, *e*, *f* take *a*, *b*♮, *c′*, which are of the same mode', and the notes *a*, *b*♮ and *c′* were designated 'affinals'; later still the term 'confinal' was used in the same way.

Having discussed how the three lower degrees of the *finales* and the *superiores* 'are associated together', Hucbald (*GS*, i, 119) went on to the uppermost degrees in the central tetrachords of his system, whose mutual orientation is not the same as the others:

g and *d′* should be deputed as much as possible not to the end but to beginnings. They maintain a somewhat similar relationship also with the 4ths below, and certain 5ths, for in commencing they bend down towards them as a limit. These [lower 4ths] are *A* with respect to *d*; *B* with respect to *e*, but this rarely; *c* with respect to *f*; [and] *d* with respect to *g*, but in this latter it goes down sometimes to *c*, that is, to the [lower] fifth place; in the others this happens very rarely.

Hucbald here observed that while *d′* and *g*, like the three pairs *c′*–*f*, *b*♮–*e*, and *a*–*d*, occupy parallel positions in their respective tetrachords, *d′* is not likely to serve as a secondary final (Guido's 'affinal') in place of *g*; on the contrary, *d′* and *g* have their affinity in downward-tending lines at beginnings.

(*ii*) *Octave species and the Hellenistic names.* After Hucbald's *De harmonica* the most important surviving source for the introduction of Boethius's terms 'mode', 'tone' and 'trope' in connection with the eightfold system is the 9th-century treatise that Gerbert called *Alia musica*. Chailley has reconstructed, edited, analysed and annotated it, and shown it to consist of three layers, all anonymous. The putative Model Treatise, like Aurelian's *Musica disciplina*, used only 'tone' to refer to a member of the eightfold system. The Principal Treatise, a reprise of and commentary on the Model Treatise, retained 'tone' in this sense and added 'trope' as well. The third layer of the *Alia musica*, a summary and correction of the Principal Treatise by means of a 'New Exposition', used only the word 'trope'.

The most lasting contribution of the *Alia musica* to modal theory was the integration of the seven species of the octave with the eight church modes. The octave species were given the Greek names not of Boethius's octave species but rather of his transposition keys – Hypodorian, Hypophrygian etc – which he had called 'modes'. Thus the term 'mode' came to mean not only the modal quality of protus, deuterus, tritus or tetrardus – the sound of a prominent pitch against its intervallic background – but also sometimes 'octave species', a distribution of tones and semitones within the extremes of an octave consonance. Modal qualities in turn were then attributed to either the lower terminus (in authentics) or to one of the medians of the octave species (in plagals), making the octave species into a modal octave.

The crucial passage in the Principal Treatise (ed. Chailley, p.107) begins:

The first mode therefore will be the lowest of all, namely the Hypodorian, from the first octave species, and it is terminated [at the top] by the middle degree [of the Boethian double octave], which is called *a* [*mesē*]. The second octave species produces the second, Hypophrygian mode, which is ended in *b*♮ [*paramesē*].

The above was continued by order number, name and upper terminus of each octave species: 3, Hypolydian, *c′*; 4, Dorian, *d′*; 5, Phrygian, *e′*; 6, Lydian, *f′*; 7, Mixolydian, *g′*.

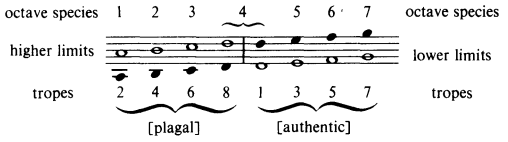
At this point the author of the Principal Treatise had run out of octave species, but had one church mode left, the eighth. In his individual treatment of the church modes he treated the eighth trope (church mode) as a mere appendage of the seventh (p.163), saying: 'it is of course called Hypermixolydian because it transcends the Mixolydian; according to Ptolemy it traverses an eighth octave species higher than all the rest', which is no new octave species at all but simply a replication of the first octave species *A*–*a* an octave higher, *a*–*a′*.

The difficulty was resolved by the third author of the *Alia musica* in his New Exposition (pp.198f):

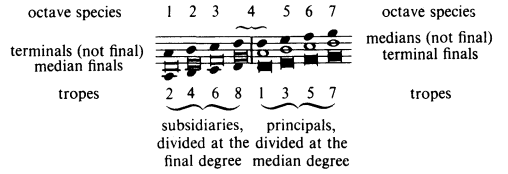
All octave species can begin either above or below, e.g. first, *a*–*A* or *A*–*a*; second, *b*♮–*B* or *B*–*b*♮; third, *c′*–*c* or *c*–*c′*; fourth, *d′*–*d* or *d*–*d′*; fifth, *e′*–*e* or *e*–*e′*; sixth, *f′*–*f* or *f*–*f′*; seventh, *g′*–*g* or *g*–*g′*. There are accordingly four higher [limits], that is, *a*, *b*♮, *c′*, *d′* and four lower, that is *d*, *e*, *f*, *g*. The four higher end [*finiunt*] the Hypodorian, Hypophrygian, Hypolydian, and Hypermixolydian in the higher section, while the four lower end [*finiunt*] the Dorian, Phrygian, Lydian, and Mixolydian in the lower section. Hence they are called 'finals'.

Ex.3*a* illustrates the above with a visual model based on Chailley's. The word 'finiunt' in the text of the New Exposition means 'end' in the sense of 'make a terminus' or 'limit', confused (perhaps intentionally) with Hucbald's sense of 'end' as 'make a termination' or 'conclude'.

Ex.3
(a)



(b)



Ex.3*b* illustrates the way in which the New Exposition later divides each octave species into species of the 4th and 5th by a single median (pp.200f):

let the Dorian either descend from *a* to *d* or ascend to *d'*, and let it have these [*d'*, *d*] above and below for its limits. Likewise from *b*♮ let the Phrygian either descend to *e* or ascend to *e'*; in the same way the Lydian from *c'* descends to *f* or ascends to *f'*, [and] no less the Mixolydian from *d'* either descends to *g* or ascends to *g'*. And always any principal trope whatsoever has a 5th below the median degree and a 4th above it . . . and in fact any subsidiary trope has a 5th above the final degree and a 4th below it.

The author of the New Exposition went on to apply a doctrine from the Principal Treatise allowing the addition of an auxiliary note to the smaller consonances, as well as to upper and lower termini of the octaves (p.201):

And if a note is added on to some trope, above or below the species of the octave, it will not be out of place to include this as *emmelis* [*aptus melo*, i.e. 'included in the tune', after a Boethian term]; wherever it adjoins the aforesaid medians, here or there, it may be a 5th plus a tone, or a 4th plus a tone.

Later writers retained the concept of the added note but applied it largely to the modal octave, using terms like *subfinalis* or *subtonium* for a one-note extension at the lower end of an authentic modal octave, and terms like *licentia* for a one- or two-degree extension at either end of any modal octave.

The New Exposition further explained the numerical discrepancy between the seven species of the octave and the eight tropes by invoking the concept of modal quality (p.202): 'Finally, the eighth trope has the same octave species [*d–d'*] as the first, but differs in that it has *g* as the preserver of its quality [*sue qualitatis custodem*], while the other [has] *a* under the name of protus'. With this work the members of the eightfold system, and their modal qualities, are joined to Boethius's seven species of the octave, with the Greek names of his seven transposition keys; Hypermixolydian became Hypomixolydian, consistent with the new names of the other three plagal modes.

(*iii*) *Melodic types and modal orientation.*

(*a*) Modal beginnings and modal endings. A clear distinction can be made between the practical and theoretical aspects of the church modes. For the sake of theoretical consistency virtually every item in the entire repertory of plainchant was assigned to one of the eight modes in the closed system. But for certain kinds of items the modal system was made to serve a practical end as well. Antiphons of the Office and of the Mass (introits, communions, and probably originally offertories) were sung in what amounts to a special kind of refrain–verse pattern; a large number of independent songs serving as refrains were coupled with verses from the psalms sung to a relatively small number of musical recitation formulae. Making an immediate juncture of two separate melodic entities, such as psalm tone (i.e. music for the verse) and antiphon (music for the refrain), so as not to fall into ugly inconsistencies of pitch or pattern later on, is a formidable difficulty in a purely vocal, purely oral tradition.

The Carolingian clergy regulated the relationship in the Franco-Roman Gregorian chant by using the borrowed system of the *oktōēchos*. In the compilations known as tonaries (practical manuals useful in an era when chant was transmitted orally, *see* TONARY) every antiphon was assigned to one of the eight modes. Within each mode the antiphons were again divided into subgroups, from one to as many as 13 per mode, depending on the mode and the usage at the time and place to which the tonary belonged. The rubric for each such subgroup of antiphons was a numbered 'difference' (or 'variety' or 'division' or 'definition'), which meant that the antiphons of each mode were subclassified according to variable endings for the psalm tone associated with the mode. This was done so that singers could learn to make the return from a psalm tone ending to the beginning of an antiphon in terms of some general feature of the antiphon beginning, rather than having to handle independently each link between psalm tone and antiphon. Sometimes the general feature at the beginning of the antiphon was no more than the initial pitch, but often it was a typical opening gesture. At the same time the endings of the antiphons were deemed protus, deuterus, tritus or tetrardus; they were also classed as authentic or plagal according to tessitura, and thus assigned to one of the eight modes. This classification of antiphons first by mode and then by psalm-tone difference can be construed as a kind of two-level scheme comprising closed systematic modes based on the endings of the antiphons, and open melody-type modes based largely on their beginnings.

A consequence of the identification at different levels of two areas of modality was that a number of antiphons seemed to belong to difference-classes of one mode according to the opening of the melody and of another mode according to the end. Conflict of modal assignment between one source and another sometimes arose as a result of this. In Regino of Prüm's tonary (*CS*, ii, 1–73) and chapter 2 of his *Epistola* (*GS*, i, 231) ambiguities of beginning and end are noted for many specific antiphons; melodies with this ambiguity are called 'illegitimate chants' or 'hybrid songs' (*cantus nothi*). Some other writers before 1100 who commented on this are Berno of Reichenau, in chapters 9–11 of the prologue to his tonary (*GS*, ii, 72–6); the anonymous author of the Reichenau Tonary (ed. H. Sowa, pp.81–154); and Johannes Afflighemensis, chapters 14–16 of his *De musica* (CSM, i; *GS*, ii).

Conflict of modal assignment from source to source may of course arise simply as a result of the melodies' being different; but often the same melody only slightly changed, or even unchanged, may quite legitimately be assigned to one mode or another. These variously ambiguous pieces and the theorists' attempts to deal with them indicate just what difficulties, both in theory and in practice, there must originally have been in fitting the vast body of plainchant to the closed eightfold system.

At the same time, by focussing attention on the modality of musical sequences smaller than whole pieces, the multimodal attributions provide the best approach to melodic modality itself in the plainchant repertory.

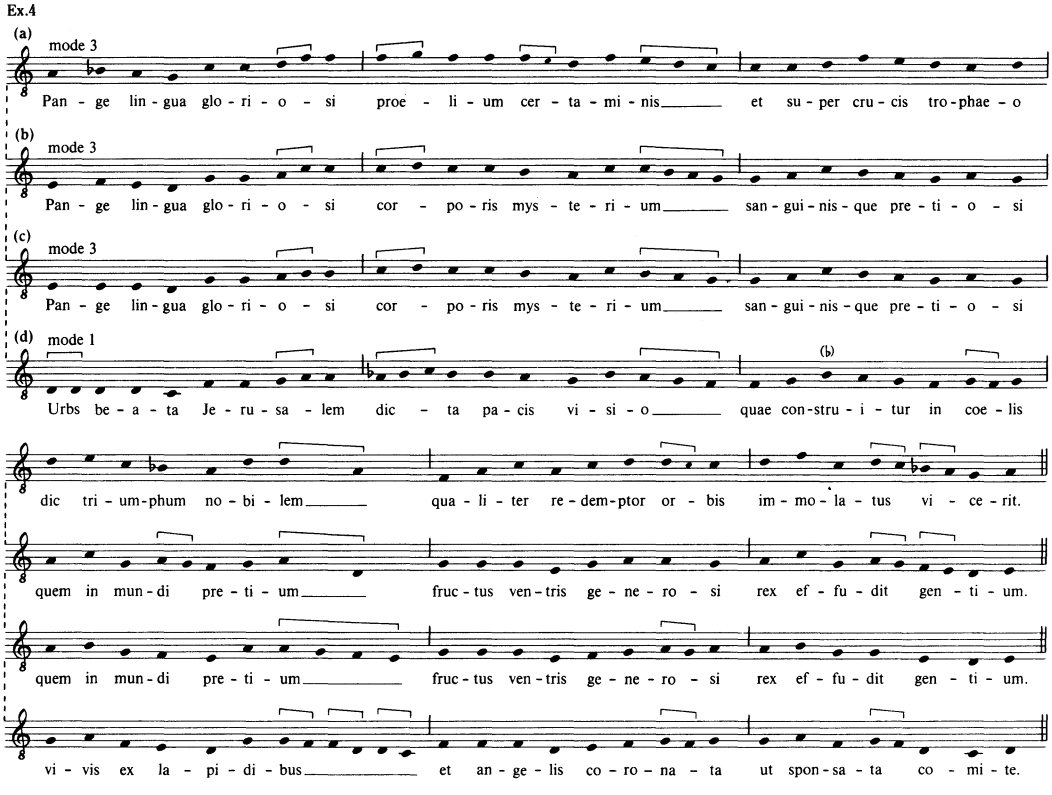
Lists of ambiguous pieces and discussions of particular cases are given by Lipphardt (1965, pt.iii, esp. chap.6) and Huglo (1971, esp. chaps.1, 2 and 12). Gevaert's *La mélopée antique* (1895), based on a study of Regino's tonary, is the seminal analytical study, even though its historical premises have long been discredited. And although his tonary can no longer be thought of as reflecting the most ancient state of chant modality, Regino was so generous with his annotations of ambiguities and his explicit recognition of modality in openings that Gevaert's analysis seems almost inevitably to follow. This analysis demonstrated for the antiphoner the existence of an open-ended modality behind the closed eightfold system; it is in fact paradigmatic for such analyses. Gevaert's two levels of classification – 47 melodic *thèmes* grouped into a much smaller number of fixed modes – embody a hierarchical contrast of free melody versus bound class, of flexible compositional (or improvisational) norms and models versus controlled aggregates of pitch relationships, which is characteristic of more than one musical culture of the past and present.

(*b*) An instance of modal ambiguity. The mode at the end of an antiphon is established by the final degree and the manner in which it is approached; at the beginning a mode is often strongly suggested by some characteristic opening gesture. Hence conflicting assignments and bimodal antiphons arise from a similarity in opening phrases between two melodies or melody types whose continuations or conclusions are dissimilar. Concomitant contradictions in scale type, or implied chromatic inflections, either of which may lead to the transposition of a melody to its affinal position a 5th higher in the double octave, or to its projection a 4th higher, are a frequent but secondary result; the primary phenomenon is the accidental confusion or deliberate admixture of phrases, motifs and configurations.

In Regino's tonary several antiphons assigned to mode 3, the authentic deuterus, are annotated 'can be in mode 1' (authentic protus). They are all tunes with a mode 3 opening (Gevaert's *thème* 35) which strongly resembles the most common of all mode 1 openings (Gevaert's *thème* 6). This particular ambiguity is also described by Johannes Afflighemensis at the end of chapter 15 of his *De musica*. The antiphons in question are given in mode 1 in most readable medieval sources (see Lipphardt, 1965, p.262, for other mode 3 attributions); but sources of the hymn tune *Pange lingua* can be used to illustrate the relationship.

Ex.4*b* gives the tune of *Pange lingua* in its familiar mode 3 form (as used, for instance, in Josquin's paraphrase mass); ex.4*d*, the hymn *Urbs beata*, begins like dozens of mode 1 antiphons. Ex.4*c* gives the *Pange lingua* text to the *Urbs beata* tune, projected one degree higher in the double octave, with final at *e* instead of *d*; this has the effect of replacing the tone *e–d|d–e* in the fourth and fifth phrases with a semitone *f–e|e–f*. In terms of scale type reckoned from a tonic final degree, this constitutes a change of mode; yet the tune, as represented in ex.4*c*, *d*, is effectively unchanged. (In ex.4, *a*, *c* and *d* are after Wagner, 1921, pp.477f, and *b* from Glarean, *Dodecachordon*, chap.36.)

Ex.4



The standard version of ex.4*b* differs from 4*c* in two essential particulars: there is an upper semitone inflection of the first note in the opening gesture; and in the opening gesture and elsewhere *b*♮ is replaced by *c′* when approached by step from below (a feature of the so-called German chant dialect, but here modally significant as well). These differences, unlike the differences in interval structure in the fourth and fifth phrases, bring about a clear contrast in melodic features between 4*b* and 4*d*. The opening gesture now brings forward the minor 6th above the final instead of the 5th, and this degree, especially as it is handled in the second and third phrases, is characteristic not only of this tune but of mode 3 tunes in general. In mode 1 tunes, conversely, the minor 6th above the final is an upper auxiliary inflection incidental to the 5th, as often notated by *b*♮ or *c′* as by *b*♭. So melodically, the second and third phrases of the *Urbs beata–Pange lingua* tune are not at all mode 1, no matter where they are projected on to the double octave.

Ex.4*a* is the *Pange lingua* tune projected a 4th higher, so as to end at *a* instead of *e*. The availability of both *b*♮ and *b*♭ above *a* makes possible the transformation of *a* protus at the affinal position with *b*♮ into *a* deuterus with *b*♭. For instance, the relationship between the mode 1 and mode 3 versions of the tune can be visualized most easily by supposing a transposition of ex.4*d* up a 5th to its affinal position; this would be an *a* protus version of the tune to contrast with the *a* deuterus version of ex.4*a*, and either could be considered a modal transformation of the other.

3. 11TH-CENTURY SYNTHESES.

(*i*) *Italian theory of modal functions.* The two works on plainchant theory that had both the widest circulation in manuscripts and the most frequent appearance in commentary and quotation were produced in Italy in the late 10th century or early 11th. They were the *Micrologus* by Guido of Arezzo (*c*1026) and the *Dialogus de musica*, formerly attributed to one or another Odo, now established by Huglo as the work of an anonymous Lombard monk in the years not long before the appearance of Guido's work. (The *Micrologus* and its commentaries have been extensively studied by Smits van Waesberghe, and a comparative study of the *Micrologus* and *Dialogus* appears in Oesch's biography of Guido; the *Dialogus* itself is almost completely translated in Strunk, 1950, pp.103ff – only the portions dealing with the specific characteristics of each mode have been omitted.)

These two works, especially the *Dialogus*, are characterized by their practical approach to modal theory. Learned reference to Boethius and other ancient authors is eschewed, and the elegant Greek note names for the double octave are replaced by the simple and familiar Latin letters *A–G*, *a–g*, *aa*, with the Greek gamma added at the bottom; the available musical space was soon extended upwards to *dd* and later *ee*. The aim was not so much to make or remake new theory as to preserve and clarify traditional practices. Modal theory, especially in the *Dialogus*, is presented as simple truth, needed to help resolve confusions in the practice, with minimal recomposition according to theory in the most extreme cases. The Italian theorists were dealing in synthesis and didactic theory, not in new theoretical discovery and analysis.

The discussion of chant modes and modality in the *Dialogus*, the *Micrologus*, and their many followers is based on the definition of modal functions, which are segmental and suprasegmental; that is, they apply to single pitches in critical positions or to ranges and successions of pitches. The modal functions are basically three: final, initial and medial. In the 'classical' modal theory from the 11th century onwards final and initial functions are treated as segmental, applied to single pitches, though these functions were occasionally also thought of in terms of characteristic phrases. The medial functions are of both kinds, having to do with range and register on the one hand, and individually important medial pitches on the other.

(*a*) Final. The classic definition of the final as modal function in the *Dialogus* (quoted in §I, 3, above), is: 'A tone or mode is a rule which distinguishes every chant in its final'. This famous dictum recurs in dozens of theoretical works over the next six or seven centuries; it is indeed part of the ultimate origin of the conventional notion of the 'tonic', current since the 18th century, which is almost inseparable in textbooks from the notion of 'finishing'.

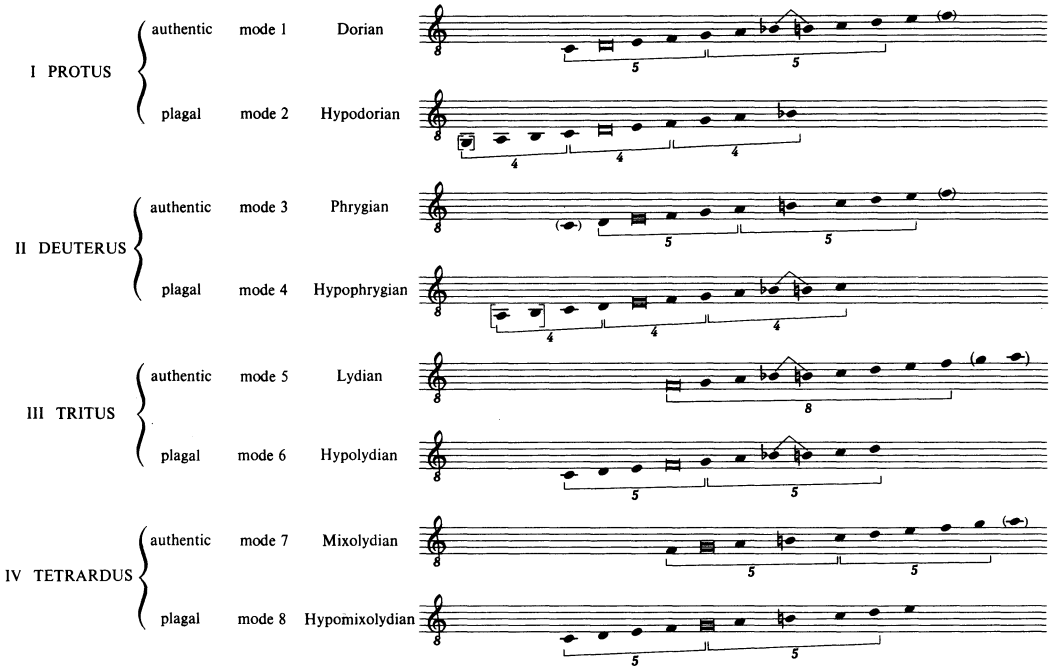
After the *Dialogus* few objections were ever entered against the idea that the modal quality of the last note of a song should override all other considerations in melodic classification and orientation in the modal system. The doctrine had the virtues of simplicity and clarity, and it was soon buttressed by powerful logical arguments. Guido gave five in chapter 11 of his *Micrologus*, which are elaborated in Vivell's Anonymous, pp.36ff (*Commentarius ... in Micrologum*; Smits edn., pp.132ff) and thence in book 6 chapter 40 of the 14th-century *Speculum musice* of Jacques de Liège (*CS*, ii, 246–8). Two versions of Guido's third argument may be seen in translation in Apel, 1958, p.175; but the second argument (a restatement of *Dialogus*, chap.8, see Strunk, 1950, p.113f) is the most important. It provides a two-stage rule whereby notes within a phrase are restricted to certain intervallic relationships with the note ending the phrase; the phrase-final notes in turn are restricted to the same set of intervallic relationships with the final:

> With the degree which terminates a phrase [*neuma*], the rest of the degrees [in the phrase] ought certainly to agree, through the aforesaid six consonances [semitone, tone, minor 3rd, major 3rd, 4th, 5th]. To the degree which terminates a song, its beginning and the ends and also the beginnings of all its medial sections [*distinctionum*] have the duty to adhere.
>
> Degrees rightly 'are suited to the final', so that they are 'coloured' by it ... for they concord to a medial cadence [*distinctioni*] by the aforesaid consonances, and the medial cadence [*distinctio*] to the final through the same consonances.

(*b*) Ambitus. With the modal quality of a song residing only in the final, to which all other degrees were made directly or indirectly subordinate, the course of a liturgical song from incipit to final was necessarily governed in its internal pitch relationships by that final. The main independent function that was still to be determined in the domain of pitch was the registral area, the boundaries between which those relationships could exist. These boundaries were located in the double-octave system with respect to the final. Guido summarized (*Micrologus*, chap.13):

> as is sustained by the evidence of liturgical songs [*usualium cantuum attestatione*], authentics hardly ever descend more than one degree from their final; [and] of these the authentic tritus seems to do so very rarely, on account of the imperfection beneath of the semitone. The authentics rise, however, to the eighth and ninth [degrees above the final], and even the tenth. Plagals, to be sure, fall and rise to the fifth [degree on either

Ex.5



side of the final], but the sixth or seventh [degree] is authoritatively granted in the ascent, like the ninth and tenth in the authentics. The plagals of the protus, deuterus and tritus sometimes necessarily finish in the upper *a*, *b*♮, *c′* [respective affinals, by the process of transposition].

Ex.5 summarizes the classical doctrine of the ambitus of the eight church modes. The doctrine began with the *Dialogus* (*GS*, i, 259–63), but was repeated in many later works. Ex.5 is based ultimately on the *Dialogus*, but in the light of later commentary, particularly the *Questiones in musica* (ed. Steglich, pp.45ff), which was the principal source in turn for book 6 chapters 42–9 of *Speculum musice* (*CS*, ii, 251–63). The several ambituses are abstractly measured by systems of perfect consonances – an octave in mode 5, three conjunct 4ths in modes 2 and 4, and two conjunct 5ths elsewhere. (In modes 1 and 8 the note *e′* is regarded as extra, though legitimate, because the span *c*–*e′* cannot be contained within a system of three perfect 4ths or two perfect 5ths.) These systems are merely measuring devices: they are part of the doctrine and have nothing to do with the internal structure of the modal scales. They are not to be confused with the species of consonances adumbrated in the *Alia musica* (see §2(ii) above) which were developed by the Reichenau theorists and later by Marchetto and his followers up to Tinctoris (see §4(ii–iii) below), and on into the 16th century. (In ex.5 square notes indicate modal finals, parentheses enclose notes that are 'incorrect' according to the texts, and square brackets enclose notes theoretically available but rarely found; although the note *b*♭ is not mentioned in the standard theoretical summary for modes 3, 7 and 8, it appears often in graduals and in a few anomalous tetrardus antiphons.)

(*c*) Initials and medials. After the 11th century, ambitus and final were normally considered necessary and sufficient to determine the mode of a piece. To go beyond the mere determination of a mode, however, and to deal with melodic relationships in more analytical detail, other modal functions besides final and ambitus were required. The older and more abstract suprasegmental functions dealing with aggregates of pitches and intervals, such as modal quality and the modal species of the consonances, were to be developed as tools for analysis of chant by the 11th-century Reichenau theorists; more concrete and practical single-pitch segmental functions were developed largely as a consequence of the doctrines of the *Dialogus* and *Micrologus*. For each mode certain specific degrees could take on important secondary functions that were derived from the practice of liturgical music itself, and were determined in two ways: from the initial notes of songs in the several modes, particularly of Office chants with verse formulae, namely antiphons and responsories; and from the verse formulae themselves, particularly the psalm tones for the antiphons.

In Guidonian theory initial notes were taken as important guides to modal structure in connection with the doctrine of the supremacy of the final, and strictly as single pitches. Beginnings were obviously likely to be in the forefront of consciousness (Hucbald used them wherever possible in his practical demonstrations of the intervals). Furthermore, none of the modes had chants beginning on all seven degrees of the scale (given octave equivalence), and the number of possibilities in any one mode ranged from one (mode 6 in some descriptions) to seven pitches at the most (mode 8 in some descriptions, with octave duplication of *c* and *c′*). Since they were easily identified, and yet were restricted to fewer than all the possibilities, those degrees in any mode that had chants beginning on them were believed to be a sure guide to the degrees allowable at the beginnings and endings of the medial phrases in that mode.

The tradition linking initials with the beginnings and ends of medial phrases – 'distinctions' – antedates the Guidonian school; but the author of the *Dialogus* was the first to link the theory and the practice by citing an example for each modal initial. Many of his citations, particularly of course for the less frequently used initials, were repeated down to Jacques' *Speculum musice* in the 14th century, and beyond.

Characteristic expressions of the connection between initial and medial functions in each mode may be found in the anonymous *Musica* (*GS*, i, 337f) and Berno (*GS*, ii, 70f), whence they were taken over by Frutolfus of Michelsberg as part of the descriptive headings for each mode in his tonary. His heading for mode 1 reads, in part: 'Its singing begins in six degrees, *c d e f g a*, in which are comprised also the "colons" and "commas", that is, parts and sections [*membra et incisiones*], which we call the "distinctions" of the song' (*Breviarum*, ed. Vivell, p.113). The equivalence of song initials with medial initials and medial cadences ('distinctions') is perhaps not always as close in practice as it is in theory, at least in terms of frequency of distribution. Rare beginnings may make fairly frequent medial cadences, such as *g* in mode 1, while some beginnings are never used as medial cadence points, such as *e* in mode 1. But on the whole the lists of modal initials so often provided by chant theorists can be used as a rough guide to the important secondary melodic nodes in each chant mode, as the theorists intended them. More than that, the very idea of secondary strong points in each mode played a central role in some of the later elaborations of the eightfold system as a theory for the structuring of polyphonic music between the 15th and 17th centuries.

(*d*) Tenor. The other main source for secondary modal functions was the psalmody of the Office. The most important borrowing was the designation of the tenor of the psalm tone associated with a given mode as a modal degree second in importance only to the final of its antiphons. For it is indeed the case that the reciting pitch of each psalm tone, the tenor, is among the pivotal degrees of many melodies in each mode. The incorporation of psalm tones and especially psalm-tone tenors as aids in the understanding of chant modality was a natural consequence of both liturgical association and musical similarities.

In chapter 13 of the *Micrologus* Guido suggested that the upper pitch limit for the beginning of a liturgical song coincides with and thus in a sense is set by the psalm-tone tenors. Part of the passage is quoted below with the commentary of Vivell's Anonymous (p.46); Guido's own words are in quotation marks:

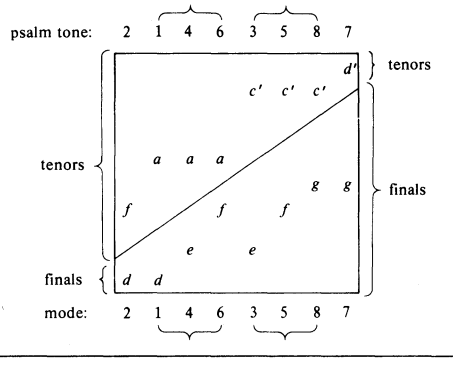
'For there', that is, in these formulae like *secularum amen*, 'we see in which degrees of the individual modes a song may be begun more often or more rarely, and in which it' – that is, the beginning – 'may never occur'. For every song, plagal as well as authentic, can begin – or any medial phrase [*distinctio*] can begin or end – as high above the final as the place where the *secularum amen* and the tenor of the whole psalm appropriate to any authentic or plagal mode rises.

Here the tenor is merely set as a guide to the upper limit for initials and for medial cadences. But by the end of the 11th century, in a passage at the beginning of chapter 11 of the *De musica* of Johannes Afflighemensis, the practical distinction of mode and psalm tone is obliterated with respect to the tenor. Even the chapter title itself – 'On the tenors of the modes and their finals' – attributes the psalm-tone element to the mode. The chapter begins:

As there are eight tones, moreover, so there are eight tenors. . . . And in music we say tenor just where the first syllable of the *secularum amen* of any tone begins, for it is as though they hold the keys of the melody [*claves modulationis tenent*] and give us access to an understanding of the chant [*ad cantum cognoscendum*]. . . . Moreover it is to be noted that, as the ends [*fines*] of the eight tones are disposed on four notes, which on that account are called finals, so also four notes are attributed, but in a different way, to the eight tenors . . . the tenor of the second tone is on *f*; of the first, fourth and sixth on *a*; of the third, fifth and eighth on *c'*; of the seventh on *d'* [see Table 3]. Nor is it unsuitable that the tenor of the second and seventh claim solitary places for themselves, because the second descends the furthest, to the 4th [below *d*], and the seventh rises above all the others.

Johannes specifically pointed to the tenor as a guide to something outside the psalm tone, in the song itself, for while 'modulatio' frequently refers to a psalm-tone configuration, 'cantus' never does. His observations mingle aspects of psalm tone and mode as concepts. He compared and contrasted psalm-tone tenors and modal finals in the same context; and his accounting for the singularity of the psalm-tone tenors *f* and *d'* is on the grounds of the ranges of their correlated modes, for it is not the second psalm tone that 'descends . . . to the 4th'. The psalm tones here are not merely indicators of the mode of their associated antiphons; rather, they have in themselves properties that can be attributed to the mode of the refrains, the liturgical songs, to which they pertain. Table 3 shows the relation of psalm-tone tenors and modal finals, as described by Johannes.

TABLE 3: Psalm-tone tenors and modal finals



The addition of the tenor to the final and the initials further refines the hierarchy of single-pitch modal functions, for it implies that one among the secondary strong points has a certain limiting power and governance over the others; it is the one which in fact is the upper limit of the theoretical possibilities for a resting point, and it is to be established by reference to the psalm-tone tenor. A four-tiered system of modal pitch functions results: at the first level the final, at the second level the tenor, at the third level the other initial–medial strong points, and at the lowest level the remaining degrees of the scale.

(*ii*) *Reichenau theory of modal species and locations.* In Guido's references to mode, whether in connection with the eightfold system or as the quality of a note in its melodic environment, no mention is made of one of his two lasting inventions, the didactic syllables *ut re mi fa sol la* (not yet called HEXACHORD), the device which by the mid-13th century had become indissolubly associated with the idea of modal quality. Nor is there any treatment of species of the modal octave or of the

smaller consonances. The aspect of modal theory first seen in the work of the Reichenau theorists was a coordination of four hitherto independent elements: the eightfold system; the species of the 4th, 5th and octave; Hucbald's Boethian double octave as constructed in tetrachords; and modal quality. Its culmination was Hermannus Contractus's scheme of hexachordal 'seats of the tropes' (*sedes troporum*).

(*a*) Modal species of the consonances. Guido's contemporary Berno of Reichenau built up the species of the consonances on the abstract description of an anonymous earlier work (*GS*, i, 313), designating specific locations in the double octave for their primary positions. The three species of the 4th are differentiated according to the position of the tones and the semitone: tone–semitone–tone; semitone–tone–tone; and tone–tone–semitone (placed *d–e–f–g*, *e–f–g–a* and *g–a–b*♮*–c′* by Berno). (The first species of 4th is clearly to be distinguished from the 'tetrachord of the finals' first described by Hucbald. Species of the 4th, with all possible positions of the semitone, are used in the description of modes; tetrachords are invariant in form and are simply the elements used for building the background system of pitch relationships, the Boethian double octave.)

The four species of the 5th were generated by adding tones above and below the three species of 4th; Berno's placement is shown in ex.6*a* (from *GS*, ii, 67, after *GS*, i, 313). In ex.6*b* (from *GS*, ii, 69f, after *GS*, i, 313) are shown his constructions of the eight modal octave species, analogously generated by adding species of the 4th above and below the four species of the 5th. (Numbers above the staff indicate which species of 4th, circled numbers which species of 5th.) To the abstract intervallic descriptions in his source (*GS*, i, 313) Berno added not only specific placement (in terms of the usual Boethian Greek note names) but also some explanation in his own words (*GS*, ii, 69):

> What I am saying is this: the first tone has the liberty of rising from its final, that is from [*d*], up in a [first species] 5th, that is to [*a*], and from [*a*] to [*d′*], which is the first species of the 4th. The second tone, however, which is called its subsidiary, rises to the same 5th, but by the same species of the 4th descends from [*d*] to [*A*], by tone, semitone, and again tone.

The theoretical contributions of Berno's younger colleague Hermannus Contractus originated as improvements on Berno's *Musica* and Guido's *Micrologus*; though neither author is mentioned by name, the doctrines criticized are unmistakable. Hermannus's new theory began from a more elegant systematization of the modal species of 4th, 5th and octave, which were generated from the four fixed tone–semitone–tone tetrachords of Hucbald's Boethian double octave. He then made each of the four tetrachords the nucleus of a hexachordal module linking melodic configuration and modal quality together, and both to the background double octave. Hermannus's *De musica*, unlike the *Musica* of Berno, was not circulated widely in manuscript, however. Despite the elegance of his system and the resemblance of some of its most novel features to central features of later theory, there is no clear evidence that his work directly influenced hexachordal and modal theory after the 11th century.

Modal quality pertains to all degrees in Guidonian theory, though it is only the modal quality of the final that can determine the mode of a chant. There is a theoretical inelegance in the Guidonian scheme, however, visible in the diagrams shown in Table 4. It is most evident in the failure of *g*, the seventh degree of the system – 'te'/IV, tetrardus, in Table 4*a*, modal pair 7–8 in Table 4*b* – to have any parallel or affinity elsewhere in the system comparable with those for the protus–deuterus–tritus qualities (4*a*) or the modal pairs 1–2, 3–4, 5–6 (4*b*).

Ex.6

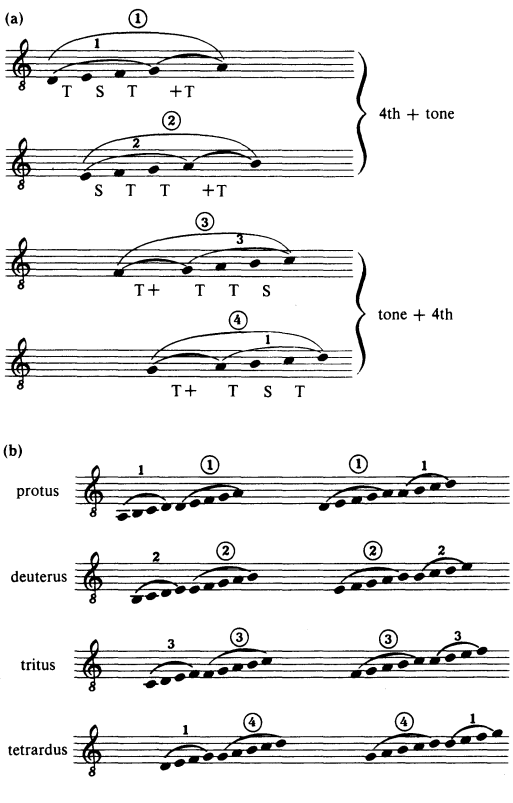
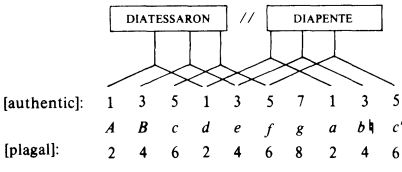


TABLE 4

(*a*)

A	*B*	*c*	*d*	*e*	*f*	*g*	*a*	*b*♮	*c′*
pro	de	tri	pro	de	tri	te	pro	de	tri
I	II	III	I	II	III	IV	I	II	III

(*b*)



Hermannus's rectification of this inconsistency, arising originally out of his criticism of Berno's derivation of the species, led him into a new doctrine of great significance: in different contexts certain degrees of the scale can have different modal qualities. Specifically, the degrees *d* and *d′* can have either protus

or tetrardus quality; and it follows as a corollary that the tone–semitone–tone species of the 4th is also twofold when it is located on *d–e–f–g* in the double octave system (ed. Ellinwood, p.27):

> Let us denote the degrees of the tetrachords . . . by their own letters. One [note] in the middle is enumerated (not measured) twice [*d*/*d*]. . . . The *graves* or *principales*, then, are *A*, *B*, *c*, *d*, the *finales d*, *e*, *f*, *g*. The first species of 4th [*diatessaron*] is necessarily then *A–d*, consisting of tone–semitone–tone, enclosed by its own letters; the second *B–e*, consisting of semitone–tone–tone, [is] bounded by its own letters this side and that; the third *c–f*, consisting of tone–tone–semitone, [is] secured on both sides by its own letters. The fourth species *d–g* – first [species] in disposition [of intervals] but fourth in the system and in power [*constitutione et potestate*] – delimits the seven intervals of the degrees [*septena vocum discrimina*] in this way [see ex.7].

Hermannus objected that his predecessors 'did not attend to the oft-mentioned double form of *d*, and erred [in] withholding recognition of the fourth trope in the fourth place' (ed. Ellinwood, p.59).

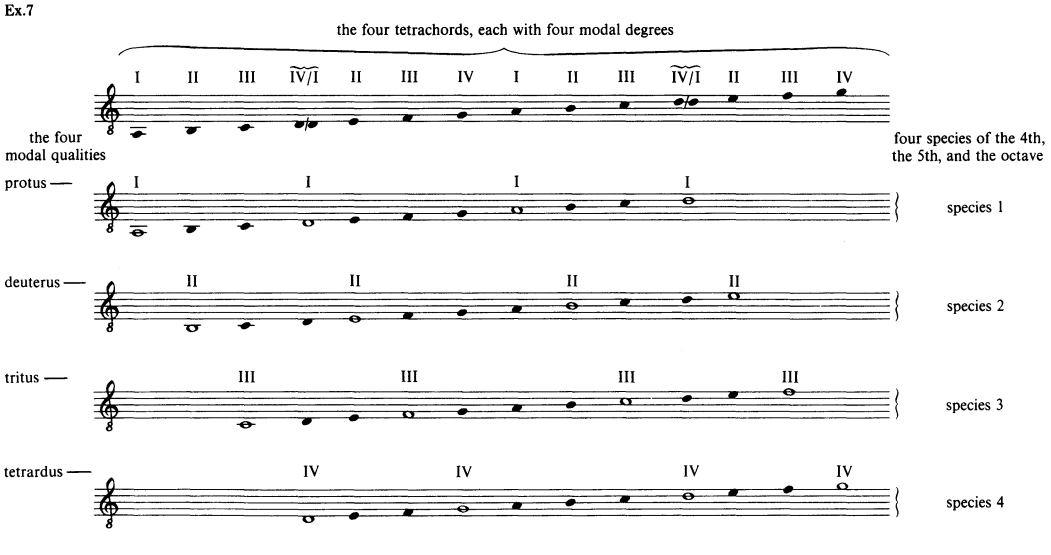
Just as the species of 4th are constructed by linking the melodic functions I, II, III, IV in the tetrachords of the *graves* and *finales*, the species of 5th are based on the modal affinities of I, II, III, IV in the *finales* and *superiores* (ex.7). And so the whole system of conjunct and disjunct tetrachords is built up on the basis of replication of the four modal qualities and the assignment of both protus and tetrardus potential quality to *d* and *d′*.

way usable as a description of diatonic scale type in the octave species. And it was, in fact, the seven species of the octave, as integrated with the eightfold system in the New Exposition of the *Alia musica* and transmitted to and by Berno's *Musica*, which continued as the basis of the doctrine of modal octaves.

(*b*) Modes of the degrees and the 'sedes troporum'. In both chapter 7 of the *Micrologus* and the letter to Michael *De ignoto cantu*, Guido discussed the modal qualities of the degrees of the diatonic system under the name 'modes of the degrees' (*modi vocum*) (ex 8*a*; protus, deuterus, tritus and tetrardus are marked I, II, III and IV, the last being shown in two versions – IV-A from *De ignoto cantu*, IV-B from *Micrologus*). The fuller explanation is in *De ignoto cantu* (*GS*, ii, 47):

> Degrees are alike and make similar sounds and concordant phrases [*concordes neumas*] only insofar as they are raised and lowered similarly with regard to the disposition of tones and semitones. So the first degree *A* and the fourth, *d*, are alike and are designated 'of a single mode' because both have tone in descent and tone–semitone–tone–tone in ascent, and this is the first similitude in degrees, that is, the first mode. The second mode is in the second [degree] *B* and the fifth [degree] *e*, for they both have tone–tone in descent and semitone–tone–tone in ascent. The third mode is in the third [degree] *c* and the sixth [degree] *f*, for both descend semitone–tone–tone and ascend tone–tone. But the seventh [degree] *g* makes the fourth mode alone; it has tone–semitone–tone–tone in descent and tone–tone–semitone in ascent.

Ex.7

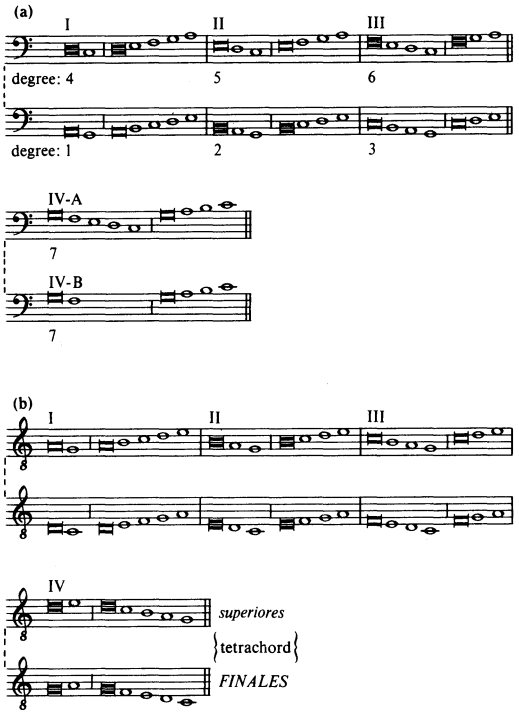


The build-up of modal octave species is also based on the presence of the same modal quality – I, II, III or IV – on degrees an octave apart in the system. Hermannus's system has the advantage of bringing everything – modal quality, position within the structural tetrachord, and species of 4th, 5th and octave alike – under the same set of numbers. Its one serious inconsistency arises if one tries to connect his modal octaves with the scale types of the seven octave species. If octave species are to be derived only by filling in between modal qualities an octave apart in the system, there can of course be only four of them, and Hermannus duly allotted both the octaves *A–a* and *d–d′* to the first species, *B–b*♮ and *e–e′* to the second, *c–c′* and *f–f′* to the third, and of course *d–d′* as well as *g–g′* to the fourth (ed. Ellinwood, pp.30ff). From a modal point of view this is eminently satisfactory, but of course it is in no

In chapter 7 of the *Micrologus*, the version of Guido's *modi vocum* known to Hermannus and later writers, a more limited descent is ascribed to the fourth mode of the degrees: 'but the fourth [mode] is lowered by a tone, and rises through tone, tone, semitone, like *g*'.

Hermannus's solution for the lack of modal affinity for the degree *g* in the Guidonian system was corollary to his doctrine of the 'biformity' of *d* and *d′*. His 'modes of the degrees' (*modi vocum*), though in all but the tetrardus identical in form with Guido's, were different in nature. Hermannus completed his system symmetrically, by developing Hucbald's treatment of the *g–d′* relationship, whereby '*g* and *d′* should be deputed as much as possible not to the end but to beginnings' (see §2(*ib*) above). He did not derive his modes of the degrees by starting with single degrees and building outwards as far as possible. Rather, he began with his

Ex.8



existing cluster of four modal degrees in the tetrachord, modified to allow for melodic extension to the limits possible for parallel modal degrees everywhere in the diatonic double octave; thus he arrived at the modal aggregate of six degrees which he called the 'seat of the tropes' (*sedes troporum*). Hermannus described its construction: 'Take any tetrachord you want, for instance the *graves*, and having added a tone on both sides, you have the limits of the modes, which makes the seat of the tropes' (ed. Ellinwood, p.57). Ex.8*b* shows Wilhelm of Hirsau's version of the modes of the degrees (*GS*, ii, 175, 178f) after Hermannus (ed. Ellinwood, pp.58f).

Table 5 shows Hermannus's construction of the *sedes troporum* from the modal tetrachords, with the additional tetrachord appended after Wilhelm of Hirsau. Hermannus's discussion of the individual *modi vocum* ('modes of the degrees') is given below in the version transmitted through Wilhelm, which supplies brief but significant additional detail both in the theory and in the practical examples cited (*Musica*, chap.38). Wilhelm's additions are set off in diamond brackets; those of Hermannus's words that Wilhelm omitted are supplied in brackets and identified.

I. The first *modus vocum* appears wherever a degree can be lowered by a tone and raised by a first species of 5th [tone–semitone–tone–tone], as can be recognized in *A.d.a.d'*, the principal degrees of the protus; and therefore this mode is ⟨indifferently⟩ [as to authentic or plagal] suited to the protus, as the ⟨authentic⟩ antiphon *Prophete predicaverunt* [see ex.9*a*] shows [Hermannus: and in *In tuo adventu*, and in similar ones that do not exceed six degrees].

Wilhelm's 'indifferently' emphasized an important aspect of the *modus vocum* of the protus, to wit, that it may shape the nuclear structure of either authentic or plagal antiphons. The versions of *Prophete predicaverunt* in ex.9*a* are in fact in mode 1 in the Worcester

TABLE 5: Modi vocum and sedes troporum

		seats of the tropes				
		modal tetrachord				
		1	II	III	IV	
excellentes	*c'*	*d'*	*e'*	*f'*	*g'*	*a'*
superiores	*g*	*a*	*b*♮	*c'*	*d'*	*e'*
FINALES	*c*	*d*	*e*	*f*	*g*	*a*
GRAVES	*G*	*A*	*B*	*c*	*d*	*e*
		I	II	III	IV	
		[I	II	III	IV]	
f		*g*	*a*	*b*♭	*c'*	*d'*
		[synēmmenōn]				

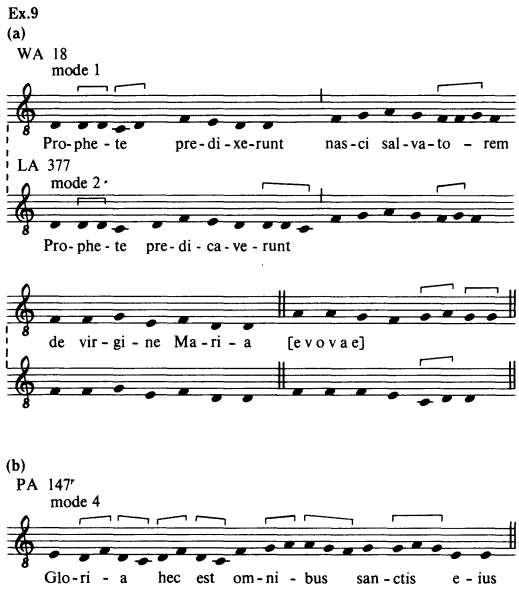
Antiphoner (WA) and mode 2 in the Lucca Antiphoner (LA).

