

Mode (from Lat. *modus*: ‘measure’, ‘standard’; ‘manner’, ‘way’)

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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; and, most significantly, a concept involving scale type and melody type. The term ‘mode’ has always been used to designate classes of melodies, and since the 20th 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, (ii). For a discussion of mode in relation to ancient Greek theory *see* Greece, §I, 6.

I. The term

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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 (1-2 + 1-2), L + L (3 + 3), B B + L (1-2 + 3) and B B B + B B B (1-1-1 + 1-1-1).

2. Interval.

Hucbald of St Amand (c850–930) listed nine ‘modes’ in his *De harmonica*, ranging from semitone to major 6th by semitonal increments, giving examples from the chant repertory for each (GerbertS, i, 105; ed. Traub, 26ff). His discussion was transmitted verbatim through Berno of Reichenau (*d* 1048; GerbertS, ii, 64). In chapter 4 of his *Micrologus* (after 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; CSM, xxiii, chap.21) 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 Frutolfus of Michelsberg's *Breviarium*, ed. Vivell, 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 Moods, 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 applied to non-Western music, though the latter naturally grew out of the former (see below, §V, 1). 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]' (Pseudo-Odo, *Dialogus de musica*, GerbertS, 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*, GerbertS, 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 repertoires 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 since 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 in its Historical Development* (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 Asian and Middle 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 *ēchos*, used in the music theory of the medieval Byzantine Church to describe the direct model for what became the mode of Gregorian chant theory. To the non-Western technical terms one might add Persian *dastgāh* or *āvāz, pathet* in Javanese gamelan music, and Japanese *chō-* with its usual enclitic, *chōshi* - a word cognate with Chinese *diao*, 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

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Medieval plainchant of the Western Church 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 (the two other principal repertories of Western medieval chant, Ambrosian and Old Roman, do not conform to 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.

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 the Byzantine Church, 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 (*d* 161 CE) and others – and transmitted to the medieval West by the Latin writings of Martianus Capella (*fl* early 5th century), Cassiodorus (*d* c580), Isidore of Seville (*d* 636) and especially Boethius (*d* c524). 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: *tonus, modus, tropus*.

Making distinctions between 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: *tonus, modus* and *tropus*. *Tonus* and *tropus* are latinized Greek, *modus* 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 *tonos* and *tropos* 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'. They are also called 'tropes' or 'tones'. Tropes are 'constitutions' that differ according to highness or lowness throughout entire sequences of pitches. A constitution is, as it were, an entire collection of pitches [*plenum ... modulationis corpus*], brought together within the framework of a consonance such as the octave, the 11th or the double octave. ... If these entire constitutions were made higher or lower in accordance with the species of the consonance of the octave discussed above [bk 4, chap.14], this would bring about seven modes, which are named Hypodorian, Hypophrygian, Hypolydian, Dorian, Phrygian, Lydian and Mixolydian (trans. after Bower).

Ex.1 is a translation into modern staff notation of Boethius's instructions for deriving his *modi, tropior toni*. 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 *systema* - 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'* (see Bower, 1984). 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*'.)

Ex.1

The image displays seven musical staves, each representing a different mode. Above the staves, two labels are present: 'tones (modes, tropes)' on the left and 'constitutions (systems) of the diatonic double octave' on the right. Each staff is divided into three sections. The first section shows the characteristic octave of the mode, with notes and accidentals indicating the sequence of tones and semitones. The second section shows the 'constitution' or 'system' of the diatonic double octave, represented by a sequence of notes and accidentals. The third section shows the mode's position within the double octave, with notes and accidentals indicating the sequence of tones and semitones. The modes are numbered 1 through 7: (1) Hypodorian, (2) Hypophrygian, (3) Hypolydian, (4) Dorian, (5) Phrygian, (6) Lydian, and (7) Mixolydian.

Ex.1

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 early 9th, when the repertory of Western plainchant achieved its basic forms, there is no record of descriptive or theoretical sources, and of course no notated music. Towards the end of 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 Gregorian chant. This system was proximately of medieval Byzantine origin, 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 or even in Jerusalem (Jeffery, 1992, p.108), 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 Gregorian chant 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 instances in Gregorian chant 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.

TABLE 1: The modal system of Latin chant

1	protus	{ authentic plagal
2	deuterus	{ authentic plagal
3	tritius	{ authentic plagal
4	tetradius	{ authentic plagal

The modal system of Latin chant

The earliest known Western source for the system of the eight modes is the Tonary of St Riquier (**F-Pn** lat.13159 dated between about 795 and 800. Soon after this, in the early 9th century, the term ‘tonus’ was defined in the first part of a brief text beginning ‘De octo tonis’, and incorporated in chapter 8 of the *Musica disciplina* of Aurelian of Réôme (fl 840s). Presumably the 8th-century or earlier Greek model for the Carolingian system was ordered like the Byzantine *oktōēchos*, that is, the four principal (authentic) modes first, then the four plagals. The Latin modes, however, from the outset were grouped the other way, with the authentics and plagals paired (Table 1).

2. Carolingian synthesis, 9th–10th centuries.

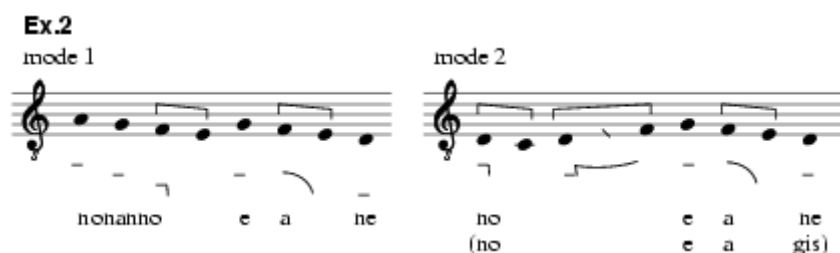
The writings of later 9th-century theorists brought back Boethius’s terms *tropus* and *modus*, but now (like *tonus*) to designate members of the system of church modes. First and foremost among these writings is the treatise (*De Musica* (formerly *De harmonica institutione*) attributed to Hucbald

(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 (ex.2, from 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 2a (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.



Ex.2

TABLE 2

Hucbald showed (GerbertS, i, 112; ed. Traub, 46–8) 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 ‘Venite’, 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 2b is a reconstruction of his diagram (garbled in GerbertS, i, 112) according to Hucbald’s instructions and following the model of Table 2a.