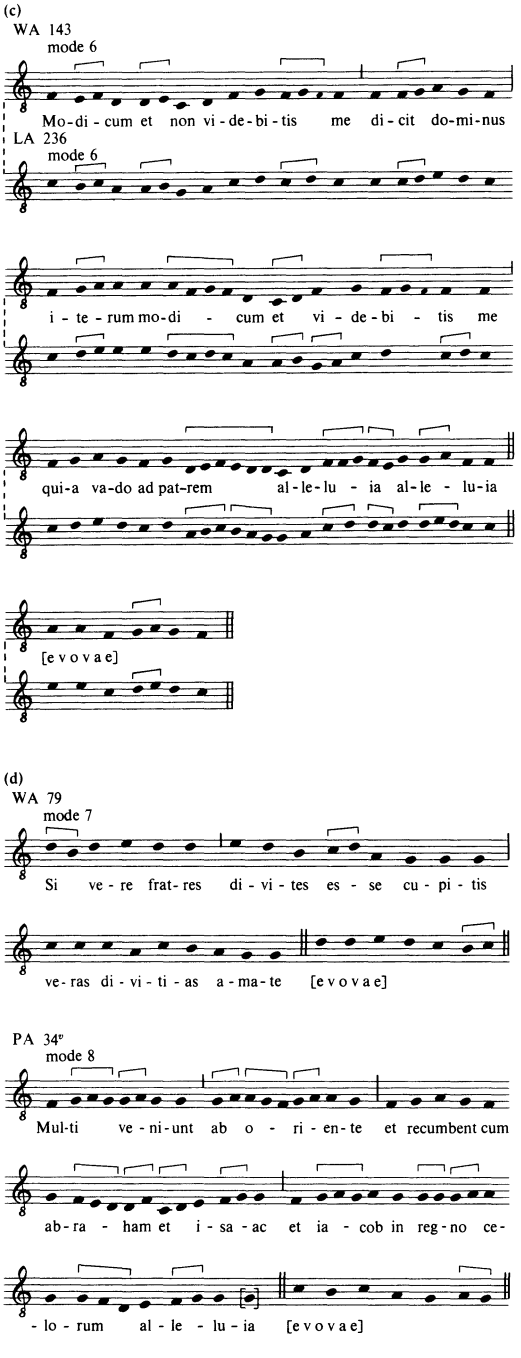
II. A degree shows the second mode [when it is] lowered by a ditone [tone–tone] and raised by a second species 4th [semitone–tone–tone], which appears in *B.e.b*♮*.e'* the principal degrees of the deuterus ⟨to which this mode is related⟩. The ⟨plagal⟩ antiphon *Gloria hec est* [see ex.9*b*; PA–Petershausen Antiphoner] shows this [Hermannus: and similar ones, either authentic or subsidiary, which do not exceed six degrees].

Hermannus's reference to authentic deuterus is curious. A deuterus composition strictly within the limits of the *sedes troporum* can either reach only to a 4th above the modal degree, in which case it would be plagal, or never get down to its final at all; if the modal degree is *e*, for example, the *sedes troporum* can be only *c–a* (plagal) or *g–e'* (without the final beneath).

III. The third mode is lowered by the third species of 4th [tone–tone–semitone] and raised by a ditone [tone–tone], as the principal degrees of the tritus *c.f.c'.f'* show, of which this is the mode. Evidence of this ⟨mode⟩ is in the ⟨plagal⟩ antiphon *Modicum et non videbitis* [see ex.9*c*].

Ex.9





The applicability of a *modus vocum* at any point in the double octave where it fits is nicely illustrated by the Worcester and Lucca versions of *Modicum et non videbitis*, at *f* and *c′* respectively. This *modus vocum*, like that for the deuterus, is again only applicable here to the plagal. The authentic tritus sung with *b♭* would be a hypothetical possibility for a *modus vocum* if one were to construct a *sedes troporum* around *g–a–b♭–c′* by adding *f* and *d′* at the extremes. Though Hermannus did not use this tetrachord, the tetrachord *synēmmenōn* was mentioned by Wilhelm (*Musica*, chap.38) as the basis of a *sedes troporum* (Table 5).

IV. We set up the fourth mode of the degrees raised by a tone and lowered by a fourth species of 5th [tone–tone–semitone–tone] [Hermannus: in the tetrardus] since its principal degrees produce that. ⟨This mode has the speciality among the others that⟩ you can recognize ⟨not only the authentic⟩ antiphon *Si vere fratres* ⟨but also the plagal⟩ antiphon *Multi veniunt* [see ex.9*d*] [Hermannus: and the like].

Hermannus's tetrardus *modus vocum*, as exemplified in *Multi veniunt*, was built from *g*, the final of mode 8, downwards. There are perhaps only half a dozen antiphons that would fit into this pattern used in this way, but this part of mode 8 is an important element in many antiphons with a higher reach. Since a *modus vocum* can be built around any modal degree, not necessarily just a final, Hermannus was able to follow up Hucbald's hint to attend 'not to the end but to beginnings' in *d′* and in *g*, and use the same *modus vocum* from *d′* as a module for the authentic tetrardus mode 7, even though mode 7 ends on *g*. *Si vere fratres* represents a common melody type in mode 7 (discussed by Apel, 1958, pp.400ff). This and several other mode 7 types begin on *d′*, or move up to *d′* rapidly, and then work their way down through the fourth species of 5th to the final *g*.

An elegant theoretical feature in Hermannus's *modus vocum* and *sedes troporum* was that the systems were completely symmetrical in terms of their components as described. That is, the *modi vocum* in pairs – protus and tetrardus, deuterus and tritus – are invertible as to pitch, as are the species of 4th and 5th that are their greater components; their lesser components, the tone and ditone, are of course self-inverting. This symmetry was noticed and elaborated by a few other writers, notably Aribo (*GS*, ii; CSM, ii), where it was likened to symmetries in other domains.

(*iii*) *Authentic–plagal distinctions.* Hermannus's *modus vocum* of the protus could refer to authentic or plagal, 'indifferently', as Wilhelm added. But of course any particular antiphon in a particular liturgy would be assigned one way or the other, since one or the other psalm tone had to be chosen for the psalm verses. For Hermannus's first example, *Prophete predicaverunt* (or *predixerunt*), the choice could go either way, as ex.9*a* shows. A number of medieval treatises included discussions of how to make the choice of authentic or plagal in such cases. Both Guidonian and Reichenau theorists discussed modal features that might be relevant to the choice, and both their points and their examples give excellent insights into the medieval sense of mode and modality. These discussions were most extensive regarding the protus, as was the case with most medieval essays on the specific details of modal theory.

(*a*) Repercussion. The *Dialogus* gives rationalized guidance on making such choices. The discussion begins and ends with two criteria: if it falls short of the 5th, it is plagal; if all else fails, judge by the traditional psalm tone. But in between there are clear instructions for making the choice on the basis of the modal structure of the antiphon (*GS*, i, 260):

There are, however, many songs among them which are neither lowered to *G*, *A* or *B*, nor raised to the 10th or 11th [scale-steps *c′* or *d′*]. The discrimination [*discretio*] for them is this:
[A] if they do not reach the 8th or 9th [*a* or *b♭*], they are certainly in the second tone;
[B] the 8th and 9th [*a* and *b♭*] are common to both [authentic and plagal]; when the song rises up to them it will be of the first mode if: [1] it dwells in them at length, or

[2] it strikes [*repercutiat*] them three or four times, or
[3] it begins in the 8th [*a*].
[C] If, however, it begins in lower [notes] and reaches to them [*a* and *b*♭] infrequently (according to the size of the antiphon) it will be of the second mode.
[D] Otherwise, they are discriminated according to the varieties and differences of their formulae [i.e. of their psalm tones].

The rule labelled '[B2]' above particularly reverberates through the literature on mode through Marchetto to Tinctoris and beyond. A note that is *repercussa* several times becomes a single-note medial function of a mode, like the tenor of the psalm tone, with which it is usually identical in fact and confused in principle.

(*b*) Mechanical measurement of average tessitura. In the 13th-century scholastic *Summa musicae* a mechanical routine for distinguishing authentic from plagal was suggested (*GS*, iii, 225f):

as there are four final degrees [*claves finales*], so there are four discriminatory degrees [*claves discretive*]. . . . Each discriminatory degree effects the distinction of two tones, for *f fa ut* discriminates the first [tone] from the second, *g* the third from the fourth, *a* the fifth from the sixth, and hard *b* [*b*♮] the seventh from the eighth. . . . If a protus song has more notes above *f fa ut*, to that extent [*quantum ad hoc*] it is authentic and of the first [tone]; if more beneath, to that extent it is plagal and of the second. [And so forth, for *g*, *a*, and *b*♮ in deuterus, tritus, and tetrardus.]

The 'discriminatory degree' midway between the modal final and its upper 5th became an important part of the modal doctrine of Marchetto and Tinctoris, under the name of 'chorda'; as *chorda mezana* it was later developed in a different direction by Zarlino.

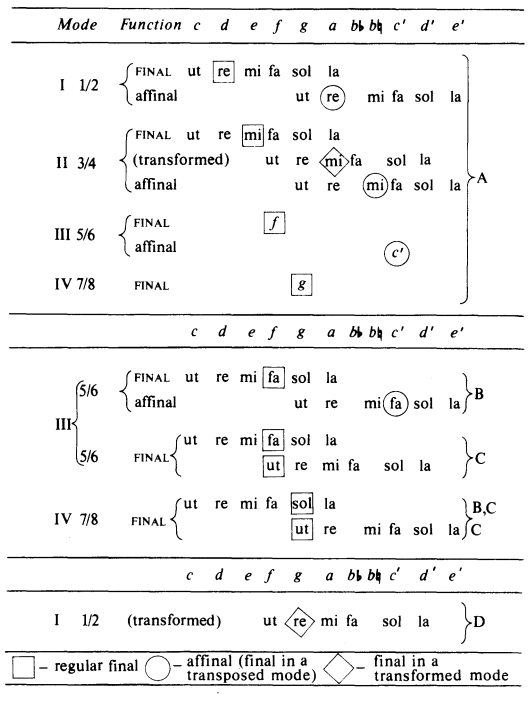
4. Mode in the later Middle Ages.

(*i*) *Modal quality and hexachord syllables.* The existence of modal qualities in parallel places in the Boethian double octave had been stipulated by Hucbald; the tetrachords embodying the set of four such modal qualities had been expanded to hexachordal *sedes troporum* by Hermannus and Wilhelm. The other 11th-century hexachord was the set of 'Guidonian' solmization syllables *ut re mi fa sol la*; but Guido himself connected his syllables neither with his own doctrine of affinities – *d* with *a*, *e* with *b*♮, *f* with *c'*, and so on – nor *a fortiori* with modal theory. It can be shown that by the end of the 11th century the 'Guidonian hexachord' must have been conceived as fully transferable to any place in the system where its stepwise successions would fit, that is, where there were affinities (see *Commentarius anonymus*, ed. Smits van Waesberghe, p.120). Yet there is no documentary evidence for what would seem to have been the obvious connection between the Guidonian *ut re mi fa sol la* transferable according to intervallic affinity and the Reichenau *sedes troporum* transferable according to modal quality. Hermannus's passage explicating his hexachordal *modi vocum* and *sedes troporum* appears in only a few other 11th-century works, notably Wilhelm of Hirsau's *Musica*. Another passage in Wilhelm's work summarizing the structure of each of the four *modi vocum* as the property of a trope is paraphrased in turn by Aribo (*GS*, ii, 217; CSM, ii, 32); and this is recast in the treatise of Engelbert of Admont (*GS*, ii, 348), who died in 1331. Apart from this no direct transmission of the Reichenau hexachord has been traced.

(*a*) Regular finals and transposed affinals. It is only in treatises from the second half of the 13th century that the connection between hexachordal syllables and modal quality is documented. Yet the treatise of the Dominican Jerome of Moravia, the earliest fully to explain the modal quality of hexachord syllables, makes no more claim than any other 13th-century writing to be presenting original doctrine in this area. The source is almost certainly not Reichenau; but whatever it is, the connecting of the hexachord syllables with the modal qualities of the four tetrachordal degrees united the functional approach of the 11th-century Italian writers with the structural analysis of their northern contemporaries. Jerome's explanation of the location of modal finals and affinals in the hexachords follows below and is illustrated in Table 6 (A): 'the first and second tone end in *d* or in *a*, with *re*. The third and fourth tone end in *e* or in *a*, with *mi*, or in *b*♮. . . . The fifth and sixth tone end in *f* or in *c'*. The seventh and eighth end only in *g'* (*CS*, i, 77f; ed. Cserba, pp.159ff). The hexachordal syllables for the tritus and tetrardus finals, which Jerome neglected to mention, are given in a similar passage from the *Speculum musice* of Jacques de Liège (early 14th century). Table 6 (B) illustrates 'chants ending in *fa* are of the fifth or sixth tone, and in fact chants ending in *sol* are of the seventh or eighth' (*CS*, ii, 313). The association of the four central hexachord syllables with the four pairs of authentic–plagal modes was simply the final stage in the evolution of a constant symmetry extending back through the four positions in the structural tetrachord and four modal qualities: *re*, modes 1 and 2, I, protus; *mi*, modes 3 and 4, II, deuterus; *fa*, modes 5 and 6, III, tritus; *sol*, modes 7 and 8, IV, tetrardus.

Some necessary substitutions for convenience of solmization at the approach to the tritus and tetrardus finals is supplied here from an anonymous treatise on the eight tones 'by some Chartist monk', and illustrated

TABLE 6



in Table 6 (C): 'The fifth and sixth [tones] in *f fa ut* are also ended in *ut* when the hexachord [*cantus*] is soft and ... descends to the final. Similarly the seventh and eighth [tones] are ended in *ut* when their chant [*cantus*] descends to the final' (*CS*, ii, 442).

(*b*) Transformed finals. The use of *a*, *b*♮ and *c′* as protus, deuterus and tritus at the upper 5th had been recognized in Hucbald's 'associated together' and Guido's doctrine of affinity and term 'affinal'. But the conjunct tetrachord *synēmmenōn* (*a*–*b*♭–*c′*–*d′*), which made the 'second 9th degree' *b*♭ of the *Dialogus* available, was regarded at the outset as auxiliary to the system rather than essential; the same in principle remained true of its *b*♭ taken alone, which was considered merely a variant for *b*♮ despite its early and continuous recognition as essential in the tritus modes. Hence theoretical recognition of the projection of the finals at the upper 4th rather than the upper 5th was long in coming. A corollary of this projection, that one note could serve as modal final for two different scale types, caused particularly keen theoretical discomfort in the case where the note was a regular final, namely *g*. The process of turning *g* tetrardus into *g* protus (or for that matter *a* protus into *a* deuterus) by using *b*♭ was called 'transformation', and was not considered quite respectable by theorists until the full integration of the hexachords with the modal system. Jacques de Liège drew attention to the hexachordal orientation of the protus on the tetrardus final *g* in the course of objecting to the use of a tetrardus–protus transformation within a mode 8 antiphon, one also discussed in the *Questiones in musica* (ed. Steglich, p.51); Table 6 (D) illustrates Jacques' location of the *g* protus final (*CS*, ii, 316):

> every regular or irregular chant, if it terminates suitably and finally in *re*, is of the first or second tone wherever it may be found or with whatever letter of the monochord it may be joined. For that [*re*] is the final degree [*vox finalis*] of the first and second tone, and it begins the first species of 5th, which is common to those two tones. Moreover I said 'if ... suitably' on account of those [mode 8] chants which have their final in *g* with *b*♭ ... such as the [mode 8] antiphon *Magnus sanctus Paulus*.

(*ii*) *Italian modal theory in the 14th and 15th centuries.* The last phase of medieval modal theory developed in Italy; the seminal work was the *Lucidarium* of Marchetto da Padova (*GS*, iii), completed by 1318, a few years before the *Speculum musice* of Jacques de Liège. Aspects of the tradition for modal description and classification established by Marchetto endured for two and a half centuries. One of the lasting features of the theory was in itself not new: the formal disposition of the scale structure of the modes according to species of the 4th and 5th. A second feature was the classification of the modal ambitus and melody into five categories: perfect, imperfect, mixed, pluperfect (some later writers preferred the term 'superfluous') and commixed. A third feature of the theory was a functional ordering of the species of 4th and 5th 'as they may be named when positioned in the tones' (*GS*, iii, 114). The first four among these functional species were named 'principal' (or 'initial'), 'terminal', 'common' and 'proper'; also included were commixed species, conjunct and disjunct species (*aggregata*, *disgregata*), species rising or falling, and species with all possible interruptions (i.e. omissions of one or more notes between the outer tones of the consonance).

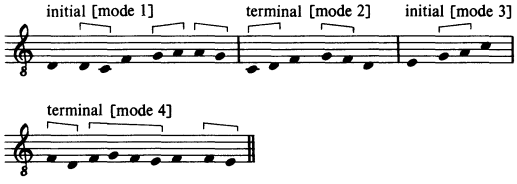
Up to the 16th century this theory was transmitted in Italy itself, where it is first documented over a century after the *Lucidarium*, in book 1 of the *Declaratio musice discipline* of Ugolino of Orvieto, written in the 1430s (CSM, vii). Much of Ugolino's treatment is an enormously expanded and rationalized commentary on Marchetto's work. (This work should be added to those discussed by K. W. Niemöller in *KJb*, xl, 1956, 23.) Several writers of northern origin working in Italy were influenced by the theory, such as Johannes Legrense (Gallicus) (*CS*, iv, 345–69), the teacher of Nicolaus Burtius. Tinctoris, whose *Liber de natura et proprietate tonorum* was written in 1476 in Naples, was a Fleming much in the centre of this Italian tradition. His exposition is the most complete of any and his work is characterized even more than Marchetto's by the use of examples composed to illustrate the points.

Franchinus Gaffurius's exposition of the doctrine is in book 5 chapters 6–8 of his *Theorica musicae* (Milan, 1492), and book 1 of the *Practica musicae* (Milan, 1496, first draft before 1487). Gaffurius's *Practica musicae* was the principal vehicle for aspects of the theory outside Italy (see Cochlaeus, 1511, bk.2 chaps.2–3, and Wollick, 1509, bk.3 chap.3). Pietro Aaron also belongs to the tradition, and part iii of Lanfranco's *Scintille di musica* (Brescia, 1533) should be included. As late as 1588 Pietro Pontio used and cited Gaffurius (*Practica musicae*, bk.1 chap.8) for the five categories of modal ambitus and melody.

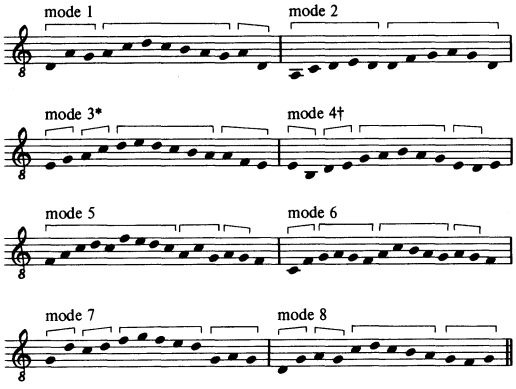
Marchetto's approach was implicitly scholastic, and Ugolino's *Declaratio* explicitly so. The first stage in the process of modal differentiation was a threefold classification of intervals; they were called conjunctions, and Marchetto defined them as 'disposition or arrangement [*ordinatio*] of sounds' (*GS*, iii, 92). Tone, semitone, major and minor 3rds were 'syllable conjunctions', which were in turn the immediate constituents of 'species conjunctions', the consonances of the 4th, 5th and octave (plus the 11th, 12th and double octave). Ugolino defined this relationship metaphysically: 'Since there is no giving form without material ... we claim the tones, semitones, ditones and other conjunctions of the degrees, from which the species of 5th and 4th are fitted together, to be the material for the form' (CSM, vii, 92). Marchetto's third class of conjunctions comprised the 6ths and the other intervals from diminished 5th and tritone to major 7th and diminished octave. The species of 4th exhibited the familiar structure tone–semitone–tone, semitone–tone–tone and tone–tone–semitone; three of the species of 5th were derived from them by adding a tone at the upper end, but the tone–tone–tone–semitone species of 5th 'arises from itself' (Marchetto, *Lucidarium*, *GS*, iii, 97f; Ugolino, *Declaratio*, bk.1 chap.29). These species were then summed in pairs to form the eight modal octaves, as they had been by Berno and his sources three and more centuries earlier (see ex.6*b*).

The passages in Marchetto's *Lucidarium* (*GS*, iii, 114–17) and Ugolino's *Declaratio* (bk.1 chap.46) that classify the species according to function rather than structure are close in both text and illustrations. Their first two types of functional species – initial and terminal – are yet another representation of the importance of opening gesture and cadential approach. Ugolino's illustrations, shown in ex.10*a*, are not labelled as to mode, but they hardly need to be. The first 'initial' is Gevaert's *thème* 6, and the other is as clearly mode 3, from the final *e* up to the tenor *c′*. The first 'terminal' can be cadential in either protus mode, but is more frequent in mode 2, and is evidently so intended since the second

Ex.10
(a)



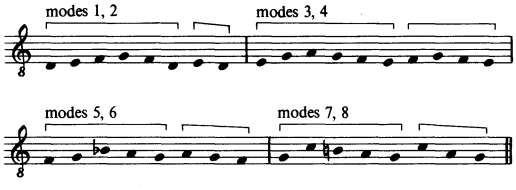
(b) 'proper [4th and common 5th] of [each] tone'



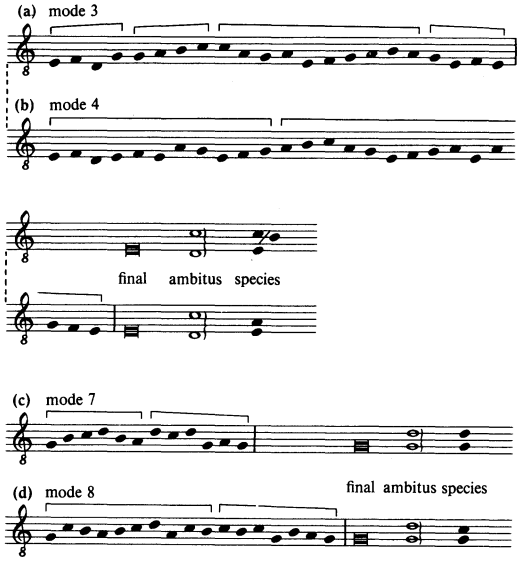
*'... to its prescribed ascent, which is c'...,' although 'the third tone is formed from the II. species of fifth and the II. species of fourth...' (*GS*, iii, 109)

†'even though the lower fourth may be rarely used' (loc. cit.)

(c) 'common [species of 4th] of the tones'



Ex.11



'terminal' is unmistakably mode 4, a deuterus plagal.

The species of 5th common to each authentic–plagal pair of modes reaches from final up to fifth. The species proper to each individual authentic or plagal is the species of 4th conjoined above or below the common 5th, respectively, to form the mode, that is, the modal octave. Ex.10*b* gives Ugolino's unambiguously composed illustrations showing the conjoining of proper 4th and common 5th in each mode. Appropriate cautionary footnotes are added from Marchetto's *Lucidarium*.

The doctrine also includes a 'common species' of 4th (*GS*, iii, 108):

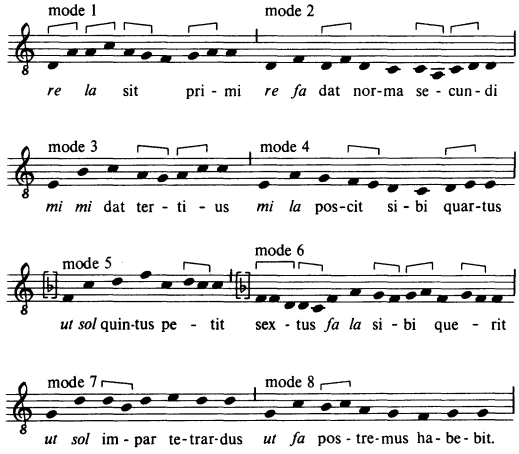
> In any of the tones, that species [of 4th] is called common which begins ... where the tone has to end, and rises upwards; this species of course is used in [both] authentics and plagals, although it can be put more often in plagals. For if in a chant [lying] high this species is struck [*repercussa*] several times, [provided] the chant does not rise beyond the 6th, the tone will be judged plagal.

Ex.10*c* is the illustration given by Marchetto and Ugolino for the species of 4th common in each authentic–plagal pair. In his *Practica musicae* (bk.1 chap.9; trans. Miller, p.53) Gaffurius misunderstood this notion of Marchetto's. Tinctoris, however, used it cogently in his *Liber ... tonorum* (*CS*, iv):

> If the tone rises above its final to the 5th plus a tone or semitone and descends a tone or semitone below, it will still be called authentic, as is proven here [see ex.11*a*] ... [but if] common species of 4th are struck [*repercutiantur*] several times, it will be judged plagal, as appears here [see ex.11*b*]. [p.32]
>
> If a tone not descending beneath its final does not rise above the 5th, and [if it] frequents the 5th as much or more than the common 4th, it is authentic; otherwise, [it is] plagal, as is proven here [see ex.11*c*, *d*]. [p.33]

The contrast between common species of 5th as a mark for authentics and common species of 4th as a mark for plagals is thus both assimilated to and developed from the notion of repercussion, as first expounded in the *Dialogus*. The repercussion – or common 5th/common 4th – coincides with the corresponding psalm-tone tenor for three of the four authentics and for two of the plagals; neither historically nor musicologically have the distinctions between repercussion and tenor been observed as scrupulously as is sometimes necessary. Ex.12 shows a mnemonic verse found in several 16th-century German works in which in effect the common 5th of the authentics and the tenor

Ex.12



of the plagals has been combined, to form a consistent pattern of repercussions. In the third part of Lanfranco's *Scintille di musica* (p.117, *recte* p.107) the same pattern may be found, making explicit the connection of repercussion with (common) species, as well as with the term 'melodia' (which sometimes also means psalm-tone tenor, or psalm-tone difference, or the whole psalm tone): 'The repercussion, which is the *melodia* or interval proper to each chant . . . all of which repercussions are called species of chant'.

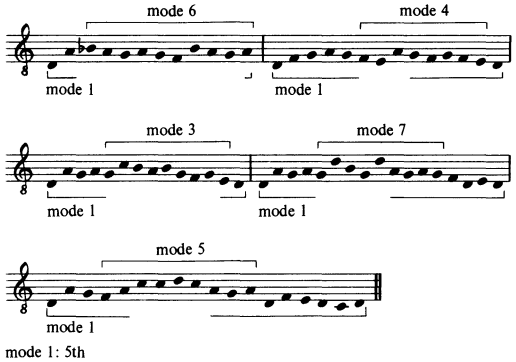
The confinal too is occasionally taken not as the final of the whole piece projected on the system a 5th higher but rather simply as the conclusion of a piece on the note a 5th above what would normally have constituted its final. This is Gaffurius's interpretation of the antiphon *Nos qui vivimus* 'which ends on the *confinalis* . . . [in] a very old antiphoner . . . it ends on its untransposed *confinalis d la sol re*' (*Practica musicae*, bk.1 chap.14; trans. Miller, pp.60f).

When a species of 4th or 5th that was neither proper nor common to the mode of a melody was introduced, it was called 'commixed' with respect to the species of the mode in question. Marchetto illustrated this by devising commixtures of the common species of 5th for mode 1 (*d–a*) with species common or proper to every other mode except 2 and 8 (the former shares the same final, the latter the same octave species), as may be seen in ex.13*a*.

Commixture of species produced commixture of modes, the most novel of Marchetto's five categories of mode with reference to ambitus (which in this category

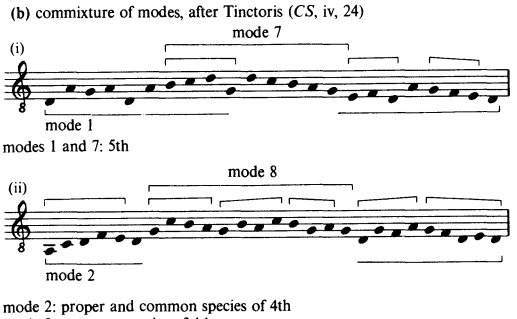
Ex.13

(a) commixture of species, after Marchetto (*GS*, iii, 115f)



mode 1: 5th
modes 6 and 4: common species of 4th
modes 3, 5 and 7: 5th

(b) commixture of modes, after Tinctoris (*CS*, iv, 24)



modes 1 and 7: 5th

mode 2: proper and common species of 4th
mode 8: common species of 4th

was not confined merely to the sense of compass above and below the final). Among the illustrations devised by Tinctoris are the following:

> If the fourth species of 5th – regularly attributed to the seventh [tone] – is established in the first tone, then this will be called first tone commixed with seventh, as appears here [see ex.13*b*, (i)]. Likewise, if the third species of 4th . . . which according to the regular tradition is assigned to the eighth [tone], is put in the second tone, then the tone is called second commixed with eighth, as is proven here [see ex.13*b*, (ii)].

Citations of chant items specifically referring to commixture were infrequent. Marchetto (and others including Gaffurius after him) referred to an initial *e* in a mode 1 chant as commixed (*GS*, iii, 106, 108). Ugolino said that 'within the protus first authentic we include another commixed octave not pertinent to it, namely, *c* to *c*'' (CSM, vii, 186), and listed a number of mode 1 chants operating in that compass straightforwardly in terms of the common 5th (*d–a*) with a tone below and a minor 3rd above. Commixture is nonetheless a useful concept and has proved especially so both to Renaissance and to modern scholars trying to account for polyphonic music in terms of traditional chant modality.

The other four categories of mode according to ambitus – perfect, imperfect, pluperfect and mixed – have to do solely with compass. Ugolino's definition of 'perfect' limits it strictly to the modal octave, as composed of its species of 4th and 5th; Marchetto (*GS*, iii) made some allowance for melodic practice:

> That tone is called perfect which fills its mode [i.e. modal octave] above and below. Now to fill its mode in an authentic [tone] is to rise from its final to the octave and not beyond, and to descend from the same final by a tone, excepting the tritus [authentic], which has a semitone below the final [p.101]
>
> [and] the fifth tone very seldom descends below its final [p.112]
>
> To fill its mode in a plagal [tone] is to rise from its final to the 6th, and from the final to descend to the 4th [below]. [p.102]

Imperfect and pluperfect have to do with an authentic or plagal mode that falls short of or exceeds the outer limit that makes it authentic or plagal (*GS*, iii):

> Imperfect is that tone, be it authentic or plagal, which does not fill its mode [i.e. modal octave], above [authentic] or below [plagal]. [p.102]
>
> The authentic tone which rises beyond the octave from its final, namely to the 9th or 10th, is called pluperfect. The plagal tone which descends below the 4th under its final is [also] called pluperfect. [p.103]

Either authentic or plagal can also encroach upon the compass proper to the other; that is, a melody may not only fill (or surpass) its 'proper' octave but may also extend in the other direction, into the territory proper to its companion. Such modes were called 'mixed'. 'If a tone is authentic it is called mixed if it descends more than one note below its final, touching something of the descent of its plagal. . . . A plagal tone which rises above the 6th from its final, touching the ascent of its authentic, is called mixed' (*GS*, iii, 103). In chapters 28–48 of his *Liber . . . tonorum* Tinctoris explained and illustrated the possible combinations of perfect, imperfect, pluperfect (superfluous), and mixed ascent and descent for authentic and plagal. It was in connection with imperfection – in effect, small ranges above the final – that he invoked the repercussions to common 5th versus common 4th as a criterion for distinguishing authentic from plagal.

Marchetto's fifth and final category of modal ambitus, the commixed tone, has already been discussed. His descriptions of the eight modes by their species are outlined below, annotated with some of his comments (*GS*, iii, 103–14), given in square brackets:

(i) Species I 5th (*defga*) + species I 4th above (*abc′d′*) + tone below (*c*) [either it ascends beyond its first species only as far as *c′* [!] and no further, and then it ought to be sung always with *b*♭, and may be said to be common with the 6th [mode], . . . or it ascends to the aforesaid *c′* [or *a fortiori* beyond it] several times . . . before it descends to *f*, and then it will be sung with *b*♮].

(ii) Species I 5th (*defga*) + species I 4th below (*dcBA*) and common (*defg*).

(iii) Species II 5th (*efgab*♮) + species II 4th (*b*♮*c′d′e′*), + tone below (*d*) [such a chant may want to rise to its prescribed ascent, which is upper *c′*].

(iv) Species II 5th (*efgab*♮) + species II 4th below (*edcB*) and common (*efga*) [even though the lower 4th may be rarely used].

(v) Species III 5th (*fgab*♮*c′*) + species III 4th above (*c′d′e′f′*) in ascent [when it rises from the final to the 5th above in whatever way, the extension through these notes passes more sweetly and smoothly to the ear . . . so that we may use the third species of 5th, which can be used in no other tone but this and its plagal]; in descent species IV 5th (*fgab*♭*c′*) [so that when it wants to come from the 5th above to the final, it may avoid the harshness of the tritone] + species III 4th above.

(vi) Species III 5th (*fgab*♮*c′*) + species III 4th below (*fedc*) in ascent; species IV 5th (*fgab*♭*c′*) + species III 4th below (*fedc*) and common (*fgab*♭) in descent [Why it is so formed, and how it ought to be sung with *b*♭ or *b*♮, is the same reason as was said of its authentic].

(vii) Species IV 5th (*gab*♮*c′d′*) + species I 4th above (*d′ e′ f′ g′*) + tone below (*f*).

(viii) Species IV 5th (*gab*♮*c′ d′*) + species III 4th [common] (*gab*♮*c′*) [which begins in high *c′* tending downward; though this species is in common with its authentic, yet it should be put more often in the eighth]; also, species IV 5th (*gab*♮*c′d′*) + species I 4th below (*gfed*).

Like his contemporary, Jacques de Liège, Marchetto (*GS*, iii) accepted with only *pro forma* reservations the projection of the modes anywhere they could fit on the system:

> The first tone and its plagal can be ended in any part of the [Guidonian] hand where the species which form it above and below can be arranged. [p.104]. . . . Such a tone is called 'proper' in terms of composition but 'improper' in terms of location, because it is settled in a place other than its own. [p.108]. . . . And we claim the same for any other tone, authentic as well as plagal. [p.104]

The principle was to cover projections of modal degrees both at the upper 5th, to the affinal (or confinal), and at the upper 4th. First, 'if any tone finishes in its confinal, it is because of accidence [*propter accidens*]' (*GS*, iii, 105). Marchetto used accidence in contradistinction to substance or essence. He took as his example the gradual *Nimis honorati* (*GR*, 391), one of the so-called 'Justus ut palma' type. These graduals are in mode 2 ending on the affinal *a*, a projection required because of two 'accidentals' (*GS*, iii, 105); regularly in mode 2 there was neither a semitone above the final nor a major 3rd below it. Second, 'there are also some chants which can finish neither in the final nor in the confinal on account of some inconvenient accidentals falling in them, such as the communion *Beatus servus*. . . . Such a note is called "acquired" [*tonus . . . acquisitus*]' (*GS*, iii, 105f). *Beatus servus* (*LU*, 1203) is discussed at length in Jacobsthal, *Die chromatische Alteration* (pp.99ff), although his constructions can be considerably improved with the better text of chapter 21 of Johannes Afflighemensis's *De musica* (CSM, i). It is a mode 3 piece that also must finish on *a*; it uses *b*♭ in mode 3 phrases at the beginning and end, but there are two medial phrases reflecting mode 1 that use *b*♮.

(*iii*) *Expansion of the tonal system.* The freedom to claim the species of the 5th and 4th as modal, no matter where they might fall in the system, had radical implications. The soft hexachord provided a protus final on *g*, but to use it 'suitably' in the sense meant by Jacques de Liège entailed a consistent use of *fa* on *b*♭ along with the protus final *re* on *g*. Hence the soft hexachord *f–g–a–b*♭*–c′–d′* became a *sedes tonorum* encompassing *g* protus modes, and *b*♭ became an essential degree, no longer accidental, just as the natural hexachord *c d e f g a* was the *sedes tonorum* encompassing the regular *d* protus modes, which use *b*♮ of the hard hexachord as the essential sixth degree and *b*♭ of the soft hexachord as the accidental. The acceptance of *g* protus modes with an essential *b*♭ as their third degree further entailed a new accidental sixth degree, *e*♭*′*, solmized *fa* in a new soft hexachord *b*♭*–c′–d′–e*♭*′–f′–g′*. The *b*♮ of the original system was reduced to the status of an alteration for approaching *c′* in cadences. By the 16th century the new system came to be called *cantus mollis*, because *b*♭ *mollis* is essential, as opposed to the traditional system where *b*♮ *durus* is essential, which thereby came to be called *cantus durus*.

Ex.14*a* illustrates what became the most conventional 16th-century usages of the *cantus mollis* system, in which all voices had a signature of B♭. The hexachordal and species patterns of the protus and deuterus modes (1, 2, and 3, 4) are identical with those of the traditional system – that is, *cantus durus* – but the letter names are different, so that protus finals are on *g* (solmized *re*) and deuterus finals are on *a* (solmized *mi*). For the tritus modes, conversely, the *cantus mollis* was used for the regular final *f*. For these two modes, from Hucbald (9th century) to Guido (11th century) to Marchetto (14th century), *b*♭ was recognized as at least as powerful as *b*♮, in practice and in theory; the *cantus mollis b*♭ signature simply recognized the fact. (However, the acquisition by the system as a whole of a soft hexachord *b*♭*–c′–d′–e*♭*′–f′–g′* made available to the tritus on *f* the same *subtonium* that all the other regular modes had always had.)

Once *b*♭ as *fa* of the soft hexachord could be considered an essential rather than an accidental degree in the system as a whole – a possibility not readily open to *b*♭ as a member of the extra tetrachord *synemmenon* (see §2(i) above) – the same principle could be extended to *e*♭*′*, the *fa* of the new soft hexachord: it could be seen as the essential third degree in a new protus first species of 5th *re–mi–fa–sol–la*, *c′–d′–e*♭*′–f′–g′*. Since this extension provided for an essential note name (E♭) that had not formed even an accidental part of the traditional system, it was regarded as musically contrived, or somehow not quite real – *musica ficta* or *musica falsa* as opposed to *musica vera* – and the system of hexachordal relationships providing for it came to be called *cantus fictus*, as opposed to *cantus durus* and *cantus mollis*. The protus species of *cantus fictus* are shown in ex.14*b* (*see also* MUSICA FICTA).

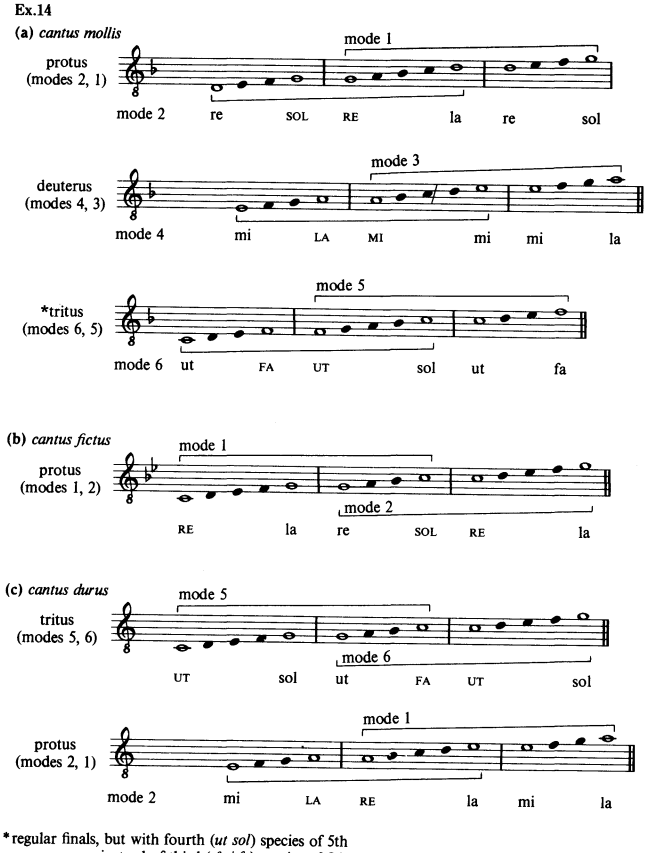
Cantus mollis tetrardus modes on *c* had been theoretically available in chant theory as transformations at the tritus affinal *c*, but they were extremely rare. The more common orientation for a *c* mode was the traditional tritus affinal, much in evidence as a *sedes* for mode 6 (Hypolydian). Also in frequent use were the protus modes at the affinal position with the *sedes a*, especially the plagal protus.

Ex.14*c* shows the *cantus durus* interpretation of the species in *a* protus, and *c* and *c′* tritus. For the protus modes there is an essential difference between the *cantus mollis* 'transpositions' (in the modern sense) and the *cantus durus* transpositions, which continue in the medieval sense. The medieval transposition simply projected the melody against a different segment of the

double octave, with no effect on the background system. A protus melody with its final set at *a* could thereby have a major 3rd below its final (*f*) and the minor 6th above its final (*f′*) as logically essential notes; it also gained the option of using an accidentally lowered second degree (*b*♭), and it lost altogether the possibility of using a major 6th above the final. In terms of the hexachordal species shown in ex.14*c*, the common species of 5th for the protus *re–mi–fa–sol–la* (as in *a–b*♮*–c′–d′–e′*) dominated, but the conjoined species of 4th (below for plagal, above for authentic) was *mi–fa–sol–la* (as in *e–f–g–a*), which was proper to the deuterus rather than to the protus. A protus using its confinal *a*, then, was a commixed protus. In the tritus modes, on the other hand, both the common 5th *ut–re–mi–fa–sol* (as in *c′–d′–e′–f′–g′*) and the proper 4th *ut–re–mi–fa* (as in *g–a–b*♮*–c′*) had the same hexachordal syllables as those for the species of the tritus in *cantus mollis* at the regular final *f*. The only tritus species unavailable as a modal element in *c*-final projections was the third species of 5th *fa–sol/re–mi–fa*, with its internal mutation between natural and hard hexachord, which could only be projected at *f–g–a–b*♮*–c′*.

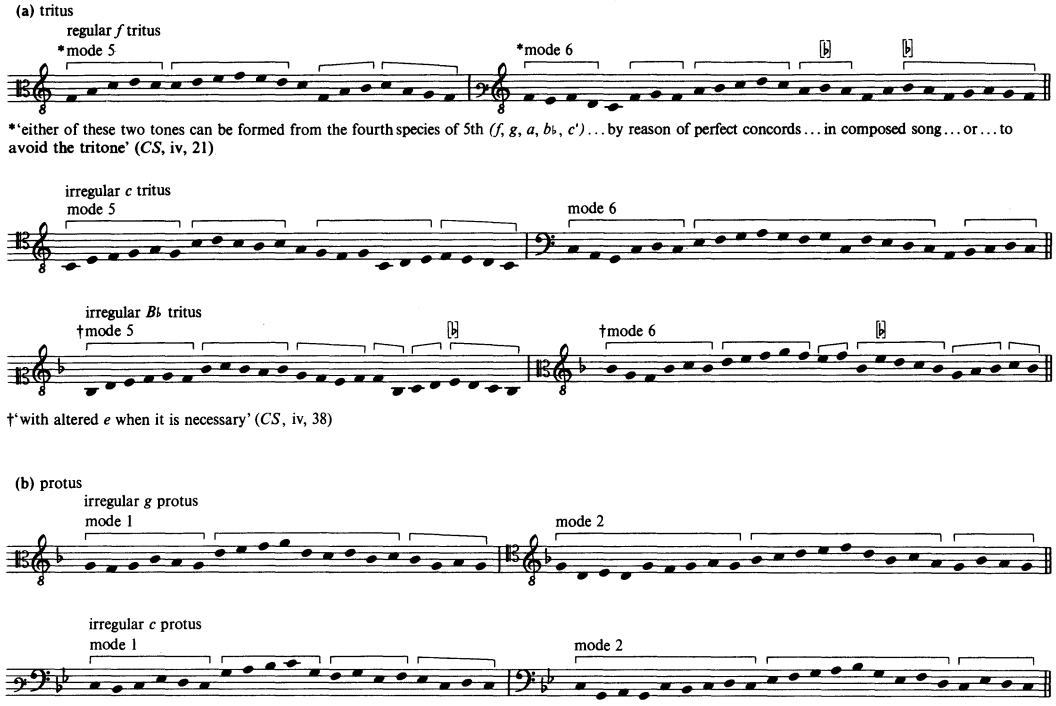
The extension of the hexachord system in such a way as to provide modal species and modal finals in unaccustomed places was a part of the development of polyphonic music, that is, 'composed songs, in primary attention to which', Tinctoris stated, 'I have principally undertaken this treatise' (*Liber de natura et proprietate tonorum*, *CS*, iv, 27). He concluded his treatise in fact with a discussion (with his usual ad hoc illustrations) of what he designated as 'irregular finals'. These included any final other than the regular finals *d*, *e*, *f*, *g*, and the confinals *a*, *b*♮, *c′*. These last three involved transposition only in the medieval sense and did not involve the transformation of the whole system effected by changing *b*♭ from accidental to essential; in that sense Tinctoris had chosen to consider the three confinals as regular also. So, for example, the medieval tritus confinal at *c′* was not represented among his 'transpositions'. An octave lower, however, *c* was an 'irregular' tritus final, as shown in ex.15*a*. Also shown in ex.15*a* are the irregular tritus modes on *B*♭ and *b*♭, along with Tinctoris's earlier examples for the regular tritus at *f*. It should be noted of the regular tritus at *f* and the irregular tritus at *b*♭ that express provision was made for the perfect 4th above the final, *fa* as *b*♭ or *e*♭*′*, respectively. Conversely, *fa* occurred naturally as *f* in the irregular tritus at *c*, which passed without any comment, indicating that the fourth degree above this tritus final *c* would never occur otherwise than as *f*.

Ex.15*b* shows two of Tinctoris's illustrations for irregular protus modes. One pair is *g* protus, in *cantus mollis*; the other is *c* protus, in *cantus fictus*.



*regular finals, but with fourth (*ut sol*) species of 5th instead of third (*fa|fa*) species of 5th

Ex.15



*'either of these two tones can be formed from the fourth species of 5th (*f*, *g*, *a*, *b*♭, *c'*)... by reason of perfect concords... in composed song... or... to avoid the tritone' (*CS*, iv, 21)

†'with altered *e* when it is necessary' (*CS*, iv, 38)

III. Modal theories and polyphonic music

1. Elements of polyphonic modal theory: (i) The poetic function of the modes (ii) Modality in a polyphonic texture. 2. Polyphonic modal functions: (i) Cadences and openings (ii) The integration of modality and polyphony. 3. Polyphonic modal theory and the eightfold system: (i) Aaron and the psalm-tone differences (ii) Composite modes (iii) Modal cadences and polyphonic psalmody. 4. Systems of 12 modes: (i) The 12 modes before Glarean (ii) Glarean's 12 modes (iii) Zarlino's synthesis of modality and polyphony. 5. Transition to major and minor keys: (i) The 12 modes in the late 16th century (ii) The modes in the 17th century (iii) The modal triad.

1. ELEMENTS OF POLYPHONIC MODAL THEORY. Between the 13th century and the 15th modal theory was rationalizing and integrating an edifice of doctrine and analysis whose elements and concepts had been largely worked out two centuries earlier, initially to deal with a repertory yet more ancient. During the same period, while creative musicians were devising artistic forms of polyphony, theory too was attending with greater interest to the problems of rhythm and proportion in durations, and structure and succession of simultaneities – in short, to mensural notation and to discant and counterpoint. Johannes de Grocheo, writing about 1300, specifically excluded mode from polyphony (trans. Seay, p.31):

> Certain people describe a tone by saying that it is a rule that judges every song by its end [*regulam quae de omni cantu in fine iudicat*]. But these men seem to err in many ways, for when they speak of 'every song' they seem to include popular and measured song [*cantum civilem et mensuratum*]. This kind of song does not perhaps proceed through the rules of a tone, nor is it measured by them. Further, if it is measured by them, they do not speak of the method by which it is used nor do they make mention about it.

Earlier Grocheo had specifically included organum, conductus, and motet in the category of measured song, so the presence or absence of a plainchant tenor as the basis for a polyphonic composition had no bearing on the question of whether or not it ought to be considered modal.

Well over two centuries later Sebald Heyden asked 'Why is it necessary to pursue religiously the ranges of authentic and plagal tones, as they are called, and the *differentiae* added to them, when we know that they have almost no meaning in figural music?' (MSD, xxvi, 113). Heyden was chiefly interested in *tactus* and proportions. Nonetheless, such a statement is surprising, for it came at a time when secular polyphonic collections ordered according to the eight modes were beginning to make an appearance. Moreover, immediately following Heyden's own summary and examples for the traditional modes and psalm tones he himself printed polyphonic compositions illustrating each of the eight modes. The question draws attention to the fact, however, that between modes and modal theory on the one hand and the actual composition of polyphony on the other there was no necessary connection either in theory or in practice. Between counterpoint – the rules governing simultaneities and their successions – and modality there was nothing comparable to the indissoluble link between harmony and tonality that prevailed from Rameau's *Traité de l'harmonie* to Schoenberg's *Harmonielehre*.

(*i*) *The poetic function of the modes.* During the period 1450–1600 musicians increasingly came to feel that polyphonic music must somehow be modal. But a mode, unlike a key in 18th- and 19th-century music, was not an abstract general pattern of tonal relationships inher-

ent in the grammar and syntax of the musical language. It was, rather, a part of musical style. Musicians believed that the modes furnished a number of differently structured sets of coherent musical relationships each of which had its own set of expressive characteristics that could naturally and of themselves reinforce the affective sense of a verbal text.