TABLE 2

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[superiores]		d'	Θ paranēte	"	}	$\overline{d'}$	Θ	nētē	synēmmenōn																																																																																																																																																												
		c'	κ paramesē	"			c'	E	paranētē	"																																																																																																																																																											
		b	ι mesē	"			b \flat	θ	tritē	"																																																																																																																																																											
tetradus	}	FINALES		g	Μ	lichanos	mesōn	}	\overline{a}	I	mesē																																																																																																																																																										
				f	P	parhypatē	"																																																																																																																																																														
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tritus	}	}		d	F	lichanos	hypatōn	}	}	}																																																																																																																																																											
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deuterus				A	†	proslambenomenos																																																																																																																																																															
protus																																																																																																																																																																					

Table 2

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 \natural* versus *b \flat* above *a*. Theogerus of Metz (*d* 1120) 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*]’ (GerbertS, ii, 187). The particular and predominant use in the tritus modes of the tetrachord *synēmmenōn* to which Hucbald drew attention (GerbertS, i, 114; ed. Traub, 54) is a reference to what in later times was considered the particular and predominant importance of *b \flat* in the F modes 5 and 6. Hucbald’s adaptation of the Boethian double octave and tetrachord is shown in Table 2c (after GerbertS, 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 *synēmmenōnis* now set forth as a descriptive foundation for modal theory (GerbertS, i, 119; ed. Traub, 66–8), and its systemic assumptions and properties endured for hundreds of years:

TABLE 2

(a – to be read downwards)				(b – to be read upwards)			
a'	no	T	}	a'		T	} added tone
g'	ne	T		g'	-e	T	
f	no	S	} two	f	-e	T	} conjunction
e' e'	-o	no		e' e'	-e	S	
d'	ne	T	} conjoined	d' d'	-e	Ve	} conjunction
c'	no	S		d' d'	-e	T	
b \natural	-o	T	} here a division	c'	-e	T	} disjunction
a	no	T		c'	-e	S	
g	ne	T	} of two sets	a	Ve	T	} disjunction
f	no	S		a	-e	T	
e e	-o	no	} two	f	-e	T	} conjunction
d	ne	T		f	-e	S	
c	no	S	} conjoined	e	-e	T	} conjunction
B	-o	[T]		e	-e	S	
A	-ne		last [tone]	d d	-e	Ve	conjunction
			added	c	-e	S	
				B	-e	T	
				A	Ve		

(c)			
[excellentes]	{	a' V nētē hyperbolaiōn	}
		g' Π paranētē "	
		f Y tuitē "	
		e' N nētē diezeugmenōn	
[superiores]	{	d' Ū paranēte "	}
		c' κ paramesē "	
		b I mesē "	
		a I mesē "	
tetrardus	} FINALES	g M lichanos mesōn	}
tritius		f P parhypatē "	
deuterus		e Σ hypatē "	
protus		d F lichanos hypatōn	
	} [GRAVES]	c B parhypatē "	}
		B Γ hypatē "	
		A † proslambenomenos	
		a' Ū nētē synēmmenōn	}
		c' E paranētē "	
		b \natural θ tuitē "	
		a I mesē "	

Table 2

Table 2c 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 (GerbertS, i, 119; ed. Traub, 68) 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 \natural* , *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 \natural* , *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 \natural* , *f* and *c'* was described again in the 11th century in chapter 8 of Guido's *Micrologus*: '*d*, *e*, *f* take *a*, *b \natural* , *c'*, which are of the same mode', and the notes *a*, *b \natural* 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 (GerbertS, i, 119; ed. Traub, 68) 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*, *b⁴-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 *Musica* the most important surviving source for the introduction of Boethius's terms *modus*, *tonus* and *tropus* in connection with the eightfold system is the late 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 *tonus* to refer to a member of the eightfold system. The Principal Treatise, a reprise of and commentary on the Model Treatise, retained *tonus* in this sense and added *tropus* 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 *tropus*.

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 *modi*. Thus the term *modus* 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, 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 *b⁴* [*paramesē*].

The above passage 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.198-9):

All octave species can begin either above or below, e.g. first, *a-A* or *A-a*; second, *b \flat -B* or *B-b \flat* ; 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 \flat* , *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.3a 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)

octave species 1 2 3 4 5 6 7 octave species

higher limits

lower limits

tropes 2 4 6 8 1 3 5 7 tropes

[plagal] [authentic]

(b)

octave species 1 2 3 4 5 6 7 octave species

terminal s (not final) median final s

terminal final s

tropes 2 4 6 8 1 3 5 7 tropes

subsidiaries, divided at the final degree principles, divided at the median degree

Ex.3

Ex.3b 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.200-01):

let the Dorian either descend from *ato d* or ascend to *d'*, and let it have these [*d',d*] above and below for its limits. Likewise from *b \flat* 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 Gregorian 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. (See Psalm, §II.)

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 and/or theoretical 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 *differentia* (also called *terminatio*, *varietas*, *divisio*, *distinctio* or *definitio*), 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 (see Psalm, §II). 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 *differentia* 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 *differentia*-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 (*Cousse-makerS*, ii, 1-73) and chapter 2 of his *Epistola* (GerbertS, i, 231; ed. Bernhard, 1989, 40-42) 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 (GerbertS, ii, 72-6); the anonymous author of the Reichenau Tonary (ed. Sowa, 81-154); and Johannes Cotto, chapters 14-16 of his *De musica* (CSM, i; GerbertS, 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 (d 915) 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 Cotto 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.4b gives the tune of *Pange lingua* in its familiar mode 3 form (as used, for instance, in Josquin's paraphrase Mass); ex.4d, the hymn *Urbs beata*, begins like dozens of mode 1 antiphons. Ex.4c 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.4c and d, is effectively unchanged. (In ex.4, *a,c* and *d* are after Wagner, 1921, pp.477-8, and *b* from Glarean, *Dodecachordon*, chap.36.)

The standard version of ex.4b differs from 4c 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 4b and 4d. 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^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) mode 3
Pan - ge lin - gua glo - ti - o - si proe - li - um cet - ta - mi - nis et su - per - ctu - cis tro - phae - o

(b) mode 3
Pan - ge lin - gua glo - ti - o - si cot - po - tis mys - te - ri - um san - gui - nis - que pre - ti - o - si

(c) mode 3
Pan - ge lin - gua glo - ti - o - si cot - po - tis mys - te - ri - um san - gui - nis - que pre - ti - o - si

(d) mode 1
Ubs be - a - ta Je - tu - sa - lem die - ta pa - cis vi - si - o quae con - stit - ut in coe - lis
die tti - um - phum no - bi - lem qua - li - ter te - dem - ptot ot - bis im - mo - la - tus vi - ce - tit.
quem in mun - di pre - ti - um fruc - tus ven - tis ge - ne - to - si tex ef - fu - dit gen - ti - um.
quem in mun - di pre - ti - um fruc - tus ven - tis ge - ne - to - si tex ef - fu - dit gen - ti - um.
vi - vis ex la - pi - di - bus et an - ge - lis co - to - na - ta ut spon - sa - ta co - mi - te.