(*a*) Modal ethos in the Middle Ages. The tradition that a mode has inherent expressive properties and extramusical associations was of classical origin; this notion is in fact an essential part of most modal systems. In the humanist Renaissance the doctrine of the inherent expressive properties of modes received powerful support from direct reference to classical sources. But the tradition of modal expressivity as well as the details of the eightfold system came to Renaissance musicians proximately from their medieval forebears.

At the beginning of chapter 14 of his *Micrologus* Guido had proposed that 'the diversity of tropes is suited to the diversity of mentalities' and had described four of the eight modes briefly. Engelbert of Admont reported the tradition as follows (*GS*, ii, 340):

> Guido says that the third tone has broken leaps, and so its song is impetuous. The sixth in truth has gentle leaps, and this is voluptuous. The seventh is indeed garrulous, on account of many and short turnabouts [*reflexiones*]. The eighth is more agreeable on account of its lingering and less frequent turnings [*propter morosos et pauciores reflexus*].

Seen in this way, the modes are not merely members of a closed system of categories for musical classification, nor just a convenient traditional code helping to link a handful of recitation formulae with a galaxy of separate songs, nor only a collection of scales or melody types. Guido's tropes are depicted as real, individual entities, with characters identified as 'impetuous ... voluptuous ... garrulous ... agreeable'. Such characters as these are ethic; they have to do with the expressive and even the moral power of a musical entity to act on a human spirit.

For the most part, the general idea of modal ethos was accepted in medieval theory without question (where it appeared at all), and specific doctrines regarding one mode or another are ad hoc, and purely traditional. Like many other usages in medieval musical theory the notion of ethos (though not the term) was borrowed ultimately from classical antiquity. A characteristic instance is a story about the ethos of the Phrygian *harmonia* whose name had become attached to the authentic deuterus by the end of the 9th century. This story is retold after Boethius (see Strunk, 1950, p.82) by medieval and Renaissance theorists from Regino in the 9th century (*GS*, i, 235) to Glarean in the 16th (bk.2 chap.23). Engelbert's version reads (*GS*, ii, 340):

> Boethius tells in the prologue of his *De musica* that the Phrygian tone, that is, the third, sung to a musical instrument, aroused one young man listening, the suitor of a certain girl, and provoked him to such rashness that he wanted to break into the girl's room at once, by force. And when the Phrygian tone was changed to Hypophrygian, that is, the third to the fourth tone, the young man calmed down, appeased by the gentleness of the tone.

While modal ethos plays a smaller role in Western modal theory than it does in modal systems in some other cultures, there are ample listings of modal affect among medieval and Renaissance sources to illustrate the phenomenon. These lists are by and large in agreement as to the general character of an authentic as against its corresponding plagal, in that in each pair the plagal is almost always darker or softer than its corresponding authentic; beyond this there is only partial agreement. There follows below a compilation of modal affects from three 11th-century sources, as an illustration of the kinds of similarities and differences that can exist in the ascription of ethos to the members of a modal system. The sources are Hermannus Contractus (mid-11th century, ed. Ellinwood, p.65), Frutolfus of Michelsberg (before 1100, ed. Vivell, p.105), and Johannes Afflighemensis (*c*1100, ed. Smits van Waesberghe, p.109). They probably do not represent independent traditions, despite their mutual differences. Frutolfus and Johannes knew Guido's work, and Hermannus must have also; and Frutolfus knew Hermannus's work since he borrowed from it elsewhere.

mode 1, authentic protus, Dorian: Hermannus, 'serious or noble'; Frutolfus, 'mobile because it is capable of all affects'; Johannes, 'lingering and courtly meanderings'.
mode 2, plagal protus, Hypodorian: Hermannus, 'agreeable'; Frutolfus, 'mournful, because its melody seems more suitable to sad and unhappy things'; Johannes, 'deep-voiced seriousness'.
mode 3, authentic deuterus, Phrygian: Hermannus, 'excited or leaping'; Frutolfus, 'excitable'; Johannes, 'harsh and rather indignant leaping about'.
mode 4, plagal deuterus, Hypophrygian: Hermannus, 'moderate or lingering'; Frutolfus, 'moderate and serious'; Johannes, 'adulatory'.
mode 5, authentic tritus, Lydian: Hermannus, 'voluptuous'; Frutolfus, 'joyful'; Johannes, 'moderate wantonness and a sudden fall to the final'.
mode 6, plagal tritus, Hypolydian: Hermannus, 'mournful'; Frutolfus, 'voluptuous'; Johannes, 'lacrymose'.
mode 7, authentic tetrardus, Mixolydian: Hermannus, 'garrulous'; Frutolfus, 'joyful and merry'; Johannes, 'theatrical leaps'.
mode 8, plagal tetrardus, Hypomixolydian: Hermannus, 'joyful or exultant'; Frutolfus, 'agreeable and sweet'; Johannes, 'seemly and rather matronly'.

An anonymous *Tractatus de natura et distinctione octo tonorum musice* (*CS*, ii, 434ff, from a 16th-century manuscript at Ghent) makes an effort to illustrate and justify ascriptions of ethos to church modes by choosing chant examples whose texts are congruent in some way to the traditional ethos of the mode of their traditional melodies. Though the demonstration is necessarily specious, it was of course possible to find texts in the enormous liturgical corpus with the right affect in the right mode. Perhaps the most difficult case would have been mode 3, the Phrygian, whose ascribed ethos lends itself ill to liturgical texts; but the author found an ingenious rationalization. Since this mode is 'harsh and inciting to wrath and war, it is suitably applied to those matters where something of bravery or power is shown, such as [the Responsory] for the mystery of the Holy Cross, *O crux gloriosa* [*Variae preces* (Solesmes, 5/1901), 151]' (p.446). The verbs in the *repetendum* of the respond warrant the affect: '[O glorious cross ... wonderful sign] Through which the devil was conquered, and the world was rescued through the blood of Christ'.

The system of modes was also correlated with extramusical octenary, quaternary and binary systems. Near the very outset of the medieval development Aurelian began his own supplement to the 'De octo tonis' that begins chapter 8 of *Musica disciplina* with a comparison of the eight modes to the motions of the seven planets (the moon, Mercury, Venus, the sun, Mars, Jupiter, Saturn) plus the zodiac. In the Guidonian tradition the eight modes were likened to the Beatitudes and also the parts of speech. Johannes reported the last congruence,

and added another (*De musica*, chap.10):

> It seems very fitting that as all that is said is contained in eight parts [of speech] so all that is sung may be governed [*moderetur*] by eight modes. But though they are now eight they were once only four, probably in imitation of the four seasons. For as the ages are diversified by the four seasons, so all song is diversified by the four modes.

In chapter 14 of the anonymous 13th-century *Summa musicae* (*GS*, iii) the eightfold system is correlated with the macrocosmic elements of the universe and the human microcosm of bodily fluids and temperaments. Authentic and plagal were more often than not called principal and subordinate, or master and disciple or servant; Aribo (*GS*, ii, 205, late 10th century) expanded the roster of dichotomies to include not only rich and poor but also male and female, which was further elaborated by Johannes de Grocheo (*c*1300): 'Just as the masculine universally exceeds the female in skill and virtue, so it seems appropriate that the principal modes exceed their plagals in ascent' (trans. Seay, p.33).

(*b*) Modal ethos for polyphony. Renaissance notions of textual expressiveness and the humanists' recovery of more and better classical authorities stimulated great interest in the idea of modal ethos as an aid to the musically expressive setting of a text. Chapter 5 of Nicolaus Burtius's counterpoint treatise (1487, pt.ii) is entitled 'How chansons [*cantilenae*] ought to be composed'. After recommending that a composer be thoroughly familiar with repertory and acquire experience through practice in his art, Burtius continued: 'most important of all, let him be familiar with the tropes, or (to use the term of practising [musicians]), the tones; for some of these induce joy, others rather sadness, while others [are] holding to a mean' (ed. Massera, p.124). The ethic properties of the eight modes, according to Burtius 'as found in documents of the musicians', are:

> (1) '. . . induces happiness . . . capable of producing all affects'; (2) '. . . heavy and pitiable . . . suitable for lamentations'; (3) '. . . provoking to anger'; (4) '. . . inciting to pleasure and tempering wrath'; (5) '. . . delightful, modest, and cheerful'; (6) '. . . pious and lacrymose'; (7) '. . . partly . . . playful and pleasant . . . partly . . . inciting, and having a variety of leaps'; (8) '. . . more gladdening . . . and stimulates pleasantness'.

Hermann Finck (1556, bk.4) drew attention to the difficulties of applying the traditional stipulations for the eight modes in composition, given the needs of the contemporaneous method of setting a text, for while a plainsong mode (Rr i*v*–Rr ii*r*):

> is recognized according to the ordinary precepts, with almost no difficulty by [even] the moderately erudite, polyphonic [music] does not follow the ordinary rules [of the modes]. . . . The chief reasons are [1] the observation of affects in the text, and according with that [2] the [textually] appropriate variation of the points of imitation and of the cadences [*fugarum ac clausularum conveniens variatio*]. . . . Hence . . . the limits of the tones cannot be observed strictly in polyphonic music.

Notwithstanding the variety of affect within a piece, a single mode will probably predominate, 'For the song as a whole is to be ascribed to the tone to which the greater part of its points of imitation and cadences can be referred' (Rr ii). So even though the method of recognizing a mode may be completely different, a predominant affect will be established, and Finck concluded the fourth book with a list giving the property (*proprietas*) of each tone, that is, its ethic affect. Along with traditional attributes Finck included the seven planets (no mention is made of the zodiac for the eighth mode); the authentics are deputed to the unwavering sun and outer planets, the plagals to the moon and inner planets with their variable phases. Authentic–plagal pairs are male–female, in one case master–servant.

> (1) 'Dorian . . . has the liveliest melody of all, arouses the somnolent, refreshes the sad and disturbed . . . [it is] like the Sun, who is deemed first among the planets . . . the foremost musicians today use this tone the most'. (2) 'Hypodorian . . . is diametrically opposed to the former . . . produces tears, makes [one] morose . . . pitiable, heavy, serious, most subdued of all . . . [like] the Moon'. (3) 'Phrygian . . . not wrongly attributed to Mars . . . moves to choler and biliousness . . . loud words, hideous battles, and bold deeds suit this [tone]'. (4) 'Hypophrygian . . . represents the parasite, who caters to the passions of his master . . . is assigned to Mercury on account of the likeness in nature'. (5) 'Lydian . . . not unlike the sanguine [temperament] . . . corresponds with cheerfulness, friendliness, the gentler affects . . . since it pleases most of all, it averts quarrels, calms agitation, fosters peace, and is of a jovial nature . . . [it is] the joy of the sorrowful, the restoring of the desperate, the solace of the afflicted'. (6) 'Hypolydian . . . [is] contrary to the former . . . not infrequent in prayers . . . by others attributed to Venus'. (7) 'Mixolydian . . . has more in common with Saturn . . . shows itself with stentorean voice and great shouts, so as to be a terror to all'. (8) 'Hypomixolydian . . . is not unlike an honest matron, who tries to soften and calm the wrath and turmoil of [her] husband with agreeable discourse . . . studiously avoids offence . . . pacific'.

To what extent Renaissance composers of polyphonic music concerned themselves with the expressive possibilities of modal ethos is moot. That polyphonic modalities based on the eightfold system came to be used by the greatest masters of the 16th century is beyond question. From the 1540s onwards polyphonic collections fully or partly ordered with the eight modes in succession were published, from Rore's first book of five-part madrigals (1542), nos.1–17 to Palestrina's offertories (1594), nos.1–32. Such regularity might seem incompatible with the notion that the mode of a composition was determined by the principal affect of its text. In Palestrina's settings of the offertories for the Sundays from Advent to Trinity in chronological and modal order there is of course no question of choice of modal ethos. Nonetheless, the general theory of modal affect as well as the specific affects of individual modes were expounded with enthusiasm by Renaissance theorists. These included the classicizing humanists who propounded the 12-mode system, Glarean and Zarlino. Among modern scholars Bernhard Meier has argued that consideration of modal ethos played a central role in the musical setting of textual affects with such composers as Rore and Lassus.

(*ii*) *Modality in a polyphonic texture.* Until the middle of the 15th century modal theory remained completely separate from theories of counterpoint. This is not to say that independent sections dealing with each could not appear in a single work; indeed, hardly any discant treatise is without an inserted or appended chapter 'on the eight tones'. But the connection between the two was made only in about 1450, and at that rather tentatively. For instance, Guillelmus Monachus (*c*1480) concluded with a section on the modes (not printed in *CS*, iii). He began almost as though he had intended to contradict Johannes de Grocheo. 'A tone, as it may be summarized here, is a certain rule [*regula*] which judges in every song [*in omni cantu dijudicat*], and I say "in every song" rightly, either plain [song] or polyphonic [*sive firmo sive figurato*]'. But the rest is exclusively a discussion of chant mode criteria: 'ascent–descent', psalm-tone intonations and mediations, finals and tenors. Only one more passing reference to polyphony occurs, in a discussion of extended compasses in authentics, which 'can be comprised in measured or polyphonic music [*in*

cantu figurato sive organico] or in . . . the music . . . of sequences, but not in Gregorian plainsong', (CSM, xi, p.55).

Johannes de Grocheo's objection that 'if [measured music] is measured by [modes], [the writers] do not speak of the method' began to be met when the late medieval Italian concepts of 'commixture' and 'mixture' came to be spoken of as applicable to contrapuntal voices in simultaneous combination as well as to single melodic lines. A rapprochement of commixture with counterpoint is mentioned by Johannes Legrense: 'What then are "commixed voices" or what "counterpoint"? Certainly nothing more than just simple song [*cantus simplex*] in duplicate or triplicate, and so *in infinitum*' (*CS*, iv, 383). His student Nicolaus Burtius called the second part of his *Opusculum musices* (1487) 'Rules of commixed song [*cantus commixti*] or counterpoint'. In Tinctoris's *Liber . . . tonorum* (written in 1476 in Naples) both commixture and mixture are applied to counterpoint and to mode together (*CS*, iv, 29):

it is to be noted that commixture and mixture of tones are made not only in plainsong but also in composed [song], so that if the music [*cantus*] be composed with two, three, four, or more parts, one part will be of one tone, another of another – one authentic, another plagal – one mixed, another commixed.

(*a*) The modal voices. If a mixed mode can be authentic and plagal combined contrapuntally as well as melodically, it would seem to follow that a polyphonic composition would most naturally be assignable as a whole to a mixed mode according to final, without distinction as to authentic or plagal – to a *maneria* (Gaffurius, 1496, bk.1 chap.7 has 'maneries'). For some time it was the common practice of modern scholars to do just that: to refer to any polyphonic *g* protus piece as '*g* Dorian', or to any *f* tritus piece as '*f* Ionian' or '*f* Lydian', and so on; the term 'maneria' has been used more in modern times than it ever was in the Middle Ages or Renaissance. But in fact, the authentic–plagal distinction was as scrupulously maintained in the Renaissance as in the Middle Ages, beginning with Tinctoris in the continuation of the above passage:

Hence, when some mass or chanson [*cantilena*] or whatever other composition you like is made from different parts carried through in different tones, if anyone asks of what tone such a composition may be, he [who is] interrogated ought to reply, for the whole, according to the quality of the tenor, because that is the chief part and the foundation of the whole relationship [*fundamentum totius relationis*]. And if one be asked in particular, about some part, of what tone it may be in a composition of this sort, he will reply, this [tone] or that. For, if anyone were to say to me, 'Tinctoris, I ask you, of what tone is the song [*carmen*] "Le Serviteur"?' [by Dufay], I would reply 'in general, of an irregular first tone [*c* protus authentic], because the tenor, the principal part of the song, is of such a tone'. If however he were to ask in particular, of what tone the superius or contratenor might be, I would reply in particular, [that] the one and the other were of the second tone, also irregular [*c* protus plagal].

In Tinctoris's famous dictum the tenor is to be taken as the 'chief part' only in the contrapuntal sense. As Gaffurius put it, 'since the tenor [1] supports the cantus and [2] is supported by the *baritonans*, it is called the foundation of the relationship' (1496, bk.1 chap.15). There is no necessary implication either that the tenor is the chief melodic part, though it may be so, or that it has the 'chief part' because it was there first, though it may have been. Nicolaus Burtius (1487) described two ways of composing a chanson (*cantilena*; cf Tinctoris's dictionary *Terminorum musicae, diffinitorium* written *c*1475); both methods result in a 'discant–tenor framework' with added contratenor (ed. Massera, pp.124ff):

you may compose first the *cantus*, or as they say, soprano, after careful consideration [*investigatione premissa*, presumably of the text]; then the tenor, corrected in all rigour; and finally the *contra*[*tenor*] *bassus*, producing no dissonances with the others. . . . Having shown the fabrication of a [free] polyphonic song, it [remains] only to be told how [one] is to be arranged on a plainchant . . . it is necessary that the plainchant have been made first. Next then, let the soprano be produced or composed with great ingenuity, having regard to the tenor (which is the plainchant), thence arriving at a *contra*[*tenor*] *bassus* [which is] to be completed, rooting out with mind, eyes, and reason whatever will have stood in the way of the sweetness of the harmony.

In both Burtius's methods the composer's primary imaginative effort is directed to the soprano; in the second not only 'careful investigation' but also 'great ingenuity' is required because of the pre-existing tenor. Given Burtius's previously quoted exhortation to the composer that he be familiar with the modes and their affects above all else, the inference that the soprano is the modal voice is inescapable. Meier's modal analysis of a number of chansons by Dufay and others in a Ferrarese manuscript of about 1450 has shown the primacy of the upper voice, and Meier proposed that the compositions demonstrate conscious use of modal affect (1953).

In the *Opus aureum* (Cologne, 1501), freedom to choose a modal voice freely is specifically stipulated: 'Therefore, desiring to compose something, first it is necessary that one put a tenor – or indeed another part [*chorum*] if desired – yet such that it be well formed according to the requirements of the tone under which it is ruled' (Schanppecher, 1501, ed. Niemöller). A decade later one begins to read that the voices should be taken in pairs, in what was rapidly becoming the standard distribution: 'The tenor [*media vox*] produces the soprano part [*supremam vocem*] and the bass [*gravis*] the alto [*acutam*]; and in the way in which the soprano seems subject to the tenor, so let the alto be subject to the bass' (Philomathes, 1512).

From this time on, though most writers continued to mention the tenor as the principal modal voice (Vicentino, 1555, f.48, proposed the bass), the soprano and tenor pair in fact functioned together in this role. Principal cadences in the four-part distribution were mostly formed by the tenor and soprano, with the bass and alto providing harmonic support and filling, respectively. A complete summary of the functions of the four 'primary voices' is in Burmeister (1606, p.11):

Discant . . . because it is the highest in the system [*temperamentum*] of [paired authentic and plagal] modes, it is defined by the diapason or octave above the tenor.
Alto . . . its limit is set in the octave which is median in the system of modes, between the discant and the tenor.
Tenor . . . the nearest to the foundation of the harmony [i.e. the bass], suitable for maintaining the status of the mode by which the harmony or melody is defined.
Bass . . . the lowest among the primary voices, carrying out the duties of fulcrum or foundation in the harmony.

Burmeister's useful term for the functionally paired voices – the modal tenor–soprano, the supportive bass–alto – was 'conterminous' (because their respective highest and lowest points just meet), while adjacent pairs of voices were 'disterminous' (because their registers overlap rather than conjoin).

(*b*) The modal ensemble. Though the tenor or soprano, or both, might be designated as the chief modal parts, the fully imitative musical style of 16th-century polyphony went far to obfuscate any distinctive type of

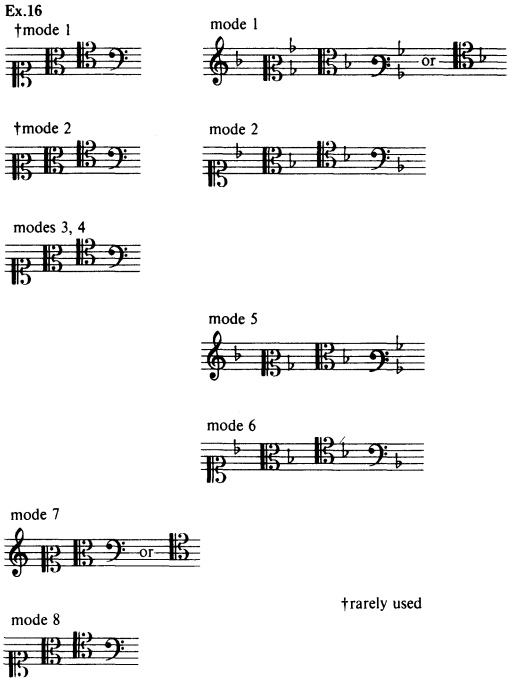
line, pace or registral position that could mark one voice as modal and its neighbour as merely supporting. Gallus Dressler (1563) explained the matter with his wonted explicitness (ed. Engelke, p.229):

> in free counterpoint account is taken not only of the tenor but of all the other voices . . . the ambitus of the tones, which is shown by the customary cadences and repercussions, is observed, by which means account is taken of all the voices . . . in songs which consist of points of imitation [*quae ex fuga constant*] the voice beginning the point is primary and pre-eminent.

As musicians came consciously to think of the modes of the eightfold system as essential to the full enrichment of their art they began to favour particular modal complexes of voices selected from the expanded tonal system. Such a complex could be designated through the particular choice of *cantus durus* versus *cantus mollis* combined with a higher as against a lower general disposition of the clefs for the voices.

One of the earliest polyphonic collections showing a consistent combining of clefs and systems for modal purposes is Rore's first book of madrigals for five voices (1542). Nos.1–17 constitute a modally ordered set. They are disposed in a conventional pattern of systems and clefs which was the preferred norm until into the 17th century: *g* protus and *f* tritus modes were set in *cantus mollis*, *e* deuterus and *g* tetrardus modes in *cantus durus*: the authentic modes (1, 3, 5, 7) were set in high clefs (*chiavette*) and the plagals (2, 4, 6, 8) in 'normal' clefs. Ex.16 shows the convention as reported in 1595 (see Meier, 1959); Rore's dispositions in 1542 differ from these only in that he distinguished plagal from authentic deuterus by using *c'*2 *c'*4 *c'*4 *f*3 *f*5 clefs for mode 4. The systems and clefs of Palestrina's second book of spiritual madrigals (1594) are disposed exactly as in ex.16 (with the normal *cantus mollis* protus modes). To avoid making a distinction between modes 3 and 4 is a common usage. Glarean observed that 'it often happens . . . among *symphonetae* [polyphonic composers] that [Hypophrygian] songs rise to small *d* [i.e. *d'*] and do not descend below *D* [i.e. *d*], which range the Phrygian, its principal mode, also has' (MSD, vi, 254). Since contrast of high clefs and low clefs is merely the polyphonic equivalent of the traditional contrast of authentic and plagal, the common clef disposition for both modes 3 and 4 is perfectly consistent.

Ex.16



2. POLYPHONIC [illegible] FUNCTIONS

Modal prescriptions and the rules for the formation and succession of simultaneities came together only very gradually, and in some respects never completely. There was no real need to try to link the fields of modal theory and counterpoint so long as it was felt that mode belonged only to the chant, or even that mode could be understood in terms of a single newly composed voice; given one modally correct voice, the rules of counterpoint would handle the rest of the polyphonic texture automatically. Of nearly 70 concocted illustrations in Tinctoris's *Liber . . . tonorum*, only five are in two voices, even though Tinctoris proclaimed the work as largely in the interests of polyphony (*cantus compositus*); and his five two-voice examples are all concerned with the tritone. But the change from composing predominantly on a tenor to composing free imitative counterpoint gradually made some inroads into modal theory.

(i) Cadences and openings. The first of the modal functions to be accommodated to counterpoint was the cadence, final and medial alike. In 1490 Adam von Fulda wrote, as the first of his ten counterpoint rules (*GS*, iii, 352, with emendations from Riemann, *Geschichte der Musiktheorie*, 2/1920, p.321):

> In every song at least one voice is appointed to be adapted to a correct tone. Moreover, to adapt to a tone (namely, of the eight tones) is this: it is to place cadences beautifully and appositely, for as the rise and fall of speech (*accentus prosae*) is set off by the period, so the tone by a perfection.

In his *Liber . . . contrapuncti* written 13 years earlier Tinctoris (MSD, v, 135) had phrased it negatively (and he supplied two pieces in illustration): 'The fifth rule [of counterpoint] is that above absolutely no note, be it medium, superior, or inferior, should a perfection be taken by which a removal from its mode [*distonatio*] can happen'. A 'perfection', according to Tinctoris's dictionary, 'designates . . . the conclusion of a whole piece or of any of its sections' (p.48); under 'clausula', the cadence is defined as 'a small part of some section of a piece, at the end of which . . . is found a perfection'.

To make a cadence function modally in counterpoint, however, raises hardly any question for traditional modal theory. Cadences were of two voices (other voices when present being treated as accompanying) and were normally led to the perfection of an octave or unison, thus merely doubling the letter name and hexachord syllable alike of the modal degree. Even though medially 'an imperfect one is inserted from time to time' (Tinctoris, MSD, v, 136), the modal voice is not thereby affected. As for the course of the music between perfections, which most sets of counterpoint rules allowed to be filled with imperfect consonances if desired, only one voice is relevant to the mode.

Changes in compositional technique during the 16th century did not affect the fundamental structure of the cadence as a two-voice progression with accompaniment, and the general principle established in the later

15th century by Tinctoris and his contemporaries, that the making of a cadence established a modally significant degree, continued to be valid. Beginnings, however, were more of a problem. As long as the counterpoint rule 'begin with a perfect consonance' reflected a practice of beginning all the parts together – as in Tinctoris's examples for his fifth rule (MSD, v, 135f) – no question about the modal voice need in principle arise. But the great variety of possible starting pitches stipulated in chant theory was drastically reduced, according to Tinctoris, even for the one modal voice (*CS*, iv, 27): 'any tone can begin in any place in its ambitus. Nonetheless, there are some places more suitable than others ... and out of 50 composed songs there may be hardly a one which does not begin in the place where it finishes'. Such a neat formal link between the opening and closing notes of a piece – making the final the initial – was often wistfully mentioned by chant theorists, but no fixed rule could be made in the face of the enormous variety of chant initials in every mode. The anonymous 11th-century Italian *Dialogus* put it, 'the beginnings, too, are found most often and most suitably on the sound which concludes the melody' (Strunk, 1950, p.113).

In the 1470s and 1480s the imitative style was well on the way to achieving the pre-eminent status it was to enjoy in the 16th century, and to make a simple analogy of an opening perfection with the modally significant cadential perfection could hardly have sufficed, nor does it seem to have been suggested. It was the point of imitation, the *fuga*, that developed a modal significance. Like other contrapuntal and compositional devices imitation was not linked to modality when its descriptions first began to appear in the literature. One of its essential features, however, ensured that in time it would be so linked.

Tinctoris defined 'fuga' in his dictionary (written *c*1475, printed 1495) as: 'the identity in a song of the notes and rests of the parts as to [1] value, [2] name, [3] shape, and sometimes as to [4] location'. Under 'solfisatio' Tinctoris confirmed that 'name' (*nomen*) referred to the hexachord syllables.

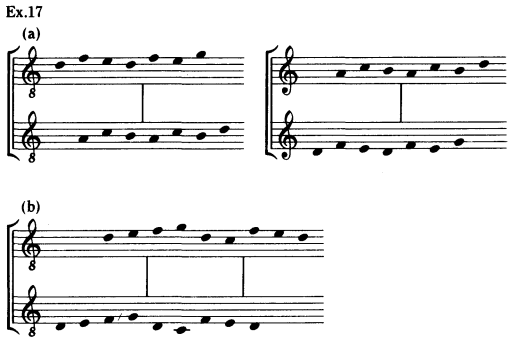
Bartolomeo Ramos de Pareia (1482) also described imitation. The same passage appears in substance and partly verbatim in Burtius (1487), though this was a work directed against Ramos; as had Ramos, Burtius appended the passage as a supplement to the counterpoint rule recommending contrary motion. Ramos's passage (p.68), with Burtius's important changes (ii, ed. Massera, p.122), reads as follows:

> The best fashion of making organum [*modus organizandi*], however, is when the organum [Burtius added 'or "soprano", to use the common term'] imitates the tenor in ascent or descent. It begins making the same melody at the same degree [*eundem cantum* – Burtius had *eandam melodiam – in eadem voce*], not at the same time, but after one or more notes. Or [it makes] a similar melody at the 4th or 5th or even octave, or in their replications and reductions below or above [Burtius omitted this sentence]. This fashion practising [musicians] call *fuga*.

Ex.17 shows Ramos's illustration, with one subject imitated at the 4th below and the 5th above, and another at the octave above.

Burtius's omission of Ramos's list of intervals of imitation, seen in the light of Tinctoris's definition, goes to the heart of the matter. Ramos had discarded the traditional system of hexachords, replacing it with an octave solmization system of his own, and he was thereby forced to name the 4th and 5th as intervals of imitation. Burtius, who defended the traditional hexachord system, was

Ex.17



under no such constraint. As Tinctoris made clear, it was enough that the points of imitation use the same hexachord syllables, whose location in hard, natural or soft hexachord automatically designates Ramos's intervals of imitation. Ramos's imitations at the lower 4th and upper 5th (ex.17*a*) would be solmized *re fa mi re fa mi sol* in all locations. This is of course the first species of the 4th, and since it occurs with *re* at *a'* and *a* as well as at *d'*, it is a modal species of the protus, in terms of the late medieval Italian theory. The leading voice (*dux*) works in the common species of 4th *re–sol* (*d'–g'*) while the answering voice (*comes*) exploits the proper species *re–sol* (*a–d'* or *a'–d''*).

The connection of the modes with the intervals of imitation was not explicitly to be made for several decades, though there are passages implying such a connection. In his *Compendium musices* (1537) Lampadius gave three 'rules' for imitative beginnings and for cadences. The first warned not to let the parts of a composition 'wander outside the regular tone, otherwise the melody will be corrupted'; the second warned not to exceed the double octave; the third stated that 'Josquin, who in this art is deemed most experienced [and] to be emulated, was the most distinguished of all in forming cadences and points of imitation'. There follow cadences combined with points of imitation (p.89), made, however, not with modal species but with the intonation plus the principal difference of each of the eight psalm tones, or as Lampadius and numerous other German writers called them, 'the tropes of the tones, with which psalms conclude'. The confounding of tone as church mode with tone as psalm tone is as old as the modal system in the West. In Finck's *Practica musica* (1556) they are so confounded, and claimed for polyphonic music as well: 'A trope is a brief phrase beginning in the repercussion of each tone which is added at the end of the individual verses of psalms and responsories ... [these are] the differences, an understanding of which is as necessary as the knowledge of their tones, especially in polyphonic music' (p.iii). It was of course necessary for a church composer to know how to set psalms and canticles polyphonically, and their recitation tones were often used as subjects; but a psalm tone as subject is modal only in the sense that any plainchant subject is modal, and in certain respects it is less so, for a psalm-tone difference taken out of context can be strikingly at variance with the structure – in terms of species, or as final with ambitus – of its corresponding mode.

Where Lampadius left connection of the modes with imitation and cadences implicit, Finck stated it very pointedly, as quoted earlier, and stated it again in almost the same words: 'a song is referred to the tone which has

the most cadences and points of imitation relating to it [*plures clausulae ac fugae sibi familiares*]' (Rr ii). This statement is a curiously apt transformation into indigenous polyphonic terms of one of the oldest doctrines of chant theory: 'A melody . . . belongs most to the mode in which a majority of its distinctions lie' (anonymous *Dialogus*, *c*1000; Strunk, 1950, p.113).

(ii) The integration of modality and polyphony That composers were consciously considering the modes in their work is established at the latest by the 1540s, when the ordering of pieces within collections according to the order of the modes can sometimes be confirmed by the objective evidence of orderly clef and system combinations. Modern scholars have tried to demonstrate that older composers were also consciously applying the modes in their compositions, irrespective of any modal assignment that might arise from a plainchant tenor or model. Perkins (1973) has investigated the possibility for two generations earlier; Treitler (1965), Meier (1953) and Reichert (1951) raised the question for two and more generations earlier still. But all these studies are necessarily based on the scholar's own analysis of the music, based on more or less compelling inferences drawn from theorists like Tinctoris. Until the mid-16th century, direct assistance from contemporaneous writers is available only in the form of general directives in the areas just considered: a modal voice might or must be chosen, and cadences (and latterly points of imitation) had to reflect and not distort the mode.

In chapter 7 of his *Isagoge* (1516) Glarean expressed a discomfort with traditional modal theory which he exorcized by radical means in his *Dodecachordon*, by incorporating traditional modal theory into a more comprehensive new system that he believed to be founded on both classical authority and reason. The inability of modal theory satisfactorily to account for polyphonic practices was dealt with in another way by 16th-century German theorists who stressed *musica poetica* – the art of composition – as a third and culminating branch added to the traditional branches of musical doctrine, *theorica* and *practica*. *Musica poetica* offered a natural disciplinary forum for combining traditional modal theories and the teaching of counterpoint.

The clear and thoughtful manuscript treatise of Gallus Dressler (1563) brings the doctrines of modality and counterpoint into as close a symbiosis as they were ever to achieve. His manuscript is annotated with references to a few compositions; his lectures must have been replete with them. The work is one of a few sources fully discussing the art of polyphonic composition in terms of the traditional eightfold system; Dressler himself adopted Glarean's 12 modes in his own *Musicae practicae elementa* (1571), and was followed in this by numerous German theorists of the next half-century, most of whom cited or supplied profuse illustrations of the modes in polyphonic music.

Chapters 1–8 of Dressler's *Praecepta musicae poeticae* make up a well-ordered conventional treatise on counterpoint, divided into *simplex* (note-against-note), *floridus* or *fractus* (smaller values over a cantus firmus) and *coloratus* (free counterpoint); chapters 7 and 8 are on the traditional construction of four-voice sonorities and cadences by means of adding to the soprano–tenor framework. Chapters 9–14 describe the proper use of counterpoint for developing modal structures and thereby compositions – that is, for *musica poetica*. Chapter 15 contains a summary of the method, and recommendations to study four generations of masters, from Josquin to Lassus, each in terms of special characteristics of compositional style.

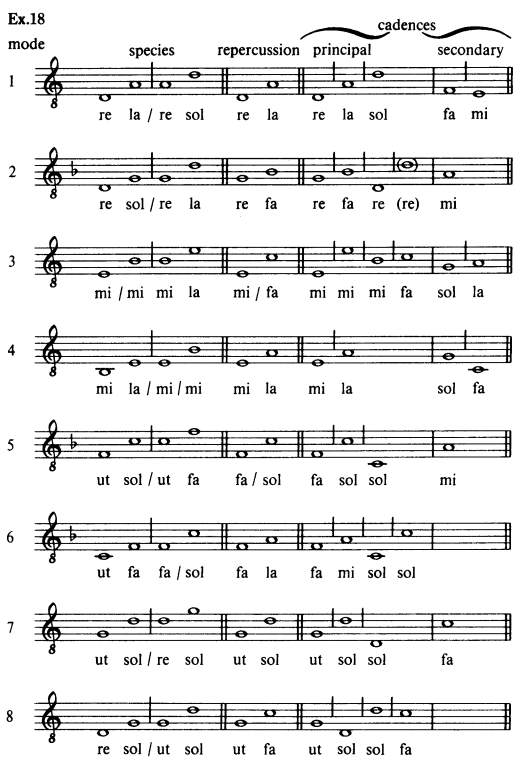
Like his immediate predecessors, Dressler stressed the importance of controlling contrapuntal beginnings and cadences through the modes; he also specified how it ought to be done (ed. Engelke, p.239):

> What the period and comma are in speech the cadences are in *poetica musica* . . . it is not enough therefore to know only the composition of cadences, but students are to be taught in what rank order the cadences are joined together so that they may render a correct *harmonia* to the ear. . . . First, they ought to correspond to the words . . . whatever *virgula*, comma, or period there may be, to them are cadences designated. Second, in what rank order the music may admit cadences is known from the doctrine of the tones . . . we may make three kinds of cadence . . .
> [1] principal . . . in which the chief foundation of the tone consists . . . the cadences . . . are built on the [notes bounding the] species of 4th and 5th, or on the [notes of the] repercussions.
> [2] secondary [*minus principales*] . . . which do not flow from the special sources [of the tone] but which can be inserted without offence in the middle part of the song.
> [3] foreign [*peregrinae*] . . . which have no proper place but rather invade from another tone.

In showing the cadences for each mode Dressler listed its (unfilled) species of 4th and 5th, and its repercussion, in hexachord syllables. The interval of the repercussion was simply that of the final of the mode and the tenor of the psalm tone, but in his work on *musica poetica* there was no reason for Dressler to allude to psalm tones, and the repercussion was treated as a purely modal function. The term 'repercussion' could refer to the single note or to the interval formed with the final, with or without other notes between.

The principal cadential degrees are listed, clearly in rank order of their importance, and then the secondary cadential degrees (if any); remaining degrees are classed

Ex.18



as foreign. Dressler's species, repercussions and principal and secondary cadences are shown in ex.18 (after *Praecepta*, ed. Engelke, pp.239ff).

After describing three types of imitation (*fuga integra*, *semifuga*, *fuga mutillata*), Dressler wrote that imitations that initiate phrases, like cadences that conclude phrases, arise from the species and the repercussions; he divided them into four types (p.243):

(1) The foundations of imitations are taken from the species of 4th or 5th . . .
(2) The foundations of imitations are taken from the repercussions of the tones which [and this will apply to species too] are made not only empty [*nudae*] but also with many other intervals intervening.
(3) Imitations may arise out of cadences in the musical tones [i.e. modes], so that we may get from one cadence to another.
(4) 'Mixed' imitations are made partly from the repercussions and partly from the species of 4th and 5th; thus the *exordium* in Crequillon's *Deus virtutum* is made partly from the species of 4th *fa ut* and partly from the repercussion *fa la*, for it is of the sixth tone.

The touchstone of *musica poetica* is its parallel with the language arts. The use in a composition of a number of musical units one after another, each demarcated by imitation at the opening (or simultaneous entry) and cadence at the close, is conceived in terms of *exordium*, *medium* and *finis*. About the modality of the regular final ending Dressler said little, but he warned the student (p.248) that 'an irregular [final] is not to be introduced without an instance from an acknowledged composer [*sine probati authoris exemplo*] . . . and is mostly to be given to the first part of a song, where a second part is expected; rarely, however, [is it] to be regularly constructed as a final ending'.

The middle, between *exordium* and *finis*, can be composed with or without imitation. Four general rules are suggested, of which the first is a summary list of Dressler's modal affects: 'First of all, a tone suitable to the matter [of the text] is to be chosen: for some tones are joyful, like 1, 5, and 8; some are sad, like 2, 4, and 6; and some are captious and harsh [*morosi et austeri*], like 3 and 7'.

The *exordium* is crucial, compositionally, modally and aesthetically (p.244):

Exordia are taken moreover from the chief sources of the tones, namely [1] from the species of 4th and 5th, or [2] from the repercussions and [3] the principal cadences . . . as we see the poet put forth his proposition in the *exordium* and the first lines . . . so we in music – whose alliance with poetry is very close – should express the tone in the *exordium* itself.

Exordia are of two types: ' "Full" [*plenum*] is when all the voices begin at the same time [*uno tempore ictu*]: "bare" [*nudum*] . . . when they come in one after another. *Exordia* of this type are mostly constructed of imitations'.

The beginning of Lassus's *In me transierunt* (*Sacrae cantiones*, 1562, no.14) is an imitative *exordium* made with the repercussion. Though all the deuterus pieces in this collection are set in the same modal complex – low clefs in *cantus durus* – this one at least is unmistakably announced as authentic by its opening subject, the repercussion for mode 3; the solmization is *mi, mi/fa, mi/la, sol*. The piece is attributed to mode 3 by a number of writers, including Dressler himself in a marginal note (ed. Engelke, p.239). It was analysed in detail by Burmeister (1606), and the analysis is discussed by Palisca (1972).

3. Polyphonic modal theory and the eightfold system.

Most of the inconsistencies and anomalies of polyphonic modal theory arose from incompatibilities between *a priori* systems of modes and compositional practice. In contrast to the casual attitude of composers towards particular aspects of modality, polyphonic modal theorizing – Renaissance and modern alike – tends towards the universal. It is assumed on historical, traditional, humanistic or analogical grounds that there has to be an inherent system of modalities in polyphonic music; that this system can be deduced or induced with the help of a proper understanding of the medieval tradition, or with the help of classical authority, or through systematic and rational analysis; and that the system can then be demonstrated in the repertory.

(*i*) *Aaron and the psalm-tone differences.* Pietro Aaron was the first theorist to undertake a thorough-going study of polyphonic repertory in modal terms. His theoretical premises were those of chant theory as formulated in the late medieval Italian tradition; they were set forth in his *De institutione harmonica* (1516), i.26–35, and appear in summary form in his *Compendiolo di molti dubbi* (*c*1550), i.29–50. Aaron referred many times both to Gaffurius and to Marchetto; though he usually took issue with Marchetto, for example in *Lucidario* (1545), i.4,7, it was only in matters of detail, while the theoretical concepts of Marchetto's doctrine were taken for granted (the relationship being much like that of Kirnberger and Rameau).

Aaron (1525) cited a substantial number of polyphonic pieces, almost all taken from Petrucci prints, in exemplification of his modal assignments, which are made according to the eightfold system. Criteria for determining the mode of a composition are its final and its species of 4th and 5th; medial cadence points must be in support of the other two.

Voices are governed modally by their courses of motion through the species of 4th and 5th; Aaron's term is 'procedure' (*procedere*, *processo*), a sometime synonym for 'ambitus' (cf Jacques de Liège, *Speculum musice*, *CS*, ii, 246, 315). Long before Aaron's time the word 'ambitus' had come to refer to the 'Guidonian' ambitus, which was not controlled by modal species; at the same time the term had lost any implication of motion implicit in its etymology and had acquired a purely static sense of compass. On both counts Aaron's choice of 'procedure' was apt. To refer simply to compass he used 'ascent' and 'descent'.

Aaron's doctrine of the finals is at once the most ingenious and the most specious aspect of his work. There are three kinds of finals: regular finals *d*, *e*, *f* and *g*; irregular finals, which can refer both to *a*, *b*♮ and *c′* (which he also called confinals) and to any other concluding degree found in a composition; and the concluding notes of psalm-tone differences. The differences are needed not because Aaron wished to include psalm-tone functions by right; conspicuously absent from his list of functions is the psalm-tone tenor (or its equivalent the modal repercussion). He invoked the differences to account for the combined procedure and final of most works ending with *a* or *c′*/*c*; indeed Aaron usually preferred to cite psalm-tone differences as modal finals even where confinals were available for the purpose.

Psalm-tone differences were originally of the essence of movement and continuity, in their role as adjustable melodic links between psalm verse and antiphon. It is ironic that they should have taken on the function of pseudo-finals; it is not, however, unprecedented. The 12th-century Cistercian radical reformers of the chant had considerably reduced the number of psalm-tone

differences, and for the introit verse tones they not only confirmed them at one per mode but also recomposed those of modes 3, 5 and 7 to bring them down to a conclusion on the modal final (see Huglo, 1971, pp.365f, and Sweeney, 1975).

Aaron's principles for assigning a mode to a given piece turn on a hierarchical authority of modal functions. Regular finals *d*, *e*, *f* and *g* prevail in determining a mode except in the case of *g* protus modes in *cantus mollis*, where the species govern (*g* being otherwise the regular tetrardus final). The modes of both *f*-final and *d*-final pieces in *cantus mollis*, however, are determined by the final, since there is no question of a conflict of two modes sharing one regular final; Aaron did mention *f* and *g* as possible pseudo-finals for those modes where they occur as differences in the corresponding psalm tones, but he had no occasion actually to use them in that way. The pseudo-final differences he needed were those on *a* and *c′*.

For pieces ending elsewhere than on one of the regular finals the species and procedure prevail. For example (*Trattato*, after Strunk, 1950):

> Certain other [presumably mode 1 or 2] tenors end on *a la mi re*; here you will need to consider and examine whether their procedure is suited and rational to such an ending, for if a tenor end irregularly in the first or second tone, not proceeding with its proper form, it may easily not belong to it, even though this step [*a*] is one of its irregular finals and an ending of its *Saeculorum* or difference. As you will understand from what follows, this is because the third and fourth tones also use this step [*a*] as a difference. For this reason, then, you will assign such a tenor to the first or second tone only when you find the proper form, as in *La plus de plus* by Josquin, which is of the first tone in view of the course of its diapente [5th] and its upward range. [p.213]
>
> You will also find certain other compositions ending on *a la mi re*; when these observe the appropriate procedure they will be assigned to the third tone, for example, *Miserere mei Deus* by Josquin. [p.215]

The compositional difference between *a* modes that Aaron's distinction reflects is a real one, and it is not that of the *a* protus and *a* deuterus of chant theory, the former in *cantus durus*, the latter transformed by the *cantus mollis*. It has to do rather with a property of the tonal system itself making the modal quality of *a* ambiguous. In §II, 3(ii*b*) above, Guido's passage on the *modi vocum* was quoted; it included a description of the affinity of *A* and *d* in the melodic environment of what would come to be called a rising first species of 5th, *re mi fa sol la*, plus the tone beneath. In his next chapter Guido dealt with 'other affinities of the degrees', and began by showing that 'A and E agree in descent, which with both is made by two tones and a semitone', that is, by a descending second species of 4th *la sol fa mi* (*a g f e* = *e d c B*).

In both pieces that Aaron cited the first species of 5th *a–e′* in the hard hexachord dominates the music. In *La plus de plus* the *a–e′* in both superius and tenor is joined with the first species of 5th, *d–a*, in the tenor, so that the piece works with the protus species of 5th in two positions. Hence the piece is indeed 'proceeding with the proper form of the first tone', and it ends 'on one of its irregular finals'.

In the *Miserere*, on the other hand, the 5th *a–e′* is joined with the second species of 4th *a g f e* (*la sol fa mi*) in the bass, so that the structural voices exploit the octave *e–e′* divided at *a*. The ascent and descent between *e* and *e′* call for assignment to mode 3; the conclusion on *a* is accounted for by invoking the third psalm-tone difference ending at *a*.

Aaron's reliance on the difference as a pseudo-final led him into a novel explanation for pieces having irregular finals at *c′* and *c*. He granted (Strunk, 1950, p.216) that pieces ending with *c′* may be said 'to be of the fifth tone, both with and without the flat signature, for example, *Si sumpsero* by Obrecht; this is solely in view of the [psalm-tone] difference which the plainsong sometimes exhibits here'. For Aaron the existence of a psalm-tone difference was decisive: the credentials of a note existing in a mode as a confinal but not at the same time as a difference were insufficient to permit it to serve as an irregular final if any explanation for such a final invoking a difference could be found. Thus despite the chant tradition for transposing mode 6 to the position with *c′* as final, for Aaron 'The sixth tone is lacking on this step [*c′*], even though it is the confinal of the fifth and sixth tones regularly ended, for the step [*c′*] can bear no form or difference appropriate to it'. The curious consequence of this doctrine is that no *cantus durus* *c*-mode piece is assigned to the tritus modes. Obrecht's *Si sumpsero* is a *cantus mollis f*-mode piece which happens to end at *c′*; Aaron's classification of it as mode 5 ending at the psalm-tone difference is appropriate. But a piece like Josquin's *Comment peult avoir joye*, a setting of a popular or courtly tune, published by Glarean as *O Jesu fili David*, cannot by Aaron's criteria be considered as in mode 6, despite its overwhelmingly preponderant composition with the species *ut–sol* (*c′–g′*) and *ut–fa* (*g–c′*) – not to mention the constant repercussion of *fa* and *la*, *c′* and *e′*. He had to call it mode 7, since it is in the octave *g–g′*, with a pseudo-final at one of the mode 7 psalm-tone differences, *c′*.

Similarly, pieces ending at low *c* are not considered to be mode 5 irregular, as Tinctoris would have considered them (see ex.15*a*). On the contrary (Strunk, 1950, p.217):

> Those ending on *c fa ut*, for the reason given above [. . . we see them clearly continue in what the proper and regular tones naturally need and require . . .] and also because they do not have the proper diatessaron [4th], I assign to the eighth tone and not the seventh.

Aaron appears to be saying that pieces ending on *c* have at least a perfectly normal tetrardus species of 5th (*ut–re–mi–fa–sol* = *c–d–e–f–g*), as used in both tetrardus modes, but that the species of 4th set above it (*ut–re–mi–fa* = *g–a–b♮–c′*) is not, however, that of mode 7, the authentic tetrardus. That assignment thereby being eliminated, only mode 8 remains. As far as the 'ascent and descent' of such tenors are concerned, from *c* up to *d′* or even *e′* or *f′*, it is perfectly appropriate for mode 8, but not at all for mode 7.

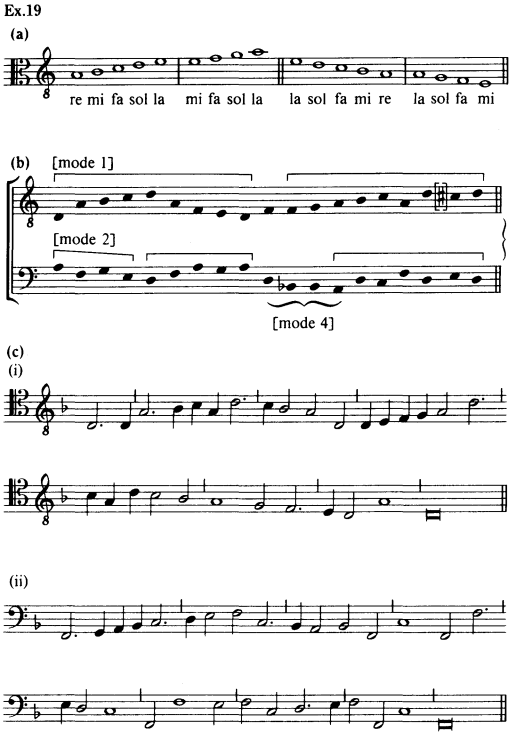
For each mode Aaron listed internal cadence points both appropriate (chaps.9–12) and inappropriate (chaps.13–20), followed by listings of initials (see Strunk, 1950, p.208, n.4). But since four of the modes have five or more allowable cadential degrees, only one as few as three, and no criteria for their applications, Aaron's general admonition about cadences and species seems a more useful guide (Aaron, 1525, chap.13):

> It is necessary that the composer take care to proceed in his music with [the correct] species or form, through which the movements will seem pleasing and harmonious. But if you proceed in some other way in the tone, the tonally discordant path will always appear [*nascera sempre il distonata via*], and so also if you use contradictory cadences.