Ex.4

Ex.4a is the *Pange lingua* tune projected a 4th higher, so as to end at *a* instead of *e*. The availability of both b^{\sharp} and b^{\flat} above *a* makes possible the transformation of *a* protus at the affinal position with b^{\sharp} into *a* deuterus with b^{\flat} . 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.4d 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.4a, 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 (c1026) and the *Dialogus de musica*, formerly attributed to Odo of Cluny, 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.103–16 – 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 (Γ) 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, both about plainchant and about polyphony, 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*; ed. Smits, 132ff) and thence in book 6 chapter 39 of the 14th-century *Speculum musicae* of Jacobus of Liège (CoussemaekerS, ii, 246–8; CSM, iii). 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, pp.113–14) 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 (*Micrologus*, chap.11):

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 [*distinctio*] 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 [*distinctio*] 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 attestatio*], 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 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^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* (GerbertS, 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, 45ff), which was the principal source in turn for book 6 chapters 43–50 of *Speculum musicae* (CSM, iii, 6). 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 (Berno and Hermannus Contractus) and later by Marchetto da Padova (*fl* 1305–190 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^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.)

Ex.5

I PROTUS	}	authentic	mode 1	Doctian	
		plagal	mode 2	Hypodotian	
II DEUTERUS	}	authentic	mode 3	Phygyian	
		plagal	mode 4	Hypophygyian	
III TRITUS	}	authentic	mode 5	Lydian	
		plagal	mode 6	Hypolydian	
IV TETRARDUS	}	authentic	mode 7	Mixolydian	
		plagal	mode 8	Hypomixolydian	

Ex.5

(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 – *distinctiones* – 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 Jacobus’s *Speculum musicae* 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* (GerbertS, i, 337–8), ascribed to Berno by Smits van Waesberghe, and Berno (GerbertS, ii, 70–71), 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, 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 Anonymus (p.46); Guido’s own words are in quotation marks:

‘For there’, that is, in these formulae like *seculorum 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 *seculorum 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 Cotto, 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 *seculorum 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 [*finis*] 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 below, 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

psalm tone:	2	1	4	6	3	5	8	7																																																						
tenors	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"><i>d'</i></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"><i>c'</i></td> <td style="padding: 5px;"><i>c'</i></td> <td style="padding: 5px;"><i>c'</i></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"></td> <td style="padding: 5px;"><i>a</i></td> <td style="padding: 5px;"><i>a</i></td> <td style="padding: 5px;"><i>a</i></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><i>f</i></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"><i>f</i></td> <td style="padding: 5px;"><i>f</i></td> <td style="padding: 5px;"><i>f</i></td> <td style="padding: 5px;"><i>g</i></td> <td style="padding: 5px;"><i>g</i></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"><i>e</i></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"><i>e</i></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="border-right: 1px solid black; padding: 5px;"><i>d</i></td> <td style="padding: 5px;"><i>d</i></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>																<i>d'</i>						<i>c'</i>	<i>c'</i>	<i>c'</i>			<i>a</i>	<i>a</i>	<i>a</i>						<i>f</i>				<i>f</i>	<i>f</i>	<i>f</i>	<i>g</i>	<i>g</i>			<i>e</i>		<i>e</i>					<i>d</i>	<i>d</i>							
								<i>d'</i>																																																						
					<i>c'</i>	<i>c'</i>	<i>c'</i>																																																							
	<i>a</i>	<i>a</i>	<i>a</i>																																																											
<i>f</i>				<i>f</i>	<i>f</i>	<i>f</i>	<i>g</i>	<i>g</i>																																																						
		<i>e</i>		<i>e</i>																																																										
<i>d</i>	<i>d</i>																																																													
mode:	2	1	4	6	3	5	8	7																																																						

Psalm-tone tenors and modal finals

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 that 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 (GerbertS, i, 313; see Bernhard, 1989, pp.77-84), 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^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.6a (from GerbertS, ii, 67, after GerbertS, i, 313). In ex.6b (from GerbertS, ii, 69-70, after GerbertS, 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 (GerbertS, 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 (GerbertS, 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.

Ex.6

(a)

①
1
T S T +T

②
2
S T T +T

③
3
T+ T T S

④
1
T+ T S T

4th +tone

tone +4th

(b)

protus

deuterus

titus

tettardus

Ex.6

The theoretical contributions of Berno's younger colleague Hermannus Contractus (*d* 1054) 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 4a, modal pair 7-8 in Table 4b – to have any parallel or affinity elsewhere in the system comparable with those for the protus-deuterus-tritus qualities (4a) or the modal pairs 1-2, 3-4, 5-6 (4b).

TABLE 4

(a)

<i>A</i>	<i>B</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>a</i>	<i>b\flat</i>	<i>c'</i>
pro	de	tri	pro	de	tri	te	pro	de	tri
I	II	III	I	II	III	IV	I	II	III

(b)

	DIATESSARON					//	DIAPENTE				
	/ \ / \ / \						/ \ / \ / \				
[authentic]:	1	3	5	1	3	5	7	1	3	5	
	<i>A</i>	<i>B</i>	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>a</i>	<i>b\flat</i>	<i>c'</i>	
[plagal]:	2	4	6	2	4	6	8	2	4	6	

Table 4

TABLE 4

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, 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 *gravesor 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 [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, 59).

Ex.7

the four tetrachords, each with four modal degrees

the four modal qualities

protus — species 1

deuterus — species 2

titus — species 3

tetrardus — species 4

four species of the 4th, the 5th, and the octave

Ex.7

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'*.

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 \flat* 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, 30ff). From a modal point of view this is eminently satisfactory, but of course it is in no 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.8a; 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* (GerbertS, 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.

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*'.

Ex.8

(a)

1 II III
degree: 4 5 6
degree: 1 2 3
IV-A
7
IV-B
7


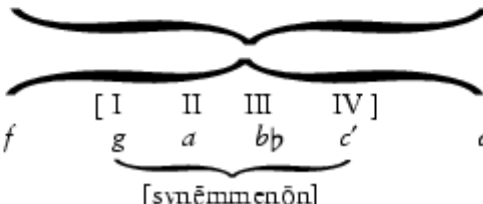
(b)

1 II III
IV
superiores
{ tetrachord }
FINALES

Ex.8

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(i) (b) 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 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, 57). Ex.8b shows Wilhelm of Hirsau's version of the modes of the degrees (chaps.27, 38) after Hermannus (ed. Ellinwood, 58-9).