(*ii*) *Composite modes.* The most elaborate exposition of the eightfold system as a theory for polyphonic music was that of Aiguino (1581), who referred to Aaron as his 'maestro irrefragibile'. This treatise, the last in the long series beginning with Marchetto's *Lucidarium*, considers the species of 4th and 5th in as many combinations

as possible within the diatonic systems. The traditional plainchant mode 2 at the affinal position is regarded as a composition of species from two modes; ex.19*a* shows Aiguino's composite forms for modes 1 and 2 (*Il tesoro*, ff.77*v*–8). Aiguino's term is 'mixed modes' (obviously not in Marchetto's and Tinctoris's sense, though he also used the term 'commixture'). Though the 4ths are of the second species, and thus pertain to modes 3 and 4, 4ths are the 'minor species' in a mode, according to Aiguino. Here the 'major species' is the protus first species of 5th, which determines the modes as 1 and 2.

Ex.19



Aiguino argued that this construction made it unnecessary to add to the eightfold system the separate authentic and plagal modes on *a* proposed by Glarean and Zarlino. Neither this construction of 'mixed modes' nor this usage of the term originated with Aiguino, however. Tinctoris had already given an instance (ex.19*b* from *CS*, iv, 26, corrected after Seay translation) of the 'second tone commixed with the fourth, so as to make *fa* against *mi* into a perfect consonance' – that is, to avoid a diminished 5th; as a result, 'the *B*♭ put against *f* creates the second species of the 4th in the fourth tone [in the lower voice]'. Vicentino called the combination of *d*–*e*–*f*–*g*–*a* with *a*–*b*♭–*c*′–*d*′ (ex.19*c*, from *L'antica musica*, f.51*r*) a 'mode mixed from the first [species of] 5th from mode 1 and the second [species of] 4th from mode 3'. In Bermudo's *Declaración* (iv, 40) the same combination of 5th and 4th – the authentic *d* mode in *cantus mollis* – is called a 'mingling [*mezclan*] of the first tone with the fourth'.

The concept of modal 'mixture' is also used by Vicentino and Bermudo to account for the traditional *f* tritus in *cantus mollis*. Vicentino called it a mode-7 5th (*ut re mi fa sol*) with a mode-5 4th (*ut re mi fa*), as in ex.19*c* (ii). Bermudo said that 'always playing the sixth [mode] with flat sign is similar to the eighth [mode] in its [species of] 5th' (iv, 23), and later, 'the mode which is played as the sixth is composed of the eighth and the sixth' (iv, 40).

(*iii*) *Modal cadences and polyphonic psalmody*. Pietro Pontio (1588, bk.3) gave a full account of the application of cadential degrees in modal polyphony, an account based not only on the theory of the modal species but even more on his observations of compositional practice. Principal and obvious cadential degrees are mentioned without much elaboration, but for all other cadential degrees Pontio provided not only comment but also precise references to cadences in compositions by Rore, Giaches de Wert, Morales and himself, and many others.

Besides this Pontio made a clear distinction between modal cadences 'as in motets, masses, madrigals, and the like' and 'in psalms, because the psalms have different cadences, proper and separate from those of motets, and different composition, and they have their own endings' (p.101). This distinction was by no means always carefully made, and Pontio drove the point home by supplying an illustrative duo not only for each mode (except mode 4) but also for each of the eight psalm tones.

Pontio was anxious to isolate polyphonic psalmody from polyphonic modality; but in analysing distributions of modal cadences he was quite ready to recognize influences from the corresponding psalm tones, to which more often than not his comments attributed subtle but important elements for distinguishing authentics from plagals, especially in the deuterus and tetrardus modes where transposition is less easily available for the task.

Table 7 is a conspectus of Pontio's discussion of modal cadences (iii, pp.94ff), showing cadential degrees in the eight modes. As in Dressler, so also in Pontio the eightfold system found an intelligent and gracious pragmatic spokesman, a composer, in an age when speculative rational theorizing about the modes was bringing them to utter confusion.

TABLE 7

MODE	CADENCES			
	Primary	*Secondary*	*Transitory*	*Inimical*
1, 2	*d a*	*f*	*g c*	*e* b♮
3, 4	*e a*	*c′*	*g* b♮	*f*
5	*f c′*	*a*	*d′ g*	*e* b♮
6	*f c′*	*a* b♭	*d′ g*	*e* b♮
7	*g d′*	–	*c′ f a e*	–
8	*g c′ a′*	–	*f a*	–

4. SYSTEMS OF 12 MODES.

(*i*) *The 12 modes before Glarean.*

(*a*) Four extra melodic types. At the end of the Carolingian 'De octo tonis' (in chapter 8 of Aurelian's *Musica disciplina*) the author related that 'there were some singers who claimed that there were certain antiphons which could in no way be adapted to their rule; hence your pious and august ancestor Charles ordered four [tones] to be added'.

Though *Noeane* syllables are named, no antiphons for the extra modes are mentioned. In a number of later sources, however, there are citations of chants (see Huglo, 1971, pp.35ff, 79ff and 156f for sources and references). In some of the sources the extra modes are

called *mesi*, in others *parapteres* (or *paracteres*) and *circumaequales*. Though the sources are by no means in full concord in their choice of chant citations, three relevant facts do come out: the extra modes were never more than a curiosity; but the tradition of their existence was fairly widely known; and the antiphons cited were indeed anomalous.

In Berno of Reichenau's *Musica* the tradition is reported for the last time, applied now to melodies anomalous only in that they are confined to the common 5th, making it difficult to fix them definitely as authentic or plagal: 'Some are accustomed to call these medial tones [*tonos medios*], and because they can be put between the four individual authentics and plagals, they add these four to those eight, and claim to have demonstrated twelve tones' (*GS*, ii, 73).

(*b*) Modal divisions of the octave. The integration of eight modes with seven octave species was achieved in the 9th century in the New Exposition of the *Alia musica* (see §II, 2(ii) above), through the device of modes 1 and 8 sharing the octave species *d–d′* mediated in two positions (see ex.3*a*). The 11th-century *Questiones in musica* points out how the operation of transposition brings about a similar pairing of modes in two other modal octaves: modes 3 and transposed 2, sharing the octave *e–e′*, modes 7 and transposed 6, sharing the octave *g–g′* (ed. Steglich, 1911, p.55). A logical completion of this pattern would try to divide every modal octave by two medians. Such a division was described by Wilhelm of Hirsau, in the latter half of the 11th century (*Musica*, chap.37).

(*ii*) *Glarean's 12 modes.* Glarean's *Dodecachordon* is the product of an extraordinary synthesis of medieval tradition, both practical and theoretical, with Renaissance classicizing humanism, original system building and musical analysis. The publication of writings on ancient Greek music, including sources both of musical theory (such as Valla's 1497 edition of Cleonides' Aristoxenian *Eisagōgē*) and of musical anecdotes (the Aldine edition of Athenaeus's *Deipnosophistae*, 1524) ensured Glarean a supply of classical authority when he needed it. Glarean was also a lifelong admirer of Boethius, whose doctrines he always preferred as the source for his own. Finally, he was devoted to the church and its traditional music; his analyses of plainsong in *Dodecachordon* (Book 2, §§36–7) show an enthusiasm for the beauty of the chant matched only by the perspicacity with which its musical properties are expounded.

The synthesis of classical authority and medieval tradition shows itself in all phases of Glarean's study of the modes save one: for analysis of the structure of actual music, plainsong or polyphony, he could have no classical models. But he hoped to bring order and reason to existing modal theory, to reconcile it with classical sources wherever possible, and through it to provide a uniform doctrine to guide his readers to an understanding of the wonders of both kinds of music.

(*a*) **The 12 modal octave species and their Greek names.** Apart from classical writings there were four main sources for Glarean's theory: Gaffurius, Cochlaeus, Boethius and 11th-century chant theory. Gaffurius's work (1518), upon which Glarean drew heavily, was itself under the influence of rediscovered classical writings on music. It is brought into the *Dodecachordon* at a crucial juncture, in the last chapter of Book 1, as a preparation for Book 2 which has no separate introduction. In the introduction to Book 3 Gaffurius is lauded again, along with Cochlaeus, Glarean's teacher at Cologne, 1507–10. Cochlaeus's teaching on mode, as reflected in Tract iii of his *Tetrachordum musices* (1511), was a combination of the late medieval Italian theories of species conjunction and five types of modal ambitus (perfect to commixed) with a German version of the repercussion doctrine and emphasis on the psalm tones. And finally, in the dedicatory preface, Glarean concluded (after references to Plato, Aristoxenus and Boethius) by alluding to a number of writers he had studied at a Benedictine monastery near Freiburg not long after he went there from Basle in 1529. The manuscripts he saw contained two further kinds of sources: a better text for Boethius than he had seen before, and a group of six 11th-century chant theorists. Three of these were 'Guidonian': Guido himself, 'Otto' (certainly the author of the *Dialogus*) and Johannes (like other writers of his time Glarean identified him with Pope John XXII). The other three are of the Reichenau school: Berno, Wilhelm (of Hirsau), and his disciple Theogerus (of Metz).

That the 11th-century writers had some influence on Glarean's thinking seems more than probable. Glarean was anxious that his 12-mode system be taken as a reconstruction, not a new creation, and he was quite ready to invoke medieval authority when it suited him, as well as classical. In justifying the number of his principal modes as six he cited Plato's *Republic* (MSD, vi, 38; cf Strunk, 1950, pp.4f) and Aristoxenus (p.102, presumably after Cleonides; cf Strunk, p.44). But no classical source could give him the number 12 for his modes, so he also reported that 'Berno . . . says there had been some who devised four other modes, so that there were twelve modes in all; so far has the truth about the 12 modes left some trace even among the men of so barbarous an age' (MSD, vi, 197). And in arguing the logical case for dividing every octave at both the 4th and the 5th, Glarean observed (p.115) that:

> since they [the early church musicians] could not separate the eighth mode from the first mode . . . they were forced by necessity to have recourse to the inversion of a system [*d–a–d′* into *d′–g–d*]. When they saw that this turned out successfully, they also considered the arithmetical and harmonic interchange of the other modes. Thus, after these eight modes, they invented four besides, [each of] which still remained in the same system [as one of the others].

Since Glarean knew of Wilhelm of Hirsau's work it seems more than likely that the above refers to the first part of chapter 37 of Wilhelm's *Musica*, as Gerbert pointed out (*GS*, ii, 54). Glarean continued: 'these last four modes . . . seem to have been neglected . . . either because they were not known to all or because the first eight seemed enough'.

Glarean's own construction of the 12 modes is based on a consistent rule differentiating the seven diatonic octave species according to combinations of the species of 4th and 5th (pp.104ff). Each one of the four species of 5th is combined in turn with each one of the three species of 4th above, making 12 species of octave, and with each of the three species of 4th below, making another 12. Of these 24 octave species, however, 12 are rejected on the ground that they have either fewer than two or more than three whole-tone steps between the two pairs of semitones. Of the 12 octave species then remaining, five have the same pattern of tones and semitones as another five, differing from them only in the

way the 4th and 5th are disposed; these five plus the two unduplicated octave species make seven, which encompass the 12 legitimate combinations of the 4th and 5th. Table 8 and ex.20 show the seven octave species (*a*), Glarean's modal names and numbers for their harmonic and arithmetic divisions (*b*), the modal divisions of the octave (*c*), and Zarlino's renumbering (1571, 1573) and rearrangement of the names (*d* and *e*). Note that Glarean's first eight numbers and the associated names and species are those of the eightfold system. For modes 11, 12 and 8 Glarean also used the names Iastian, Hypoiastian and Hyperiastian, since these names were said to be in Aristoxenus (along with Aeolian and Hypoaeolian); on his retention of old names and assignment of new, see *Dodecachordon* Book 1, §21, and Book 2, §§4, 7, 9, 10.

TABLE 8

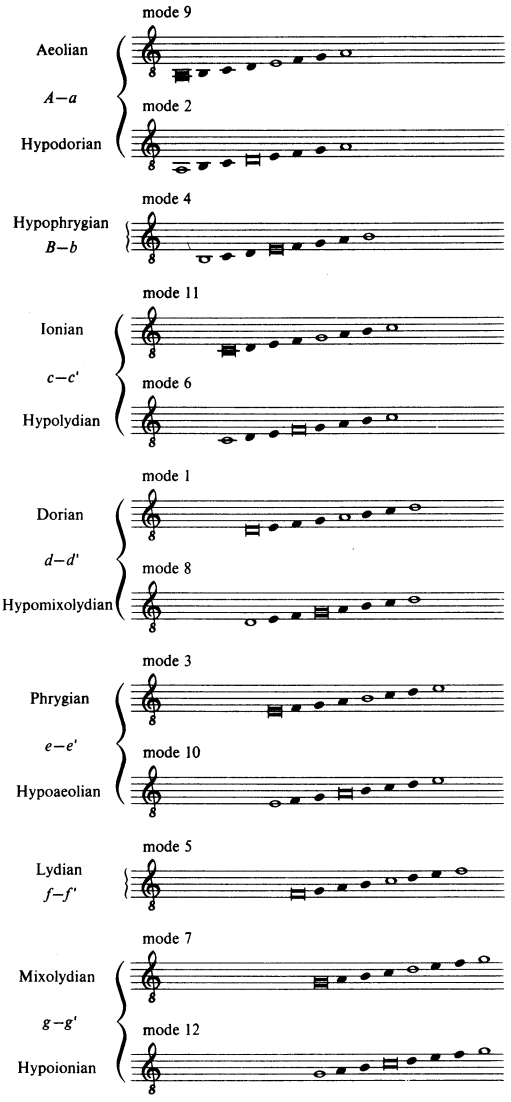
(*a*)	(*b*)		(*c*)	(*d*)	(*e*)	(*a*)
A–a	Aeolian	9	*A–e, e–a*	11	Aeolian	*A–a*
	Hypodorian	2	*A–d, d–a*	4	Hypophrygian	
B–b♮	(Hyperaeolian)	–	–	–	–	*B–b♮*
	Hypophrygian	4	*B–e, e–a*	6	Hypolydian	
c–c′	Ionian	11	*c–g, g–c′*	1	Dorian	*c–c′*
	Hypolydian	6	*c–f, f–c′*	8	Hypomixolydian	
d–d′	Dorian	1	*d–a, a–d′*	3	Phrygian	*d–d′*
	Hypomixolydian	8	*d–g, g–d′*	10	Hypoionian	
e–e′	Phrygian	3	*e–b♮, b♮–e′*	5	Lydian	*e–e′*
	Hypoaeolian	10	*e–a, a–e′*	12	Hypoaeolian	
f–f′	Lydian	5	*f–c′, c′–f′*	7	Mixolydian	*f–f′*
	(Hyperphrygian)	–	–	–	–	
g–g′	Mixolydian	7	*g–d′, d′–g′*	9	Ionian	*g–g′*
	Hypoionian	12	*g–c′, c′–g′*	2	Hypodorian	

With his modes firmly rooted in mediated octave species, Glarean was forced to maintain that distribution of the semitones is the essential feature of a mode. He argued that if replacing *b♮* with *b♭* in a mode with *g* final changes it from mode 7 to mode 1, replacing *b♮* with *b♭* in a mode with *f* final should change the mode also. He claimed that Lydian and Hypolydian (modes 5 and 6) if performed with *b♭* throughout are really Ionian and Hypoionian (modes 11 and 12), transposed so that their finals are at *f*. Indeed, Glarean referred to Ionian and Hypoionian many times as 'new mode 5' and 'new mode 6' – whether *f*-final in *cantus mollis* or *c*-final in *cantus durus* – in contrast with 'old' modes 5 and 6 (that is, *f*-final modes in *cantus durus*, which he presumed to have been the original condition of Lydian and Hypolydian melodies).

By the same token, Dorian and Hypodorian (modes 1 and 2) with *b♭* throughout must be redesignated Aeolian and Hypoaeolian – or rather restored to their putative rights, for Glarean supposed that his Aeolian was 'old indeed, but deprived of a name for many years' (p.142); or conversely, as he observed, 'one rarely finds a song in the Dorian which they have not somewhere turned into the Aeolian through the *synemmenon* tetrachord [that is, by using *b♭*], which I do not condemn if it is done with good judgment' (p.157). One such piece is the mode 1 antiphon *Ave Maria* (Gevaert's *thème* 5) which Glarean wished to call Aeolian.

Glarean's synthesis of medieval and ancient sources is also demonstrated in his method for assigning names to his new modes. He retained Boethius's names for the

Ex.20 Glarean's 12 modes from seven mediated octave species (see also Table 8)



seven 'modes or tones or tropes' in the sense in which they had come to be understood in the Middle Ages, as octave species; he retained the medieval usage of 'hypo-' meaning 'plagal' when prefixed to a principal modal name; and he ransacked classical authorities for a set of five names that might be made to fit the modal scales left over. Glarean was quite frank in saying, after a great deal of discussion of the 'more than twenty names by which the seven octave species are designated' (p.101), that 'we shall now attempt to fit these names of modes into a definite form which is appropriate to the art and also adhered to by us in the following, howsoever the names may have occurred among writers' (p.117). Table 8 (*b*) shows his final results. Boethius's seven names having been given to their customary medieval modal scales, 'the remaining five modes in the writings of Aristoxenus, as Valla reports [cf Cleonides; Strunk, 1950, p.44], are named . . . Hypoiastian, Hypoaeolian, Iastian, Aeolian, and Hyperiastian' (pp.115f).

To distribute these five names among the five remaining modal scales Glarean had recourse to a passage in Athenaeus in which the Aeolian and Hypodorian are equated (p.116; Strunk, pp.48f); Glarean took the equation as meaning that they share the same octave species. With the Aeolian placed in the octave *A–a*, divided *A–e* and *e–a*, its plagal the Hypoaeolian reverses the species of 4th and 5th and occupies the other form of the Phrygian octave, *e–e′* divided into *e–a* and *a–e′*. This leaves only one pair of similarly related modal scales, *c–g–c′* and *g–c′–g′*, for the Iastian–Hypoiastian pair. From other classical sources Glarean (p.116) got the equation of Iastian with Ionian, which he preferred as being a Greek tribal name more on a par with Dorian and Aeolian. Hyperiastian – '[one degree] above the Iastian' – occupies the position of the plagal form of mode 7, the Hypomixolydian. The two 'rejected' scales are given names with the 'hyper-' prefix by analogy. Taken as a whole, the confection is as brilliant as it is specious; with very few loose ends and inconsistencies several classical authorities are adduced to justify an *a priori* construction improving upon and extending a purely medieval tradition.

Modal function and non-modal consonance

Classical authority, however, could give Glarean no direct support for analysis of repertory, and his musical discussions reflect the influence of traditional modal theory as he must have learnt it from Cochlaeus at Cologne. Book iii.1–4 of the latter's *Tetrachordum musices* deals with non-psalmodic aspects of the eightfold system. Chapters 1 and 4, as Miller has shown (MSD, xxiii, Preface), are modelled on Wollick (1501), but Cochlaeus replaced Wollick's 'Guidonian' doctrine of measuring modal ambitus solely by its extent above and below the final; in chapter 2 the finals, confinals, and systems of modal species of the 4th and 5th are described, surely under the influence of Gaffurius's *Practica musicae*, from which Cochlaeus borrowed directly elsewhere. In chapter 3 Cochlaeus discussed the five types of ambitus (perfect to commixed) of the Italian theory, also doubtless after Gaffurius.

Cochlaeus's teaching on the species of the smaller consonances may well have predisposed Glarean towards a construction based on those species along with the octave, reinforced as it would have been by the species doctrines of Boethius and Berno. But *Tetrachordum musices*, iii.4, reflecting the same doctrines as Wollick (1501), seems the clearest influence of the Cologne theorist on Glarean. For while Glarean proposed 'that modes are recognized principally by the octave division, which is made through the fourth and fifth consonances' (p.194), he also stressed 'that modes do not always fill out the outermost strings, but are recognized partly by *phrasis* and also partly by the final key' (p.197).

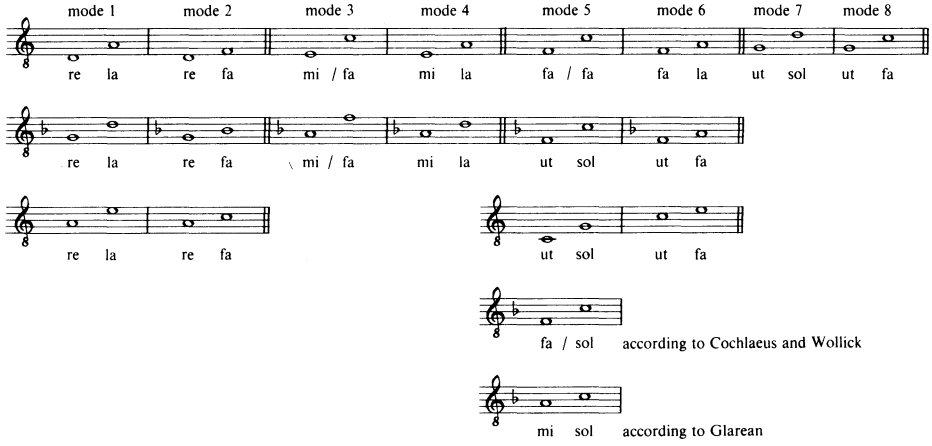
Glarean nowhere defined the term 'phrasis', but at one point he referred it back to 'certain rather easy and relatively common rules which . . . certainly should not be neglected' (pp.195, 71). The rules turn out to be a form of the familiar list of eight pairs of characteristic modal intervals, those pairs consisting of the final and one other note, a note variously derived from (psalm-tone) tenor or (modal) repercussion, called *melodia* by Cochlaeus, Wollick, and other writers in the German orbit, and now *phrasis* by Glarean. Ex.21 is a composite reference list of all the modal pairs in *cantus durus* (two hexachordal positions where relevant) and in *cantus mollis*, which is the norm for the regular *f*-final modes (note that as usual in their case the use of *cantus mollis* effects no transposition).

Wollick (1501, ii.9) gave a diagnostic definition of *melodia* in which the psalm-tone tenor and the modal melodic function are completely amalgamated (ed. Niemöller):

> it is necessary to distinguish authentics from plagals . . . considering thereunder two things: (1) the *melodia* itself, that is, its nature or essence, of which more later; (2) the ambitus. . . . [p.56]
> The *melodia* infallibly leads us to recognition of the tone. Every chant finishing in *re*, taking the beginning of its 'seculorum amen' [that is its psalm-tone tenor] in *la* is of the first tone. . . . To put it another way: . . . in every chant often attaining to *la* [and] recurring to *fa* above [i.e. *b♭* over *a*, *f′* over *e′*, or *e♭′* over *d′*], if a chant of this kind finishes in *re*, it is of the first tone. . . . [p.58]

Cochlaeus's wording of the doctrine emphasizes further the melodic aspect of the two notes in the pair, and separates this aspect of *melodia* from the sense of *melodia* as psalm-tone tenor (which he mentioned briefly

Ex.21 *Melodia* (Cochlaeus, Wollick)/*repercussa*/*phrasis* (Glarean)



at the beginning of iii.5): 'The *melodia* of a tone is a conventional progression of notes, according to fixed intervals, which is more common to one tone than to another. For its recognition there are four rules, according to the [four] finals of the tones'. Following his list of four (pairs of) rules Cochlaeus gave an ad hoc formula or progression to demonstrate the role of the *melodia* in the course of each of the eight modes.

In Glarean (1547) the equivalent term 'phrasis' occurs constantly, and in contexts where it implies both a still greater generality in melodic emphasis and at the same time a still greater specificity as motivic nucleus. The variant for mode 5 in Glarean's list (see ex.21) demonstrates an evident desire to turn the traditional *melodia* of his Cologne mentor into a unique definition of the mode. The traditional *cantus mollis melodia* for mode 5 is the third species of 5th *ut sol* (or *fa/sol*); *ut sol* is also the *melodia* for mode 7. Glarean's substitution of *mi sol* as the characteristic interval for mode 5 has two effects. First, by dispensing with the final of the mode as a member of the pair, Glarean showed that he conceived the *phrasis* as a melodic interval, not a pair of modal functions or a single prominent note to complement the final. Second, the substitution eliminates the one duplication of intervals in the traditional list, *ut sol* in both modes 5 and 7. Now every modal pair is intervallically unique: one minor 6th (*mi/fa*); two 5ths differently composed (*re la* and *ut sol*); two 4ths likewise (*mi la* and *ut fa*); one major 3rd (*fa la*); and two minor 3rds differently composed (*re fa* and *mi sol*).

In Book 2, §§36–7, Glarean discussed the species of consonances as non-modal boundaries of pitch areas in which melodies operate – melodies whose true modality is determined by their finals and *phrasis*. Non-modal use of the consonances was of course not new: it was part of the 11th-century Italian theory of the ambitus, and the consonances were used as registral boundaries in the 9th-century *Alia musica* (see, for example, Chailley ed., pp.121ff, for an analysis by non-modal consonances of the Advent introit *Rorate coeli*).

(*c*) Mode as ethos, category, and inherent property. As a humanist Glarean was fully committed to the doctrine of modal ethos, and here too his work reveals his synthesis of the classical revival with the medieval heritage. The two modes of the Phrygian octave species (*e–e'*) are particularly revealing (p.160):

> The Phrygian is commonly called the third mode, a particularly famous and ancient mode ... Horace calls it '*barbarus*' ... Lucian calls it 'divinely inspired', Apuleius, 'religious' ... some say that it evokes the harsh reviling of the indignant [cf Johannes in §1(i) above], others say that it incites to battle and inflames the appetite of a frenzied rage [cf, the anonymous Chartist in §1(i) above]. Well known is the fable of the Tauromenian youth...

Glarean then retold the Phrygian story from Boethius, quoted in §1(i) above in the version of Engelbert of Admont. For the Hypoaeolian mode, however, Glarean could report no ethos; the only classical source he had for the name was the Aristoxenus passage quoted in Cleonides, where Hypoaeolian is merely listed, and of course there was no medieval tradition for it. The arithmetically mediated octave *e–a–e'* got the name Hypoaeolian solely by virtue of being the plagal rearrangement of the *A–e–a* octave, which Glarean had had an excellent classical justification for calling Aeolian.

Glarean must have felt that the contrast in surviving richness of ethic attributions for these two modes was paralleled in their surviving musical manifestations in the chant. For the Phrygian, 'since it is known to everyone we shall be content with one example' (p.160); but the Hypoaeolian 'is infrequently used in our time, and one finds few songs in choirs [i.e. chant] according to it' (p.162). Yet as his only plagal *a* mode the Hypoaeolian is necessarily his category for two of the most provocative melody types in the repertory, probably very ancient, with apparent calendaric associations. First, there are 'some Graduals, as they are called, many of which are sung in Advent, and in Easter time, also some at other times' (p.167). These are the *Tollite portas–Haec dies* mode 2 transposed graduals (see Apel, 1958, 357ff, and PalMus, ii, iii; also G. M. Suñol y Baulenas, *Introduction à la paléographie musicale grégorienne* (1935), Plate *F*, for a tabular analysis). Glarean went on to observe that 'this [Hypoaeolian] mode is also found between small *e* and large *F* [i.e. *e'* and *f*] ... within the same range as the Lydian ... yet it ends on its proper final, small *a* [i.e. *a*], while the Lydian ends on large *F* [i.e. *f*]. We shall present an example of this ...', and he printed the antiphon *Exaltata est* (*Liber responsorialis*, p.374, 'mode 4 transposed') – Gevaert's *thème* 29 – cited two more of the same melody type, and went on: 'Similar also are many used in Advent and other times, especially during Lent' (pp.162f). (For a brief discussion of this melody type see Apel, 1958, pp.398ff.) Glarean also used the Hypoaeolian as he did the Aeolian, as a modal assignment for protus melodies that use the flat 6th degree exclusively, as do many mode 2 responsories (see Apel, pp.332ff, for discussion of the type and references).

In applying his system to polyphony Glarean was limited in three ways. First, for him as for others the modes were monophonic, and a principle for integrating the voices was needed. Second, though the *Dodecachordon* includes a discussion of mensuration and proportion (Book 3, §§1–12), there is no treatment at all of counterpoint or of the composition of the sonorities, and thus no doctrine of polyphonic cadences or beginnings. Third, Glarean the humanist was committed to the integrity of the octave species; though he was aware of the potential modality of the smaller species he mentioned them only incidentally in his analyses, normally preferring rather vague invocations of *phrasis* when reference to a modal element of narrower compass was needed (though he often also used *phrasis* in a context implying the full span of a modal octave).

Glarean's examples are modally labelled according to the tenor, but in no sense did he discuss polyphonic compositions in terms of a single modality. He postulated natural relationships among modes as entities; though these relationships in fact turn on the existence of smaller species common to two modes, for Glarean the mode as a whole remains the unit of discourse (p.250):

> There is a certain hidden relationship of the modes and a generating of one from the other, certainly not acquired through the ingenuity of *symphonetae*, but determined in this way by the nature of the modes. For we see this happen whenever a Hypodorian tenor [e.g. *a–d'–a'*] is arranged so that its bass is Dorian [*d–a–d'*], often also Aeolian [*A–e–a'*]. ... Contrariwise, whenever the tenor is Phrygian [*e–b♮–e'*], the bass and cantus often fall into the Aeolian [*A–e–a, a–e'–a'*] ... . Sometimes the cantus comes into the Hypophrygian [*b♮–e'–b♮'*].

Glarean's 'hidden relationship of the modes' is nowhere better illustrated than in his own observations on the combinations of the Aeolian modes with the Dorian modes on the one hand and the Phrygian on the other. This relationship of modal systems is the equivalent, in

Glarean's terms, of Aaron's distinction between final *a* as mode 1 confinal and final *a* as mode 3 difference. Looked at yet another way, the relationship of Glarean's Aeolian to both Dorian and Phrygian reflects the mixed composition of the *a* modes, which consist of the *re la* mode 1 (protus) species of 5th and the *mi la* mode 3 (deuterus) species of 4th.

As an example of the Aeolian mode Glarean quoted the 'Pleni sunt coeli' from Josquin's *Missa sine nomine*, 'in which the higher voice begins, and after two *tempora* the lower voice follows at the fourth below, as they usually say. But its system is truly Aeolian, not Dorian as some have written, and also ends on the lowest string [i.e. degree] of the [Aeolian] fifth'. This canon is constructed on the same tonal principle as Bartolomeo Ramos de Pareia's little demonstration *fuga* in ex.17*a*: each voice lies within a single hexachord, natural (*c′–a′*) in the upper voice and hard (*g–e′*) in the tenor, and hence would be solmized with the same syllables. In terms of modal species of 5th both voices are protus, set at two positions a 4th apart.

Josquin's five-voice *Miserere* was one of Aaron's examples for mode 3 ending at its difference on *a*; Glarean said of the same piece, referring like Aaron to the pattern of its ostinato tenor, 'One truly sees here the Hypoaeolian from small *e* to large *E* [i.e. *e′* to *e*], indeed divided arithmetically at small *a* [i.e. *a*], on which it also ends, namely on the lowest string [i.e. degree] of the [Hypoaeolian] fifth [*a–e′*]' (p.260).

The relationship of Glarean's Ionian and Hypoionian to the rest of his system is of a different kind. First, *c*-mode pieces, otherwise considered secondary forms of members of the eightfold system, could now be supposed to have separate modes of their own. For instance, Josquin's *Comment peult avoir joye*, which Aaron had assigned to mode 7 ending on its difference *c*, naturally became Hypoionian when Glarean printed it with the words *O Jesu fili David*. Second, Glarean's insistence on the integrity of the semitone distribution in his modal octaves required him to consider *f*-mode pieces in *cantus mollis* as transpositions of his Ionian or Hypoionian mode because they had the same intervallic structure. This made the *cantus mollis f* modes systematically consistent with the other *cantus mollis* modes (p.256):

> Ionian . . . all the examples of this mode are transposed from the proper tonic by a fourth . . . which change usually occurs in most other modes, as in the Dorian and Hypodorian, its plagal, and in the Hypoionian, the plagal of this [Ionian] mode. . . . Moreover, a beautiful five-voice example of this mode is the *Stabat mater dolorosa* of Josquin des Prez.

Aaron had also cited the Josquin *Stabat mater*, an *f*-final *cantus mollis* composition, as one of his instances for mode 5 with the regular final, Glarean's 'old' Lydian; in so doing he was following the centuries-old tradition of considering *b*♭ – from the *synēmmenōn* tetrachord – a co-equal member of the tonal system when it occurred in tritus modes.

The simple and logical symmetries of Glarean's system eliminated cumbrous lucubrations over modal assignments for pieces ending with *a* or *c′*; it also eliminated the apparent inconsistency by which *f* modes were considered to be modes 5 or 6 in *cantus durus* and *cantus mollis* alike, while *g* modes in *cantus durus* were modes 7 or 8 but in *cantus mollis* they were modes 1 or 2. On the other hand, the 12-mode system also logically eliminated important and by no means over-subtle distinctions, such as those between the two kinds of *a* modes in *cantus durus*. Of course such distinctions could continue to be made on a secondary level, as Glarean and some of his immediate successors made them. But those who took up the 12-mode system, whether directly from Glarean or from Zarlino, eventually lost sight of such distinctions in their enthusiasm for the simple, rational and universal paradigm that the system provided.

(*iii*) *Zarlino's synthesis of modality and polyphony*. The modal doctrine of Zarlino is expounded in detail in Part iv of his *Istitutioni harmoniche* (1558, rev. 3/1573); important concepts are also found in Part iii, on counterpoint. Zarlino adopted Glarean's system in its entirety; he added to it the polyphonic modal functions that had been creeping into the literature since the 15th century; and more than that, he succeeded in bringing polyphonic texture, modal structure and modal ethos under the rule of a single unifying musical principle.

In the 1558 edition Zarlino kept Glarean's 12 modes as Glarean had ordered and named them. In the 1573 edition, however, he renumbered the modes to begin with the authentic and plagal *c* modes as modes 1 and 2, the *d* modes as 3 and 4, and so through the hexachord up to the *a* modes as 11 and 12 (see Table 8(*d*)). The reordering followed on some conclusions published in his *Dimostrationi harmoniche* (1571, pp.270ff); in this work he reordered the names of the modes along with their numbers (Table 8 (*e*)) but in the revised *Istitutioni* he used the new numbers alone, without names, on the grounds that though the old names had been wrongly used it would be too confusing to insist on a new usage. Of the six reasons offered for the reordering the most important was that his tuning was based on just intonation of the (C) major scale (for which his classical warrant was Ptolemy's syntonic diatonic); he also believed, wrongly, that the names in his new ordering represented the correct interpretation of the 'modes or tones or tropes'.

Zarlino often adopted Glarean's comments on the ethos of one or another mode. For instance, he said that mode 9/11 – Glarean's Aeolian – is 'very old, yet it has long been deprived of its name and proper place' (1573, p.411), and shortly thereafter he listed several epithets translated from Glarean's classical sources. Zarlino's musical comments on individual works are not unlike Glarean's, but with regular reference to the smaller species of consonances, especially in cases where his new doctrine of modal structure produces something flagrantly at variance with what he knew to be the practice. On the Phrygian, for instance, whose regular cadence points he required to be *e*, *g*, *b*♮ and *e′*, he observed (1573, p.401):

> If this mode had not been mixed . . . with [the Aeolian], and if it were heard plain, it would have had a harmony rather harsh. But because it is tempered by the 5th of mode [9/11, Glarean's Aeolian, namely *a–b*♮*–c′–d′–e′*] and by the cadence that is made on *a* which is so greatly used, some have thought on that account that it has the character of moving to tears; therefore they set it freely to words that are tearful and full of laments. It has great conformity to the aforesaid [Aeolian], because they have the [*mi fa sol la*] species of 4th in common.

In the treatise on counterpoint (Part iii), Zarlino introduced polyphonic modal functions. The fifth of his six general rules for composition requires that 'a composition be ordered under a prescribed and determined mode, or tone, as we like to call it' (trans. Marco and Palisca, p.52). He went on to require that imitative voices enter on modal degrees (p.55):

the interval between the initial notes of the two voices should be one of the perfect consonances named above [. . . unison, fifth, octave, or compound . . .], or a 4th. This is not unreasonable, for one begins on the extremes or the middle points of the modes on which the melody is founded.

The cadences are to be on the modal degrees also (p.42):

The cadence has a value in music equivalent to the period in prose and could well be called the period of musical composition. . . . The end of a sentence in the text should coincide with the cadence, and this should not fall on an arbitrary tone but on the proper and regular steps of the mode used.

In its details Zarlino's counterpoint treatise is a summary, extension and codification of existing doctrine. But permeating the polyphonic web Zarlino saw the same 'sonorous numbers' that he had used for his tuning system, those perfect and imperfect consonances of just intonation which he had measured in the simple ratios of the numbers one to six. The small-number ratios of just intonation now allowed the 5th easily to be conceived as harmonically and arithmetically mediated into major and minor 3rds with simple ratios, just as the octave had always been simply mediated into a perfect 5th and a perfect 4th. As a consequence, the general bilateral pattern of both structural and ethic contrast that had been associated with the harmonically mediated authentic octave versus the arithmetically mediated plagal octave could be claimed as well for the harmonically versus the arithmetically mediated 5th.

The 5th and its 3rds now became the sonorous glue of the contrapuntal texture. Zarlino portrayed them in their new role as follows:

The variety of the harmony . . . results from the position of the note that divides the fifth. . . . On this variety depend all the diversity and perfection of harmonies. [p.69]
Since harmony is a union of diverse elements, we must strive . . . to have those two consonances [the third and the fifth] or their compounds sound in our compositions as much as possible. [p.188]

Zarlino was of course quite ready to recognize the existence of other consonances in the texture, but he regarded them as substitutes for the 3rd or 5th (p.188):

True, musicians often write the sixth in place of the fifth, and this is fine. . . . Especially in three-voice writing the octave may be used in place of one of them to preserve a beautiful, elegant, and simple voice line. To want to use those consonances constantly in such pieces would be impossible.

The consonances that dominate the contrapuntal composition of the texture were also invoked to govern the modal disposition of the structure, establishing the final, its upper 5th, and its mediating 3rd (major or minor) as the proper scale degrees for beginnings and cadences: 'The true and natural beginnings not only of this but of any mode you like should be at the boundary degrees [*chorde estreme*] of their fifths and fourths, and on the median degree [*chorda mezana*], which divides the 5th into major 3rd and minor 3rd' (1573, iv.18, p.392). And again Zarlino recognized the realities of practice, though in this case he attempted no explanations: 'All the same, many compositions that have their beginnings on other degrees are to be found'.

To allow for anomalous cadence points is both prudent and customary, and Zarlino did so; what is new is his prescription of a uniform basis for fixing cadential norms, the same for all 12 modes (1573, iv.18):

Cadences are found to be of two kinds, 'regular' and 'irregular'. Regular are those which are always made on the boundary notes or degrees of the modes. (Where the octave in each mode is harmonically or arithmetically mediated or divided by a median degree, those degrees are the boundaries . . . likewise where the 5th is divided by a median degree into a major 3rd and minor 3rd.) Any other [cadences] then may be made wherever you like; they are called irregular.

The intervals that permeate the contrapuntal texture and regulate the modal structure are also said to determine the general ethos of a mode (pp.21f):

the fifth, sixth, seventh, eighth, eleventh and twelfth [modes, numbered as in 1558, see Table 8 (b), (c)] . . . are very gay and lively, because in them the consonances are frequently arranged [in an order] according to the nature of the sonorous number, that is, the fifth is harmonically divided into a major and minor third which is very pleasing to the ear. . . . In the other modes, which are the first, second, third, fourth, ninth, and tenth, the fifth is arithmetically divided by a middle note, in such a way that one often hears the consonances arranged [in an order] contrary to the nature of the sonorous number. Whereas in the first group [of modes] the major third is often placed beneath the minor, in the second [group of modes] the opposite is true, with a result I can only describe as sad or languid.

This theory of a bipolar modal ethos based on the harmonic or arithmetic division of the modal 5th in Part iii is a generalization; in Part iv specific, usually traditional, affects are attributed to each mode individually. Zarlino's recognition of the realities of compositional practice regarding 'irregular' cadences in the Phrygian has been quoted. Finally, his recommendations for a predominant use of 3rds and 5ths in the texture did not prevent him from providing for the actual construction of simultaneities through the conventional rules for adding first the bass and then the alto to a principal interval in soprano and tenor (see trans., pp.178ff, and especially the table on pp.182f). Nonetheless, his synthesis of texture, mode and affect through their joint participation in a background ambience of major 3rds, minor 3rds and 5ths, was an enduring contribution, and it had a devastating effect on polyphonic modality. The essence of all traditional modal theory, as applicable to polyphonic music, had been that the tonal relationships specific to each mode were treated as completely independent of the general tonal relationships governing vertical sonorities and their successions. Zarlino's construction on Glarean's 12 modes broke down the barrier between modal structure and chord structure and left them wholly dependent on each other.

5. TRA[redacted]

(*i*) *The 12 modes in the late 16th century.* The new and systematically conceived theory of 12 modes was promulgated with both sets of names and numbers. One was Glarean's, and Zarlino's 1558 version as well: modes 1 (Dorian) to 8 (Hypomixolydian) – the old eightfold system – and modes 9 (Aeolian) to 12 (Hypoionian) as authentic–plagal pairs of *a*-final (9, 10) and *c*- or *c′*-final (11, 12) modal octaves. The other set of numbers and names was Zarlino's second version from 1571 and 1573: six pairs of authentic–plagal modal octaves, with finals in order of the natural hexachord, *c d e f g a*; *c* authentic (mode 1) to *f* plagal (mode 8) were now called by the old names, Dorian to Hypomixolydian; the *g*-final modal octaves became Ionian and Hypoionian, and only the names Aeolian and Hypoaeolian (modes 11 and 12) referred to the same modal octaves as they had in Glarean's system. (See Table 8 (*e*).)

In the later 16th century and early 17th the 12-mode system was taken up enthusiastically, by composers as well as by theorists. In Germany at first Glarean was the source, so that mode 1 (Dorian) continued to be *d* authentic in *cantus durus* with *b*♮, or *g* authentic in *cantus mollis* with *b*♭. The earliest large-scale musical embodiment of Glarean's new system was a setting of the Gospel texts for the whole year, published in 1565, in four cycles of the 12 modes, by Glarean's student Homer Herpol. Alexander Utendal's 1570 settings of

the seven penitential psalms (plus five texts from the Prophets) in the 12 modes, along with Herpol's works, were among those often cited as examples for the 12 polyphonic modes in music textbooks for the German Lateinschulen well into the 17th century. The 1570 *Cantiones* of Eucharius Hoffmann is another 12-mode collection, and in Hoffmann's 1582 treatise *Doctrina de tonis seu modis* Lutheran chorale tunes were added to the recurrent roster of citations exemplifying the 12 modes. Andreas Raselius also wrote about the 12 modes and illustrated them in his *Hexachordum seu questiones musicae practicae* (1591) and published two collections of motets on German Gospel texts, one set for Sundays and the other for important feasts, 'in which living examples of Glarean's *Dodecachordon* in both scales [*cantus durus, cantus mollis*] have been invented' (*Teutsche Sprüche*, 1594–5).

In Italy too the earlier 12-mode system was preferred, not because musicians were unaware of Zarlino's new scheme, but because it was easier in a liturgical context if the first eight modes could be associated directly with the traditional eightfold system; organists had not only to play independent pieces during the service but also to collaborate with both the polyphony and the plainchant of the choir. Organ compositions keyed to the 12 modes proliferated in the late 16th century and early 17th. Andrea Gabrieli's *Ricercari* of 1595 form a full set of extended compositions in all 12 modes. Table 9*a* lists their modes (called 'tones') along with their scales (*cantus durus* unmarked, *cantus mollis* designated by a flat sign), their endings and their putative transpositions from the abstract system.

TABLE 9

(*a*)

Tone	*Scale*	*Final*	*Putative transposition*	*'Natural' final*
1	–	*d*	–	
1	♭	*g*	↑4	*d*
2	♭	*g*	↑4	*d*
3	–	*e*	–	
4	–	*e*	–	
5	–	*c*	↓4	*f* (in B♭ scale)
6	♭	*f*	–	
7	–	*g*	–	
8	–	*g*	–	
9	♭	*d*	↓5	*a*
10	–	*a*	–	
11	♭	*f*	↓5	*c'*
12	–	*c'*	–	

(*b*)

				Name of mode
1	♭	*f*	↑4	*c* Dorian
2	♭	*f*	↑4	*c* Hypodorian
3	♭	*g*	↑4	*d* Phrygian
4	♭	*g*	↑4	*d* Hypophrygian
5	–	*e*		Lydian
6	–	*e*		Hypolydian
7	–	*f*		Mixolydian
8	–	*f*		Hypomixolydian
9	–	*g*		Ionian
10	–	*g*		Hypoionian
11	–	*a*		Aeolian
12	–	*a*		Hypoaeolian

In France, conversely, Zarlino's second scheme was generally accepted in principle, with the *c* authentic modal scale being mode 1, or Dorian. (Conflicts that arose in liturgical situations were accepted, though they had to be explained.) In Le Jeune's *Octonaires* (1606; ed. in MMFTR, i, viii) each of the 12 modes has two chansons for four voices and one for three; the *c*-final and *d*-final authentic–plagal modal pairs – modes 1 (Dorian) to 4 (Hypophrygian) – are set in *cantus mollis*, to end with *f* and *g*. Table 9*b* lists the modes, scales, endings and putative transpositions for this collection.

The potential for confusion in two co-existing sets of names is only terminological; in any specific circumstance one set of names or the other will be found. But the 12 modes and the eightfold system were two genuinely competing theories, one rational and unified, the other traditional and diverse. Coupled with that source of confusion was the matter of transposition (in the modern sense) of modes. Even considering only the traditional overlapping systems of *cantus durus* and *cantus mollis* – the scale with *b*♮ and the scale with *b*♭ – the number of octave scales of potential modal legitimacy was doubled without there being much increase in the number of finals in the system as a whole. From Table 9 two preliminary illustrations may be extracted.

The Gabrieli *Ricercari* (see Table 9*a*) include two *f* modes, one authentic and one plagal, both with the *b*♭ scale; one of these, however, is called mode 11 (Glarean's Ionian) transposed down a 5th while the other is the traditional mode 6 of the eightfold system, the ancient tritus plagal mode with its traditional *b*♭. A similar coupling occurs with the *c* and *c'* modes: one is in principle a transposition of the traditional mode 5 (with its traditional *b*♭) into *cantus durus*, down a 4th to *c*; the *c'* mode is called mode 12 (Glarean's Hypoionian). Finally, the set includes two *d*-final authentic modes, mode 1 in its regular position and mode 9 a 5th lower. They differ in their sixth degrees, but the distinction is minimized by the normal practice of using *b*♭ over *a* (*fa* over *la*) in the authentic protus at *d*. (The downward transposition of mode 9, like the transposition of mode 5 down to *c* and mode 2 up to *g*, is ultimately a reflection of systematic adjustment of the organ to a convenient pitch level for the choir in the musical liturgy: see §5(ii*b*) below.)

Quite different instances of two modes sharing the same final due to the overlapping *cantus durus* and *cantus mollis* systems are furnished by Le Jeune's scheme for the *Octonaires* (see Table 9*b*). The collection includes two sets of plagal–authentic *f* modes, and two sets of plagal–authentic *g* modes: in each set with common final one pair uses *b*♮, the other *b*♭, like Gabrieli's mode 1 and mode 9. In the *f* modes the contrast in scale system comes in their fourth degrees, the old question of theoretical tritus versus practical tritus. The contrast in the third degrees of the *g* modes, *b*♮ and *b*♭, is also reminiscent of an old modal contretemps, the transformation of mode 7 tetrardus on *g* to mode 1 protus on *g* (see §II, 4(i), above); but here it is not a question of changing modes in one piece but of the existence of whole pieces in different modes with the same final. This is the converse of the situation illustrated in the Gabrieli *Ricercari* by the first two pieces, which are both in the authentic protus mode but with

different finals – *g* (in the *b*♭ system) and *d* (in the *b*♮ system).

These collections between them embody three elements of disorder for polyphonic modality: the existence of a new modal theory in conflict with the traditional eightfold system; systemic ambiguities arising ultimately from the practical requirements of transposition; and contrasts in scale type over common finals arising out of two parallel systems of scales, *cantus durus* and *cantus mollis*.

(*ii*) *The modes in the 17th century.*

(*a*) Transposition of modal scales. Before the humanists with their classical authority came to rationalize the eightfold system and make it more consistent it had been an essential part of the Catholic liturgy, and so it continued. An ever more important part in both Mass and Office was played by the organ, and in performing *alternatim* mass sections and *Magnificat* verses with the choir the organist had to be ready to accommodate his music to pitch levels comfortable to the choir. This meant that the whole complex of modes and psalm tones had to be available in practice at pitch levels on the keyboard other than those embedded in the traditional system of note names, out of which the design of that keyboard had developed. The background diatonic assemblage of course already provided for one substantial and useful shift in relative pitch level through the two parallel systems of *cantus durus* and *cantus mollis*, the scales with *b*♮ and *b*♭. *Cantus fictus*, with its two flats, was a way of considering transpositions by a whole step downward as only slightly contradicting the conception of a single diatonic framework with exchangeable ancillary notes. Practical transpositions to other parts of the keyboard further augmented both the number of places a given mode could be projected and the number of modal scales that could be projected at a given place. This process, accompanied by necessary acoustic refinements, led in time to the abandonment of the extended double octave coupled with hexachord syllables as the model for the background assemblage of pitches and pitch relationships available for music.