TABLE 5: Modi vocum and sedes troporum

	seats of the tropes					
						
		I	II	III	IV	
excellentes	<i>c'</i>	<i>d'</i>	<i>e'</i>	<i>f'</i>	<i>g'</i>	<i>d'</i>
superiores	<i>g</i>	<i>a</i>	<i>b\natural</i>	<i>c'</i>	<i>d'</i>	<i>e'</i>
FINALES	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>a</i>
GRAVES	<i>G</i>	<i>A</i>	<i>B</i>	<i>c</i>	<i>d</i>	<i>e</i>
		I	II	III	IV	
						
		[I	II	III	IV]	
	<i>f</i>	<i>g</i>	<i>a</i>	<i>b\flat</i>	<i>c'</i>	<i>d'</i>
		[synēmmenōn]				

Modi vocum and sedes troporum

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* [ex.9a] 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.9a are in fact in mode 1 in the Worcester 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* [ex.9b; 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 above, ex.9c].

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* (see above, Table 5).

Ex.9

(a)

WA 18
mode 1
Pro - phe - te pre - di - ce - runt nas - ci sal - va - to - rem de vir - gi - ne Ma - ti - a [evovae]

LA 377
mode 2
Pro - phe - te pre - di - ca - ve - runt

(b)

PA 147'
mode 4
Glo - ti - a hec est om - ni - bus san - ctis e - ius

(c)

WA 143
mode 6
Mo - di - cum et non vi - de - bi - tis me di - cit do - mi - nus i - te - tum mo - di - cum et vi - de - bi - tis me

LA 236
mode 6
qui - a va - do ad pat - tem al - le - lu - ia al - le - lu - ia [evovae]

(d)

WA 79
mode 7
Si ve - re frat - res di - vi - tes es - se cu - pi - tis ve - ras di - vi - ti - as a - ma - te [evovae]

PA 34'
mode 8
Mul - ti ve - ni - unt ab o - ti - en - te et re - cum - bent cum ab - ta - ham et i - sa - ac
et ia - cob in teg - no ce - lo - tum al - le - lu - ia [evovae]

Ex.9

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* [ex.9d] [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 Aribio (GerbertS, ii; CSM, ii), where it was likened to symmetries in other domains.

(iii) *Authentic-plagal distinctions.*

Ex.9

(a)
WA 18
mode 1
Pro - phe - te pre - di - ce - runt nas - ci sal - va - to - rem de vir - gi - ne Ma - ri - a [evovae]
LA 377
mode 2
Pro - phe - te pre - di - ca - ve - runt

(b)
PA 147'
mode 4
Glo - ri - a hec est om - ni - bus san - ctis e - ius

(c)
WA 143
mode 6
Mo - di - cum et non vi - de - bi - tis me di - cit do - mi - nus i - te - rum mo - di - cum et vi - de - bi - tis me
LA 236
mode 6
qui - a va - do ad pat - tem al - le - lu - ia al - le - lu - ia [evovae]

(d)
WA 79
mode 7
Si ve - te fiat - ies di - vi - tes es - se cu - pi - tis ve - ras di - vi - ti - as a - ma - te [evovae]
PA 34'
mode 8
Mul - ti ve - ni - unt ab o - ti - en - te et te - cum - bent cum ab - ta - ham et i - sa - ac
et ia - cob in reg - no ce - lo - rum al - le - lu - ia [evovae]

Ex.9

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.9a 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 (GerbertS, i, 260):

There are, however, many songs among them which are neither lowered to *G*, Aor *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^b*], they are certainly in the second tone; [B] the 8th and 9th [*a* and *b^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^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 [*differentiae*] 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 (chap.18):

as there are four final degrees [*claves finales*], so there are four discriminatory degrees [*claves discretives*]. ... 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, 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 (GerbertS, ii, 217; CSM, ii, 32); and this is recast in the treatise of Engelbert of Admont (GerbertS, 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 Hieronymus de Moravia (*d* after 1271), 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. Hieronymus'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*′ (Cousse-makerS, i, 77–8; ed. Cserba, 159ff). The hexachordal syllables for the tritus and tetrardus finals, which Hieronymus neglected to mention, are given in a similar passage from the *Speculum musice* of Jacobus of Liège (*d* after 1330). Table 6 (B) illustrates 'chants ending in *fa* are of the fifth or sixth tone, and in fact chants ending in *solare* of the seventh or eighth' (bk 6, chap.75). 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.

TABLE 6

Mode	Function	<i>c</i>	<i>d</i>	<i>e</i>	<i>f</i>	<i>g</i>	<i>a</i>	<i>b\flat</i>	<i>b\natural</i>	<i>c'</i>	<i>d'</i>	<i>e'</i>	
I 1/2	FINAL	ut	re	mi	fa	sol	la						
	affinal					ut	re	mi	fa	sol	la		
	(transformed)	FINAL	ut	re	mi	fa	sol	la					
		affinal				ut	re	mi	fa	sol	la		
III 5/6	FINAL				f								
	affinal									c'			
IV 7/8	FINAL					g							
<i>c d e f g a b\flat b\natural c' d' e'</i>													
III	5/6	FINAL	ut	re	mi	fa	sol	la					
		affinal					ut	re	mi	fa	sol	la	
5/6	FINAL	ut	re	mi	fa	sol	la						
			ut	re	mi	fa	sol	la					
IV 7/8	FINAL	ut	re	mi	fa	sol	la						
						ut	re	mi	fa	sol	la		
<i>c d e f g a b\flat b\natural c' d' e'</i>													
I 1/2	(transformed)				ut	re	mi	fa	sol	la			
<i>c d e f g a b\flat b\natural c' d' e'</i>													
		□	- regular final		○	affinal (final in a transposed mode)		◇	Final in a transformed mode				

Table 6

TABLE 6

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' (written probably at the end of the 14th century), and illustrated in Table 6(C): 'The fifth and sixth [tones] in *ffa 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' (CoussemakerS, ii, 442).

(b) Transformed finals.

TABLE 6

Mode	Function	c	d	e	f	g	a	b \flat	b \natural	c'	d'	e'	
I	1/2	FINAL	ut	re	mi	fa	sol	la					
		affinal					ut	re	mi	fa	sol	la	
II	3/4	FINAL	ut	re	mi	fa	sol	la					
		(transformed)	ut	re		mi	fa	sol	la				
		affinal				ut	re	mi	fa	sol	la		
III	5/6	FINAL			f								
		affinal							c'				
IV	7/8	FINAL				g							
c d e f g a b \flat b \natural c' d' e'													
III	5/6	FINAL	ut	re	mi	fa	sol	la					
		affinal					ut	re	mi	fa	sol	la	
		FINAL	ut	re	mi	fa	sol	la					
		FINAL	ut	re	mi	fa	sol	la					
IV	7/8	FINAL	ut	re	mi	fa	sol	la					
		FINAL	ut	re	mi	fa	sol	la					
c d e f g a b \flat b \natural c' d' e'													
I	1/2	(transformed)	ut	re	mi	fa	sol	la					
c d e f g a b \flat b \natural c' d' e'													

- regular final
 affinal (final in a transposed mode)
 Final in a transformed mode

Table 6

The use of *a*, *b \natural* 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 \flat -c'-d')*, which made the 'second 9th degree' *b \flat* 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 \flat* taken alone, which was considered merely a variant for *b \natural* 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 \flat* was called 'transformation', and was not considered quite respectable by theorists until the full integration of the hexachords with the modal system. Jacobus of 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, 51); Table 6 (D) illustrates Jacobus’s location of the *g* protus final (chap.78):

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 \flat* ... 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 (GerbertS, iii; ed. Herlinger, 1987), completed by 1318, a few years before the *Speculum musicae* of Jacobus of Liège. Aspects of the tradition for modal description and classification established by Marchetto endured for more than three 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’ (GerbertS, iii, 114; ed. Herlinger, 488ff). The first four among these functional species were named ‘principal’ (or ‘initial’), ‘terminal’, ‘proper’ and ‘common’; 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 musicae disciplinae* 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, pp.23–32.) Several writers of northern origin working in Italy were influenced by the theory, such as Johannes Gallicus (*Libelli musicalis de ritu canendi*, pt 2, bk i), the teacher of Nicolò Burzio. The Franco-Flemish Tinctoris, whose *Liber de natura et proprietate tonorum* was written in 1476 in Naples, was very 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 musice* (Milan, 1496, first draft before 1487). Gaffurius’s *Practica musice* 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 musice*, bk 1, chap.8) for the five categories of modal ambitus and melody.

Ex.6

(a)

1
T S T +T

2
S T T +T

3
T+ T T S

4
T+ T S T

4th +tone

tone +4th

(b)

protus

deuterus

titus

tettardus

Ex.6

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' (ed. Herlinger, 308). 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*, ed. Herlinger, 354; 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.6b).

The passages in Marchetto's *Lucidarium* (ed. Herlinger, 488ff) 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.10a, 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 '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.10b 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*.

Ex.10**(a)**

initial [mode 1] terminal [mode 2] initial [mode 3]

terminal [mode 4]

The notation shows four musical phrases on a single staff. The first phrase is labeled 'initial [mode 1]' and consists of a sequence of notes starting on a lower pitch and moving upwards. The second phrase is labeled 'terminal [mode 2]' and consists of a sequence of notes starting on a higher pitch and moving downwards. The third phrase is labeled 'initial [mode 3]' and is similar to the first. The fourth phrase is labeled 'terminal [mode 4]' and is similar to the second. Brackets above the notes indicate the scope of each phrase.

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

mode 1 mode 2

mode 3* mode 4†

mode 5 mode 6

mode 7 mode 8

The notation shows eight musical phrases on a single staff, arranged in four pairs. Each pair is labeled 'mode X' where X is a number from 1 to 8. The notes in each phrase represent the 'proper' (4th and common 5th) of that mode. Brackets above the notes indicate the scope of each phrase.

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

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

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

modes 1, 2 modes 3, 4

modes 5, 6 modes 7, 8

The notation shows four musical phrases on a single staff, arranged in two pairs. Each pair is labeled 'modes X, Y' where X and Y are numbers from 1 to 8. The notes in each phrase represent the 'common' species of the 4th for those modes. Brackets above the notes indicate the scope of each phrase.

Ex.10

The doctrine also includes a 'common species' of 4th (ed. Herlinger, 434):

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

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 [ex.11 a] ... [but if] common species of 4th are struck [*repercutiantur*] several times, it will be judged plagal, as appears here [ex.11b]. [chap.30]

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 [ex.11c, d]. [chap.35]

Ex.11

(a) mode 3

(b) mode 4

final ambitus species

(c) mode 7

(d) mode 8

final ambitus species

The image displays four musical staves, each representing a different mode. Staves (a) and (b) show the full range of notes for mode 3 and mode 4, respectively, with brackets indicating the ambitus. Staves (c) and (d) show the final, ambitus, and species for mode 7 and mode 8, respectively. The notation includes treble clefs, notes, and rests, with some notes marked with a slash to indicate accidentals.

Ex.11

The contrast between common species of 5th as a mark for authenticals 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 authenticals 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 authenticals and the tenor 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, thus 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 *differentia*, 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'.

Ex.12

mode 1
re la sit pti - mi re fa dat not - ma se - cun - di

mode 2
mi mi dat tet - ti - us mi la pos - cit si - bi quat - tus

mode 3
ut sol quin - tus pe - tit sex - tus fa la si - bi que - tit

mode 4
ut sol im - pat te - trat - dus ut fa pos - tie - mus ha - be - bit.

Ex.12

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 musice*, bk 1, chap.14; trans. in CSM, xx, pp.60-61).

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.13a.

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 was not confined merely to the sense of compass above and below the final). Among the illustrations devised by Tinctoris are the following (*Liber ... tonorum*, chap.13):

Ex.13**(a)** commixture of species, after Marchetto (bk 11, chap.4; *Gerbert S,iii, 115-6*)

mode 6
mode 4
mode 1
mode 1
mode 3
mode 7
mode 1
mode 1
mode 5
mode 1

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

(b) commixture of modes, after Tinctoris (*Liber . . . tonorum*, chap.13)

(i)

mode 7
mode 1
mode 1 and 7: 5th

(ii)

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

Ex.13

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 [ex.13b, (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 [ex.13b, (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 (ed. Herlinger, 418, 431). 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 (see, for example, Meier, 1974, pt ii, chap.2).

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 considered the perfect range to be a 9th (with one exception):

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 [ed. Herlinger, 378]

[and] the fifth tone very seldom descends below its final [p.470]

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.380]

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:

Imperfect is that tone, be it authentic or plagal, which does not fill its mode [i.e. modal octave], above [authentic] or below [plagal]. [ed. Herlinger, 382]

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.384]

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' (ed. Herlinger, 386ff). 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 (ed. Herlinger, 394-488), given in square brackets:

(i) Species I 5th (*d e f g a*) + species I 4th above (*a b̄ c' 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 *b̄*, 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 *b̄*].

(ii) Species I 5th (*d e f g a*) + species I 4th below (*d c B A*) and common (*d e f g*).

(iii) Species II 5th (*e f g a b̄*) + species II 4th (*b̄ 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 (*e f g a b̄*) + species II 4th below (*e d c B*) and common (*e f g a*) [even though the lower 4th may be rarely used].

(v) Species III 5th (*f g a b̄ 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 (*f g a b̄ 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 (*f g a b̄ c'*) + species III 4th below (*f e d c*) in ascent; species IV 5th (*f g a b̄ c'*) + species III 4th below (*f e d c*) and common (*f g a b̄*) in descent [Why it is so formed, and how it ought to be sung with *b̄* or *b̄*, is the same reason as was said of its authentic].