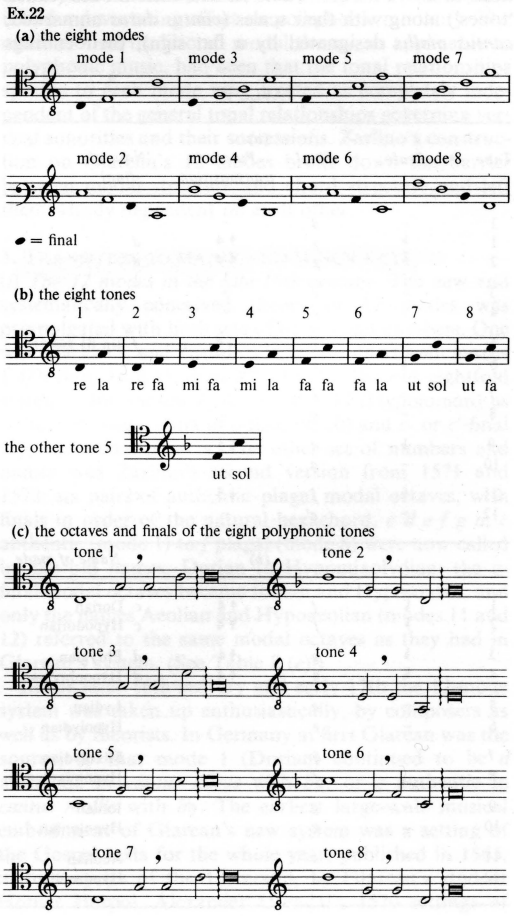
(*b*) The eightfold system and the 12 modes. The organist's need to transpose arose from his interaction with the choir; a considerable share in the confusions of later polyphonic modality in Catholic countries is due to the intersection of the practical need for transposition with conflicting systems of 12 modes, eight modes and eight psalm tones.

Pietro Pontio had made a clear and emphatic distinction between the eight tones used for motets, masses, madrigals and the like, and the eight tones used for the psalms, which, he rightly observed, have their own cadences and even their own endings (see §3(iii) above). Those adhering in principle to the new 12-mode systems generally made this same distinction; Zacconi, for instance, distinguished 12 'tuoni harmoniale' from eight 'aeri di salmeggiare' (*Prattica di musica*, ii, 1622, p.43), and proposed that in any case the latter are derived from the former.

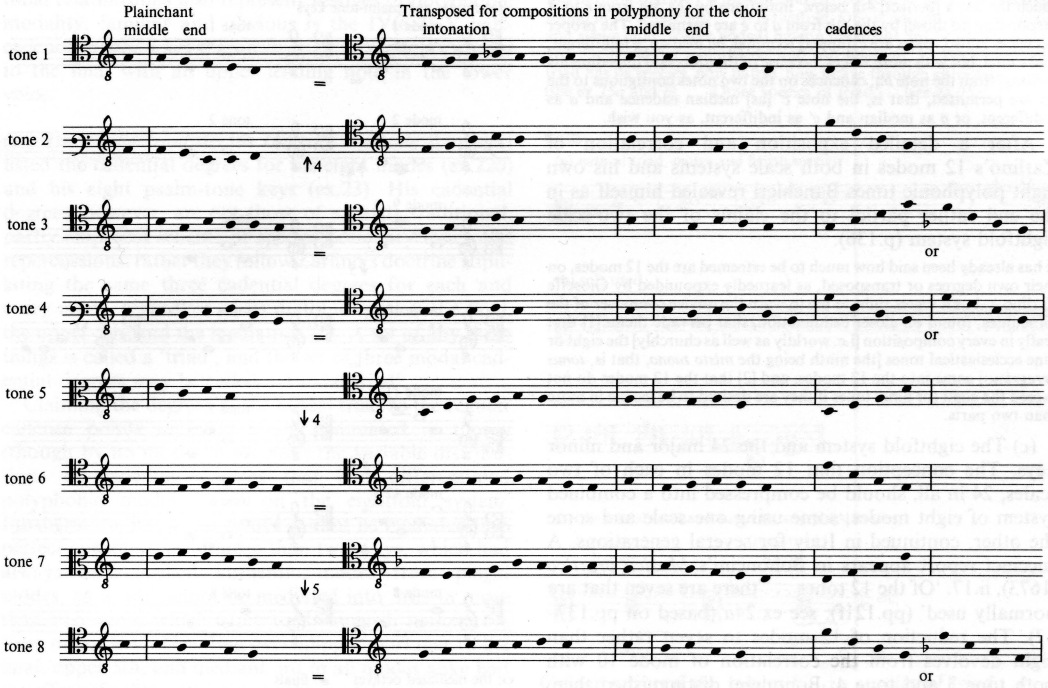
Others, especially those inclined to prefer the traditional eightfold system as the basis for tonal distinctions, were not ready to build a wall between tone (for psalms) and mode (for everything else). Banchieri (1614) gave a thorough, fully illustrated account of a kind of conglomerate modal system that was typical in Catholic usage well past the first half of the 17th century, with some local variations. Basically these systems were developed in three stages. First, members of the two eightfold systems – like Pontio's tones for motets and tones for psalms – were mingled together in theory, as in liturgical performing practice, into a single eightfold system. Second, the conglomerate eightfold system was compared and correlated with the 12 modes in *cantus durus* and *cantus mollis*. The third stage then either recognized the systems as separate in function or derived one of the systems from the other, implying or stating that there was only one true system of modes. The organist's practical experience with transposition played a leading role in the construction of the conglomerate system, but only *cantus durus* and *cantus mollis* were originally drawn on to provide theoretical scales for constituent modes in a closed system.

Banchieri began his discussion with a list of the traditional eight modes, illustrated however not by stepwise species or final–ambitus but by modal degrees within their octaves, in the manner of Zarlino (ex.22*a*); this is followed immediately by the eight psalm tones illustrated by the ancient and familiar couple of modal final with psalm-tone tenor (ex.22*b* – both from 1614, p.68). Shortly thereafter follows the principal demonstration, in which Banchieri depicted an eightfold system of polyphonic modes based on the psalm tones (see ex.23, from 1614, pp.70f). He began with the 'intonation, middle, and end of the plainchant' for each of the

Ex.22



Ex.23



eight psalm tones at its regular position, ending each with its principal difference. They are all then shown again, each one 'transposed for compositions in polyphony for the choir' (*trasportato alle compositioni coriste del figurato*); following their transposed forms their modal degrees are shown as 'cadences', on a pattern like that shown in ex.22*a*.

The transpositions that are made all occur within the parallel systems of *cantus durus* and *cantus mollis*. Tones 2 and 7 go from *cantus durus* into *cantus mollis*, up a 4th and down a 5th, respectively. Tone 5 appears as though it were merely transposed down within the *cantus durus* system, but Banchieri's tone 5 at the *f*-final position would have had its usual *b*♭ in practice (see ex. 22*b*); tone 5 is in fact transposed the other way, from *cantus mollis* at *f* to *cantus durus* at *c*.

The practical aim of these transpositions was to reduce the range needed for the choir's psalmody. This is seen clearly in the 'middle' notes of Banchieri's formulation, which represent the recitation pitch of the psalm-tone tenor, on which the bulk of a psalm verse was chanted. Column 1 in ex.23 shows that in the pure diatonic double octave the psalm-tone tenors are spread between *f* and *d′*; their equivalents in the partly transposed system drawing from both *b*♮ and *b*♭ scales cover only *g* to *c′*. The lowest psalm tone (2), with its equivalent polyphonic tone, has been brought up, the two highest (5 and 7) have been brought down. In the alternative use of a *cantus mollis* transposition by downward whole step suggested by Banchieri for the otherwise untransposed tones 3 and 8, the range of recitation pitches is still further contracted. In the *Cartella musicale* no explanation is offered for these alternative sets of cadence points, but in his *L'organo suonarino* (1605) Banchieri at one point outlined soprano and bass parts for the polyphonic verses of an *alternatim Magnificat* for each of his eight tones, and tones 3 and 8 have indeed been set 'a tone lower for the convenience of the choir' (pp.94, 104), bringing the tenors from *c′* down to *b*♭, thereby compressing the range of recitation tones to a minor 3rd, *g*, *a* and *b*♭.

It may be observed that a systemic effect of the mixed pattern of transposition is to subvert one of the fundamental premises of the traditional eightfold system. Instead of sharing a common final in a single diatonic system and being contrasted by higher and lower ambitus, three of the four authentic–plagal pairs – 1 and 2, 5 and 6, 7 and 8 – keep the octave span constant, and it is the final and scale system that change. This may be seen in ex.22*c* (from 1614, pp.84–7) which shows the prescribed intervals of imitation and the last notes in the tenor part for each of Banchieri's eight tones (the points of imitation are assigned to the extremes and the mean of each modal octave).

Tones 3 and 4 also have different finals, but both are in *cantus durus* and they have different octave spans as well. Tone 3, like all the others, is a psalmodically engendered polyphonic mode, and *a* is the last note of its most prominent difference. The emphasis on *a* and *c′* in mode 3 is of course nothing new, but using *a* as the final of mode 3 is only justifiable when the psalm tone is the model for the mode. In a system of polyphonic modes avowedly derived from psalm tones there is no reason to call particular attention to this final in tone 3, and there is nothing inconsistent in Banchieri's taking it for granted. What is inconsistent is the treatment of mode 4. In his model for the derivation of the system (ex.23) he assigned two sets of modal degrees to tone 4, as he did for tones 3 and 8. The basis for the substitution – borrowed from Zarlino – is entirely different, and has to do neither with psalm tones nor with the convenience of the choir (p.75):

Because the degree *b*♮ does not have an upper [perfect] 5th, and so much the less a [perfect] 4th below, imitations by the 5th from *e* to *A* responding [to those] by the 4th from *a* to *e* are permitted. The proper cadences in two voices are *c′* [upper] terminal, *b*♮ median, *g* indifferent, and *e* final; but with more voices, because of the aforesaid impediments [arising] from the note *b*♮, cadences on the two notes contiguous to the *b*♮ are permitted, that is, the note *c′* [as] median cadence and *a* as indifferent, or *a* as median and *c′* as indifferent, as you wish.

After a detailed exposition and correlation of Zarlino's 12 modes in both scale systems and his own eight polyphonic tones Banchieri revealed himself as in the end rather partial to the claims of the two-scale eightfold system (p.136):

It has already been said how much to be esteemed are the 12 modes, on their own degrees or transposed, as learnedly expounded by Gioseffe Zarlino. . .but it seems right to me to warn the novice composer of the difficulties, found on closer examination, that pervade them: [1] that really in every composition [i.e. worldly as well as churchly] the eight or nine ecclesiastical tones [the ninth being the *misto tuono*, that is, *tonus peregrinus*] come into the 12 modes; and [2] that the 12 modes do not exceed the eight (or nine) tones if they are desired to be usable in more than two parts.

(*c*) The eightfold system and the 24 major and minor keys. The conception that 12 modes in each of two scales, 24 in all, should be compressed into a combined system of eight modes, some using one scale and some the other, continued in Italy for several generations. A succinct report appears in Bononcini's *Musico prattico* (1673), ii.17. 'Of the 12 tones . . . there are seven that are normally used' (pp.121f): see ex.24*a* (based on pp.137–47). The reduction of 12 modes to seven rather than eight devolves from the correlation of mode 10 with both tone 3 and tone 4: Bononcini distinguished them only by their endings. Ex.24*b* (based on pp.148–53) is Bononcini's demonstration of how a melody can be converted from its 'natural' mode to any other mode by changing the key signature.

By a circuitous but traceable route through French- and German-speaking Catholic countries, what had begun as Banchieri's eight 'psalm-tone keys' were finally incorporated into the system of 24 major and minor keys in Mattheson's *Das neu-eröffnete Orchestre* (1713). After a discussion of the '12 *modi*, or Greek manners of singing' (p.57), Mattheson described the final stage of the eight 'psalm-tone keys' (p.60): 'The Italians and the present-day composers employ another fashion of differentiating their *modulationes*' (shown in Table 10). As his source for this set of eight tones Mattheson

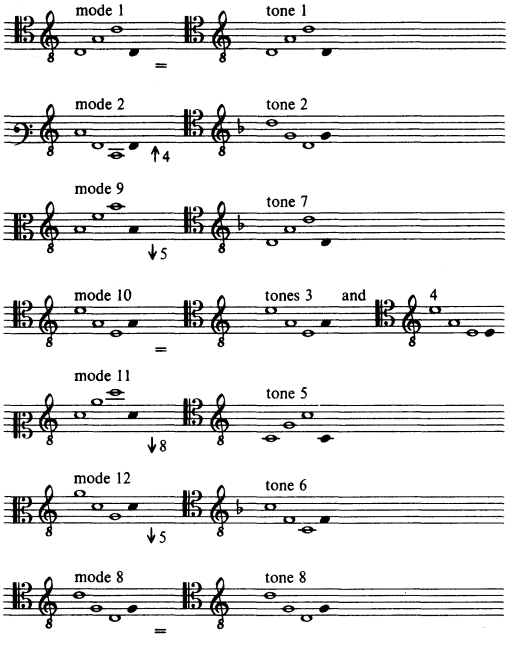
TABLE 10

tone 1	D	F	A	or D minor
2	G	B♭	D	G minor
3	A	C	E	A minor
4	E	G	B♮	E minor
5	C	E	G	C major
6	F	A	C	F major
7	D	F♯	A	D major
8	G	B♮	D	G major

must have used the 'regular tones or modes' in Georg Falck's *Idea boni cantoris* (1688), since he continued with a second eightfold set of four major and four minor keys corresponding to Falck's *fictus* or transposed modes, observing that they are 'no less usable and customary'. Mattheson concluded 'Whoever is desirous of knowing all tones must include the following', and completed the 24 by adding the remaining four major and four minor keys (cf Riemann, *Geschichte der Musiktheorie*, 2/1920, pp.454f). But shortly thereafter he returned to the 24 major and minor keys, first set out as a whole in 1711, only two years earlier,

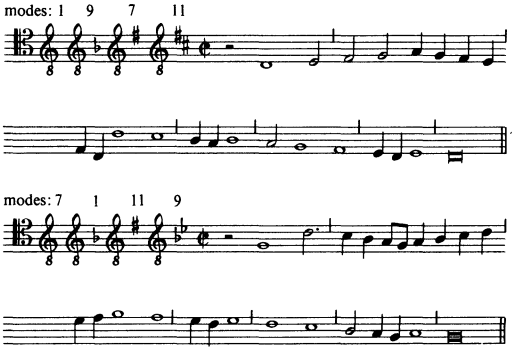
Ex.24

(a) modes and psalm-tone keys



o: the mediated octaves ●: finals

(b) modes and key signatures



in Heinichen's *Neu erfundene und gründliche Anweisung . . . des General-Basses*, recommending the more familiar approach: 'There are just the 12 semitones of the chromatic octave, each of which can be differentiated once, through the major or through the minor 3rds; thus the aforementioned 24 arise, and so it remains' (Mattheson, 1713, p.63).

A few traces of the heterogeneously agglomerated major–minor key system can be observed in early 18th-century musical practice. Most conspicuous are the key signatures with one flat or one sharp too few or one sharp too many, representing transpositions of mode 1 or mode 2 (minor keys with one flat too few or one sharp too many), transpositions of mode 8 (major keys with one sharp too few), or use of a one-flat or two-flat signature as though it were *cantus mollis* or *cantus fictus* (major keys with one flat too few). Certain details of early 18th-century harmonic movement or aspects of

tonal relationships also represent vestiges of polyphonic modality; familiar and obvious is the IV(6-3)–V half-cadence in minor keys, a survival of the mode 4 cadence to the final with an upper leading note in the lower voice.

(*iii*) *The modal triad.* In his *Cartella musicale* Banchieri listed the cadential degrees for his eight modes (ex.22*a*) and his eight psalm-tone keys (ex.23). His cadential degrees, however, are not those of a partly traditional, partly empirical scheme of species boundary tones and repercussions; rather they follow Zarlino's doctrine stipulating the same three cadential degrees for each and every mode, regardless of its diatonic species: the final, the upper 5th, and the mediating 3rd. A set of any three things is called a 'triad', and the set of three modal cadential degrees may be called a 'modal triad'.

Claiming the degrees of the modal triad as the regular cadence points in every mode eliminated in theory (though by no means in practice) the variable distributions of cadential degrees that had differentiated polyphonic modes based on the eightfold system. Furthermore, just as an octave cannot be mediated into perfect consonances in more than two ways, which had always distinguished authentic modes from plagal modes, so a 5th cannot be mediated into 3rds in more than two ways, which came to distinguish major keys from minor keys. Granting overriding importance to the final, upper 5th, and mediant 3rd in all modes alike had the effect of calling attention to the modal triad common to all modes mediating their 5ths in the same way; concomitantly subordinated were most of the theoretically decisive modal distinctions supposed to arise from varying placements of the semitones in the modal octave.

Around 1600 German theorists began to manipulate simultaneities comprising three pitch classes as single entities, that is, as chords. Burmeister (1606, p.22) called them 'conjugate' and named the pitches *basis*, *media* and *suprema*. Harnisch (1608) offered for the first time a description of 6-3 chords as though they were inversions of 5-3 chords; his term for them is 'composite consonance', 'imperfect' and 'perfect' respectively, and he also discussed both doubling and open spacing in terms of octave duplication of chordal degrees (see Lester, 1974, p.110).

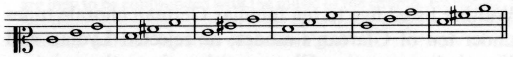
In the writings of Calvisius's student Johannes Lippius (published 1609–12), appears the expression 'harmonic triad' (*trias harmonica*), along with 'monad' (a single note in a melodic context) and 'dyad' (a two-note interval). Lippius not only defined 5-3, 6-3 and 6-4 chords as triads, however; he also defined each of the 12 modes in terms of the triad of its final, third and fifth degrees, defined the general 'lively' or 'sad' affect of each mode by the affect of its modal triad, and then finally listed the cadential degrees of modes in terms of that same modal triad, thus making the modal triad the single foundation of melodic identity, poetic affect and formal structure in each of the 12 modes.

Lippius's theories were transmitted to later generations through the publications of Johann Crüger, whose first significant work, *Synopsis musicae* (1630), borrowed not only its title but most of its language from Lippius's *Synopsis musicae novae* of 1612, simplifying or eliminating the theology and numerology and also expanding and clarifying the explanations. The *trias musica* is made up of three sounds, and (chap.8):

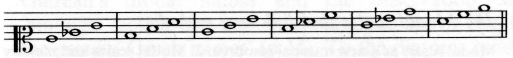
> this harmonic Trinity is the true and correct root of the *unitrisona* [one sound in three pitches] . . . it is twofold. One is natural, perfect, noble, and suave [and Crüger added] having the major 3rd below the minor 3rd. . . . The other is imperfect and soft [*mollior*]. . . . Each harmonic triad has its species, now native, now fictive through chromatic notes. [see ex.25*a* and *b*]. . . . Other species of triad . . . [see ex.25*c*].

Ex.25

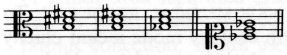
(a) natural triad, native and fictive species



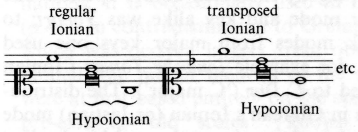
(b) soft triad



(c) other species of triad



(d) the modal triad and authentic and plagal modes



Crüger grouped the modes by the species of triad:

> The modes, because of the proper and individual harmonic triad that each has, are either natural, consisting of a natural harmonic triad, or soft [*molliores*], consisting of a soft triad. Ionian, Lydian, Mixolydian are natural; Dorian, Phrygian, Aeolian are soft.
>
> They are either authentic and primary, or plagal and secondary, by virtue of the 4th conjoined to the harmonic triad. . . . If the 4th is placed above the harmonic triad to complete the ambitus of an octave it will represent an authentic and primary mode . . . if below, a plagal and secondary mode [see ex.25*d*].

Crüger then ascribed poetic content to each mode according to two hierarchic criteria, the modal triad and the scale type (chap.11):

> The nature of each mode follows the nature of its fundamental triad [*naturam radicis unitrisonae*], and of its intervals – tones and semitones disposed in the ambitus of an octave – by which the modes are distinguished from each other.
>
> Thus the one is vigorous and cheerful – Ionian extremely so, Lydian enchantingly, Mixolydian moderately – and the other is soft, weak, sad, serious – Dorian moderately so, Aeolian less so, Phrygian completely.

The primary, secondary and tertiary cadential functions handed down from the latter part of the 16th century are now mechanically assigned (as in Zarlino) to the lowest (and 'final degree'), the highest and the median parts of the harmonic triad; the foreign cadences (*peregrinae*) 'arise irregularly, from the harmonic triad of another mode' (chap.15).

Varying combinations of elements from Glarean's modal doctrines and Lippius's doctrines as promulgated by Crüger continued to appear in German textbooks throughout the 17th century. The 12-mode doctrine, however, was never amalgamated with any other theory of modal or tonal structure; unlike the Italian modal theories it was not gradually transformed and merged into an evolving tonal theory. It survived as an antiquarian anachronism – but it also survived as well in one kind of musical practice, the Lutheran service, as can be observed in many of Bach's chorale settings and elaborations. Both the doctrine and the practice of Glarean's 12 modes at that time are summarized in J. G. Walther's

Musicalisches Lexicon (1732, p.409):

Modus musicus is the way of beginning a song, continuing it correctly within fixed limits, and ending it suitably. The Greeks principally had 12, namely six chief and as many collateral modes . . . only the Greek names survived, and they are applied to the diatonic melodies placed on the following six keys: D, E, F, G, A, and C . . . to know this doctrine is indispensable particularly to organists, since they have mostly to do with chorale songs, among which ever so many have been set and handed down in those old modes.

Walther listed five to ten familiar German chorale tunes under ten of Glarean's modes; he rejected Lydian and Hypolydian, quoting Glarean at length on the point.

See also HARMONY, § 3.

IV. Modal scales and folksong melodies

1. Modal scales as a new musical resource. 2. Modal scales and melody types in Anglo-American folksong: (i) Folksong scholarship and the modes (ii) Melody type in Anglo-American folksong (iii) Mode as musical property versus mode as category.

1. MODAL SCALES AS A NEW MUSICAL RESOURCE. To musicians in the early 19th century mode meant chiefly the major or minor scale; otherwise 'mode' could designate a 'Greek mode', which meant one of Glarean's 12 authentically or plagally mediated octave species. The German term for mode and key alike was *Tonart*; to distinguish Greek modes from major keys one used Glarean's names, for example *Ionische Tonart* ('Ionian mode') as opposed to *C Dur* ('C major'). The distribution of semitones in Glarean's Ionian (or Iastian) mode is the same as that in the major scale, and his Aeolian coincides with the minor mode of tonal music with the sixth and seventh degrees lowered, as they normally were in descent. By 1800 it had come to be believed that the major and minor modes were the result of historical reduction of a primitive welter of scales to their purified essences. Koch's *Musikalisches Lexikon* (1802) concludes a discussion of 12 modes with the observation that 'our two modern modes are the descendants of the old Ionian and Aeolian'. A century later Heinrich Schenker attributed 'the reduction of those many systems to only two' to the 'instinct and experience' of 'the artist' (*Harmonielehre*, 1906, Eng. trans., ed. O. Jonas, 1954/*R*1973, p.45).

The teachings of 19th-century theory on the whole began with the diatonic major and minor scales as their didactic foundation. Composers too thought in terms of scales when – under the influence of Romantic fashions – they wanted to evoke a Gothic atmosphere and antique mystery. Beethoven, expressing his thanks to God for a recovery from illness in the String Quartet op.132, set a churchly, prayerful mood by composing a four-part chorale-like movement 'in the Lydian mode'. But strange scales were useful not only for local colour; they also provided novelty. Beethoven's composition was an experiment as well as an evocation.

Another 19th-century Romantic fashion that led ultimately in the direction of strange scales was a yearning after the state of nature as expressed in 'the folk'. In its earliest French and German phases the concomitant interest in folksong added little to the purely tonal resources of the urban composer, but with the growth of nationalist enthusiasm, internationally known musicians originally from outlying European regions began to think of native rural and archaic musical practices in their homelands with an ear attuned not just to their patriotic virtue but to their novelty as well. Exotic scales could be made to generate flamboyant harmonies. The occasional melodies with raised fourth degrees or lowered supertonics in Chopin's (Polish) mazurkas, the use of gypsy-like melodies with exotic scales in Liszt's *Hungarian Rhapsodies* come easily to mind as instances of patriotism and piquancy combined. But the experimental utility of strange scales went deeper than patriotism with Liszt. In an abstract work like the Sonata in B minor, for example, Liszt's technique of thematic transformation was consistently and rigorously applied. The opening notes of the sonata comprise simply a descending octave scale; throughout the work Liszt made use of a half dozen different transformations of the descending scale idea, which of course produce a half dozen different scale types, from which he realized every drop of potential for novel harmonizations.

With the emancipation of Russian and Scandinavian composers from the domination of Italian and German musicians, added to the continuing desire for national musical expression in the eastern European empires of Russia and Austria, the fondness for 'modal' harmonies made available by ethnic scales grew apace. To the repertory of modal novelties arising from European sources were eventually added new sounds from oriental outposts of European imperialism like Russian Turkestan and Dutch Indonesia, as well as from the Ottoman Levant. The enthusiasm for exotic scales as a new musical resource in time led to an eclectic attitude welcoming creolization and homogenization of musical styles. The preface to a collection of harmonizations of *Mélodies populaires de Grèce* by Bourgault-Ducoudray is quoted approvingly by Cecil Sharp (1907, p.52):

we have forced ourselves to preserve in the accompaniment the character of the mode in which the melody is cast . . . we have directed our efforts to enlarge the circle of the modalities of polyphonic music. . . . Eastern music, till now exclusively melodic, will start upon a new harmonic career; Western harmonic music, hitherto restricted to the use of two modes, the major and minor, will escape at last from its long confinement.

Throughout the 19th century experimentation with so-called modal scales and modal harmonies remained firmly based on the assumption that successions of simultaneously sounding notes were the basic building-blocks of art music, whether those harmonies were the simple consonant triads of Beethoven's op.132 'Song of thanks' or the strange harmonies of Musorgsky's *Boris Godunov* which Rimsky-Korsakov tried to correct. The coherence of 'classical' European ensemble music depends on certain quasi-linguistic conventions of harmonic succession – fundamental part-writing connections and cadential relationships – which governed structural relationships on the largest scale and in detail alike. Whether coherence in the large could or should survive an onslaught of exotic 'modal' harmonies in the small was moot. Two conflicting comments on Beethoven's 'Song of thanks in the Lydian mode' epitomize the relationship of exotic scales to European art music as it was seen at the turn of the 20th century. Schenker (1906) said no such relationship was possible (ed. Jonas, pp.60f):

He attacked his task in a spirit of orthodoxy, and, in order to banish F major once and for all from our perception, he carefully avoided any B-flat, which would have led the composition into the sphere of F major. He had no idea that behind his back there stood that higher force of Nature and led his pen, forcing his composition into F major while he himself was sure he was composing in the Lydian mode.

The English folksong collector Cecil Sharp applauded Beethoven's experiment, which he saw as a model for composers (1907, p.48):

The melody is harmonized exclusively with diatonic chords of the mode and without, of course, modulation. This is a typical example of genuine modal writing, and one which musicians would do well to study.

2. MODAL SCALES AND MELODY TYPES IN ANGLO-AMERICAN FOLKSONG. During the second half of the 19th century, while continental composers were becoming ever more interested in native peasant musical sources, English and American professional musicians remained dependent on the mainstream style as taught in continental conservatories. A few collections of British peasant songs with their melodies were published during this period by educated amateurs; one of the first was *Sussex Songs*, collected from farm people and privately printed in 1843 by John Broadwood, a grandson of the founder of Broadwood, the piano manufacturers. His niece Lucy Broadwood was one of the founders of the English Folk Song Society. Although notated tunes had occasionally appeared with the literary collections of ballads and popular lyrics that began to be published in the mid-18th century, it was with the publication of the *Journal of the Folk Song Society* from 1899 that extensive tune collections made by the members of the society began to provide sufficient material for serious musical study.

(*i*) *Folksong scholarship and the modes.* Professionally trained musicians and scholars were associated with the society from the outset. J. A. Fuller Maitland was one of the founders, and both Vaughan Williams and Percy Grainger published collections in its journal. For Vaughan Williams the contact with native folksong released a pent-up compositional creativity, as it had for other composers. Grainger, for his part, made the first attempt at a really precise notation of performing practice. His elaborately detailed transcriptions, made from wax cylinders, were published in no.12 of the journal in 1908.

(*a*) Folksong and pseudo-Greek modes. Grainger's preface to his transcriptions included a section on 'Folksong scales in the phonograph' in which he made some analytical observations about the modality of the songs: 'Of seventy-three tunes phonographed in Lincolnshire, forty-five are major and twenty-eight modal. . . . Most [of the latter] are in a mongrel blend of Mixolydian and Dorian' (p.156). Grainger summed up his observations by saying that (pp.158f):

> the singers from whom I have recorded do not seem to me to have sung three different and distinct modes (Mixolydian, Dorian, Aeolian), but to have rendered their modal songs in *one single loosely-knit modal folksong scale* . . . consisting of:
>
> Firstly – the *tonic, second, major and minor* (*or unstable*) *third, fourth, fifth, and flat seventh* . . .
>
> Secondly – the *sixth*, which is generally major, though sometimes minor . . . and the *sharp, or mutable seventh*; which intervals do not, as a rule, form part of the bed-rock of tunes, but act chiefly as passing and auxiliary notes.

Grainger's grouping of his repertory into two basic classes, major as against modal, accords well with the fact that rural American singers even in much more recent times used to sing major tunes with instrumental accompaniment – 'chording' – and other tunes without. But Grainger's theory was very much at variance with the by then already conventional modal doctrines of the society – so much so that the editorial committee of the journal responded to his 'mongrel blend' observation in an editorial footnote. These doctrines are summed up in chapter 5, 'The Modes', of Cecil Sharp's *English Folk-song: some Conclusions* (1907). On the tunes of Grainger's second class, Sharp wrote (pp.36f):

> The scales, upon which many English folk-tunes are constructed . . . are generally known as the Greek modes. . . . It has been customary to look upon the ancient modes as mere relics of a bygone day . . . but the recent discoveries of English folk-song have thrown a fresh flood of light upon the matter . . . for here are scores of melodies cast, it is true, in the old despised modes, yet throbbing with the pulse of life . . . such melodies as these cannot be quietly dismissed as archaic survivals. . . . Nor, again, are they to be confounded with the music of the church. Except for the fact that they happen to be cast in the same scales, they have but little in common with the melodies of plain-song.

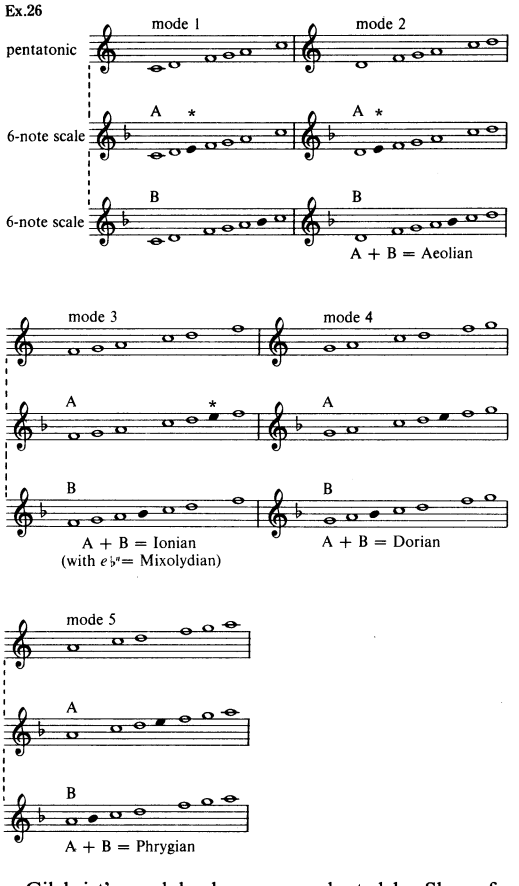
Sharp continued with a summary exposition of the diatonic species of the octave, concluding with Glarean's modal names and the observation that 'amongst secular musicians the old scales are known by the pseudo-Greek names' (p.44). To the diatonic modal scales Sharp added the five octave species of the anhemitonic pentatonic scale (the general scale made up of minor 3rds separated alternately by one tone and a pair of tones). He observed that the anhemitonic pentatonic collection: 'is still used by the peasant-singers of Scotland and Ireland, and also by the natives of New Guinea, China, Java, Sumatra, and other Eastern nations. It is occasionally used in English folk-music' (p.44). In contradistinction to Grainger's modal theory, which was derived largely from observation, however limited, the modal theories of the Folk Song Society were at first based entirely on the conception of a set of pre-existing 'old scales . . . known [amongst secular musicians] by the pseudo-Greek names'. This of course accorded well with the Romantic idea of a living survival of some older and purer pre-Raphaelite music in what was left of the as yet uncorrupted rural countryside, and this flavour of quaintly antique peasant modalism is still very much a part of the folk music cult.

(*b*) A new modal theory for Anglo-American folksong. A truly creative contribution to the theory of modality in folk music of the United Kingdom was made by Annie Gilchrist in a brief 'Note on the Modal System of Gaelic Tunes' (*JFSS*, iv, p.150; and see ex.26). Gilchrist's scheme is based on the set of five anhemitonic pentatonic octave species, which she expanded to hexatonic and heptatonic octave species by filling in the minor 3rds. Her attitude towards modalism in general was fully rooted in the late 19th-century presuppositions embodied in Sharp's chapter on 'The Modes' in that the pentatonic scales are regarded as more 'primitive' (p.150) and the hexatonic scales 'form a convenient index to the modifications of the pentatonic scale on its way towards a seven-note system' (p.153). Nonetheless her scheme is in no way *a priori* but rather is empirically founded on the specific collection to which her 'Note' is appended. Furthermore, she made a point of the necessary distinction between 'tonic' and 'final'. At the same time she drew attention to the musical uncertainties inherent in this kind of modal theory, uncertainties consequent on its need to make an assignment of tonic function to some one degree of every tune, whether or not the 'true tonic' can be established (p.153):

> No doubt there will be differences of opinion regarding classification in some of these tunes, especially those in which the modes are mixed, and certain others in which it is difficult to believe that the last note of the tune is the true tonic. . . . In examining the tunes in MS., there was also some uncertainty in certain cases as to where the tune really ended, owing to the fact of the song beginning with the chorus or refrain. [footnote] Some of these tunes, being of the 'circular' class, have *no* definite ending.

Gilchrist did not go so far as to suggest that some tunes might not have any definite tonic either, but she came closer here than any of those who followed her. The annotations to her table of modes (facing p.152; see ex.26) regarding strong and weak notes also testify to an extraordinary appreciation of the subtle importance of strong and weak degrees in a melody. She commented on modes 1-A, 2-A and 3-A that 'the E [marked *] is sometimes flattened in these three modes, more especially when occurring as the 7th degree of mode 3'. She also commented that 'The distinction between mode 1-A and mode 3-B, which appear to correspond in scale, lies in whether the 3rd or the 4th degree of the mode be an essential note, belonging to the original pentatonic framework'; and 'Similarly, in the case of mode 2-A and mode 4-B, the distinction lies in whether the 2nd or 3rd degree be the imported note'. Also 'The characteristic Highland mode formed by the filling-up of the gaps in mode 1 by E♮ and B♭ is distinct in tonality from the Mixolydian mode, whose scale it resembles; it corresponds more nearly to the Hypo-Ionian, owing to the prominence of F and A, its 4th and 6th degrees'.

Ex.26



Gilchrist's modal scheme was adapted by Sharp for *English Folk Songs from the Southern Appalachians* in 1917 (see pp.xxx–xxxiv of the 'Introduction to the First Edition' in the second edition of 1932); the scheme thus adapted was thereafter cited or used by other studies, for instance Buchanan in 1939. The youngest descendant of Gilchrist's combined pentatonic–hexatonic–heptatonic scheme is the 'modestar' of Bertrand Bronson (*The Traditional Tunes of the Child Ballads*, ii, pp.xi–xiii, first described in his article 'Folksong and the Modes', 1946; repr. in Bronson, 1969). Bronson's diagram is a seven-pointed star schematically representing the connections of pentatonic, hexatonic, and heptatonic scale types, in terms of contrasting or overlapping scale degree content, by means of interior angles and intersections.

(ii) Melody type in Anglo-American folksong.

(*a*) Mode as a musical property. Bronson's modal designation for the tunes in *The Traditional Tunes of the Child Ballads* (1959–72, i) and his description of the system (p.xxviii) were, as he put it, 'generally either ignored or charged a little impatiently with being rather cryptic, or "fuzzy", or imperfectly described' (ii, p.xi). Whether such criticisms are apt or otherwise, there is one thing that Bronson did not attempt to do with his modes, and that is to use them as a basis for classification of the melodies. Kolinski (1968), opening with the words 'Bronson's classification of tonal structures' (p.208), merely criticized the modestar's pentatonically based system for failing to be arranged like his own pentatonically based system for ordering and classifying notated melodies (Kolinski, 1961). Cazden (1971) at one point referred to the 'imaginative epicycles of Bronson' (p.47) along with Sharp's 'church-mode plan' (p.57), and both are taken as being among the 'accepted mode classifications'. Yet neither for Sharp nor for Bronson was 'mode' a tool for classifying melodies, as is for instance Kolinski's congeries of modal 'tint-complexes' (Kolinski, 1961 and elsewhere).

Scholars have usually failed to make a clear distinction between mode in connection with melodic type and mode as a classifying rubric. Herzog (1937), observing that 'typology and classification are merely different facets of the same procedure', nonetheless warned against confusing them. In Bronson's monumental collection of ballads the hundreds of tunes that there are for some of the ballads are grouped and subdivided not according to modes but according to the tune families to which they belong. Bronson's modal theories have not prevented him from ordering the tunes with the greatest sensitivity to their melodic typology. The only claim he made for his cyclic formulation of modal scales is that 'the solid connections of the whole system show us how, in the chances of oral transmission, the same basic tune may pass from mode to mode almost imperceptibly' (ii, p.xiii). For Bronson, as for Sharp before him, 'mode' was an inherent musical property. As Sharp put it: 'Each of the modes has its own set of intervals from which it derives an individuality as characteristic and distinct as that of the major or minor. . . . The character of every melody is, in part, derived from the mode in which it is cast' (1907, p.47).

(*b*) Tune families. Like the construction of modal theory, the consciousness of tune relationship has its roots in the work of the English Folk Song Society. Samuel P. Bayard observed of Gilchrist that she 'has, almost uncannily, the faculty that discerns the basic tune in its persistent phrasal pattern, contour, intervals, and diagnostic formulae' (1953, p.128). The collectors were well aware that the existence of different tunes for the same text and the singing of different texts to very

similar tunes betokened tune 'types' or 'styles' at several levels of resemblance, and the pages of the *Journal of the Folk Song Society* are replete with references to such tune resemblances by the name of some particularly well-known tune of the kind. More recently the writers most concerned with the theory of tune relationships have been Bronson and, above all, Bayard.

The term 'tune family' was first used consistently by George P. Jackson, but it is indelibly associated with Bayard's name as a result of a series of papers on tune families stretching over three decades. From the outset Bayard dealt with no abstractions not inferable from the tunes. His intention was 'to identify specific melodies in as many of their variant forms as possible' (1950). In the process of attempting to isolate factors common to tunes that singers, collectors and scholars with a wide acquaintance with folksong tunes agree to be related, he arrived at a certain number of important factors, no one of which is universally consistent in tunes of the same family, but many of which can be observed to cluster and form melodic prototypes. Among his observations on the relatedness of tunes is that 'the mode in which an air happens to be cast of course means nothing' (1939, p.125). In the same paper he asserted that 'the number of separate tunes is not large . . . the well-known tunes in the British folk repertory [are] about fifty-five in number' (p.124), and he suggested three central factors in tune resemblance, namely, contour, important degrees of the scale, and stereotypical motifs (pp.125f):

[1] consistently parallel melodic lines . . . are much more important than any similarity in modal or rhythmic features
[2] strongly accented . . . diagnostic tones
[3] closely related melodic formulae of progression and cadence

He went on to observe in more general terms that:

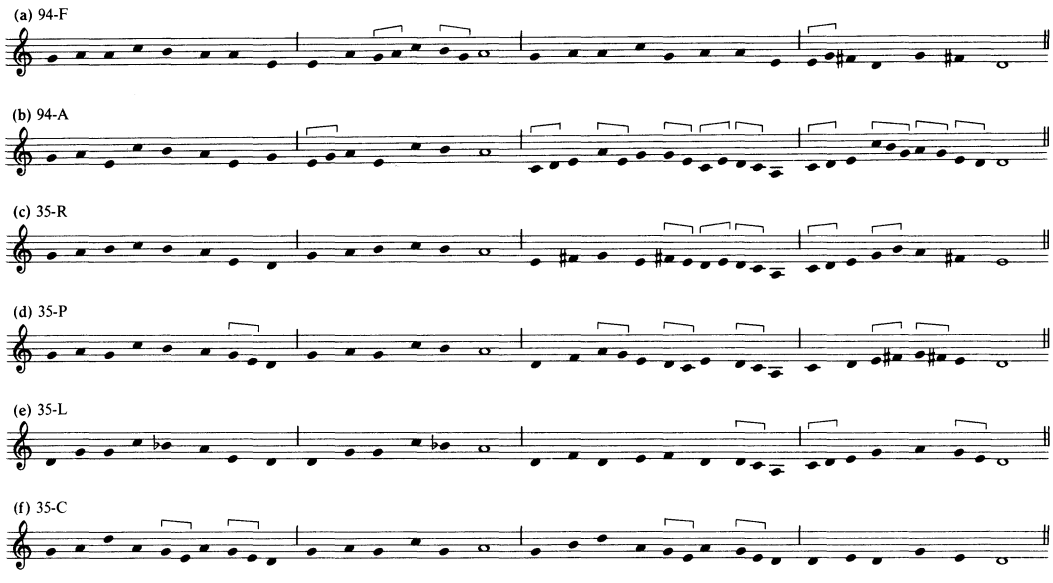
the problems of variation can never be solved by thinking in terms either of independently composed tunes in great numbers, falling into similar conventional lines or of mere rearrangements and recombinations of stock musical phrases. . . . The versions resemble each other in ways too deep and too intricately detailed to be accounted for in either manner.

Over the subsequent decades Bayard refined, elaborated, and demonstrated the theoretical premises here set forth, without needing to modify them in any essential way. The specific number of tune families suggested varies trivially; in 1953 he wrote that 'over forty such tune-families are current' (1953, p.132), and went on to discuss seven of them thoroughly. In his 'Prolegomena to a Study of the Principal Melodic Families of Folksong' (1950, repr. 1961) Bayard developed his 1939 outline of the principal factors in tune resemblance in great detail, and mentioned yet another number of tune families: 'no fewer than thirty-five' (p.115). In the same article he referred to three hierarchical levels of tune relationship: 'tunes, tune-versions, and tune-families' (p.118). Bayard's one really extensive comparative analysis, 'Two Representative Tune Families of British Tradition' (1954), is a full and convincing demonstration of his command.

Another study dealing directly with tune families is Bronson's 'Some Observations about Melodic Variations' (1950; rewritten in 1954 and so repr. in Bronson, 1969), and of course Bronson's grouping of tunes under each ballad in *The Traditional Tunes of the Child Ballads* is an epic demonstration of results of the tune family approach. Charles Seeger's 'Versions and Variants of the Tunes of "Barbara Allen" ' (1966) is a sophisticated discussion and analysis of two of the tune families associated with this ballad. (In Bronson, ii, four tune families for 'Barbara Allen' are represented by over 200 individual tunes.) The 30 notated tunes analysed by Seeger are transcriptions from the holdings of the Archive of American Folk Song (Library of Congress) and may be heard on their recording AAFS L54.

Ex.27 shows skeleton outlines of six versions of the tune 'Demon Lover', taken from among those included by Sharp for two Child ballads in his *English Folk Songs from the Southern Appalachians* (2/1932). Versions of this tune sung to some other Child ballads may be seen in the same collection: 4-F, H, I ('Lady

Ex.27



Isabel'), 7-H ('Earl Brand'), 13-G ('Edward'). Despite the apparent variety in scale type and several striking deviations of contour and emphasis they are patently the same tune in all but the narrowest sense.

(*iii*) *Mode as musical property versus mode as category.* Bayard's '35' or 'over 40' or '55' tune families are certainly comparable in order of magnitude with Gevaert's 47 *thèmes*, in contrast to the fixed number of modes in Gilchrist's, Sharp's or Bronson's systems, or in the eightfold system. But even Bronson has not proposed his system of modes as a set of superordinate categories for the tune families corresponding to the role of the eightfold system for Gevaert's *thèmes*. So far the modes of Anglo-American folksong, whatever they may be, have been treated by most of those who know the repertory best more as properties of individual items than as universal categories. All the same, there is a constantly recurring and obviously powerful urge to imbue all items believed to have a common mode with a common musical property so distinctive or so fundamental that it warrants claiming all those items as members of a modal category.

In the 20th-century interest in systematic modal order set alongside ever changing congeries of melodic types it is certainly not going too far to see a parallel to similar relationships that have arisen at least twice before: between the eightfold system and the antiphons in the 9th century; and between the eight or the 12 modes and vocal polyphony in the 16th century. The same kinds of musical results also seem to ensue: modern professional folksingers compose 'in the modes', as had the late medieval composers of tropes and rhymed offices, or the late 16th- and 17th-century composers of collections ordered by the eightfold system or by Glarean's or Zarlino's 12 modes.

V. Mode as a musicological concept

1. Expansion and internationalization of the concept. 2. Modal entities in western Asia and south Asia: (i) Maqām (naghmah–gusheh–āvāz) (ii) Raga. 3. Modal entities in south-east and east Asia: (i) Paṭĕt (ii) Chōshi.

1. EXPANSION AND INTERNATIONALIZATION OF THE CONCEPT. By the mid-18th century, 'mode' in European languages meant a collection of degrees of a scale (and its aggregate intervallic content) being governed by a single chief degree: a mode was a scale with a tonic, which was the last note of a melody or the root of a final triad. This is the sense in which the major and minor scales, as well as the so-called 'church modes', are still deemed 'modes', and it is with this sense that application of the term 'mode' to phenomena and practices in other musical cultures first appeared.

The earliest full-scale attempt to deal with a modal system in a living non-European musical culture was Sir William Jones's 'On the Musical Modes of the Hindoos', first published in 1792, translated into German in 1802 by Dalberg, and reprinted several times since then. He gave a systematic exposition, in terms of:

> the variety of modes, or manners, in which the seven harmonic sounds [diatonic degrees of the scale] are perceived to move in succession, as each of them takes the lead, and consequently bears a new relation to the six others. . . . [Since] we find twelve semitones in the whole series, and, since each semitone may, in its turn, become the leader of a series formed after the model of every primary mode [diatonic octave species] we have seven times twelve, or eighty-four, modes in all.

Jones observed further that 'the Persians and the Hindoos (at least in their most popular system) have exactly eighty-four modes, though distinguished by different appellations and arranged in different classes'. As the last words imply, however, the number 84 is not necessarily obtained by multiplying the seven diatonic octave species by the 12 semitonal degrees of the total chromatic. That process may be seen as the theoretical basis of a Chinese system of 84 *diaw* (see §3(ii) below). The Persian theoretical 84 was merely one of a number of Perso-Arabic schemes, this one comprising the sum of 'twelve *makams* or *perdahs*, [plus] twenty-four *shobahs*, and forty-eight *gushas*' (p.134), a scheme partly related to older Perso-Arabic theories, and dimly reflected in present Persian practice. The Hindu 'most popular system' is arrived at through the 'families of the six rāgas . . . each of whom is . . . wedded to five rāginīs . . . and father of eight . . . sons' (p.146), so that the Hindu 84 arises from six groups of 14 'modes' each, each group of 14 comprising one raga plus five raginis plus eight sons. But this too was only one of many such symmetrical classification schemes, by no means the most widespread, and it is the only one that adds up to 84.

In any case, individual Persian '*makams* or *perdahs*' and Hindu 'rāgas and rāginīs' in musical practice do not fit the 18th-century European abstract scale type 'mode' well. In fact almost a century earlier Jean Chardin had located the Persian entity at the melodic rather than the scalar end of the spectrum: '*Perdah* is the Persian term which means "[the] tune of [a] song" [*air de chanson*], and they distinguish the tunes by the names of their ancient kings, and by names of provinces' (*Voyages*, 1711, ii, p.114). Jones (see Tagore) himself was well aware that: '*rāga*, which I translate as mode, properly signifies a *passion* or *affection* of the mind' (p.142), and he knew of more specific ethic attributes as well.

It seems to have been Willard who first perceived the incompatibility of the standard European conception of 'mode' with the phenomenon of raga in Indian practice, in a perceptive discussion at the beginning of the chapter 'Of Rags and Raginees' in his *Treatise on the Music of Hindustan* (1834). The review in the *Journal of the Asiatic Society*, xxv (1834) sums it up: 'The author [Captain Willard] corrects Sir William Jones' rendering of *Rág* by the expression "*mode*" or "*key*" for which the Hindus have the distinct word t'hat [*thāṭ*]: *Rág* signifies rather "*tune*" or "*air*" '. But Willard in fact had not moved 'raga' quite wholly to the melodic end of the scale–tune spectrum: 'It is not strictly a tune . . . it is likewise not a song, for able performers can adapt the words of a song to any Raginee; nor does a change of time destroy its inherent quality' (p.65). In short, Willard saw 'raga' as falling between the 19th-century European conceptions of 'mode' and 'tune', and he almost always left it untranslated.