(vii) Species IV 5th (*g a b̄ c' d'*) + species I 4th above (*d' e' f' g'*) tone below (*f*).

(viii) Species IV 5th (*g a b̄ c' d'*) + species III 4th [common] (*g a b̄ 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 (*g a b̄ c' d'*) + species I 4th below (*g f e d*).

Like his contemporary, Jacobus of Liège, Marchetto 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. [ed. Herlinger, 400] ... 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.430] ... And we claim the same for any other tone, authentic as well as plagal. [p.402]

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 accidentence [*propter accidens*]' (ed. Herlinger, 404). Marchetto used accidentence 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' (p.406); 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*]' (pp.408-16). *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 Cotto's *De musica* (CSM, i). It is a mode 3 piece that also must finish on *a*; it uses *b \flat* in mode 3 phrases at the beginning and end, but there are two medial phrases reflecting mode 1 that use *b \natural* .

(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 Jacobus of Liège entailed a consistent use of *fa* on *b \flat* along with the protus final *re* on *g*. Hence the soft hexachord *f-g-a-b \flat -c'-d'* became a *sedes tonorum* encompassing *g* protus modes, and *b \flat* 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 \natural* of the hard hexachord as the essential sixth degree and *b \flat* of the soft hexachord as the accidental. The acceptance of *g* protus modes with an essential *b \flat* as their third degree further entailed a new accidental sixth degree, *e \flat '*, solmized *fa* in a new soft hexachord *b \flat -c'-d'-e \flat '-f-g'*. The *b \natural* 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 \flat* *mollis* essential, as opposed to the traditional system where *b \natural* *durus* essential, which thereby came to be called *cantus durus*.

Ex.14a illustrates what became the most conventional 16th-century usages of the *cantus mollis* system, in which all voices had a signature of *B \flat* . 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 \flat* was recognized as at least as powerful as *b \natural* in practice and in theory; the *cantus mollis* *b \flat* signature simply recognized the fact. (However, the acquisition by the system as a whole of a soft hexachord *b \flat -c'-d'-e \flat '-f-g'* made available to the tritus on *f* the same *subtonium* that all the other regular modes had always had.)

Once *b \flat* 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 \flat* as a member of the extra tetrachord *synēmmenōn* (see §2(i) above) – the same principle could be extended to *e \flat '*, 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 \flat '-f-g'*. Since this extension provided for an essential note name (*E \flat*) 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.14b (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

(a) cantus mollis

protus (modes 2, 1)
mode 2 te SOL RE la te sol

deuterus (modes 4, 3)
mode 4 mi LA MI mi mi la

*titus (modes 6, 5)
mode 6 ut FA UT sol ut fa

(b) cantus fictus

protus (modes 1, 2)
mode 1 RE la te SOL RE la

(c) cantus durus

titus (modes 5, 6)
mode 5 UT sol ut FA UT sol

protus (modes 2, 1)
mode 2 mi LA RE la mi LA la

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

Ex.14

Ex.14c 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_b*), and it lost altogether the possibility of using a major 6th above the final. In terms of the hexachordal species shown in ex.14c, the common species of 5th for the protus *re-mi-fa-sol-la* (as in *a-b_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^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^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*, chap.19). 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^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^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.15a. Also shown in ex.15a are the irregular tritus modes on *B^b* and *b^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^b* that express provision was made for the perfect 4th above the final, *fa* as *b^b* or *e^b'*, 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

(a) tritus

regular *f* tritus
mode 5

mode 6

irregular *c* tritus
mode 5

mode 6

irregular *B^b* tritus
mode 5

mode 6

irregular *c* protus
mode 1

mode 2

irregular *c* protus
mode 1

mode 2

* 'either of these two tones can be found from the fourth species of 5th avoid the tritone' (*Liber . . . tonorum*, chap.8) (*f, g, a, b^b, c'*) . . . by reason of perfect concords . . . in composed song . . . or . . . to

† 'with altered *e* when it is necessary' (*Liber . . . tonorum*, chap.48)

Ex.15

Ex.15b 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*.

III. Modal theories and polyphonic music

Harold S. Powers, revised by Frans Wiering

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 Grocheio, writing about 1300, specifically excluded mode from polyphony (trans. Seay, 1967, 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 Grocheio 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.

There may be more to this than merely the correction of a definition. Fuller (1990) pointed out that already in 1271 Amerus had applied the modes to ‘cantilenis organicis’ (almost certainly polyphony) in his *Practica artis musicae* (CSM, xxv, chap.1). The *Compendium de musica* sometimes ascribed to Jacobus of Liège (c1300) also seems to connect modes and polyphony (chap.iii.3; ed. J. Smits van Waesberghe, E. Vetter and E. Visser, Buren, 1988, pp.88–122). The first unambiguous application of the eight modes to polyphony occurs in the anonymous treatise in the Berkeley Manuscript (**US-BEm** 744, dated 1375; ed. O. Ellsworth: *The Berkeley Manuscript*, Lincoln, NE, 1984). A continuous tradition in the application of modal theory to polyphony begins only with Tinctoris (*Liber de natura*, 1476; CSM, xxii).

Nevertheless, well over two centuries after Grocheio, Sebald Heyden (Haiden) could still ask ‘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 perceive that they are hardly taken into account in figural music?’ (*De arte canendi*, 1540; trans. after 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 (see Wiering, 1995, pp.176–83). 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* (1722) to Schoenberg's *Harmonielehre* (1911).

(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 inherent 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 ancient Greek origin; this notion is in fact an essential part of most modal systems (see Ethos). 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 (*d* 1331) reported the tradition as follows (GerbertS, 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 (GerbertS, i, 235) to Glarean in the 16th (bk 2, chap.23). Engelbert's version reads (GerbertS, 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.

A modernized version appears in Artus Thomas's *Philostrate* (1611): a French nobleman became so aggressive when hearing a composition by Claude Le Jeune (in Phrygian?) that it was necessary to calm him by playing some music in the Hypophrygian mode (Walker, 1941-2, pp.113-14). Such a reworking of ancient legend shows that modal ethos was not only something of the past, but a reality in contemporary culture as well.