The grey area between a comparatively undifferentiated scale type 'mode' and a comparatively precisely determined 'tune' became a matter of continuing interest for European musicological scholarship only in this century, at first as a result of greatly intensified work in the music of Eastern Christianity and Judaism. In the year before the outbreak of World War I a seminal article, 'L'octoëchos syrien' by the Benedictines Jeannin and Puyade in *Oriens christianus*, radically extended the scope of what had come to be understood as modal (p.277):

The modality of a musical item is principally determined by the arrangement of intervals on the scale. But in the case where the arrangement of intervals is the same for several modes, there are other empirical means for distinguishing the modality of a particular melody: return of certain cadences or of certain melodic formulae, preponderance of certain dominant degrees, and lastly, the final note.

In the same year an article along similar lines was published by Idelsohn, who devoted his life to the collection and study of Jewish music. He defined the Arabic term *maqām*, as he had come to understand it from his vantage-point in Jerusalem in the closing years of the Ottoman Empire:

In the musical sense, *maqām* is now used for 'tone'. . . . In the wider sense *maqām* in music signifies in effect *Musikweise*, that is, a musical type [*Musikart*] which makes use of its own proper degrees of the scale [*Tonstufen*] and motivic groups [*Motivgruppen*]. In no way may the concept *maqām* be identified with 'church mode' [*Kirchenmodus*] or even 'tonality' [*Tonart*]. For while these latter merely denote the scale in which tunes [*Weisen*] can be sung as desired, in *maqām* both scale type and melody type [*Tonleiter und Tonweise*] are comprised, and pre-eminently the latter. For in *maqām* the main emphasis is laid on the melody type [*Tonweise*], that is, on the organization and articulation of the tones [*Tongruppierung und Tongefüge*].

The definition of 'mode' that Idelsohn gave in 1929 is given earlier in this article; it differs in no essential particular from his definition of *maqām* in 1913.

In 1920 Egon Wellesz introduced Idelsohn's contrast into an article on the Serbian eightfold system (*osmoblasnyk*) (*ZMw*, ii, 1919–20, p.141):

Now if one examines the eight groups of songs according to the characteristics of the church tones [*Kirchentöne*], one concludes that no differentiation seemingly conformable to the nature of the eight modes can be worked out. On the contrary, it turns out that in each group of songs certain formulae appear which in turn are lacking in the other groups, and that the presence of just these formulae is the essential characteristic for whatever group a melody is to be assigned to. This however leads us on to the path that Idelsohn and Jeannin–Puyade have shown for the analysis [*Erschliessung*] of Arabic and Syrian songs.

Here the new notion of melodic type and the traditional notion of church mode are still thought of as separate, even opposed. But an increasing awareness of the importance of melodic formula in Byzantine chant in time led Wellesz to equate the individual members of the (Byzantine) eightfold system with their melody types (1961, p.326): 'The mode, we may therefore conclude, is not merely a "scale" but the sum of all the formulae which constitute the quality of an Echos'. The melody type phenomena observed in *maqām* and echos are proposed as members of a larger metacultural musical entity (p.325):

this principle of composition is of far greater importance than was at first thought. Further investigations have shown that it was not confined to the melodies of a few areas, but was the ruling principle of composition in Oriental music and, with the expansion of Christian music, spread over the whole Mediterranean basin.

The Indian raga and Perso-Arabic *maqām*, as well as the Byzantine echos, thus independently came to be seen by European musicians and musicologists as falling between or combining together, or both, scale type and melody type. Furthermore, each term has had its own musicological history of association with the term 'mode' of European languages.

Similar associations of the European term 'mode' with technical terms in Asian musical cultures still farther east are now widely accepted. For instance: '*Paṭět* is the Javanese system of classifying gamelan pieces, usually translated as mode' (Becker, 1972, p.160); 'these modes, or chōshi as they are known in Japanese' (Garfias, 1975, p.61). The association of such culturally and linguistically diffused terms as echos (Greek), *maqām* (Arabic), *rāga* (Sanskrit), *paṭět* (Javanese), and *chōshi* (Japanese) with the much expanded European concept of mode has naturally led to an almost unquestioned assumption of some minimal underlying metacultural or scientific category 'modality', to which concepts and phenomena of specific musical cultures might be referable as special cases. For example, Mantle Hood, in *The Ethnomusicologist* (1971), wrote that:

in considering existing definitions of 'mode'. . . . We discovered that there were quite a few in print . . . [but] none of them could be applied on an international level. In fact, all of them taken together, contradictions aside, could not account for Indian raga, Javanese patet, Persian dastgah, and modal practices of other musical cultures. . . . After spending four or five months examining modal practices in various parts of the world, the Seminar was able to construct a definition . . . that rests on the assumption that mode itself is a continuum. [p.57]

Basic features of Mode seem to include the following: (1) a gapped scale . . .; (2) a hierarchy of principal pitches; (3) the usage of . . . ornamental pitches; and (4) extra-musical associations. [p.324]

It is not clear, however, here or elsewhere, whether 'mode' in such a broad sense is an ontological or merely an epistemological object, an inherent musical property or a scientific paradigm. In the following sections several terms in Asian languages that have been associated with 'mode' and 'modality' are discussed with the aim of highlighting the similarities and, even more, the differences in the musical phenomena to which they refer in the different cultures.

The four kinds of modal entity to be compared are not only drawn from four different Asian musical cultures or genres but also represent four different points on the modal spectrum between abstract scale and fixed tune. The Middle Eastern *maqām* and particularly the Indian raga are nearer the tune end; the *paṭět* of Javanese gamelan music and particularly the *chōshi* of Japanese court music (gagaku) are nearer the scale end. But they differ strikingly in some much less abstract aspects of their performing practice. First, most obviously and most significantly, the art of western Asian and south Asian musical high cultures is pre-eminently the art of the virtuoso vocal or instrumental soloist, while the gamelan music of Java and the gagaku of Japan are for ensembles including many different types of melody instrument (sometimes including solo or choral vocal parts), performing simultaneously most of the time. Second, the number of named modal entities in the western and south Asian spheres, the number of *maqām* or ragas, runs to many dozens, even hundreds; the sets of central Javanese *paṭět* or Japanese *chōshi* number fewer than ten entities each. Finally – and perhaps subsuming the dichotomies of tune versus scale, solo versus ensemble, and many versus few – the western Asian and Indian modal entities are primarily compositional–improvisational models, while the south-east and east Asian modal entities are primarily categories of a repertory.

2. Modal entities in western Asia and south Asia.

(i) *Maqām* (*naghmah–gusheh–āvāz*).

(*a*) The basic terms. *Maqām* (plural *maqāmāt*) is an Arabic word meaning 'place'. Its modal meanings ultimately derive from a basic meaning of 'tone' or 'degree of the scale' – that is, a particular place in the general scale of all pitches available in the system. In Arabic-speaking countries of the eastern Mediterranean, *maqām* has become the technical term for 'modal entity', but the word *naghmah* ('tune', 'voice') is also used in this sense (D'Erlanger, v, pp.69ff). In Persia the

operative terms for a modal entity are *gusheh* (plural *gusheh-hā*) or *āvāz*, depending on the scope and systematic importance of the modal entity in question; *maqām*, and the word 'mode' as well, refer only to scale type (Farhat, 1965, pp.37f). *Naghmah* is sometimes used as equivalent to *gusheh* (Khatschi, 1962, pp.87–116), or to *āvāz*. The Persian word *perdeh* has passed out of use as a term for modal entity; it means literally 'curtain' or more generally 'partition', and from this last comes its continuing musical sense of 'fret' and now 'key' (of a piano). *Perdeh* in this sense parallels the basic meaning of *maqām*, both of them referring to a determined position in an overall background system of available pitches.

(*b*) Modal entities and the general scale. In Arab, Turkish and Persian musical cultures alike the modal entities are made up of a limited number of degrees of the scale which are seen as being drawn out of a general background collection (D'Erlanger, v, p.99):

> The general scale [*échelle générale*] of sounds of Arabic music is capable of giving rise to an infinitude of particular complexes [*gammes particulières*]. The sounds which compose each of these complexes constitute the material substance of a particular melody. The intervallic relationships which separate the sounds in their natural succession constitute the physical form of this substance, and the procedures of melodic succession [*processus du mouvement*, i.e. *ṭawr al-naghmah*] across the scale whose sounds form the degrees of the scale constitute the animating principle which enlivens that form. Each of these complexes [*gammes*] – composed of a succession of sounds linked by predetermined melodic [i.e. intervallic] relationships and ruled by a predetermined motion – constitutes for the Arabic musicians of our time a special mode, a *naghmah*. [See also Touma (1976), pp.88ff.]

In Arabic and Turkish usage every degree of the general scale has its own name. The fundamental collection comprises two octaves, from *yakāh* to *ramal tūtī*, which can be extended outwards. Within any octave are 14 separately named degrees of the scale, which correspond roughly to the 12 semitones of the European chromatic plus two 'neutral' degrees. Most octave-equivalent degrees have different names; for instance, the upper octaves of the degrees in the perfect 4th span *'irāq*, *kawāsht*, *rāst*, *zirkūlah*, *dūkāh*, *kurdī* and *sikāh* – *b*-$\frac{1}{2}\flat$, *b*, *c′*, *d*$\flat$*′*, *d′*, *e*$\flat$*′*, *e*-$\frac{1}{2}\flat$*′* – are called *'awj*, *hihuft*, *māhūr* (or *kardan*), *shāhnāz*, *muḥayyir*, *sunbulah* and *buzurk*. In addition to these 14 separately named principal degrees, up to as many as ten auxiliary modifications (named as 'low' or 'high' plus one of the standard names) are deemed to be possible within an octave span.

Not only in Turco-Arabic but also in Persian usage European note names and note symbols, with modifications, have come into use; in Iran the traditional Arabic note names (most of which are Persian words) have passed out of use altogether (but see Huart in *EMDC*, I/v). Arabic usage equates the global collection from *yakāh* to *ramal tūtī* with the double octave *g*–*g″*, while the Turkish notational convention makes it *d′*–*d‴*. Persian conventions are of the same order, but the actual letter notes used depend on the instrument and its tuning. In no case do the European names imply any exterior absolute pitch standard; like the Guidonian diatonic, the general scale is the total background from which any particular foreground modal complex is conceived to have been drawn.

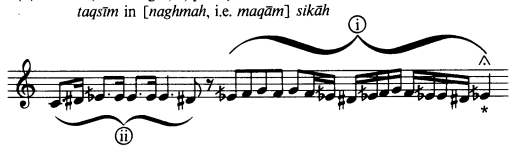
(*c*) Modal nucleus and modal complex. The ambitus of a *naghmah*, *maqām* or *gusheh* is variable, even ambiguous. D'Erlanger (v, pp.69ff) complained that:

> The Arabic musicians of our time seem to confound the idea of genus [*genre*, Arabic *jins*, by which D'Erlanger meant the span of a tetrachord or pentachord] with that of mode: the same term *naghmah* serves them, in effect, to denote either the one or the other. . . . Every melodic succession, whatever its scope, is for these musicians a *naghmah* . . . this term *naghmah* (melody or emission of the voice), employed in our time to denote any melodic conglomeration [*toute ensemble mélodique*] must originally have denoted genus, and by extension it would subsequently have been attributed to the modal complexes [*gammes modales*] of which the genera are the constituent elements.

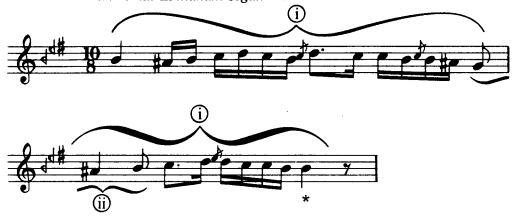
It is indeed the case that single modal nuclei of fairly limited scope are combined together into composite modal complexes of much greater scope, and that a modal composite may have the same name as one of its modal units. To the acculturated ear, however, any musical entity with a recurrently recognizable individuality has an identity and can have a modal name. Complexes of three or four notes may be so characterized by intervallic configuration and melodic direction alone that they are easily recognized and hence named. Ex.28 illustrates the modal entity *segāh* (Arabic *sikāh*) as heard in each of the three musical cultures. The

Ex.28

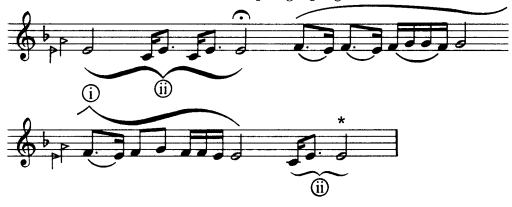
(a) Arabic (D'Erlanger, v, p.307)
taqsīm in [*naghmah*, i.e. *maqām*] *sikāh*



(b) Turkish (Bey, in *EMDC*, I/v, 3042; signature modernized after Signell, 1977, p.74a)
aksak-semâi in *makam segâh*



(c) Persian (Farhat, 1965, p.104)
formula for a *darāmad* in [*dastgāh*] *segāh*



modal entity is named for the degree *sikāh* (marked *) of the general scale, which characterizes it, and with which any presentation of it must conclude; the degree of the scale *segāh* is written as *e*-$\frac{1}{2}\flat$*′*, *b*-$\frac{1}{2}\flat$*′* and *e*-$\frac{1}{2}\flat$*′* (or *a*-$\frac{1}{2}\flat$*′*) in the Arabic, Turkish and Persian staff notations respectively. This particular degree is one of the 'neutral' degrees, forming intervals of roughly three-quarters of a tone with its adjacent upper note in Arabic and Persian music; it forms roughly a quarter-tone interval with its adjacent lower note in the Arabic example (*d*$\sharp$*′* to *e*-$\frac{1}{2}\flat$*′*); in Turkish music this interval is roughly a semitone (*a*$\sharp$*′* to *b*-$\frac{1}{2}\flat$*′*). In the Persian modal nucleus *segāh*, the adjacent lower note to the final is often omitted, as in ex.28. A general char-

acteristic for *segāh* is variability of pitch level, both within and across musical cultures, vis-à-vis system-framing notes such as *yakāh*, *rāst* and *nawā* (*g*–*c′*–*g′* in ex.28*a*, *c*; or *d′*–*g′*–*d″* in ex.28*b*). Turkish *segâh* (*b*-♭′) is a just major 3rd above *râst* (*g′*), while in Arabic styles the interval *rāst-sikāh* (*c′*–*e*-♭′) is neither major nor minor. The same interval in Persian music is also always a 'neutral' 3rd, but with noticeable differences from performer to performer.

The unusual intervallic complex in Arabic and Persian music formed by the degree *segāh* and the two degrees of the scale above it – a neutral step and a whole step – is sufficient to identify the modal entity *segāh*. In the Arabic *naghmah* of *sikāh* the tiny fluctuations between the degree *sikāh* and its adjacent lower note confirm the identification, as do the corresponding full semitone fluctuations in the Turkish *makam segâh*. Also characteristic of the latter is the 'stereotyped motif' (*g′*–*a*♯*′*–*b*-♭′) connecting the degrees *râst* and *segâh* (ex.28*b* (ii), and cf Signell, 1977, p.127); this figure is also found in the Arabic *naghmah sikāh* (ex.28*a* (ii), *c′*–*d*♯*′*–*e*-♭′). The comparable element in the Persian *segāh* is *c′*–*e*-♭′, *c*–*e*-♭′, *e*-♭′ (ex.28*c* (ii)); this is the *forūd* of *segāh*, the cadential motif, which is used to conclude presentations of the modal nucleus *segāh*, and to mark returns to it when it forms a part of a larger modal complex.

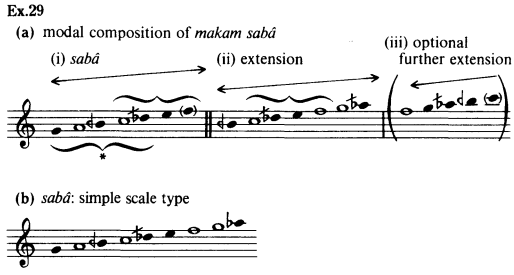
In addition to intervallic structure and occasional use of a stereotyped motivic tag, a modal entity such as *sikāh*/*segâh* in Arabic and Turkish music is also distinguished from other modal entities by its position in the system at large. The only other places where the unusual intervallic configuration of *sikāh*/*segâh* can occur are at the 4th below and 5th above, around the degree *'irāq*/*irak* (*b*-♭′ Arabic, *f*♯′ Turkish) or its upper-octave equivalent *'awj*/*eviç*. But when a given scalar type is developed in performance at another place in the general scale it is usually heard as another modal entity, with another name. The general term for a new (Turkish) *makam* generated by transposition of a modal complex to another position in the general scale is *şet* (Arabic *shaṭṭ*, 'being distant'). In D'Erlanger (v, pp.158ff) scale types and sample *taqsīm* for *maqām 'irāq* and *maqām 'awj* are shown; Signell (1977, pp.180, 179) defines *makam irak* and *makam eviç* as '*segâh*-on-F♯'. In ex.30*a* Turkish and Arabic *irak*/*'irāq* (as part of a composite *maqām*) are also shown as a transposition of *segâh*/*sikāh*. Two modal entities transpositionally related as *'irāq* and *sikāh* are called in Arabic *maqāmāt mutashābihah* ('conformable' *maqām*).

For a detailed study of the Arabic modal entity *sikāh*, showing how the three-note modal nucleus *e*-♭′–*f*♯*′*–*g′* is expanded into a composite modal complex, see Reichow (1971). Good recordings illustrating the modal entity *segāh* in each of the three cultures are *UNESCO Tunisia* (Bärenreiter BM 30 L 2008, Arabic, side A, band 3); *Musique traditionelle turque* (OCORA OCR 56, all four items on side B, Turkish); *Musique persane* (OCORA OCR 57, all of side B, Persian), and see the supplementary analysis in Sadeghi's review (1973, p.356).

(*d*) Turco-Arabic simple and mixed modal complexes.

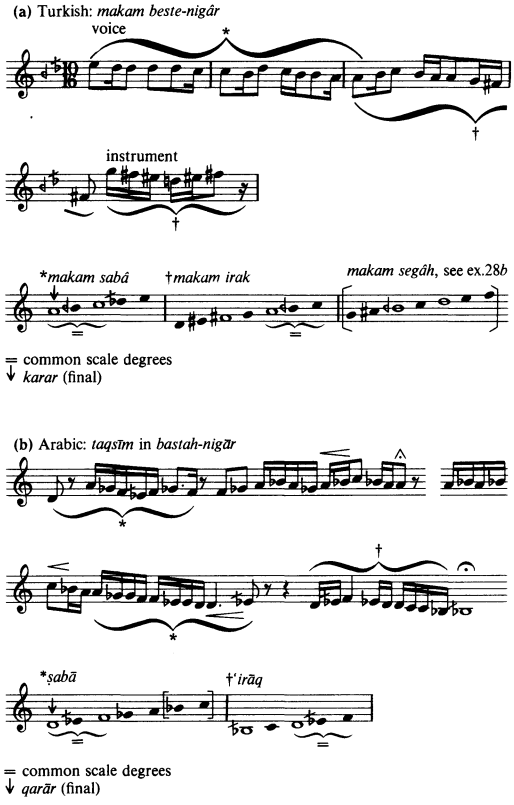
In Turkish usage, as in Arabic, the term *makam* (plural *makamlar*) designates any recognizable modal entity, whether a nuclear modal complex or a composite of several such nuclear complexes. For instance, ex.29 is a schematic outline of Turkish *makam sabâ* (reduced from Signell, 1977, pp.62f). Ex.29*a* (i) shows the modal nucleus of *sabâ* (marked *): (ii) and (iii) are the upward extensions of *sabâ* (note that the upward extension does not produce octave equivalents of the modal nucleus). Ex.29*b* is a further reduction of the *makam* structure, showing only component degrees of the scale, with prominent degrees singled out. Both the simple modal nucleus (which appears often in mixtures with other named *makam*) and the composite modal entity are designated by the same name, *sabâ* (see also D'Erlanger, v, pp.282f).

Ex.29



Turkish *makam* (and their Arabic equivalents) can be mixed together, in two different ways. A *makam* in either kind of mixture need not be 'complete'; it is sufficient that enough motivic or intervallic individuality, or both, be present for a modal nucleus to be identified. Ex. 30*a* (after Signell, 1977, p.108) illustrates the last line of a *şarki* of the Turkish *makam beste-nigâr* (*sabâ* plus

Ex.30



irak); illustrations from the Arabic equivalent, the beginning and end of *taqsīm* in *bastah-nigār*, appear in ex.30*b* (after D'Erlanger, v, p.171). (In Persian music *basteh-negār* is not a modal entity but an item characterized by its performing style.) The Turco-Arabic *makam beste-nigâr* is composed of the modal nucleus of *makam sabâ* placed above that of *makam irak*, with which *sabâ* has three degrees of the scale in common. A *makam* of this sort is called in Turkish *mürekkep* (Arabic *murakkab*) 'composed, compounded'. The more common Arabic term is *tarkīb*, 'composition, mixture'.

Ex.31 (after Signell, 1977, p.83) is a Turkish instance for another kind of combination of modal nuclei. The *makam* is *sabâ*, but in the third line the modal nucleus is changed to that of *makam hicaz*, which normally appears at the same pitch level as *sabâ* but has a completely different intervallic structure. In Arabic the word *tarkīb* ('composition, mixture') is also used for this kind of modal change; the Turkish term is *geçki* (Signell, 1977, p.179).

Jürgen Elsner (1973) fully discussed *maqām* as scale step, modal nucleus and what are here called simple and composite *maqām*. Elsner used 20th-century Arabic theorists as the basis for discussing general principles and illustrated with published and recorded examples of *maqām bayyātī*. His examples extend from a piece using the modal nucleus *bayyātī* only minimally to compositions and improvised *taqsīm* of *maqām bayyātī* as a composite *maqām* using several other modal nuclei in the course of its development. Touma (1976) took a different approach to the *maqām* phenomenon, but also used *bayyātī* as his point of reference.

See also ARAB MUSIC, §I, and TURKEY. For the influence of *maqām* on Syrian Orthodox, Assyrian, Chaldean and Maronite modal systems *see* SYRIAN CHURCH MUSIC, §3.

(*e*) Modal nucleus and modal complex in Persian music. In the limited sense of modal nucleus the Turkish *makam*, Arabic *maqām* or *naghmah*, and Persian *gusheh* are all equivalent. But *makam* (*maqām*) and *naghmah* also refer to larger modal complexes, simple or compound, while in Persian the term *gusheh* ('corner') can refer modally only to a unitary modal nucleus. A larger complex of such modal nuclei is best designated in Persian by the term *āvāz* ('voice' or 'note', hence linguistically equivalent to Arabic *naghmah*). However, both *gusheh* and *āvāz* have formal as well as modal senses, and the senses are easily and naturally confused.

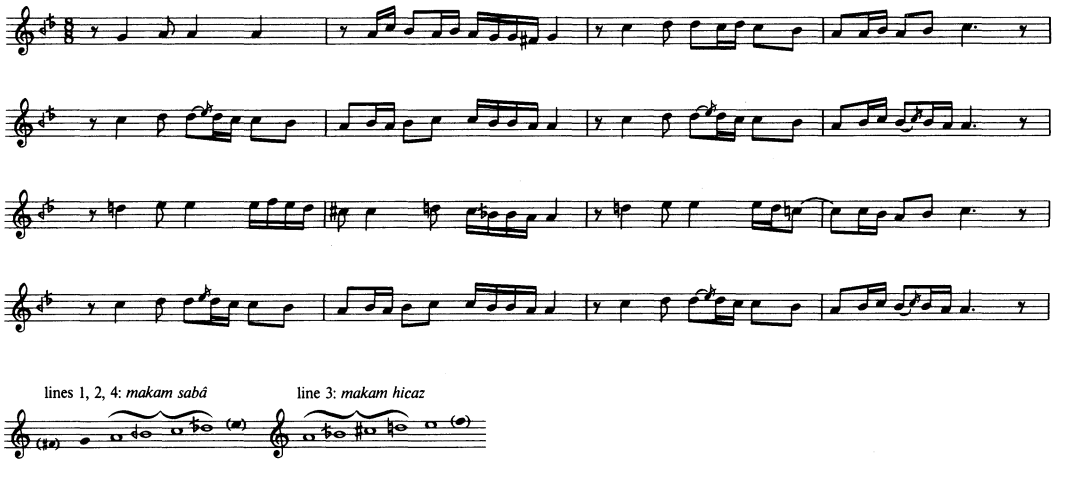
Gusheh (plural *gusheh-hā*) can refer to any item in one of the traditional series (*radīf*) of musical items called a *dastgāh* ('organization, system'). Some *gusheh* names denote modal structures (see below), some denote fixed compositions in a particular style of performance; in short, the term *gusheh* can mean any item in a traditional series, as well as a nuclear modal entity.

Āvāz, though it refers to a composite modal complex of several unitary modal nuclei, is at the same time often synonymous with *dastgāh*, while *dastgāh* in turn is sometimes conceived as a modal entity. Hence the expressions *dastgāh-e chahārgāh* and *āvāz-e chahārgāh* both mean either the major unitary modal complex *chahārgāh*, or a whole set of *gusheh* traditionally performed with *chahārgāh* at their head as the principal modal nucleus. The expression *gusheh-e chahārgāh* would designate any *gusheh* (either modal nucleus or item of performing style) belonging to the *dastgāh* dominated by the modal nucleus *chahārgāh*, but it would not mean *chahārgāh* itself.

The dominant modal nucleus of a *dastgāh*, such as *segāh* or *chahārgāh*, is developed in its fullest form in unmeasured improvisatory items called *darāmad* ('introduction, entrance, prelude') which are presented at or near the beginning of the performance. The *darāmad* corresponds in style and developmental technique to the Turco-Arabic *taqsīm*; therefore *darāmad-e chahārgāh* is a *gusheh* of *dastgāh-e chahārgāh*, showing the modal nucleus *chahārgāh* in a quasi-improvisatory and freely pulsed guise. After one or more *darāmad* in the dominant modal complex, and perhaps after several minor *gusheh* – items in other performing styles but using the same modal complex – a shift is made to a new modal nucleus at a higher pitch level, which will also be a named *gusheh*. This second modal *gusheh* may be concluded by a return to the *forūd* (cadential formula, cadential degree) of the *āvāz*, or may move still higher into yet another modal *gusheh*. This procedure of ordering *gusheh* at successively higher levels of register is generally followed, though many deviations and interruptions are possible.

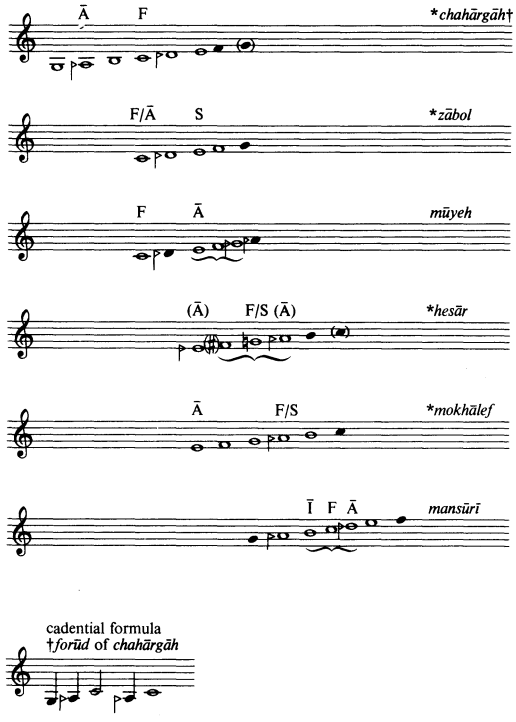
Ex.32 gives a conspectus of most of the principal modal nucleus *gusheh* of *dastgāh-e chahārgāh*, the

Ex.31



'system of [the dominant modal complex] *chahārgāh*', based on Farhat (1965, pp.115ff), Nettl (1972, *Daramad* and 'Notes'), and where relevant (marked *) the *santūr* performance by Nasser Rastegar-Nejad (Lyrichord LLST-7165). The *gusheh* are aligned to show the nuclei in overlapping registers. Also marked are the modal functions: Ā = *āqāz* ('initial'), F = *forūd-e kāmel* ('final'), S = *shāhed* ('predominant'), and Ī = *īst* ('temporary stopping-note'). Two alterations of the basic scale type can occur, in the *gusheh mūyeh* and *hesār*; these are usually described as a transposition of the *chahārgāh* scale type a 4th and 5th higher respectively. This is intervallically correct, but in fact the altered degrees of the scale work rather as variant ancillary degrees in the same register; there is no return of *chahārgāh* motivic material in a higher register. In the *gusheh hesār* there is great variability of tuning of the putative altered degrees (Nettl, 'Notes', 1972, pp.177f), and in Nasser Rastegar-Nejad's *santūr* version the degrees *e*♮′ and *f*♮′ of the principal scale type (as in *chahārgāh*) continue unaltered (and cf Nettl, 'Notes', 1972, pp.180, 192).

Ex.32



(*f*) Modulation. The term 'modulation' sometimes occurs in the literature on western Asian music; it is used in three different, often insufficiently distinguished, senses. All three senses can entail a change of *maqām*/*naghmah*/*gusheh*. (*i*) A modal nucleus is transposed as a whole to another pitch level in the general scale where it can fit (Arabic *shaṭṭ*, Turkish *şet*) without any internal changes of either intervallic structure or melodic emphasis. In effect, the key only has been changed, as in ex.30*a*, where *irak* is a transposition downward by a 4th of *segâh*. (*Irak* is notated for the instrumental echo as though it were an octave higher.) (*ii*) Both the intervallic structure of a modal nucleus and its position in the general scale remain substantially the same but there is a change in melodic emphasis. This is a change of melody type (in Persian music it entails a change of *gusheh*), as in ex.32, *mokhālef* and the version of *hesār* with *f*♮′ and *e*♮′. In that case the modal individuality turns most obviously on the replacement of *g*′ as predominant and final with *a*-♭′. (*iii*) One modal nucleus is replaced by another with a different aggregate interval structure but spanning the same segment of the general scale and with the same principal degree. This is a change in scale type, a transformation, as in ex.31 where in the third line *makam sabâ* on *a*′ is replaced by *makam hicaz* on *a*′. In Arabic this process is designated by the general term *tarkīb*, whose Turkish equivalent is *geçki*; in the Persian system it is simply a change of *gusheh*. Any of these three procedures normally entails a change of modal name, but not always. The upward extension of *makam sabâ* shown in ex.29*a* (ii) involves changes of pitch level, scale type, and necessarily melody type, yet it is simply part of the larger domain of *makam sabâ*.

(*g*) Modal functions. Western Asian modal entities on the whole seem more easily viewed from the end of the scale–tune spectrum which concerns degrees of the scale than from that which concerns tune. To be sure, characteristic motifs often play identifying and formal roles: there is often an initial 'stereotyped motif', such as that heard at or near the beginning of *segāh* (see ex.28*a*, *c*, and Signell, 1977, pp.126f, *g*′–*a*♯′–*b*-♭′); the cadential *forūd* of a Persian *āvāz* is a vital element of large-scale formal shape. But on the whole, the pivotal notes of the modal nucleus, the directions of their stepwise connections, and their ornamenting arabesques play the major characterizing role.

Table 11 shows a comparative listing of some terms for the principal modal functions in Arabic, Turkish and Persian music. Note that a 'final' note ought no more than a 'predominant' note to be assumed to be a 'tonic'.

TABLE 11

	Arabic	*Persian*	*Turkish*
initial	āghāz	āqāz	agaz
	mabdā'		giriş
predominant	ghammāz	shāhed	güçlü
medial stop	markaz	īst	muvakkat kaliş
subfinal	ẓahīr		yeden
final	qarār	[forūd-e kāmel]	karar

The term 'tonic' normally implies that the degree in question has some sort of pitch-related governance over other degrees, a governance that goes beyond mere weight of recurrence ('predominance') or temporal position ('finality'). Words like 'repose' or 'termination' (*qarār*), or 'descent' or 'bottom' (*forūd*), do not of themselves suggest 'tonic'. They suggest, rather, that the modal function designated by them is determined by form and register, and not necessarily by constraints based on pitch relationships. A 'final' may in fact be harmonically stable and central, as it is in Persian *chahārgāh*, but it may also be weak and unstable, as it is in Persian *segāh*, where the 'predominant' function is prominent, and is not assigned to the same degree as the 'final' function.

(*h*) Modal systems. The Turkish *makam* now form an open-ended system of several dozen modal entities.

Signell (1977, p.16) suggested '60–70 makams recognized today'; Oransay (1966, p.91) cited a 19th-century Turkish source claiming 92 *makam* in common currency and 62 more not in common use. D'Erlanger (v, p.111) described and later exemplified 119 Arabic *naghmah* obtained and verified in 1932, but said that only 30 were well known, and still fewer in popular café music.

D'Erlanger's classification of his 119 modal entities follows a traditional procedure of grouping the *maqām* simply by their finals. He provided nine groups based on finals, but contemporary Arab theorists use only eight finals (Faruqi, 1974, p.94), from *g* up to *f′*. Another classification system was proposed in a report published by an Egyptian Government Committee in 1964 (see Faruqi, 1974, pp.86ff, 94ff). 46 basic *maqām* are grouped into 11 categories, according to the intervallic structure of the lowest tetrachord (*jins*); these categories in turn are divided in two according to *dalīl* ('method'), that is, according to whether the basic tetrachord has only tones, semitones, and augmented seconds (method I) or uses also 'neutral' tones (method II) (see Table 12).

TABLE 12

2 dalīl	I					II					
11 jins	1	2	3	4	5	1	2	3	4	5	6
46 maqām	(4)	(5)	(4)	(4)	(7)	(9)	(7)	(1)	(2)	(1)	(2)

This three-level system has three significant characteristics: its primary level of 46 *maqām* comprises phenomena of actual practice; the criteria for distinguishing its categories at both superordinate levels are purely musical (albeit rather mechanical or even arbitrary); as a result, the system is on the whole non-symmetrical, and remains musically open-ended not only at the primary level but also potentially at the secondary level as well. One cannot be sure about the criteria for categorizing in older *maqām* systems, but the fact that most of the systems reported are wholly or partly symmetrical and evidently closed suggests that the classifying began with the system rather than with the phenomena, and that phenomena which did not fit well were sometimes either forced in or left out. The system reported by Jones (see §V, 1, above) is an extreme case: 12 *maqām*, 24 *shu'ba*, 48 *gusheh*, with each level double the previous level. Another one cited in Khatschi (1962, pp.46f) is symmetrical at the two superordinate levels of 12 *maqām* and 24 *shu'ba*, but the number of *naghmah* assigned to each *shu'ba* varies from two to ten, amounting to 139 in all, which suggests that empirical modal entities were involved at the primary level of the system.

12 entities in the highest category was the norm for Arabic-based theory, beginning with Ibn Sīnā in the 10th century, and bearing a set of names which remained constant as a whole, though with some variants and order changes. The set of 12 was handed on through Safi al-Dīn and his followers after the 13th century (when the term *maqām* was first attached to them) and on into the 18th century (Oransay, 1966, p.91). Both emotional affects and suitable times of day for performance are attributed to the 12 from the beginning. The 12 *maqām* of Al-Lādhiqī in the 15th century are further correlated not only with three general ethical categories (of Platonic origin) but also with the 12 zodiac signs and the four elements; his secondary *āvāz* are seven in number, one for each planet; his four *shu'ba* have only the four elements, one each. At the primary level, though, there are evidently again real musical entities; the number of *tarkīb* ('mixtures') is said to be infinite in principle: 'in our time however there are about 30' (D'Erlanger, iv, pp.428ff).

While Arab and Turkish theorists in this century have tried to organize existing modal entities in rational categories, those who reconstituted Persian music in the first decades of the century preferred to rebuild and work from traditional assemblages of *gusheh* of all kinds, performing-style *gusheh* as well as modal nuclei. Their prime concern has been to assemble authoritative sequences of *gusheh* into larger systems, that is, to determine one or more series (*radīf*) for a small number of *dastgāh*. Present feeling about the standardized number of 12 *dastgāh* systems – seven primary and five secondary (called *āvāz* or *naghmeh*) – seems uncomfortably poised between adherence to an important traditional number, thus keeping the system closed, and allowing one or two important *gusheh* such as *shushtārī* to break away and perhaps begin to accrete secondary *gusheh* and ultimately form new *dastgāh* systems of their own, thus opening the system and breaking up its exterior symmetry. But at any rate there has as yet been no serious attempt actually to reclassify the over 200 *gusheh* of the various present-day traditions by scale type, or by any other arbitrary or logical criterion.

See also IRAN, §I.

(*i*) The central Asian systems. Similar to the 20th-century Persian set of 12 *dastgāh* are the remnants of central Asian court music suites going by the name of *shashmakom* ('six *maqām*'). The word *makom* here has the same sense as Persian *dastgāh*, that is, it designates a series of items called *shuba*. *Shu'ba* of course designates *makom* has two main divisions, a set of instrumental items followed by a set of vocal items. The second (instrumentally accompanied) vocal set comprises a series of items called *shuba*. *Shu'ba* of course designates in many traditional Perso-Arabic systems a modal entity or complex that is found on the classificatory level below *maqām* and *āvāz*; here the term *shuba* corresponds in form and function to the modern Persian *gusheh*. Some are chiefly characterized by performing style, but melodic recognizability is fundamental. A *shuba* is a melodic entity – and in some sense, then, a modal entity – but now a *shuba* is a fixed composition and no longer improvised. The characteristic beginning of a *shuba* from one of the six *makom* systems may well turn up as a subsequent subdivision of a *shuba* in another *makom*, or even elsewhere in the same *makom*. Such a quotation from a melodic entity normally belonging elsewhere is designated by the Persian word *namud* ('appearance'). For instance, there is a *shuba* in the Uzbek *makom dugāh* which is called *chārgāh*; most of it appears a 5th higher, modified in detail but clearly the same configuration, as the registral climax of the first vocal item in the *makom buzruk*. In this alien context the *shuba chārgāh* is referred to as a *namud-e-mukhayyar-e-chārgāh*: 'appearance of an excerpt of *chārgāh*' (Radjabī and Karamatov, 1966, pp.18ff, 52ff).

See also UNION OF SOVIET SOCIALIST REPUBLICS, §XI, 6.

(*ii*) *Raga.*

(*a*) The basic terms. The two art musics of the south Asian subcontinent, Hindustani music and Carnatic music, are similar and dissimilar in roughly the same

degree as western Asian musics. Of the span of the scale–tune spectrum covered in western Asia by the Arabic word *maqām*, the major part, stretching towards the tune end, is designated in south Asia by the Sanskrit word *rāga* (pronounced *rāg* in north Indian languages like Hindi and Bengali, *rāgam* in south Indian languages like Tamil and Telugu). The feminine derivative *rāginī*, regularly found along with *rāg* in north Indian sources from the 16th century to the 19th, is identical with *rāg* in musical meaning.

The basic meaning of the Sanskrit word *rāga* is 'emotion, affect, passion'. Like the Arabic word *maqām* ('position, place') and the Persian word *dastgāh* ('system'), *rāga* is used widely in its common-language senses as well as in its musical sense. The strikingly different semantic fields of the musical terms *rāga* and *maqām* suggest that their musical senses may have less in common than at first appears. The cognizable identity of a raga seems ultimately to devolve from the associative and expressive effects of its tonal configurations, while the identity of a *maqām* seems to depend more on the means of producing those configurations, ultimately on the position of the *maqām* in and its relationship to an instrumentally definable scale. This is not to say that a raga cannot be discussed in terms of its scale. On the contrary, for several hundred years Indian theory has had precise, instrumentally determined means for describing intervallic structures and scale types. But from the outset a clear distinction has been made between a raga and its scale type.

As Willard pointed out in 1834, the Hindustani word *ṭhāṭ* ('framework, arrangement') is used in the north precisely to denote 'scale type'. The *ṭhāṭ* – the scale type of a modal entity – of a raga was originally simply that 'arrangement' of frets that would produce the intervals needed for the raga. The word *ṭhāṭ* first appears in the commentary of a musical treatise of 1609, where it is offered as the vernacular equivalent of the Sanskrit *mela* ('assembly'), that is, an assembly of degrees of a scale (Somanātha, *Rāga-vibodha*, iii, 1). The word *melam* is still used in the sense of scale type in south Indian theory; another 17th-century term *melakarta* – 'that which produces a *mela*' – is also used (and helps to prevent confusion with other musical senses of the word *melam*).

The terms *mūrcchanā* and *jāti*, long obsolete but once theoretically connected with the idea of mode, are often encountered in the literature on Indian music. *Mūrcchanā* once signified the sets of octave species (actually heptads) drawn from background pitch collections (a pitch collection is called *grāma*); the word *mūrcchanā* is not in current usage, and its sporadically occurring senses differ widely in their meanings. *Jāti* – literally 'genre' or 'type' – is now used in only one restricted musical sense. It denotes the type of a raga in terms of the number of scale degrees it includes within an octave: the *jāti* of a raga can be *auḍava*, *ṣāḍava*, or *sampūrūa*, as it allows five, six or seven different scale degrees.

It is believed that the melodic types (*jāti*) first described in Chapters 28–9 of the *Nāṭya-śāstra* must have had musical structures and functions corresponding to those of ragas; the word *rāga* is not used as a technical musical term in the *Nāṭya-śāstra* and appears for the first time only in about the 8th century.

(*b*) Modal entities and the general scale. There are a few evident parallels between south Asian and western Asian orderings of modal complex and general scale. For instance, in both cases a given modal entity will use only some of whatever pitch positions an octave span of the general scale makes available – in principle seven – and normally no more than two intervals of the semitone class will occur in succession in a single modal complex. But the designation of degrees of a scale in Indian music, their organization into modal complexes, and above all the relationship of modal complex to general scale – of *gamme particulière* to *échelle générale* – are very different from western Asian conceptions.

The underlying point of reference in Indian pitch nomenclature is melodic function rather than intervallic structure. The basic note names are vocal solmization syllables that were only secondarily adapted to the designation of measured intervals. An octave span in the centre of the Indian general scale provides only seven independent note names – *sa ri ga ma pa dha ni* – as compared with the 14 in the central octave of the western Asian general scale. Extension to registers above or below produces replications of note names in the central octave. In other words, the basic set of western Asian note names denotes in principle a general scale of all available pitches, while the basic set of Indian note names denotes degrees of the scale of any possible modal entity but without specifying precise pitch relationships.

To provide for more precise description, Indian theory declares that some one particular scale type, some particular intervallic arrangement of seven pitch positions, is to be deemed 'basic' and that any pitches other than those occurring in the defined 'basic' scale will be considered as having been 'altered', much like the post-Scholastic European modal theorists' distinction of 'essential' and 'accidental'. 'Altered' scale degrees have the same names as 'essential' ones, but with an attributive term added.

The term denoting a degree of a solmization scale is *svara*. A *svara* in the 'basic' scale is called 'pure' (*śuddha*); any alteration of its pitch makes it 'modified' (*vikṛta*), and different terms for designating the 'modified' degrees came into use. By the 17th century the nomenclature of pitch as 'pure' or 'modified' had been adapted to the designation of fret positions on the contemporary *vīṇā*. The frets provided for 12 semitone positions in an octave. Note names of the seven 'pure' solmization degrees (*svara*) plus from five to ten 'alterations' of them (including enharmonic equivalents) were assigned to the semitone positions determined by the frets, each of which was called *svarasthāna* ('position for the solmization degrees'). From the general scale of 12 such positions to the octave various systems of seven-degree scale types were extracted. These systems were based on intervallic structures found in ragas of the current practice, and named for them; each of these was known as a *mela* or *ṭhāṭ*.

The distinction between a general scale of available pitches and numerous particular scale types is an important part of Indian scale theory today, for both Hindustani and Carnatic music. The particular scale types may be considered either as abstractions from ragas (modal entities) or as selected subsets of all the available pitch positions.

(*c*) The system tonic. The emphasis in modern Indian theory on an abstract scale type (*mela* or *ṭhāṭ*) intervening between the general scale (the whole set of pitch positions) and the specific modal complex (the raga) is

directly related to a basic feature of Indian music that radically differentiates it from western Asian music. Every Indian raga has a tonic, the *svara* named *sa*, which occurs in every raga and which has only one *svarasthāna*, that is, no higher or lower varieties. In terms of the Indian general scale all ragas have the same tonic, unlike the Turkish, Arabic or Persian *maqām*. (The scale degree *pa*, a perfect 5th above *sa*, also has no higher or lower varieties, but it is omitted altogether in some ragas, such as those illustrated in exx.33 and 34.) All the abstract seven-degree scale types (*ṭhāṭ* and *mela*) are reckoned as including *sa* for the first degree. The pitch frequency used by a performer for *sa* is the system tonic for every item he may render. In Hindustani music it is his *sur*, in Carnatic music his *śruti* or *ādhāra-ṣaḍja*.

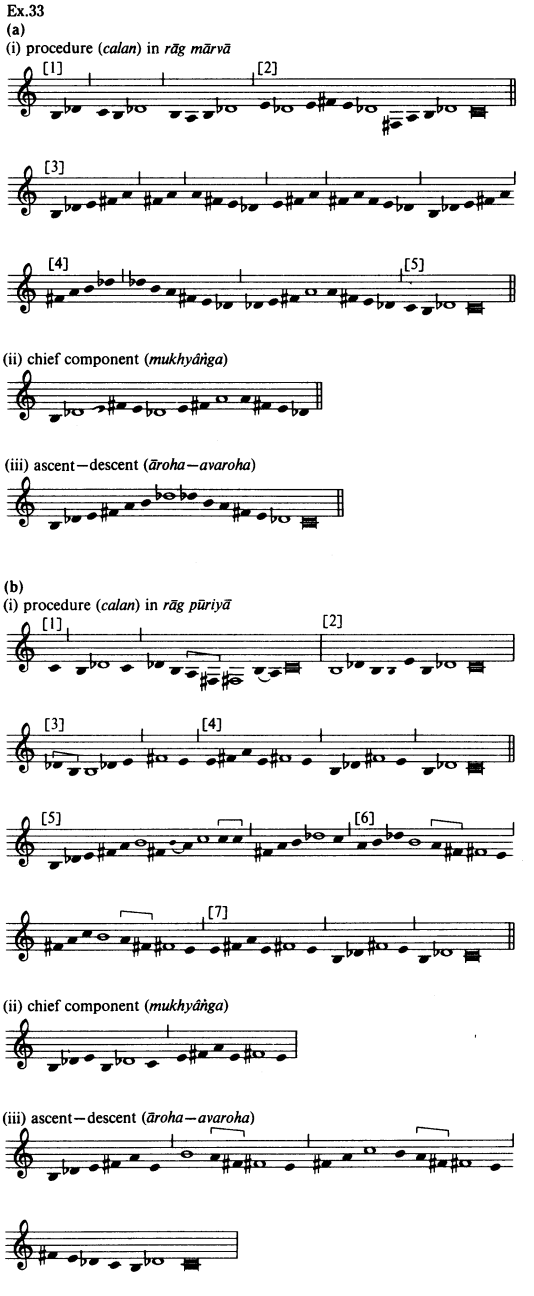
Note that 'tonic' does not mean 'final' nor 'predominant' nor any other modal function. The tonic in Indian music belongs to the system as a whole, not to individual modal complexes. Every raga, like every *maqām*, has its own set of modal functions and its own internal melodic and harmonic relationships, motif to motif as well as note to note. But beyond and in addition to all that, every note and every motif and every relationship is additionally related to the system tonic. In normal performance the system tonic is constantly present as an unchanging drone, in contrast to the sporadic drones of western Asian music, which may change pitch not only from one modal entity to another but also between one part and another in the same modal entity. Of course *sa* as a degree of the scale in this raga or that raga may well have a modal function specific to the raga as well, but that is not the same as its general function as tonic for the whole system.

As a rule a performer at the end of an item will indeed subside to the system tonic; but this is 'repose' not in the sense of 'finality' for the particular raga being performed but in a universal sense. In the Hindustani *rāg mārvā*, for example (see ex.33*a*, after Omkarnāth Ṭhākur, *Saṅgītâñjalī*, iv, p.134), the degree *sa* is mostly avoided, and this avoidance is a most essential element in the individuality of the *rāg*. When *mārvā* finally subsides to *sa*, with no more motions towards other degrees, it is the system tonic, not a modal tonic, that has emerged; the *rāg mārvā* is not just concluded, it is annihilated. The system tonic, in short, pervades and overrides all ragas; by being a required part of each it is a definitive part of none.

The system tonic in Indian music, then, is part of the *échelle générale*. There is no tonic of this kind in western Asian music. If one chooses to take 'tonic' as synonymous with the modal function *qarār* ('final, repose') or with *shāhed–ghammāz* ('predominant'), or any other modal function, then western Asian modal entities have different tonics, in terms of the background system. So for example simple melodies in the Arabic *maqām sikāh* and *maqām rāst* work with the same basic aggregate of intervals – the nucleus may be written *c′–d′–e-*$\frac{1}{2}$*♭′–f′–g′*– and are distinguished sometimes only by whether they cadence finally to *e-*$\frac{1}{2}$*♭′* (*sikāh*) or *c′* (*rāst*), as shown in Reichow (1971, pp.13ff). In Indian music the system tonic and the *échelle générale* are inseparable, and together they provide the frame of reference for the individual modal entities, the ragas. In western Asian music there is an *échelle générale* as frame of reference, but no system tonic.

There is a real and necessary distinction between the notion of a tonic common to a system of modes and the notion of a system of modes each having a tonic, just as there is a real and necessary distinction between the notions 'tonic' and 'final'. Failure to recognize these distinctions has engendered much confusion and misunderstanding. It is not to be supposed *a priori* that the function of system tonic so central to modern Indian music is necessarily valid for other Asian musics, such as those of south-east or east Asia, or for the much more readily comparable musical modalities of western Asia, or even for the earlier phases of Indian music itself. Transcriptions that suppose a system tonic where none is evident from the performing practice are all too fre-

Ex.33



quent in musicological literature. Such transcriptions are not only spurious in themselves, but are also likely to hide genuine relationships among modal entities based on other kinds of pitch connections.

(*d*) Modal nucleus and modal entity. An Indian raga ~~in performance is developed in the same~~ general way as a Persian *āvāz* (see ex.32): low-register modal nuclei are brought in first; then the general tessitura moves up through ever higher-pitched modal nuclei (with occasional *forūd*-like gestures back to the original cadential material); after the highpoint has been established a return to the original register is made. (Ex.33*a* (i), *b* (i), after Omkarnāth Ṭhākur, iv, pp.109f, shows typical though compressed sequences of phrases in two Hindustani ragas.)

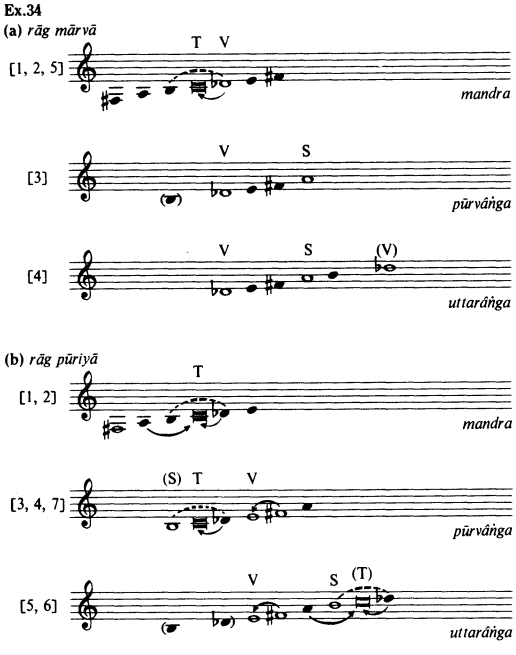
The characteristic Persian use of separate names for different levels of register of the same modal complex, however, has no counterpart in Indian music. Instead a general term *aṅga* – 'limb (of the body), member, component' – is coupled with various attributives to designate different 'components' of a raga. The compounds *pūrvâṅga* and *uttarâṅga* designate formal and registral components or both, *mukhyâṅga* and *rāgâṅga* designate thematic or motivic components, which are referred to specific ragas by compounds with the raga names, such as *kānaḍâṅga* or *bihāgâṅga*. All these compounds extend the basic term *aṅga* in many different directions but all convey the fundamental sense of a distinctive yet fully integrated part of some larger whole.

The two principal components of a raga are the *pūrvâṅga* 'prior component' and *uttarâṅga* 'higher component', to give *pūrva* and *uttara* their primary meanings. Actually two contrasts are implied in the dichotomy between *pūrva* and *uttara*: prior–subsequent (temporal) and lower–higher (registral). These contrasts are of course mutually consistent, since in a typical presentation of a raga the lower-pitched material is in fact supposed to appear first, the higher-pitched afterwards as a 'response' (another meaning of *uttara*). Ex.34*a*, *b*, shows three registrally delineated components (*aṅga*) of Hindustani *rāg mārvā* and *rāg pūriyā*, based on the epitomes in ex.33*a* (i), *b* (i). The first *aṅga* to be fully developed in performance, even before the full elaboration of the *pūrvâṅga*, is the *mandra* ('low [register]'); in a full rendition there would also be an extension of the *uttarâṅga* into the *tāra saptaka* ('high heptad') before the return to the *pūrvâṅga*. (In ex.34 T = *sa* ('system tonic'), V = *vādī* ('predominant'), S = *saṃvādī* ('secondary predominant').)

The registral components of an Indian raga contrast with their western Asian counterparts in yet another way. In addition to other features, a raga is almost always characterized by one or more striking motivic tags, by recognizable thematic elements. Such 'stereotyped motifs' are not merely ancillary to the raga system, they are its central feature. One term for such an element is *mukhyâṅga*, 'chief component'. Ex.33*a* (ii), *b* (ii), show *mukhyâṅga* for Hindustani *rāg mārvā* and *rāg pūriyā*. Emphasis on their modal degrees is of course part of the identity of each raga, but in *pūriyā* particularly there are characteristic melodic ideas dominating every stage of the proceedings (see ex.33*b* (i)). In the *pūrvâṅga* of *pūriyā* the last two segments of units [4] and [7] represent a characteristic rising contour followed by the cadential figure; unit [2] is another version of the same sequence, and unit [3] is a less characteristic form of the rising figure (as before, ending with *e′* resolved from a long held *f♯′*). In the *uttarâṅga* the configuration *f♯′–a′–c″* establishing the upper tonic is striking, but this motif is found in a number of other Hindustani ragas. Absolutely characteristic for *pūriyā*, though, is the way of making the descent from *b′* down to *e′* that is shown in unit [6]. In any rendition (improvised or otherwise) of a raga some such absolutely characteristic phrases, or group of phrases, of the raga must be heard first, before anything else, so that the identity of the raga is unmistakably clear.

A glance through the sample procedures (*calan*) for *mārvā* and *pūriyā* shown in ex.33 will illustrate how each thematic–registral component is fully developed in both rising and falling configurations before a shift is made to the next level. In *pūriyā*, for instance, units [1–2], [3–4], [5–6] and [7] are each self-contained cycles within *mandra*, *pūrvâṅga*, *uttarâṅga* and return to *pūrvâṅga*, respectively. Yet the levels can be bridged by a wide-ranging flourish across two or more registers, as in the *mārvā calan* in the middle segment of unit [4], or in the *pūriyā calan* at the beginning of unit [5]. To run through such a full sweep of a raga is to show its *āroha* and *avaroha*, its ascent and descent. Indian theoretical descriptions tend to summarize ragas in terms of a full scalar ascent and descent – *āroha* and *avaroha* – across the registers, showing in the process both which degrees in the *mela* or *ṭhāṭ* (abstract scale type) are to be omitted (*varjya*), and which degrees (if any) occur out of straight ascending or descending order (*vakra*) as a result of required motivic configurations. Ex.33*a* (iii), *b* (iii) shows the *āroha* and *avaroha* for *mārvā* and *pūriyā* as given by Omkarnāth Ṭhākur. In the *pūriyā āroha–avaroha* the suggested ascent–descent is so characterized by out of order scale degrees (*vakra svara*) as to be no 'ascent–descent' at all but rather an abbreviated *calan* ('procedure'). His ascent–descent for *mārvā* is a more straightforward scale pattern, though it does show how

Ex.34



the system tonic *sa* (C) is characteristically omitted (*varjya*) in the ascent.

The conventional type of ascent–descent description adds yet another stage to the progressive crystallization of modal individuality from *échelle générale* through *gamme particulière*. The points on the scale–tune continuum for a Hindustani *rāg* can be summed up as in Table 13, reading from top to bottom. The same scheme would apply to the description of a Carnatic *rāgam*, substituting the words *mela* for *ṭhāṭ*, *sañcāra* for *calan* and *śruti* for *sur*.

TABLE 13

échelle générale	all the 12 scale degrees (svarasthāna)	system tonic (sur)
	a particular scale type (ṭhāṭ)	
gamme particulière	a scale pattern (āroha-avaroha)	
	a typical melodic pattern (calan)	

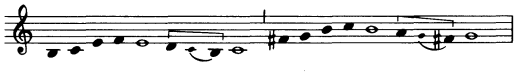
(e) Simple and complex modal entities. An old tripartite classification divides ragas into *śuddha* ('pure'), *chāyâlaga* ('[with] tinges added' from other ragas), and *sankīrṇa* ('mixed'). This appears not unlike the distinction of simple and compound *maqām* in Turco-Arabic music, but there are significant differences. The underlying conception of 'pure' (*śuddha*) in this context has nothing to do with the mechanics of mixed versus unmixed scale types, but rather with how a given raga is directly apprehended. 'Pure' means uncontaminated by melodic configurations audibly reminiscent of other ragas. As explained by Somanātha in 1609, 'pure [*śuddha*] is what is pleasing by itself, that is of its own accord, and without resorting to other tinges [*chāyā*]' (*Rāga-vibodha*, iv, 3, commentary). He was paraphrasing the 15th-century theorist Kallinātha (see *Sangīta-ratnākara*, ii.133) and, like him, then cited a much earlier authority.

This conception is still current. Omkarnāth Ṭhākur (ii, 1954, p.1) began by defining 'purity' of raga the same way. Then, however, he speculated that a concomitant feature of 'pure' ragas may be parallel tetrachords, but he returned to the direct perception of melodic resemblance from which he began:

A *rāg* in which there is no tinge or mixture [*chāyā yā miśraṇ*] of another *rāg* is regarded as a pure [*śuddha*] *rāg*. But there is another key for understanding pure *rāg*, arising from experience. . . . In the pure *rāg* the same [intervallic] structure of degrees of the scale is found in the *pūrvâṅg* and *uttarâṅg* [lower and upper sections of the central octave]. There are even some *rāg* of this sort in which the same motif is found in both components [*aṅga*]. *Bihāg* is one such *rāg*; the [parallel] motifs in *bihāg* are like this: [ex.35*a*].

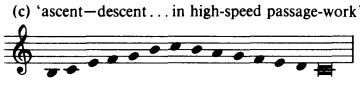
Ex.35

(a) 'in the *pūrvâṅg* and *uttarâṅg* . . . the same motif'



(b) 'ascent–descent'

(c) 'ascent–descent . . . in high-speed passage-work'



Paṇḍit Ṭhākur then showed an *āroha–avaroha* ('ascent–descent') incorporating these figures (ex.35*b*), and a simple rising–falling scale (ex.35*c*).

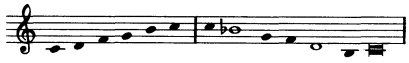
The conception of *chāyâlaga* – 'a tinge [of another raga] added' – is the clearest illustration of the difference between the Turco-Arabic and the Indian approaches to mixture of modal entities. Since the *chāyā* – 'shadow, image, reflection, tinge' – of a raga is produced whenever a particular melodic configuration brings that raga to mind, there need be neither a change of register nor a change of scale type for the *chāyā* of an extraneous raga to be evoked. A characteristic motif from the other raga, or even an emphasis on one of its modal degrees (if that contrasts with those of the established raga) is sufficient.

Ex.36*a* (after Omkarnāth Ṭhākur, i, 39) shows a few configurations illustrating the pentatonic Hindustani *rāg sārang*. A *chāyā* ('tinge') of this raga in turn strongly permeates a large and important group of ragas of which one, *darbārī-kānaḍā*, may be the most widely performed and recorded of all Hindustani ragas.

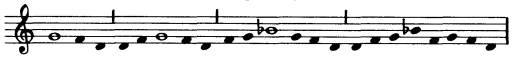
Ex.36

(a)

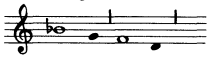
(i) 'ascent–descent'



(ii) 'these note groups are taken repeatedly'

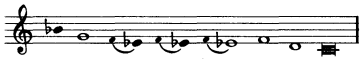


(iii) '*sārang* comes into view in just these notes'



(b)

'Every Kanhada variety must have this passage'



The link among all ragas of the *kānaḍā* class is a recognizable melodic configuration with several elements (Ratanjankar, 1951, p.103):

The mark of Kanhada *anga* [component] is an oscillating Komal Gandhara [*e♭′*], Komal Ni-Pancham Swara Sangati [*b♭′–g′* interval] and Vakra Gandhara in the *avaroha* [out-of-order *e♭′* in the descent]. To illustrate: [see ex.36*b*]. Every Kanhada variety must have this passage, whatever else it may have.

Ex.37*a* is a *calan* for the *rāg darbārī-kānaḍā*. The *kānaḍā* component appears in full in the final descent at the end, and elements of it appear separately earlier; all are marked *.

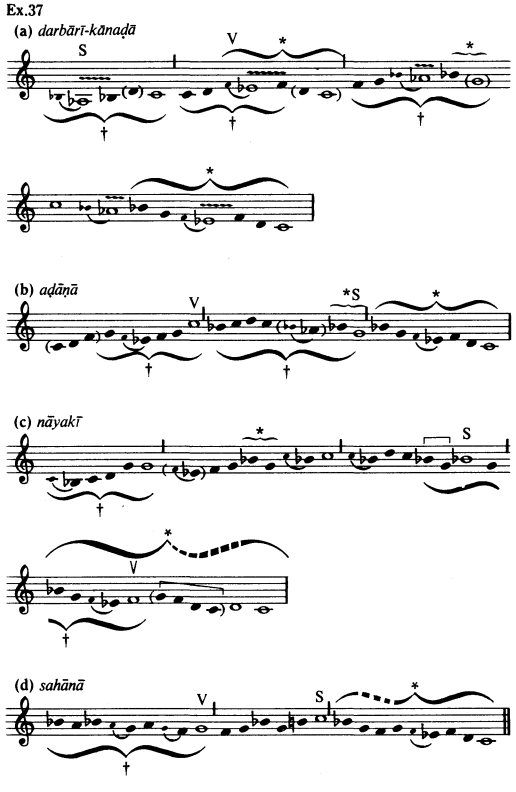
The *chāyā* ('tinge') of *sārang* permeates the *rāg darbārī-kānaḍā* because of the prominence of two of its principal elements as parts of the *kānaḍā* component (Omkarnāth Ṭhākur, v, 122):

The very sustenance of this *rāg* [*darbārī-kānaḍā*] is coming onto these *sārang* notes *b♭′–g′* and *f′–d′*; . . . taking these two intervals in the descent is unavoidable because from them the *rāg* is manifested. It is

true what the learned say, that the *kānaḍā* component is formed by the use of out-of-order *e♭′* and *a♭′* in the *sārang* degrees of the scale [i.e. *b♭′–g′* and *f′–d′* become *a♭′–b♭′–g′* and *e♭′–f′–d′*]. These *sārang* elements are found in almost all *rāg* of the *kānaḍā* type.

The addition of *a♭′* in the *b♭′–g′ sārang* component to make the *uttarâṅga* descent in *darbārī-kānaḍā* is not a matter of a different scale type for *darbārī* than for *sārang*. The *rāg sahānā* (ex.37*d*) uses *a♮*, and *nāyakī* (ex.37*c*), like *sārang* itself, has no sixth degree at all. Nonetheless, all three are clearly *kānaḍā* melodic types, and *a fortiori* all three show a *chāyā* ('tinge') of *sārang* in the *uttarâṅga* because of the *b♭′–g′*.

Ex.37



The *kānaḍā* component, as a whole or in part, provides much of the descent material for the ragas in the *kānaḍā* group, as may be seen in the four ragas illustrated in ex.37*a–d*; the *kānaḍā* component is marked *. Each has its own melodic individuality as well as its own *rāgâṅga* – raga component – that is, its characteristic motivic configurations. (The word *rāgâṅga* is used in Carnatic music with a very different meaning, where it signifies a raga which is used as a scale type, a *melakarta*.) Characteristic components (*rāgâṅga*) of each individual raga in ex.37 are marked with daggers.

The melodic contrasts among these four related ragas in some cases also entail registral emphasis or pace, or both. For instance, a pseudo-ethic contrast of serious and stately (*gambhīr*) versus playful and wild (*cancal*) in *darbārī* versus *aḍāṇā* is a reflection of the rather faster than average performing tradition of *aḍāṇā* as well as of its characteristic emphasis on a higher tessitura.

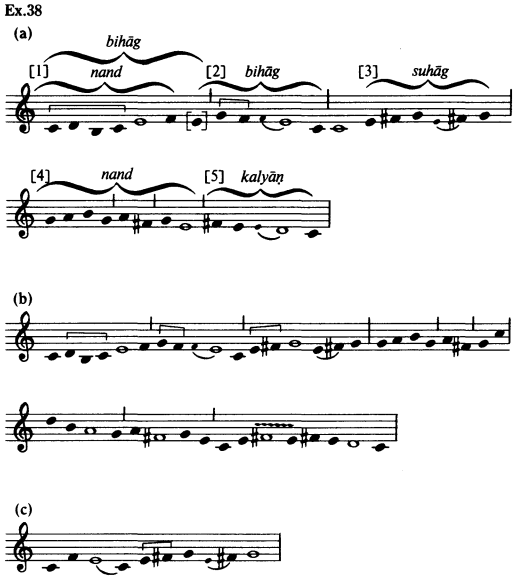
Thus the *kānaḍā* ragas illustrated in ex.37 show a twofold layering of purely melodic allusion. All the ragas have the elements of the *kānaḍā* component, a common *rāgâṅga*; but in addition the *kānaḍâṅga* in all its contexts incorporates a shading, a 'tinge', of the 'pure' *rāg sārang*.

None of these *kānaḍā* ragas, however, would be called *sankīrṇa*, that is 'mixed', since none of the individuating non-*kānaḍā* components by itself suggests any different raga. It is quite otherwise with another much-performed and recorded Hindustani raga, a *bihāg* variety called *māru bihāg*, in which virtually every element is also an element in another fully independent raga. The configurations of *māru bihāg* are illustrated in ex.38; bracketed numbers in ex.38*a* are keyed to Omkarnāth Ṭhākur's analysis (v/2, p.15):

> This *rāg* [*māru bihāg*] has obtained a widespread currency these days. Going *sarinisa, ga–ma* [1] and then back to *ga* [*e′*] is quite like *bihāg*; but if one makes a pause on *ma* [*f′*] it [*bihāg*] is suppressed and the *chāyā* of *nand* is shown. Having shown its *chāyā* to that extent, then do *pa ma ma ga–sa* and again *bihāg* is manifested [2]. And from then doing *sa–ga–ma♯ pa gama♯–pa* [3], at that point comes a view of *suhāg*.
>
> In the *uttarâṅg*, show the *chāyā* of *nand* [with] *pa dha ni pa, dha ♯ma, pa ga* [4] for the *bihāg* component [i.e. instead of using the *uttarâṅg* in the *bihāg* fashion, as in the second unit of ex.35*a*, do the same notes in such a way as to call to mind the *rāg nand*]. Then couple this with the *kalyāṇ* motif *♯ma ga gari–sa* [5]. From these gestures collectively a complete form of the *rāg* [*māru bihāg*] stands forth.
>
> Remember that showing any one component repeatedly in the whole structure of this *rāg* will be a mistake. The *rāg* arises from the mingling of the components indicated above. Therefore when singing this mixed [*sankīrṇa*] *rāg* one has to develop it keeping in mind the varying movements in its assorted components.

In ex.38*b* a typical *calan* of *māru bihāg* is shown. Of the elements not already identified in the above analysis only the *c′–e′–f♯′–e′* in the last segment is special to *māru bihāg*. The approach to and descent from the upper tonic (*c″*) are found in the already mentioned *rāg nand*, which is itself a mixed raga; the upper register descent, considered separately, shows a *chāyā* ('tinge') of *kalyāṇ*. Ex.38*c* is a less elaborate form of the first three segments of ex.38*b*, the *rāgâṅga* or *pakaḍ* ('catch') for *māru bihāg*.

Ex.38



(*f*) Modal functions. Modal functions in Indian music have been defined in two ways: according to general

tonal function; and according to phrase structure. Sets of terms for each exist in traditional music theory, both originating from lists in the *Nāṭya-śāstra*, where they are applied to *jāti*; hence the names of modal functions antedate the appearance of the word *rāga* in the meaning of modal entity: *vādī*: 'sonant' (i.e. sounding out); *saṃvādī*: 'consonant'; *anuvādī*: 'assonant' (i.e. auxiliary); *vivādī*: 'dissonant'. These four terms originally designated interval classes (*vādī* being unison and octave), but by an easy transition came to be applied to individual degrees of the scale as well. The last two terms are obsolete, but *vādī* and *saṃvādī* are important in Hindustani terminology, where they designate the 'predominant' and 'secondary predominant' degrees in a raga. In exx.34 and 37 – the *mārvā* and *pūriyā* registral segmentations and the outline of four *kānaḍā* type ragas – these two modal functions are marked 'V' and 'S'. *Vādī* is analogous to Persian *shāhed*; *saṃvādī* would be analogous to the *shāhed* of a principal *gusheh* in another register (see §2(i) (*e*) above and ex.32).

Two things may be observed of the *mārvā* and *pūriyā* modal functions (and compare also the melodic outlines in ex.33). First, the two ragas share the same scale type exactly, and a contrast in the *vādī-saṃvādī* pair is a major aspect of their modal differentiation. *Mārvā* stresses the degrees D♭ and A. The chief degrees of *pūriyā* are E – the normal phrase final in both *pūrvâṅga* ascent and *uttarâṅga* descent, in both cases usually following a prolonged F♯ – and B at phrase beginnings, and often sustained. Second, while the *vādī–saṃvādī* degrees are normally mutually separated by 4th or 5th, the 4th or 5th is not necessarily perfect (though it almost always is); in *mārvā* the augmented 5th or diminished 4th interval of *vādī* and *saṃvādī* is due to the retention of the traditionally predominant pair even after the original scale type of *mārvā* had undergone a change.

The registral placement of predominant and secondary predominant degrees – *vādī* and *saṃvādī* – in the four *kānaḍā* ragas illustrated in ex.37 suggests the enormous range of contrasting possibilities available even to melodically related modal entities. Four different predominant pitches (*vādī*) are represented: one is high (*aḍāṇā*) and the others are low; two are established in descent (*nāyakī* and *sahānā*), one is established in the ascent (*aḍāṇā*), and the oscillating *e♭′* of *darbārī* is approached freely from both sides.

The other way of characterizing the function of a single degree of the scale in a modal entity is according to registral or temporal position. The various forms of the rather longer list of such terms differ slightly in different sources and at different times or places. The following list of raga characteristics – *rāga-lakṣaṇa* – is typical; it is taken proximately from Śarṅgadeva (ii.23f), where it is said that the degrees of the scale exhibiting these features of a raga must be made manifest in an *ālāpa*, that is, in an improvised exposition:

1. *graha*: initial
2. *aṃśa*: predominant
3. *mandra*: low point
4. *tāra*: high point
5. *nyāsa*: final
6. *apanyāsa*: secondary final
7. *alpatva*: weakness: a degree of the scale either appears rarely (*anabhyāsa*), or is always moved through quickly (*langhana*), as a passing note
8. *bahutva*: strength: a degree of the scale either appears repeatedly (*abhyāsa*), or is capable of being prolonged to any extent (*alanghana*)
9. *ṣāḍava*: hexatonic (one of seven possible degrees of the scale is wholly absent)
10. *auḍava*: pentatonic (two degrees of the scale are wholly absent)

The purely negative property of complete absence – today called *rarjatva* – is covered by characteristics 9 and 10. The two selectional subcategories in characteristics 7 and 8, the strength–weakness field, are frequent–infrequent and prolongable–transitory; they were traditionally associated with the basic *bahutva–alpatva* opposition (see for example Śarṅgadeva 1.7, 49ff and Kallinātha's commentary, pp.189f). The *mandra–tāra* 'low point–high point' couple – *lakṣaṇa* no.3 and no.4 above – is associated in ancient and modern times alike with the registers below and above the central operating register. The simple designation of specific degrees of the scale as outer limits is not common, though it is easy in almost any raga to see points where to go beyond a certain degree of the scale entails a completion of some gesture thereby begun. For instance, in the Hindustani *rāg pūriyā* illustrated in exx.33*b* and 34*b*, the note E is a phrase ending in descent. To go below a low *e* in the *mandra* register would require continuing through low *d♭* to low *c*, with the sequence *f♯–e–d♭–c*, since D♭ can neither begin nor end a phrase in *pūriyā*; hence, low *e* is an effective lower limit to a rendition of *pūriyā* for most singers.

The remaining four modal functions – nos.1, 2, 5 and 6 – are analogous to the four principal modal functions in the modal entities of medieval Europe or of modern western Asia, as suggested in Table 14.

TABLE 14

Gregorian	*Sanskrit*	*Persian*
initial	graha	āqāz
tenor	aṃśa	shāhed
final	nyāsa	forūd[-e kāmel]
medial	apanyāsa	īst

In the older Sanskrit technical literature there is some argument about whether there is any difference between the terms *graha* and *aṃśa* – initial and predominant – in this list, but the distinction was well expressed quite early in terms of the relation of each to the *vādī* ('predominant') of the other list: 'Matanga says that only the *vādī* [pitch predominant] is the *aṃśa* [formal predominant], but any of the fourfold varieties of *vādī* [i.e. *vādī*, *saṃvādī*, *anuvādī*, or *vivādī*] may be a *graha* [initial]' (Kallinātha in *Saṅgīta-ratnākara*, ALS edn., i.183). This illuminates the distinction between what were two aspects of modal predominance. The *aṃśa* was a temporal–formal predominant, marked by highest frequency or most extensive prolongation, or both. *Vādī* was originally a tonal way of emphasizing the structural *aṃśa*, probably by unison and octave doubling; in time the terms became effectively synonymous.

Another historical confusion around the terms *graha–aṃśa–nyāsa* (initial–predominant–final) anticipates the present-day ambiguities regarding the system tonic. The group of 16th- and 17th-century treatises in which the notion of scale type – *mela* or *ṭhāṭ* – was first developed also report the degree *sa* as initial, predominant and final for almost all ragas; only in a few evidently exceptionally striking cases are other degrees of the scale reported as having any modal function.

Other than the *vādī–saṃvādī* couple in Hindustani music, few terms for modal functions are used consist-

ently by practising musicians, north or south. In Carnatic music the term corresponding to the Hindustani *vādī* is *jīva-svara*, meaning 'life[-giving] degree of the scale'. The Tamil *eṭuppu* 'taking up' is used for the initial note of a phrase; it is a translation of *graha* ('taking, seizing'). The term *nyāsa* is much used, but in the sense of a mid-phrase note sustained without oscillation, as well as in the sense of a phrase-final degree of the scale: it can mean a note to finish with, but it can also mean a note to pause upon, a function also conveyed by the term *viśrānti-svara* ('resting degree'). The common Hindustani expression for sustaining a tone in this way is *mukām karnā* ('to make a halt').

(*g*) Modal systems. In the oldest sources of Indian music theory modal entities are associated with performance in the theatre, and the systematizations of them reflect this connection in various ways. But well before the 13th century (when the treatise *Sangīta-ratnākara* was written) music theory was quite independent of dramaturgy, and post-13th-century kinds of modal systems are clearly akin to modern approaches to the matter.

The number of ragas current in either Hindustani or Carnatic music is indeterminate. It is of an order of magnitude ranging between the 60 to 70 Turkish *makam* reported in Signell (1977) and the close on 300 *gusheh* in the current Persian *radīf*. Some of the systematizations of Indian modal entities have been symmetrical and closed, others have been open-ended and asymmetrical. Sometimes the criteria for structuring a system have been musical, sometimes extra-musical. Sometimes systems are closed at superordinate levels but open at the primary level.

An idea of the diversity of past Indian modal systems may be gleaned from Gangoly's *Rāgas and Rāginīs* and Bhatkhande's *Some . . . Leading Music Systems*. An outline of three models still current will indicate the range of possibilities:

(*1*) A traditional group of ragas still respected by some older musicians is called the 'Hanuman doctrine'. It is a closed symmetrical system of 36 entities comprising six ragas personified as male, to each of which are assigned five raginis as wives. This system is known with two slightly differing distributions of raginis. The one reported by both Jones and N. A. Willard is attested in a number of musical treatises; the other form is widely represented in numerous sets of 36 miniature paintings in which each personified raga or ragini is depicted in some stylized indoor or outdoor setting (see Ebeling, 1973, for an extensive bibliographical and iconographical inventory). There are several older schemes which also have superordinate classification levels of six ragas; in some the six ragas are specifically assigned to the six seasons of the year in north India: cold season, spring, summer, rainy season, autumn, winter (see for instance Bake, 1930, pp.42f). Beyond this extra-musical association there is no certain iconographical or musical basis for the grouping in these symmetrical systems, though an argument can be made for an original pentatonicism of the six superordinate ragas. The systems are purely traditional associations of raga names and iconographies, found together long before any record of their musical properties exists. In some cases, in fact, differences over time or geography, or both, in both melodic type and scalar type in particular ragas can be demonstrated to have taken place during the long period over which the names of these ragas have been classed together. The earliest fully comprehensible source for both scale type and melody type for a complete set of 36 ragas and raginis is Chapter 7 of the treatise *Saṅgīt-sār* (Poona, 1910–12). It was compiled some time before 1805, and there was then no more musical basis for the classification than there is now; indeed, some of the 36 are unmistakably the same musically as their modern embodiments.

(*2*) The present south Indian system is closed and symmetrical in its superordinate levels but open-ended at the level of the modal entities themselves. The closed system is a symmetrical arrangement of 72 scale types (*melakarta*) whose generating algorithm was devised by Venkaṭamakhi of Tanjore in the 17th century. In his time only between 12 and 23 scale types had been inferred from existing ragas (he himself mentioned 19). Venkaṭamakhi proposed a method for providing scale types for any and all modal entities that might evolve in the future, based on systematic permutation of the variable pitches of the five degrees of the scale subject to 'modification' – that is, all but the system tonic and its invariant upper 5th. With the lower variety of scale degree, the fourth kept constant, the pitches of the variable second, third, sixth and seventh degrees within the two tetrachords are permuted so as to obtain six groups of six scale types per group; the whole pattern is then duplicated with the higher fourth degree, making 72 scale types (*see* INDIA, SUBCONTINENT OF, Table 10). Within each scale type, however, an infinite number of ascent–descent patterns are possible, since in actual ragas one or two degrees may be omitted (*varjya*), one or more degrees may be taken out of order (*vakra*) and this sometimes more than once, or an altered variety (*anya-svara*) of one or more of the variable degrees of the scale may be used in some contexts. Ragas showing any of these three 'deviations' from scalar regularity are often said to be *janya* ('born, generated') of their superordinate scale type, called *janaka* ('giving birth, generator'). Early in this century V. N. Bhatkhande, after investigating the southern system of scale types and its historical prototypes, devised his own system of ten scale types (*ṭhāṭ*) for Hindustani music. He chose to follow the principle of Venkaṭamakhi's predecessors and contemporaries, however, using the fewest scale types possible that might still be made to accommodate modal entities existing in musical practice.

(*3*) In south India the term for a raga whose degrees are taken as representing one of the 72 scale types is *rāgâṅga-rāga*. In north Indian usage, however, the word *rāgâṅga* means the *aṅga* – melodic 'component' – that characterizes a raga, as the *kānaḍâṅga* (ex.36*b*) characterizes the *rāg darbārī-kānaḍā* and a number of other ragas (ex.37), or as the *bihāgâṅga* (ex.35*a*, first unit) characterizes a small group of ragas including *māru bihāg* (ex.38).

Musicians and theorists (including V. N. Bhatkhande) often draw attention to the fact that there are many clusters of ragas like the *kānaḍā* and *bihāg* groups in Hindustani music (see also Kaufmann, 1968, pp.394–531; Powers, 1970, pp.15–45; Powers, 1976). Ratanjankar (1951, p.100) observed that:

> distinctions in the swara sancharas [scale degree patterns] have given rise to classifications and groupings of ragas from an aspect totally different from the Janya Janaka [modal entity–scale type] aspect. There are about 20 such ragangas [generalized nuclear motifs] which have given rise to as many groups of ragas, whatever melakartas [scale types] they might belong to as regards their flats and sharps.

He went on to list some *rāgâṅga*, and discussed five of them, including the *kānaḍâṅga* (see above and ex.37*c*).

A number of motivically characterized components (*rāgâṅga*), each dominating a group of its own, is of course as much a two-layer modal system as any formally symmetrical *rāg–rāginī* system or any rationally ordered *ṭhāṭ–rāg* system. Being open-ended and asymmetrical at all levels it has many more loose ends. On the other hand it also has the same expanding–contracting capacity as any of the innumerable modal entities, the ragas themselves, whose separate individualities emerge into musical practice or are submerged by it as the passing of years and the tenacity of tradition continue their endless conflict.

See also INDIA, SUBCONTINENT OF, §§I, 5(i–iii), II, 1–2, and (for bibliographical details of treatises), §§I–II, bibliography.

3. MODAL ENTITIES IN SOUTH-EAST AND EAST ASIA. What have been deemed to be modes and modal systems in south-east and east Asia contrast strikingly with the raga and *maqām* systems. In heterophonic ensemble music such as that of the Javanese gamelan or of Japanese ceremonial court music (gagaku), factors such as instrumental tone colour and range, as well as potentialities, conventions and limitations of instrumental technique, may make the same underlying melodic, modal or scalar structure sound very different when it is actually performed. In a composition played by a Javanese gamelan the same structural notes are approached not only with different melodic lines but even in different styles: with flowing and pulsed melodic patterns (*cengkok*) in the multi-octave *gambang* (xylophone) and *gĕnder* (metallophone) parts; with floating and unpulsed melodic formulae (*cengkok*) in the *pasiṇḍen* (female solo voice) or flute (*suling*) or spike fiddle (*rĕbab*) parts; and with stately and regular successions of four-beat 'nuclear motifs' (*gatra*) in the single-octave metallophone *saron* parts. The various lines can differ considerably among themselves without violating the integrity of the composition, and the two styles of elaborating patterns and formulae (*cengkok*) and the 'nuclear motifs' (*gatra*) alike are cumulatively associated with the *paṭèt*, the modal categories.

In Japanese gagaku music too a 'nuclear theme' is variously rendered by different instruments of the ensemble, although isolated single notes of that nuclear theme do not appear in any one of the instrumental parts. Rather, the pitch content of each instrumental version of the melody is related to the technique of the instrument: chords on the *shō* (mouth organ); blowing and fingering articulation on the other two wind instruments, the cylindrical-bore double-reed *hichiriki* and the flute (*ryūteki* or *fue*); plucking patterns of the 13-string half-tube zither *gakusō* (usually called by its modern name koto); and plucking and strumming on *biwa* (large four-string pear-shaped lute). The different 'tonalities' or 'modes' – the *chōshi* – differ not only in register but also according to the effects of instrumental tuning and technical considerations, particularly in the *hichiriki* part, the dominating melodic line.

(*i*) *Paṭèt*.

(*a*) South-east Asian modal systems. There are generally at least two basic modal levels in south-east Asian musics, as in south Asian and western Asian, but the numbers of named entities involved, and even to some extent the relationship of the hierarchic levels, are very different. In Burma, for instance, over a dozen basic named song types are grouped into four superordinate named categories; for each of these four 'modes' some of the strings of the Burmese bow harp *saùng-gauk* have to be retuned. In traditional Vietnamese music there are two modal categories called *diêu* – named *bac* 'north', *nam* 'south' – and each *diêu* has three or four subordinate 'nuances' appended; *diêu* and 'nuance' alike are mutually distinguishable on the basis of pitch content and organization, as well as by circumstances of performance or type of ensemble, or both.

(*b*) Modes and scales in Javanese gamelan music. There are two different tunings for the fixed-pitch instruments of Javanese gamelans, called *laras pelog* and *laras slendro*. The two *laras* are similar to the two *diêu* of Vietnam in that the contrast in their intervallic structuring involves much more than a mere choice of different degrees or intervals from a common stock; *pelog* and *slendro* are altogether different from each other. The difference has nothing to do with the fact that interval sizes differ from one gamelan to another in any case; the basic contents and even concepts of the two tunings differ. *Slendro* is always an anhemitonic pentatonic tuning, with only five named degrees of the scale. *Pelog* is always a heptatonic tuning of seven named degrees of the scale, with two conjunct intervals somewhat smaller than the others; (in any specific musical context only five degrees of the scale are prominent, but at least one 'semitone' must be among them). The degrees of these two tunings are listed in Table 15, as though naming the keys of two single-octave metallophones *saron* (one tuned for *pelog* and one for *slendro*), with Indonesian names and modern cipher equivalents, to which are added Western equivalents. The Roman letter D is arbitrarily set as though it were a common pitch (*tumbuk*) for the degree *gulu*/2 between a set of paired gamelan; all other apparent pitches are necessarily approximate and the intervals would differ widely from one gamelan to another in either system. The degrees most ill-represented by Western equivalents are those marked with plus signs. Degree 4 (*pelog*) is normally much closer to 5 (*lima*) than to 3 (*ḍaḍa*). Likewise, degree 3 (*ḍaḍa*) in *slendro* is as likely as not to be closer to 5 (*lima*) than to 2 (*gulu*) in any given gamelan. In short, the note *pelog* might as well have been represented by F𝄪 and *ḍaḍa* (degree 3) in *slendro* by F♮; the same applies with only slightly less force to other scale degrees, and instruments not having pre-set tunings (including the human voice) seem to be inflected one way or another, according to *paṭèt* ('mode') even within a single gamelan ensemble.

TABLE 15

Pelog			*Slendro*		
barang	7	B	C	1	barang alit ('high')
nĕm	6	A	A+	6	nĕm
lima	5	G♯	G	5	lima
pelog	4	F♯+			
ḍaḍa	3	E	E+	3	ḍaḍa
gulu	2	D	D	2	gulu
bĕm	1	C♯	C	1	barang

In the central Javanese gamelan, traditional repertory items in each *laras* are assigned to one of three *paṭèt*; *paṭèt* is the term customarily rendered as 'mode'. To

consider each *laras* – *slendro* and *pelog* – as a 'mode' with several subdivisions would make the word 'mode' merely synonymous with 'scale type'. Therefore it seems quite natural to think of the relationship of *laras* and *paṭět* as analogous rather to the relationship of *échelle générale* and *gamme particulière*. In that case, however, there would be two *échelles générales*, not one. At the same time, for each of the two *échelles générales*, *slendro* and *pelog*, there are only three *gammes particulières*, the three *paṭět*. Furthermore, each of the three *slendro paṭět* uses all the degrees of the *laras*, so there is no question of *gammes particulières* using particular degrees selected from a larger stock contained in an *échelle générale*. At the same time, in *laras pelog* just such selections of *gammes particulières* are made: *pelog paṭět barang* uses scale degree 7 (*barang*/B) to the virtual exclusion of scale degree 1 (*bĕm*/C♯); the latter is featured in the other two *pelog paṭět*, where degree 7 plays a subsidiary role, normally being omitted altogether. Degree 4 (*pelog*/F♯+) is an 'exchange note' (*sorogan*), normally for degree 3 (*ḍaḍa*/E) in two *pelog paṭět* and normally for degree 5 (*lima*/G♯) in the third *pelog paṭět*. Thus in *pelog* several different pentatonic *gammes particulières* are selected from a heptatonic *échelle générale*, by selecting either 1 or 7, and exchanging 4 for 3 or 5; in *slendro*, on the other hand, each *gamme particulière* is coextensive with the *échelle générale*.

(*c*) *Paṭět* versus raga. Both the number of entities – six *paṭět* divided between two *laras* – and their hierarchic relationship contrast strongly with the multiplicities of modal entity versus singular *échelle générale* of western and south Asia. But in addition to numbers and systems, there is a difference in the way modal entities are related to the repertory in performance and to what is expected of the performer. For a Javanese musician the closest quantitative equivalent to the dozens of ragas an Indian musician must control is not the six *paṭět* but the one or two hundred *gĕnḍing* – gamelan compositions – that he knows and can play. An Indian musician must know compositions too, but they are conceived as the embodiments of ragas, and any major performance is dominated by the artist's own ad hoc elaborations in the raga, attached to a composition only as to a convenient peg. Thus, for example, the improvised *ālāpana* of a south Indian artist in a major *rāgam* could be followed by any of several dozen *kīrtanam*.

The opening solo *bubuka* of a Javanese *gĕnḍing*, conversely, is a fixed pattern attached to that particular *gĕnḍing*; it foreshadows not so much the *paṭět* in general but rather specific passages of the *gĕnḍing* itself. A musician is not at liberty to transfer a *bubuka* belonging to one piece to some other piece in the same *paṭět*. So too the closing soloistic *paṭětan* after a *gĕnḍing* is an instrumental elaboration not on the *paṭět* as an abstract modal entity but rather on a specific vocal composition in that *paṭět*, traditionally attached to the *gĕnḍing*. In short, where a raga is one of hundreds of more or less sharply defined musical entities, under the direct control of the artist and in the forefront of his consciousness, a *paṭět* is one of a tiny handful of musical categories embodying in the most general kind of way features of hundreds of individual and distinct traditional compositions.

(*d*) Modal entity and modal functions. Indeed, questions of how the *paṭět* are to be recognized and what their distinguishing characteristics may be form a major research area in Indonesian musicology. Since there are no obvious melodic formulae deliberately used to announce *paṭět* and *paṭět* alone, earlier studies concentrated more on its scalar aspects and tried to establish modal functions for the degrees of the *paṭět*, recognizing thematic significance only in cadential formulae (Hood, 1954; Kunst, 1949). More recent work has drawn attention to the melodic aspects of the question (Becker, 1972; Walton, 1974; Sumarsam, 1975; McDermott and Sumarsam, 1975).

Clear and distinct separate modal functions like predominant, final and the like cannot be established for the *paṭět*. The notion of modal 'tonic' (Javanese *bakuswara*, 'basic note') is more plausible, and the word *tonika* has been borrowed in modern Indonesian (McDermott and Sumarsam, 1975, p.236; see also Hood, 1954). The 'tonic' or 'tonics' of a *paṭět*, however, are neither finals nor necessarily predominants; they are simply those degrees of the scale that tend to occur more often at important structural positions. Of equal or greater importance in *paṭět* recognition, however, is the general avoidance in each *paṭět* of a particular degree of the scale at important positions.

The pivotal positions in the structure of gamelan music are the goal notes of the largest divisions: those divisions are called *gongan* because their goal notes are marked by a stroke of the hanging *gong agung* ('great gong'), and their goal notes are *gong* notes. Each *gongan* in turn is divided into two or more *kĕnongan*, whose goal notes are marked by strokes on a gong called *kĕnong*; less important formal positions are sometimes marked by the gong *kĕmpul*. The fourth and last of every group of four *saron* beats (every *gatra*) is the goal note for the three that lead up to it. The more important the structural position, the more likely in any given *paṭět* that certain degrees will occur with significant frequency at that position and that others will not be heard there.

The predominant usage for degrees of the scale in the three *pelog paṭět* is summarized in Table 16, with comments following. (For Indonesian note names and approximate intervals, see above.) Degree 1 (*bĕm*/C♯) in

TABLE 16

Paṭět	*Basic pentatonic* (*strong*)	(*others*)	*With 4* (*pelog*) *substituted*	*Weak/absent*
lima	1,5	2,3,6	1 2 4 5 6	7
nĕm	6,5	1,2,3	1 2 4 5 6	7
barang	6,2	3,5,7	2 3 4 6 7	1

effect is omitted in *paṭět barang*; degree 7 (*barang*/B) does occur in *paṭět lima* and *paṭět nĕm*, but rarely, and in *paṭět lima* only in passing. Degree 4 (*pelog*/F♯+) in place of 3 or 5 occurs most significantly in *paṭět nĕm*, least significantly in *paṭět barang*.

Paṭět barang is the most easily distinguishable of the three *pelog paṭět*. Not only is its pitch content unique – it has its own fixed-pitch idiophones – but also it has a significantly higher tessitura in vocal music and a different pair of open strings on the *rĕbab*. *Paṭět lima* and *paṭět nĕm*, on the other hand, are identical in pitch content and similar in other respects; for example, the contour 2 1 7 5 is a characteristic cadential approach to degree 5 (*lima*/G♯) in both. They seem so much alike that they are sometimes paired into a mediate category, *paṭět bĕm*, so named for the degree (1/C♯) which

distinguishes them as a pair from *paṭět barang*. Still, the relative structural prominence of degree 6 (*něm*/A) in *paṭět něm* helps to distinguish it from *paṭět lima*, where degree 1 (*bĕm*/C♯) is more probable at points of structural weight.

It must be stressed that relative strength of degrees as structural goal notes is only one factor in *paṭět* individuation – manner of approach is significant – and strength itself is a matter of probability: any note may occur, but some are more likely than others. This is all the more the case for the three *slendro paṭět*, where there is no pre-selection of a subset of pitch classes less than those of the *laras* as a whole (see Table 17). Strength and avoidance is noted particularly with respect to *gong* and *kĕnong* tones, but in some cases – 3 (*ḍaḍa*/E+) in *manyura* particularly – it is also meant to reflect prominence in the approach to structural strong points.

TABLE 17

Paṭět	*Avoided*	*'Tonic'*	*Also strong*
něm	–	2,6	5
sanga	3	5	1
manyura	5	6	3,2

The strongest contrast is between *paṭět sanga* and *paṭět manyura*. *Sanga* is in fact the most distinct of the *slendro paṭět*, and a great frequency of degree 5 (*lima*/G) at the goal tones of *gongan* and *kĕnongan* contributes most strongly to this distinctiveness. *Paṭět manyura* by contrast avoids degree 5 at strong goal notes; strong positions in *sanga* in turn avoid showing 3 (*ḍaḍa*/E+), a note correspondingly emphasized in *manyura*.

Distinctions between *paṭět něm* and *paṭět manyura* are much hazier. These two *paṭět* share strong degrees 2 and 6 (as well as many configurations approaching them). They are distinguished most strongly by a noticeably higher tessitura for *paṭět manyura* in all multi-octave instruments and by the fact that *paṭět něm* has degree 5 (*lima*/G) as an occasional goal note in *kĕnongan*, while *paṭět manyura* generally avoids it in structural positions.

(*e*) Goal notes and melodic elaboration in the *slendro paṭět*. The characteristic feature of gamelan music is the superimposition of many different parts whose relationship is one of increasing subdivision of a long, fundamental time span. Each *gongan* is divided into *kĕnongan*; each *kĕnongan* contains a set of two, four, or eight *gatra*. 'The unit of measurement of *gamelan* pieces is the *gatra*. One *gatra* consists of four *saron* strokes [original has "four beats of the *balungan*", that is, of the so-called "nuclear theme"] and is the smallest meaningful unit' (Sindusawarno, *Ilmu karawitan*, after Becker, 1972, p.21). Just as the goal note of a *kĕnongan* or *gongan* subsumes and completes everything that has led up to it since the last goal note at that level appeared, so the pitch at the last position of the *gatra* is the goal note subsuming the three previous beats. *Gatra* are reckoned in pairs, the second (even-numbered) *gatra* of each pair being strong (*ulihan*) while the first (odd-numbered) *gatra* is weak (*padang*).

Judith Becker (1972) has established significant correlations between (even-numbered) strong *gatra* and *paṭět* in a large repertory of *gĕnḍing*. On the significance for *paṭět* of four-stroke *gatra* she observed that 'a patet is the profile of the use of particular contours on particular pitch levels (patterns) in particular positions within a composition' (p.187). 'Contour' is an abstract arrangement of pitches (such as four adjacent descending notes, her contour no.2), used to establish the pitch level of a goal note (such as 2, 5 or 6) resulting in a pattern, such as 6 5 3 2, or 3̇ 2̇ 1 6, or 2̇ 1̇ 6 5. The more important the structural position on which such patterns end, the more likely the patterns are to be specifically correlated with *paṭět*. The three patterns mentioned are in fact Hood's 'tonic cadential formula' in the *balungan* (*saron* part and 'nuclear theme') for *paṭět něm*, *paṭět sanga* and *paṭět manyura*, respectively (Hood, 1954, p.124). Note again that these patterns are not exclusive, as they would have to be if they were modal identifying tags like a north Indian *pakaḍ* or a south Indian *piṭuppu* ('catch'). The *gatra* 6 5 3 2, for instance, the 'tonic cadential formula' for *paṭět něm*, happens to appear in ex.39*a* as part of a piece in *paṭět manyura*, and appears in the *balungan* in ex.40*a*, *b*, illustrating both *paṭět* (*něm* and *manyura*). The *gatra* 6 5 3 2 also appears in *paṭět sanga*, but not in strong positions.

Strong-position *gatra* are often more characteristic of *paṭět* if their associated preceding weak-position *gatra* are taken into account. For instance, the *gatra* 6 5 3 2 forms part of an overwhelmingly probable *paṭět manyura* formula if preceded by the weak-position (odd-numbered) *gatra* 3 3 . . (two strokes on degree 3, the second being undamped and dying away over three counts, with silence at the goal note): 3 3 . . 6 5 3 2 (McDermott and Sumarsam, 1975, p.238). Strong emphasis on degree 3 in any context is associated with *paṭět manyura*.

The four-beat *gatra* is the basic melodic unit of the *balungan*, Hood's 'nuclear theme'. It is also the unit controlling not only the elaborating subdivisions provided by multi-octave fixed-pitch instruments like *gĕnder* (metallophone) and *gambang* (xylophone) but also the free-floating elaborations of the spike-fiddle, end-blown flute, and solo female voice (*rĕbab*, *suling* and *pĕsinḍen*). The pitch of the fourth stroke of a four-note *gatra* is not only the goal note for the *gatra* of the 'nuclear theme' itself; it also stabilizes the goal for each layer of the filling-in parts (*panerusan*). A stretch of music in a filling-in part is denoted by two closely related terms, *cengkok* and *wilĕt* (Kunst, 3/1973, i, p.334):

> *wilet* . . . is the piece of melody, the melodic turn, between two given points . . . the piece of melody between two interpunctuating tones . . . [but] whereas *wilet* refers to the fragment of melody as it is being sung, or played on the *rebab* [or *gendèr*, etc], at a given moment, including all variations and fioriture added by the player, the meaning of *chèngkok* is exclusively the sequence of the essential, so to speak, 'compulsory' tones, i.e. those which give the melody its specific character. One might say, therefore 'Niyaga A plays a different *wilet* from that of niyaga B; but the *chèngkok* of both their performances is the same'.