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, 65), Frutolfus of Michelsberg (before 1100, ed. Vivell, 105) and Johannes Cotto (c1100, ed. in CSM, i, 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* (part of the composite *Tractatus de musica plana*; CoussemakerS, ii, 434ff, from a manuscript copied in Ghent in 1503, the contents of which may be considerably older; see Anonymous theoretical writings) 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 extra-musical octenary, quaternary and binary systems. Near the very outset of the medieval development Aurelian stated in his own supplement to the 'De octo tonis' that begins chapter 8 of *Musica disciplina* that the eight modes appear to imitate the motions of the zodiac and of the seven planets (the moon, Mercury, Venus, the sun, Mars, Jupiter, Saturn). Ramis de Pareia (*Musica practica*, 1482) presented an elaborate comparison of the eight modes and the celestial orbits, which reappears on the title-page of Gaffurius's *Practica musice* (1496; see Haar, 1974). 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 13th-century *Summa musice* attributed to Perseus of Würzburg and Petrus (GerbertS, iii, 190-248; ed. C. Page, *Summa musice: a Thirteenth-Century manual for Singers*, Cambridge, 1991) 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 (GerbertS, 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 Grocheio (c1300): '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 Nicolò Burzio's *Musices opusculum* (1487, pt ii) is entitled 'How chansons [*cantilena*] ought to be composed'. After recommending that a composer be thoroughly familiar with repertory and acquire experience through practice in his art, Burzio 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, 124). The ethic properties of the eight modes, according to Burzio '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 plainchant mode (Rr iv–Rr iir):

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 (presumably after Gaffurius; 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 cholera 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 stentorian 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. This is especially clear from the large number of collections that are organized as 'modal cycles' employing all eight (or, later, 12) modes in numerical succession (408 cycles through the modes and psalm tones are listed in Wiering, 1995, appx C). Such cycles were by no means uncommon in plainchant. Polyphonic settings of the *Magnificat* and the psalm tones began to be organized in cycles from the second half of the 15th

century onwards. The earliest example may be the *Magnificat* cycle in **I-Rvat** S Pietro B80), containing works by Binchois, Du Fay, Dunstaple and anonymous composers, compiled around 1460. Sebastian z Felsztyna's *Opusculum musicae* (1517) contains what may be the oldest non-psalmodic cycle, which consists of eight short pieces in three-voice note-against-note counterpoint. The first free cycle in a practical source, Thomas Stoltzer's *Octo tonorum melodiae*, a collection of five-voice instrumental fantasies, dates from approximately the same time and place. From the 1540s onwards polyphonic collections fully or partly ordered as modal cycles were published in considerable numbers. Among these are Rore's first book of five-part madrigals (1542), nos.1-17, and Palestrina's offertories (1593), 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. Meier also endeavoured to show that the eight modes, four authentics and four plagals, were pre-compositional realities in Renaissance polyphony in much the same way as the keys were in tonal music from the 18th to the early 20th century. Structural and ethical functions of the modes are closely interrelated in Meier's view: departure from the norms of the modes is a 'licence' that the composer may take only when it serves to underline the meaning of the text. Meier's interpretation of polyphonic modality has been adopted by many who aspire to 'authentic analysis' of Renaissance polyphony. But it has also been criticized on methodological grounds. As early as 1968 Dahlhaus questioned the validity of the authentic-plagal distinction for polyphony. Harold Powers, working from an ethnomusicological perspective, contended that mode is not an objective (etic) property of a polyphonic composition, but a subjective (emic) category that has no meaning outside the cultural context of a composition (Powers, 1981; 1982).

(ii) Modality in a polyphonic texture.

Until the middle of the 15th century modal theory remained almost wholly 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'. In about 1460 Johannes Gallicus (*Libelli musicalis de ritu canendi*, chap.2.i.12) rejected the application of modes to polyphony, asserting instead that such pieces were composed in the Boethian constitutions. Yet barely 20 years later, Guilielmus Monachus (*fl* late 15th century) concluded his treatise with a section on the modes (CSM, xi, 9). He began almost as though he had intended to contradict Johannes de Grocheio. '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, 55).

Johannes de Grocheio'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 authors such as Tinctoris (*Liber ... tonorum*, written in 1476 in Naples; CSM, xxii) applied both commixture and mixture to counterpoint and to mode together (chap.24):

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. There is some evidence for informal systems of 3 or 4 modes, based on the quality of the final only (Judd, 1992; Wiering, 1995, chap.5); yet 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 Du Fay], 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].

The modal characteristics of Du Fay's *Le serviteur* are given in Table 7.

Voice	Range	Final	Octave species	Mode
superius	<i>g-c''</i>	<i>c'</i>	<i>g-c'-g'</i>	2
contratenor	<i>c-eb'</i>	<i>g</i>	<i>d-g-d'</i> [?]	2
tenor	<i>c-eb'</i>	<i>c</i>	<i>c-g-c'</i>	1

Table 7. Du Fay, *Le serviteur*

TABLE 7: Du Fay, *Le serviteur*

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. Nicolò Burzio (1487) described two ways of composing a chanson (*cantilena*; cf Tinctoris's dictionary *Terminorum musicae diffinitorium* written c1475); both methods result in a 'discant-tenor framework' with added contratenor (ed. Massera, 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 Burzio'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 Burzio'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 Du Fay and others in a Ferrarese manuscript of about 1450 (**P-Pm** 714) has shown the primacy of the upper voice, and Meier proposed that the compositions demonstrate conscious use of modal affect (1953; but see also Fallows, 1981, on the genesis of this source).

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, 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). However, Vicentino (1555, f.48) proposed the bass as the principal modal voice. It seems that, especially in instrumental music, the range and final of the bass was sometimes considered the fundamental criterion for the determination of the mode (for example in Galilei's *Fronimo*, 1584; see Wiering, 1998, pp.98-101).

(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, 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 *canto durus* versus *cantus mollis* combined with a higher as against a lower general disposition of the clefs for the voices. Together with the final of the work, these characteristics are known as the 'tonal type'. Tonal types are usually rendered by an expression consisting of the signature, the clef of the superius, and the final, as in \flat -g²-G. The concept was introduced as *Tonartentype* by Siegfried Hermelink (1960); however, it gained wide acceptance only after Harold Powers used it to distinguish between an *a priori* and an *a posteriori* approach to tonal structure in Renaissance polyphony (Powers, 1981; 1982). Powers considered the tonal type to be an *a priori* pre-compositional property, and mode to be an *a posteriori* method of classification. He described their relationship as follows (1981, pp.466-7):

contrasting patterns in system, in cleffing representing *ambitus*, and in final sonority can be seen as objective criteria minimally marking off one from another a certain number of tonal types, each with its own distinctive musical profile. Though these tonal types were frequently used to represent church modes it leads only to confusion to treat them as though they somehow were church modes. The anthropologist's distinction of 'etic' from 'emic' is useful here, and the church modes might better be regarded as culture-contextual 'emic' musical concepts while the tonal types are objectively marked 'etic' musical entities.