It is *cengkok* – 'standard' fragments of melody leading up to a given structural point – that are of concern in the matter of *paṭět*. It should be noted also that the *cengkok* used in a given *gĕnḍing* are indeed 'compulsory', as Kunst has it (and see also McDermott and Sumarsam, 1975, pp.234f). A *cengkok* may be locally embellished or varied by the musician, and there may be ample occasions to substitute one *cengkok* for another (*santun cengkok*, see Kunst, 3/1973, p.127, n.2); nonetheless a basic sequence of *cengkok* appropriate to the elaborating parts is specific to each *gĕnḍing*. Current research is trying to establish that the traditional *cengkok* for a given *gĕnḍing* are in addition independently specific to

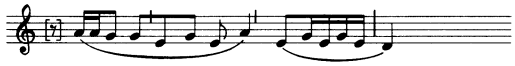
paṭět, that is, that they are not just governed by the individual *gatra* or pair of *gatra* with which they occur, nor by the goal notes alone. Research emphasis up to 1978 has been on *cengkok* in the three *slendro paṭět*.

Ex.39*a* shows three different vocal *cengkok* associated with the same place in the same *gĕnḍing* in *slendro paṭět manyura* (after Walton, 1974, pp.6, 8, 75, 93). Each comprises a standard initial formula and a standard final formula; the final one in each case establishes the goal note of the *gatra*. In the vocal and end-blown flute parts in the gamelan (*pĕsinḍen* and *suling*), the free-flowing, unpulsed lines begin late in the time span – sometimes they do not appear with odd-numbered weak-position *gatra* at all – and characteristically spill over the time point of the goal note's appearance. Note that initial and final formulae are separable: ex.39*a* (ii), (iii) have the same opening but different conclusions.

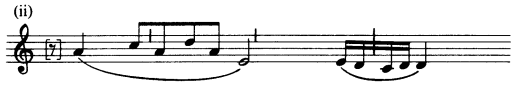
Ex.39

(a)

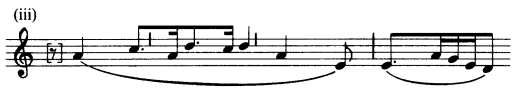
(i)



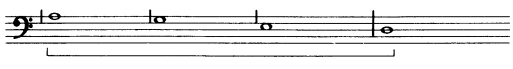
(ii)



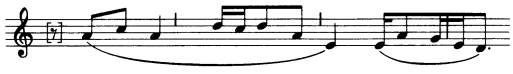
(iii)



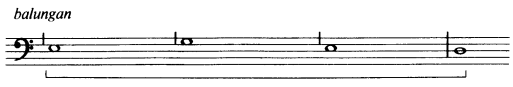
balungan



(b) same melodic formula (*cengkok*) in a different context



balungan



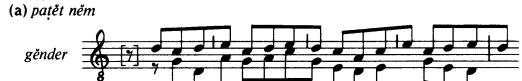
Ex.39*b* illustrates the independence of *cengkok* from specific *gatra* contours. The vocal *cengkok* is that of ex.39*a* (iii), but it accompanies a different *gatra* (the approach in the *gatra*, however, is still from above, with the penultimate degree one key above the goal note).

Ex.40 (after McDermott and Sumarsam, 1975, p.238) illustrates the proposition that choice of *cengkok* is connected with *paṭět*. The two *cengkok* for *gĕnder* accompany the same *gatra* occurring in compositions in different *paṭět*. The *paṭět manyura cengkok* typically and characteristically lies much higher than the *paṭět nĕm cengkok*; moreover the approach independently emphasizes degree 3 (*ḍaḍa*/E+) and even seems to suggest the *manyura* descent 3 2 1 6, while the *paṭět nĕm cengkok* hovers around degree 2 (*gulu*/D) and uses 3 largely as an upper auxiliary to 2. But more than that, the *gĕnder* intervals at the goal note of a *cengkok* are said to be specific to the *paṭět* (McDermott and Sumarsam, 1975, pp.235ff). *Slendro* simultaneities where degrees are separated by two keys on the *gĕnder* – '*slendro* 5ths' – are called *kĕmpyung*, and octaves are *gĕmbyang*. The low-lying *gĕmbyang* octave 2–2 (*gulu–gulu*/*d'–d*) as the concluding arrival interval of a full *cengkok* (ex.40*a*) is claimed as exclusive to *paṭět nĕm*, while the final higher-lying *kĕmpyung* '5th' 6–2 (*nĕm–gulu*/*a+'–d'*) that occurs in ex.40*b* is claimed for *paṭět manyura* or *paṭět sanga* and excluded from *paṭět nĕm*.

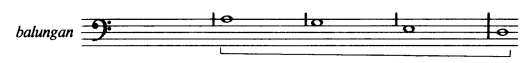
Ex.40

(a) *paṭět nĕm*

gĕnder

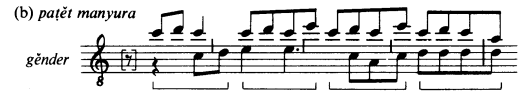


balungan

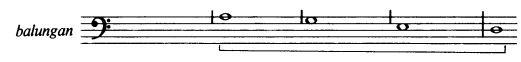


(b) *paṭět manyura*

gĕnder



balungan



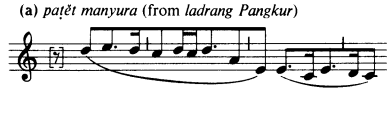
barang–gulu–ḍaḍa–lima–nĕm = 1 2 3 5 6 = C–D–E+–G–A +

One of the few features distinguishing *paṭět manyura* from *paṭět nĕm* is that its melodic formulae by and large lie noticeably higher on multi-octave instruments, as was noted above for ex.40. The same registral contrast is of course also embodied in the *gĕnder* intervals claimed as exclusive to the one *paṭět* or the other at goal points. The distinctions between *paṭět manyura* and *paṭět sanga*, on the other hand, do not depend on distinctions of general tessitura. Distinctions between these two *paṭět* are, rather, a matter of differently emphasized structural scale degrees and correspondingly different choices of formula, even on multi-octave instruments.

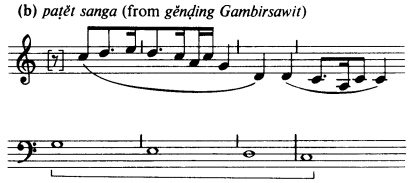
Ex.41 is based on the *gatra* 5 3 2 1. This *gatra* occurs indifferently distributed over all three *slendro paṭět* (with a slight preference for *paṭět sanga*), without playing a significant structural role in any. Along with

Ex.41

(a) *paṭět manyura* (from *ladrang Pangkur*)



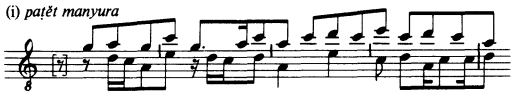
(b) *paṭět sanga* (from *gĕnḍing Gambirsawit*)



Ex.42

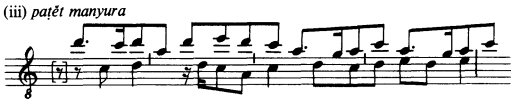
(a) ending on the fifth *a*+'–*d*' *(kěmpyung něm–gulu)*

(i) *paṭět manyura*



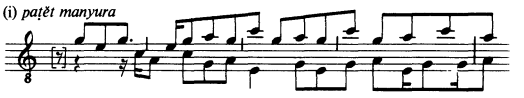
(ii) *paṭět sanga*

(iii) *paṭět manyura*

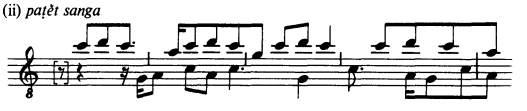


(b) ending on the octave *a*+'–*a*+ *(gěmbyang něm–něm)*

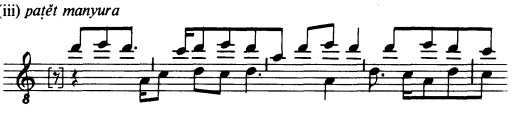
(i) *paṭět manyura*



(ii) *paṭět sanga*



(iii) *paṭět manyura*



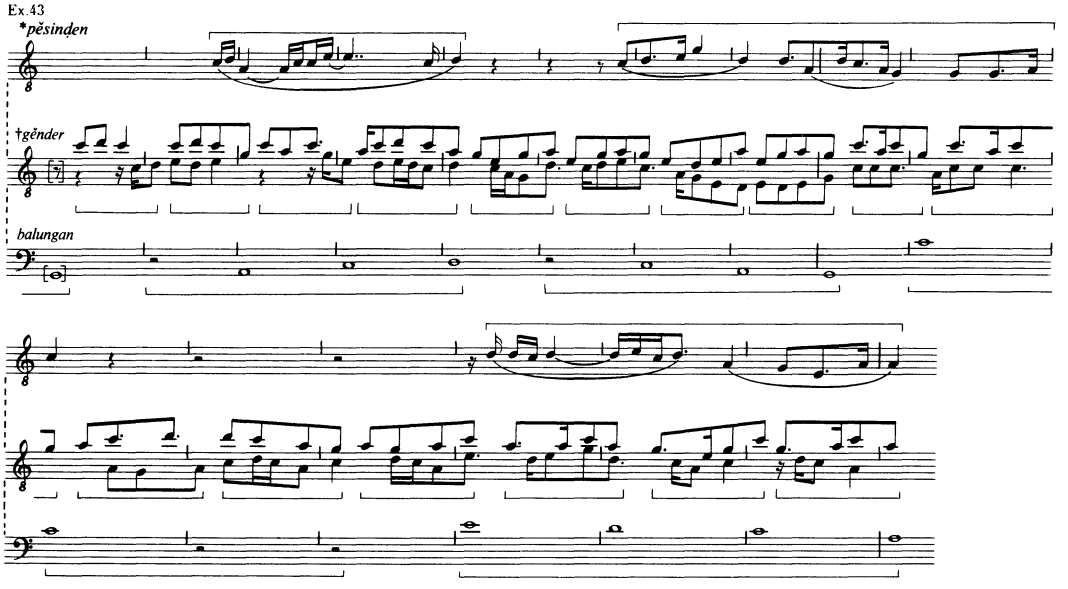
barang–gulu–ḍaḍa–lima–něm = 1 2 3 5 6 = C–D–E+–G–A+

the 5 3 2 1 *gatra* are shown vocal *cengkok* (*sinḍen cengkok* by Wasitodipuro, after Walton, 1974, pp.83, 102) accompanying it as it occurs in two well-known *gěnḍing* in *paṭět manyura* and *paṭět sanga*, respectively. The goal note is of course degree 1 (*barang*/C), and it is established in both *cengkok*, but the manner of establishing it is quite different. The *paṭět manyura cengkok* stresses degree 3 (*ḍaḍa*/E+), and in the closing formula particularly brings out the line 3 2 1 (*ḍaḍa–gulu–barang*/E+–D–C) of the *gatra*. The *paṭět sanga cengkok*, conversely, stresses degree 2 (*gulu*/D), and its closing formula brings out the cadential weak–strong descent 2 1 (*gulu–barang*/D–C). The initial formulae likewise emphasize degrees 3 and 2 (*ḍaḍa*/E+, and *gulu*/D) for *paṭět manyura* and *paṭět sanga* respectively.

But more than that, the opening of the *paṭět sanga cengkok* in ex.41*b* seems to be only a trivially varied transposition down one *slendro* step of the opening of the *paṭět manyura cengkok* (in ex.41*a*). And indeed, Javanese musicians believe that many aspects of *paṭět sanga* can be explained as the shifting of *paṭět manyura* down one *slendro* step. Ex.42 (after Sumarsam, 1975, p.169) illustrates this theory. Ex.42*a* (i), (ii), and ex.42*b* (i), (ii), show *cengkok* leading to the same simultaneity in the two *paṭět*: the *kěmpyung* 6–2 (*něm-gulu*/*a*+'–*d*') in ex.42*a*, and *gěmbyang* 6–6 (*něm–něm*/*a*+'–*a*+) in ex.42*b*. The *cengkok* in ex.42*a* (i), *b* (i), are for *paṭět manyura*: the *paṭět sanga cengkok* are in ex.42*a* (ii), *b* (ii). The two *paṭět sanga cengkok*, however, have been derived merely by downward of one position from *paṭět manyura cengkok* as shown in ex.42*a* (iii), *b* (iii).

On the *gěnder* of course such a downward shift is an extremely easy and natural process, involving only a slight shift of the hands towards the left, with not the slightest difference in playing technique. But the same

Ex.43



barang–gulu–ḍaḍa–lima–něm = 1 2 3 5 6 = C–D–E+–G–A+

transposition relationship has been claimed for the free-floating vocal *cengkok* as well: '*cengkok* [original has *wilět*] of *slendro paṭět sanga* = *cengkok* [*wilět*] of *slendro paṭět manyura* lowered one note' (Walton, 1974, p.13, after Sulaiman Gitosaprodjo). Whether the primary factor is indeed only transposition of whole patterns, or whether it also entails rather subtle matters of adjusting initial and final formulae to emphasize different structural degrees seems still open; the opening formulae in ex.41*a*, *b*, are near enough to pattern transposition – and others are nearer still – but the closing formulae have been adjusted so much that they are distinctive in contour emphasis as well as in pitch level.

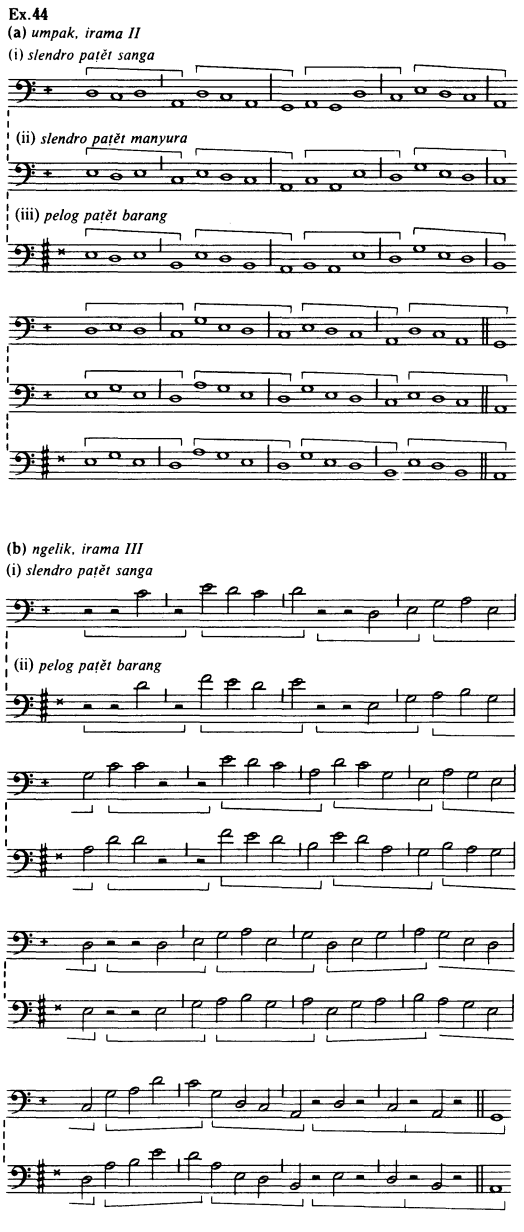
Nonetheless, pattern shifting is near enough the truth to allow the aurally evident distinction between the two *slendro paṭět*, *manyura* and *sanga*, to be characterized in terms of a contrast in degrees of the scale with associated melodic patterns bringing out degrees 6, 3 and 2 in *paṭět manyura*, as against degrees 5, 2 and 1 one step away in *paṭět sanga*. For the *cengkok* of *paṭět něm* a different derivation is proposed: 'In practice, the *cengkok* or melodies [original has *wilět-wilět* (*melodi*)] for *slendro paṭět něm* are a combination of *cengkok* of *paṭět sanga* and *paṭět manyura*' (Walton, 1974, p.13, after Gitosaprodjo). For the *gěnder* too, *slendro paṭět něm* is said to comprise *cengkok* from *paṭět sanga* and *paṭět manyura*, with a few of its own (Sumarsam, 1975, pp.169ff).

Ex.43 is from the modally ambiguous *ladrang Remeng*, classified in *slendro paṭět něm*. It shows vocal and *gěnder cengkok* accompanying the two pairs of 'nuclear-theme' *gatra* in the strong (i.e. second) half of one *gongan*. The second *gatra* shown in the example closes the third *kěnongan*, the fourth *gatra* closes the *gongan*. The female voice (*pěsiṇḍen*) is from Walton, 1974, p.142, after Wasitodipuro; the *gěnder* is from Sumarsam, 1975, p.170. Both parts alike have a *cengkok* in each of the four *gatra* (the vocal *cengkok* of the second *gatra* runs over into the third in a technique called *plèsèdan*). The second and fourth *gatra* in the example (sixth and eighth of the whole *gongan*) are characteristic cadential formulae for *paṭět sanga* ([2] 1 6 5) and *paṭět manyura* (3 2 1 6) respectively; 3 2 1 6 is also used in *paṭět něm*, but rarely in *paṭět sanga*, and . 1 6 5 is very uncommon for *paṭět manyura*, more likely in *paṭět něm*. The use of mutually contradictory . 1 6 5 in a *kěnong* position immediately preceding 3 2 1 6 in *gong* position strongly suggests *paṭět něm*.

The first three *gěnder cengkok* belong to *paṭět sanga*, the fourth to *paṭět manyura*; the fourth vocal *cengkok* is *paṭět manyura*, and the second vocal *cengkok* ends with a *paṭět sanga* formula. In this example the *gatra* and *cengkok* alike illustrate the notion that *paṭět něm* is readily heard as a combination of the other two *slendro paṭět*; at any rate it is aurally the least distinctive of the three *slendro paṭět*.

(*f*) Transposition and transformation. Ex.44 illustrates the relatively uncommon case of a *gěnḍing* which exists in both transposed and transformed versions. *Pangkur* is one of the most familiar *ladrang* in the repertory, and is well known in all three of the *paṭět* shown (the *slendro paṭět sanga* and *pelog paṭět barang* versions are from Gitosaprodjo, 1972; for the two *slendro* versions see also Sumarsam, 1975).

Ex.44



The *manyura* version can be made from the *sanga* version by simply shifting up one degree in *laras slendro* (for *gěnder* parts for both *slendro* versions of *Pangkur* see Sumarsam, 1975, pp.171ff). The *slendro paṭět manyura* version can in turn be transformed into *pelog paṭět barang* by playing it in the same position on instruments tuned in *laras pelog*. Ex.44*b* shows the 'nuclear theme' of the second section of *Pangkur* in *slendro paṭět sanga* and *pelog paṭět barang*. Note how in *pelog* the note *lima* (5/G♯) of the (written) lower register is replaced by the note *pelog* (4/F♯+) in the (written) upper register. Both correspond with the note *ḍaḍa* (3/E+) of the *slendro paṭět sanga* version (which becomes 5/G in the *slendro paṭět manyura* version).

(ii) Chōshi.

(a) A term for mode in east Asia: *tiao–diêu–chō*. The Japanese word *chōshi* means 'note', 'key', 'mode' or 'tuning' in differing musical contexts. *Chō* is sometimes softened to *jō* in compounds (e.g. *hyōjō*, *hira-jōshi*); it is an *onyomi* word, that is, a loan word from Chinese in pronunciation as well as in using a Chinese ideogram. The modern Chinese pronunciation is *diaw* (*tiao*^{4}); the Vietnamese is *diêu*. If east Asia as a cultural area is defined by the use of Chinese ideograms, then the one for *diaw–diêu–chō* is in fact the general east Asian equivalent for mode, with as widely varying contexts and ranges of meaning as the words 'mode' and '*maqām*'. The Vietnamese contrast of *diêu bac* and *diêu nam* – 'northern mode' as against 'southern mode' – refers to a contrast of style, function and pitch content easily comparable with the contrast between *slendro* and *pelog* in Javanese music. At the other extreme, Japanese *honchōshi* simply means 'standard tuning' for the shamisen, as opposed to 'second [string] up' (*niagari*) or 'third [string] down' (*sansagari*).

The original Chinese term *diaw* (*tyao*, *tiao*^{4} etc) appears first in sources from the T'ang and Sung dynasties (Courant, 1921, pp.96ff, 114ff; Picken, 1957, pp.93ff; Pian, 1967, chap.2). As Picken put it, 'The term "system" (*diaw*) includes both mode and key in the Western sense'. The Chinese system of modes incorporated three aspects:

(*1*) a set of 12 pitch classes theoretically generated through the circle of 5ths – six female *leu* (*lü*^{3}) alternate with six male *liuh* (*lü*^{4}), known collectively as the 12 *liuh* (*lü*^{4}) – on each one of which can be constructed either:

(*2*) five anhemitonic pentatonic octave species or seven diatonic octave species, comprising either the five different five-note segments from the intervallic succession: . . . |T|T|m3|T|m3|T|T|m3| . . . or the seven different seven-note segments from the intervallic succession: . . . |T|T|T|S|T|T|S|T|T|T|S|T|T| . . . and

(*3*) one degree of each pentatonic or diatonic sequence is in turn the principal note.

Such systems can be grasped in several different ways depending on the order in which the three criteria are applied. One method is to confine all the 12 pitch classes within a single octave and to make from these all 12 of the possible pentatonic or diatonic series; in modern staff notation this amounts to 12 different key signatures, producing 12 different pentatonic or diatonic collections. Each degree of such a collection in turn is designated as principal degree, making 12 × 5 pentatonic 'systems' or 12 × 7 diatonic 'systems'. The diatonic result of this process is illustrated in Pian (1967, table 2 and pp.43f).

The system of 7 × 12 modal systems was probably only theoretical. In late T'ang and Sung sources, however, systems of 28 'popular' modes are reported; their names are different from the names of the 84 but each of the 28 is equated with one of the 84. Courant (1921, pp.117f) gave a list of those 60 modes out of the 84 which arise from degrees of the basic pentatonic collections, including equivalent names for the 28, after northern Sung sources. Pian (1967, p.54) gave a slightly different list of the 28, after southern Sung sources.

(b) Scales and modes in Japanese gagaku music. During the Nara (710–84[94]) and Heian (794–1185) periods Japan was saturated with influences from the China of the T'ang dynasty (618–907); among the surviving phenomena is the repertory of the dominant division of gagaku, the imperial court music. This repertory goes by the name of *tōgaku*, which means 'T'ang music'. By the end of the Heian period at the latest, however, gagaku as a whole had ceased to play any role outside the ceremony of the court and of a few temples. After the Meiji restoration (1868) different gagaku traditions were brought together and some standardization was attempted. Although it remains an isolated, somewhat esoteric, branch of Japanese music, it has been preserved, and gagaku embodies in some form an audible ancient system of east Asian ensemble modalities, the *chōshi*.

The theoretical basis of *tōgaku*, including the *chōshi*, is from T'ang China, but much modified. The 12 pitch classes are recognized as the *échelle générale* but only one of them, conventionally notated and played A, has the same name as one of the 12 Chinese *liuh* (Japanese *ōshiki* is Chinese *hwang jong*, the first *liuh*). Furthermore, *tōgaku* uses only nine of the 12 pitch classes. Equivalents of D♯, F, and A♯ are not found among pipes of the 'mouth organ' *shō* nor in any koto tuning (though playing techniques of the double-reed *hichiriki* and flute *ryūteki* add these and other pitch inflections in performance).

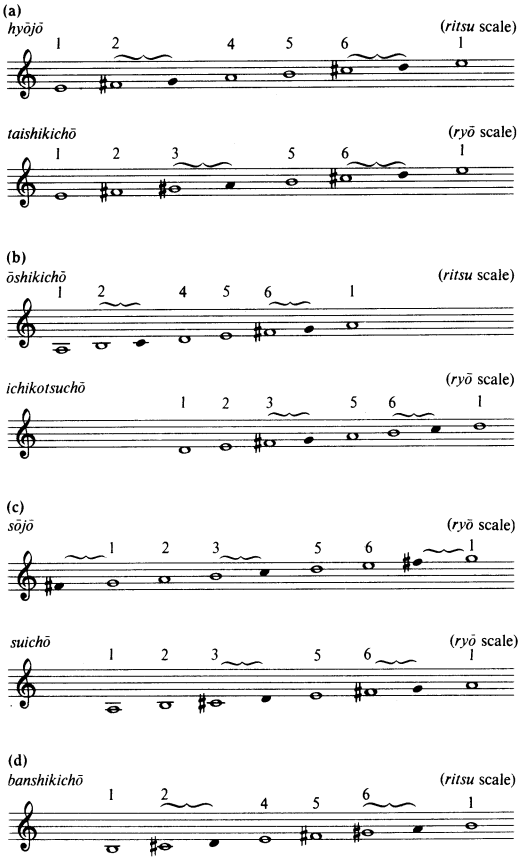
The Chinese terms *leu* and *liuh*, read in Japanese as *ryō* and *ritsu*, retain their female–male associations, but now denote two anhemitonic pentatonic scale types rather than denoting types of pitch class. The *ryō* and *ritsu* scale types each have two additional 'exchange notes', similar to the *sorogan* in Javanese *laras pelog*, whereby two of the five degrees of the scale have alternative degrees which may be and often are substituted. These exchange notes are called *hennon*, equivalent to Chinese *biann-in* (*pien*^{4}*-yin*) (exchange notes in a pentatonic scale are in fact sometimes called '*pièn*-tones' in musicological writings).

Ex.45 shows the theoretical *ritsu* and *ryō* scales for the principal *tōgaku chōshi*. The five principal degrees of the scales are numbered 1, 2, 3 or 4, 5, and 6. In both *ritsu* and *ryō* scales (with one exception) the theoretical sixth degree can be exchanged for the degree a semitone above (exchange notes are shown as solid note heads). In *ryō* scales the third degree may be exchanged with the degree a semitone above, in *ritsu* scales it is the second degree that has an exchange degree a semitone above it. Ex.45*a* illustrates a *ritsu chōshi* and a *ryō chōshi* with the same 'tonic' degree, E. In terms of the apparent heptatonic collection of pitches they differ only in that *hyōjō* has G (*sōjō*) versus *taishikichō*'s G♯ (*fūshō*), but in fact there is a noticeably greater stress on a stable second degree – F♯ (*shimomu*) – in *taishikichō* compositions. Ex.45*b* shows the theoretical scales for a *ritsu* and a *ryō chōshi* using the same collection of pitch classes, exchangeable degrees included, falling at different places in the *échelle générale*.

Ex.45*c* shows the theoretical scales of the remaining *ryō* and *ritsu chōshi*. The exchange tone F♯ (*shimomu*) in *sōjō* is anomalous both in that it is exchanged with the modal degree itself, *sōjō*, and in that it is a semitone below it whereas all the other exchange notes are semitones above the degrees they can replace. The theoretical pitch class F (*shōsetsu*), which would have been expected as an exchange degree for E (*hyōjō*), is not part of the nine-pitch *échelle générale* theoretically available for *tōgaku*.

Suichō has a *ryō* scale sharing its 'tonic' degree A with the *ritsu* scale of *ōshikichō*, the two thus being

Ex.45



related as are *hyōjō* and *taishikichō* in ex.45*a*. *Banshikichō* (ex.45*d*) is the third *ritsu*-scale *chōshi*.

These seven *chōshi* are the principal modes of the *tōgaku* repertory. They are almost certainly surviving descendants of the 28 'popular modes' of T'ang court music. Their names at least, or sufficiently close equivalents, may be found among the northern Sung version of the late T'ang 28-mode system (Courant, 1921, pp.117f, nos.2, 5, 23 and/or 30, 38 and/or 72, 40, 51 and 75).

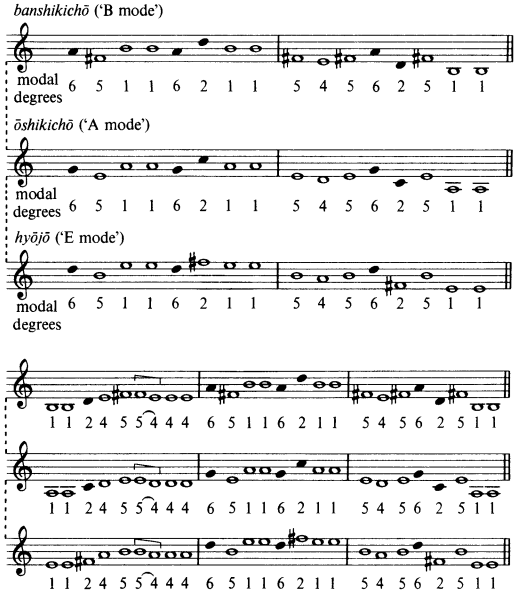
The assignment of only five numbers to the scale degrees of individual scales in ex.45 is in accordance with the koto tunings (see below and cf ex.48*a*) and it corresponds to Sino-Japanese patterns of pentatonic nomenclature. It also represents audible musical reality in that the degree numbered 1 for each *chōshi* is indeed a tonic in every sense of the word, as well as being a final. The *chōshi* really are tonalities – 'keys' – in addition to whatever else they may embody. The tonic of a composition in *hyōjō* will be the degree E of the *échelle générale*, whose name is *hyōjō*; it will be a 4th higher (or 5th lower) than the tonic of a piece in *banshikichō*, represented as B in the *échelle générale*, named *banshiki*; and it will be a 5th higher (or 4th lower) than the tonic degree A (*ōshiki*) or *ōshikichō*. To translate *hyōjō*, *oshikichō* and *banshikichō* by 'the key of E', 'the key of A' and 'the key of B' would be correct, though also insufficient (especially with respect to the melodic wind parts).

The *tōgaku chōshi*, then, form a system of *gammes particulières* grouped into two general scale-type classes *ritsu* and *ryō*, and they are projected at different places on an *échelle générale* of nine pitch classes. Five pitch classes – equivalent to G, D, A, E and B – can serve as tonics of a *ryō* tonality (G, D, A and E) or a *ritsu* tonality (A, E and B). Three of the remaining pitch classes – equivalent to F♯, G♯ and C♯ – can serve only as secondary degrees. *Shinsen* – equivalent to C – can only be an exchange note. Of the primary or secondary degrees G, D, A and F♯ also serve as exchange notes, and are variously inflected in the melodic wind parts. Only *hyōjō* (E) is never inflected and is never either an exchange note or subject to being exchanged. In this sense *hyōjō* is the one fixed note of the system, though in no sense is it a system tonic.

(*c*) Modal individuality and transposition in the three *ritsu chōshi*. The *tōgaku chōshi*, though they incorporate the notion of 'key', are something more than simply equivalent entities projected at different places in the background system. Even apart from any differences reflecting *ryō* and *ritsu* scale types, the requirements of the melodic instruments ensure a distinctive character for each *chōshi*. The distinctions are most easily seen through comparison of transposed versions of *tōgaku* compositions.

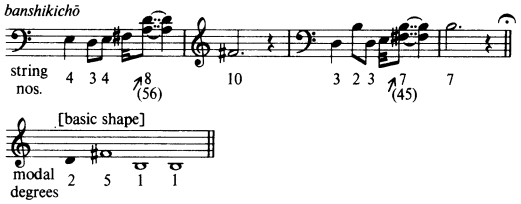
There exist versions of the *shōkyoku* ('little piece') *Etenraku* in each of the three *ritsu chōshi*. The *banshikichō* version is believed to be the original. The *hyōjō* version of *Etenraku* is the one item of gagaku that could be considered familiar, even 'popular'. Recorded performances of all three may be heard on Everest Record 3322, side A. Ex.46 (reduced after Shiba, 1969, pp.161f, 155f, 111f) shows the basic shape, the 'nuclear theme', for all three versions of *Etenraku*, with each note head corresponding to one 'bar' of the actual music. The design of the piece is *ABCAB* (the *tomede* – final close or coda – are not included). The modal degree numbers and the staff notes alike represent an abstraction; they happen to be derived from the koto parts, but the lowest and principal note of each chord of the 'mouth organ' *shō* might have been used, or a reduced version of the part

Ex.46

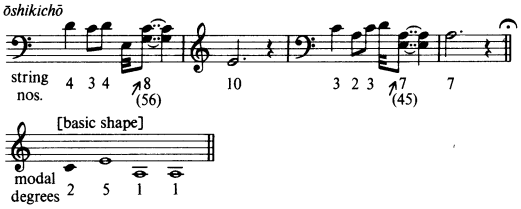


Ex.47

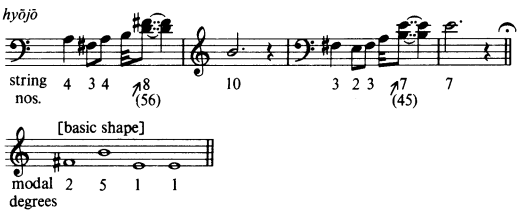
banshikichō



ōshikichō



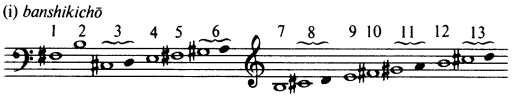
hyōjō



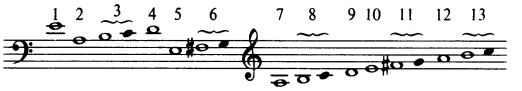
Ex.48

(a) *ritsu*-scale tunings for the *gakusō* (koto) in gagaku

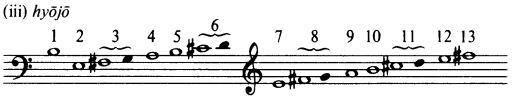
(i) *banshikichō*



(ii) *ōshikichō*

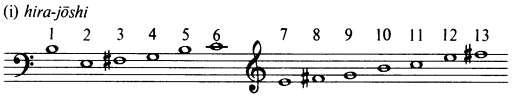


(iii) *hyōjō*

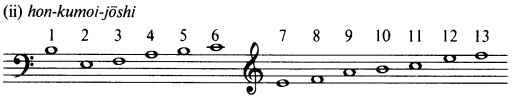


(b) *in*-scale tunings for the koto (17th century and later)

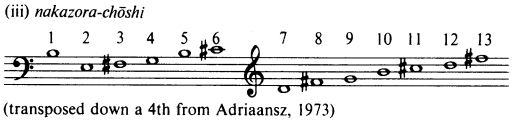
(i) *hira-jōshi*



(ii) *hon-kumoi-jōshi*



(iii) *nakazora-chōshi*



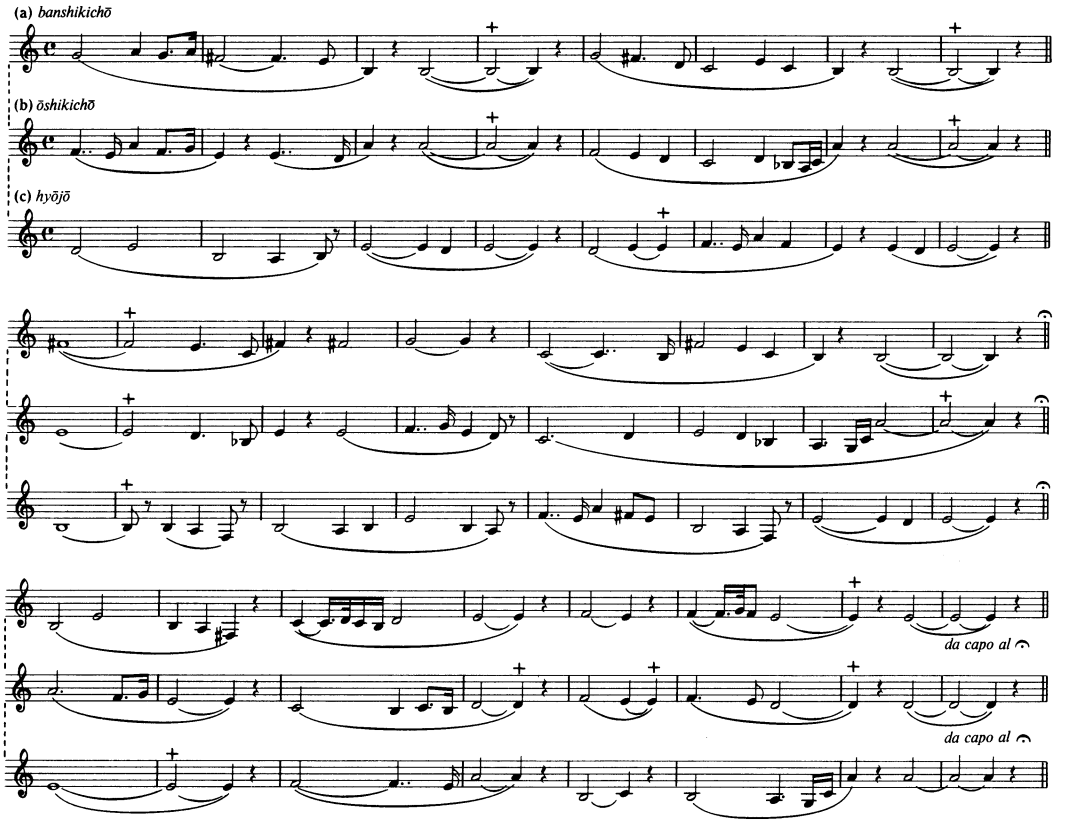
(transposed down a 4th from Adriaansz, 1973)

Ex.49

(a) *banshikichō*

(b) *ōshikichō*

(c) *hyōjō*



for *biwa* (large four-string, pear-shaped lute).

Each melodic instrument has a highly stylized, even stereotyped, conventional manner of presenting its version of the basic shape. Ex.47 (from Shiba, 1969, pp.161, 155, 111) shows the end of the koto part in each transposition of *Etenraku* – the last four bars, equivalent to the last four note heads of the abstracted basic shapes. The two-bar plucking pattern named *shizugake* (appearing twice in each example) goes all through the piece, with a variant only in the fifth bar of the contrasting *C* section. For each of the three transpositions the player's physical motions are identical; the same koto strings are plucked each time, as shown in the numbers under the staff notation, and differences of pitch content result only from different tunings of the open strings. Ex.48*a* (after Shiba, 1955, p.4) shows the tunings of the 13 strings of the koto for each of the three *ritsu chōshi*. Substituting the designated pitches (or their exchange tones) for the string numbers in ex.47 will produce the figuration shown in the staff notation.

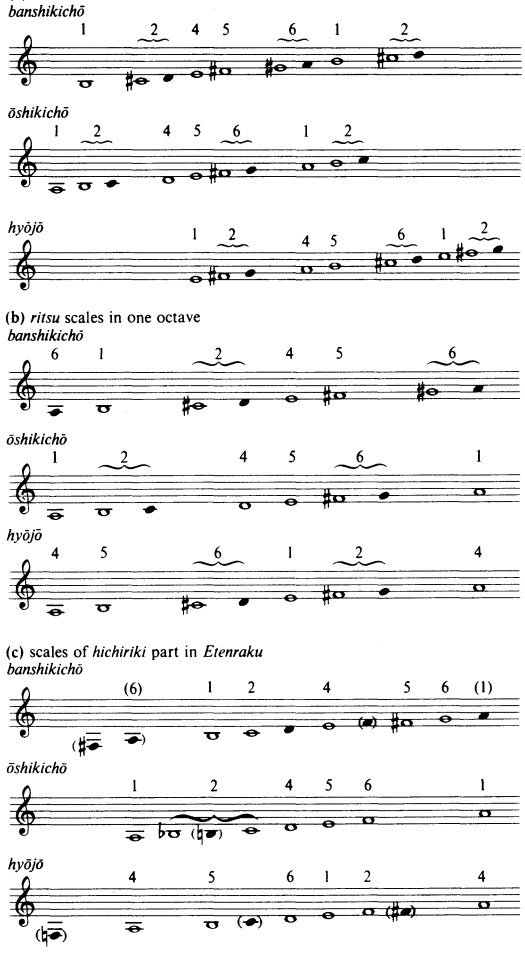
The realization of the abstract pattern on the double-reed *hichiriki* or the flute *ryūteki* is a much more complex affair, depending on wind pressure, fingering and oddities of instrumental construction, all leading to a complicated oral performing tradition of only slightly less complicated notated parts. Garfias (1975, pp.47ff, 68ff) gave a full account of the technique and notation of the two instruments; a pale reflection of what the *hichiriki* does to those abstract *Etenraku* melodies so simply touched up by the koto can be gleaned from Shiba's transcriptions into staff notation, shown in ex.49*a*, *b*, *c* (after Shiba, 1969, pp.161f, 155f, 111f). The wonderfully raucous tone, the correlated changes of pitch and dynamics, the hiccoughing breaks of register, cannot be shown (though semi-attack has been shown with a cross); but even the outline of pitches – many penetratingly stable, others approximate and shifting, a few merely quick flickers of articulation (such as the semiquavers, which are articulations rather than pitches) – suggests vast differences between the three versions.

Some of the differences in the three *hichiriki* melodies reflect different inflections of the same pitch in different *chōshi*, and others are functions of the technique and tradition of the instrument itself; a detailed description of many subtleties of *hichiriki* and *ryūteki* figures in the three *ritsu chōshi* is given by Garfias (1975, pp.135ff). Some grosser modal distinctions of the three versions of the melody can be seen in the transcribed examples. The *hichiriki* has a limited range of effectively an octave, with a downward extension by one degree, that is, by one fingering, which here (as in most cases) can produce more than one pitch.

Ex.50 illustrates the effect on the *hichiriki* part of its limited range. Ex.50*a* gives the three theoretical *ritsu* scales, each with the range of one degree beyond the octave needed for the basic shape of *Etenraku*. Ex.50*b* gives the same degrees of the scale but compressed within the single octave *a*–*a*′, as though within the effective range of the *hichiriki*. Ex.50*c* gives scale types extracted from the actual *hichiriki* parts of ex.49, omitting note heads that only indicate articulations. Sounding all three *chōshi* in a single common register does not suppress but rather highlights individual melodic differences, emphasizing that a difference in *chōshi* is not only a difference in 'key'.

Comparing ex.50*b* and *c*, one also observes that the basic pentatonic structure of the theoretical *ritsu* scales is maintained in the *hichiriki* melodies, along with the exchange notes (see particularly the complementary distribution of C and B♭ in the *ōshikichō* version). Certain of the actual pitches, however, fairly regularly conflict with those of the two string instruments in being altered downward: G♯ > G♮, C♯ > C♮, and F♯ > F♮ (except in *banshikichō* where F♯ generally holds its proper pitch level to provide the 5th above the tonic B). In other words, in the linear wind parts a secondary degree 2 or 6 of a *chōshi* is usually transformed so as to make a semitone above a primary degree 1 or 5, instead of the whole tone/minor 3rd called for by the theoretical *ritsu* scale, and actually present in the koto tunings.

Ex.50 Transformation of *ritsu* scales in *hichiriki* performing practice



There are, then, three basic elements endowing each *hichiriki* melody in the three transpositions of *Etenraku* with a distinct modal character: the transformation of secondary degrees to upper-auxiliary semitones; the compression of melodic motion into one octave plus a 'degree' below; and blowing and fingering traditions of the instrument. Allowing for these three factors, the basic shapes of *Etenraku* in *banshikichō*, *ōshikichō* and *hyōjō* – realized so regularly and mechanically in the koto part – can almost as easily be matched to the *hichiriki* parts, one bar in ex.49 to each note head in

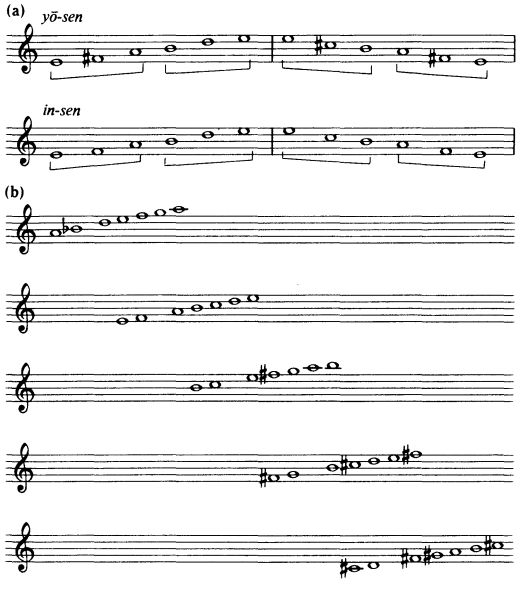
ex.46. Yet the *hichiriki* music is in fact different in each version; such differences make a *chōshi* a modal entity and not just a tonality.

(*d*) Transformation and transposition: modes, scales and tunings. The *hichiriki* parts whose scales are summarized in ex.50*c* are in effect using transformed versions of the three *ritsu chōshi*: the anhemitonic pentatonic scale structure of tones and minor 3rds that arises from the koto part becomes a hemitonic pentatonic with a skeleton of semitones and major 3rds.

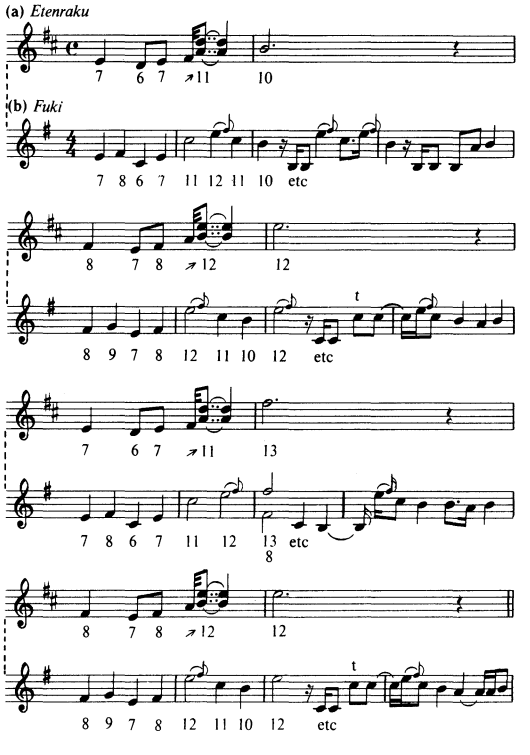
In later Japanese theory the scale types are no longer discussed in terms of *ritsu* and *ryō*. The male–female dichotomy is now presented in the much more obvious and familiar opposition of *yō* and *in* (equivalent of Chinese *yang* and *yin*), as illustrated in ex.51*a* (after Kishibe, 1969, p.12). A *ritsu* type of scale structure is seen in the *yō* scale; the opposed *in* scale is also a *ritsu* type, transformed by a lowering of the second degree of the scale and the sixth (or its exchange note) from tones or minor 3rds above the first and fifth to semitones above the first and fifth – the same difference that the *hichiriki* intonations produce in the *chōshi* of *tōgaku*. The *in* scale provides a semitone–major 3rd division of the 4th which is characteristic of the bulk of Japanese traditional music from the 16th century onwards, and is apparently of ancient and indigenous provenance. Ex.51*b* (after Malm, 1963, p.61) shows the five forms of the *in* scale used for the shamisen in *nagauta*.

It has been suggested that this characteristically Japanese *in* scale may have influenced the intonations of the *hichiriki* to bend in its direction over the centuries (but cf Garfias, 1975, pp.135f). Be that so or otherwise in principle, it has been shown that just such a transformation of a *ritsu*-scale tuning into an *in*-scale tuning in practice was responsible for the composition effectively launching the modern koto traditions. Willem Adriaansz, after relating the story of the origin of the first *kumiuta* (koto with voice) – that it was developed during the 16th and 17th centuries from the koto part of *Etenraku* – showed how it was done (Adriaansz, 1973, pp.147ff). It involves a chain of tuning transformations and structural elaborations, leading from the *ritsu*-scale *hyōjō* version of *Etenraku* to the *in*-scale form of *Fuki* as it existed in the late 17th century. Ex.52 shows the first part of Adriaansz's demonstration (pp.270f, together with Shiba, 1969, p.111) written out in staff notation, with the koto string numbers from his table underneath; two bars of *Fuki* correspond to one measure of *Etenraku*. It may be observed that every string number of *Etenraku* is matched by a string number in *Fuki*; there are also extra actions in *Fuki* filling the pauses, with the single-note bars in *Etenraku* being treated especially elaborately (string numbers for these bars are omitted in ex.52*b*).

Ex.51



Ex.52



Note that it is not the background basic shape of *Etenraku* that was used but the koto's particular version of it. The pitch content of the original, and hence the scale or mode, has been transformed, again simply by retuning the koto. There is no sure way of knowing from which *ritsu chōshi* version of *Etenraku* the *in*-scale *Fuki* ultimately descended; from ex.48*a* (iii), *b* (i), can be seen how the *hyōjō* tuning of the koto might have been modified from a *ritsu* tuning to an *in* tuning to produce the tuning used for *Fuki*, and indeed for the bulk of traditional koto music. This tuning is called *hira-jōshi* (ex.48*b* (i)); *hira* is the *kunyomi* (Japanese) word written with the same ideogram as *hyō* (both words meaning 'plain, level, peaceful, ordinary'), a probably more than coincidental reflection of the transformation of *ritsu*-scale types to *in*-scale types.

Two other Edo-period (1603–1868) koto tunings are shown in ex.48b (ii), (iii); like the shamisen scales of ex.51*b*, all three koto tunings can be thought of as simply making available different transpositions of the *in* scale (Adriaansz, 1973, pp.115, 475). Of course the

same can be said of the *ritsu*-scale tunings of the *gakusō*, the koto played in the *tōgaku* ensemble. And indeed, compared with the flamboyant modal individuation of the *hichiriki*, the koto parts seem hardly more than transpositions of one another. Yet they do differ slightly, if only by registral dislocations in the lower strings (ex.47). Perhaps the combination of changing tessituras of the different *in* scales and the constant strings 1 and 2 (ex.48*b*) provide a difference in orientation from one koto *chōshi* to another that is more than just a change in the register – a change of 'key' – of the *in* scale. But on the whole, to compare the *hira-jōshi* and *kumoi-jōshi* of the koto and voice ensemble with the comparably transposed *hyōjō* and *ōshikichō* of the *hichiriki* in the *tōgaku* ensemble is to know the difference between *chōshi* as a mere tuning pattern and *chōshi* as a unique modal entity.

See also JAPAN, §§III, 1, and IV, 2, 4.

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