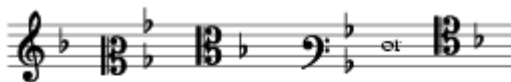
One of the earliest polyphonic collections showing a consistent combining of clefs and systems for modal purposes is Rore's first book of madrigals for five voices (1542). Nos.1-17 constitute a modal cycle. They are disposed in a conventional pattern of systems and clefs which was the preferred norm 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'4c'4 f3 f5* 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

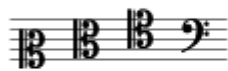
†mode 1



mode 1



†mode 2



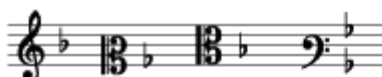
mode 2



modes 3, 4



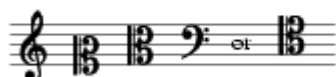
mode 5



mode 6



mode 7



mode 8



†rarely used

Ex.16

2. Polyphonic modal 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 (GerbertS, 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 in 1477 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, 135-6) - 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 (*Liber ... tonorum*, chap.19; CSM, xxii): '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 in about 1475, printed in 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 Ramis de Pareia (1482) also described imitation. The same passage appears in substance and partly verbatim in Burzio (1487), though this was a work directed against Ramis; as had Ramis, Burzio appended the passage as a supplement to the counterpoint rule recommending contrary motion. Ramis's passage (p.68), with Burzio's important changes (ii, ed. Massera, 122), reads as follows:

The best fashion of making organum [*modus organizandi*], however, is when the organum [Burzio 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* - Burzio 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 [Burzio omitted this sentence]. This fashion practising [musicians] call *fuga*.

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

Ex.17
(a)

(b)

Ex.17

Burzio's omission of Ramis's list of intervals of imitation, seen in the light of Tinctoris's definition, goes to the heart of the matter. Ramis 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. Burzio, who defended the traditional hexachord system, was 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 Ramis's intervals of imitation. Ramis's imitations at the lower 4th and upper 5th (ex.17a) 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 *differentia* 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 (see Psalm, §II, 6), and central European modal theory from the 16th century often shows a particularly strong impulse to do so, as compared to Italian sources. In Finck's *Practica musica* (1556) mode and psalm tone 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 [*differentiae*], 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 *differentia* 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 (Pseudo-Odo) *Dialogus*, c1000, chap.8; 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 often 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) 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, 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 as foreign. Dressler's species, repercussions and principal and secondary cadences are shown in ex.18 (after *Praecepta*, ed. Engelke, 239ff).

Ex.18

mode	species	repercussion	cadences	
			principal	secondary
1	te la / te sol	te la	te la sol	fa mi
2	te sol / te la	te fa	te fa te (te)	mi
3	mi / mi mi la	mi / fa	mi mi mi fa	sol la
4	mi la / mi / mi	mi la	mi la	sol fa
5	ut sol / ut fa	fa / sol	fa sol sol	mi
6	ut fa fa / sol	fa la	fa mi sol sol	
7	ut sol / te sol	ut sol	ut sol sol	fa
8	te sol / ut sol	ut fa	ut sol sol	fa

Ex.18

After describing three types of imitation (*fuga integra*, *semifuga*, *fuga mutilata*), 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 Lasso'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, 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 has often been 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 differentiae.*

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* (c1550), 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. These examples have been studied extensively by Powers (1992) and Judd (1995). 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 Jacobus of Liège, *Speculum musicae*, CSM, iii, 6, chaps.38, 67). 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 *differentiae*. The *differentiae* 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 *differentiae* 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 *differentiae* as modal finals even where confinals were available for the purpose, probably because psalm-tone *differentiae* are much more frequent in plainchant practice than confinals.

Psalm-tone *differentiae* 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 *differentiae*, 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.365-6, 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 *differentiae* in the corresponding psalm tones, but he had no occasion actually to use them in that way. The pseudo-final *differentiae* 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 [*differentia*]. As you will understand from what follows, this is because the third and fourth tones also use this step [*a*] as a difference [*differentia*]. 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 = ed 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 *differentia* ending at *a*.

Aaron's reliance on the *differentia* 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 *differentia* was decisive: the credentials of a note existing in a mode as a confinal but not at the same time as a *differentia* were insufficient to permit it to serve as an irregular final if any explanation for such a final invoking a *differentia* 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 *differentia* 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 has 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 *differentiae*, *c'*.

Ex.15

(a) titus
 regular f titus
 mode 5

* either of these two tones can be formed from the fourth species of 5th avoid the tritone' (Liber . . . tonorum, chap.8) (f, g, a, bb, c') . . . by reason of perfect concords . . . in composed song . . . or . . . to

irregular c titus
 mode 5

irregular Bb titus
 mode 5

† with altered e when it is necessary' (Liber . . . tonorum, chap.48)'

(b) protus
 irregular g protus
 mode 1

irregular c protus
 mode 1

Ex.15

Similarly, pieces ending at low *c* are not considered to be mode 5 irregular, as Tinctoris would have considered them (see above, ex.15a). 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 *chave* 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^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 process 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.19a shows Aiguino's composite forms for modes 1 and 2 (*Il tesoro*, ff.77v-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.

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 (see Schubert, 1993). Neither this construction of 'mixed modes' nor this usage of the term originated with Aiguino, however. Tinctoris had already given an instance (ex.19b from *Liber ... tonorum*, chap.18; CSM, xxii) 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^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^b-c'-d'* (ex.19c, from *L'antica musica*, f.51r) 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'.

Ex.19

(a)



(b)



(c)

(i)



(ii)



Ex.19

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.19c (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 8

MODE	CADENCES			
	<i>Primary</i>	<i>Secondary</i>	<i>Transitory</i>	<i>Inimical</i>
1, 2	<i>d a</i>	<i>f</i>	<i>g c</i>	<i>e b\natural</i>
3, 4	<i>e a</i>	<i>c'</i>	<i>g b\natural</i>	<i>f</i>
5	<i>f c'</i>	<i>a</i>	<i>d' g</i>	<i>e b\natural</i>
6	<i>f c'</i>	<i>a b\flat</i>	<i>d' g</i>	<i>e b\natural</i>
7	<i>g d'</i>	–	<i>c' f a e</i>	–
8	<i>g c' a'</i>	–	<i>f a</i>	–

Table 8. Pontio: cadential degrees in eight modes

Table 8 is a conspectus of Pontio's discussion of modal cadences (iii, 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.

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' text 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 156–7 for sources and references). In some of the sources the extra modes are called *mesi*, in others *parapteres* (or *paracteres*) and *circumaequales* (see Atkinson, 1982). 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 authentic and plagals, they add these four to those eight, and claim to have demonstrated twelve tones' (GerbertS, ii, 73).

(b) Modal divisions of the octave.

The integration of eight modes with seven octave species was achieved towards the end of 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.3a). The 11th-century *Questiones in musica* points out how the operation of transposition a fifth upwards 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), and by Johannes Gallicus in the 15th century (*Libelli musicalis de ritu canendi*, chap.2.i.6).

(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 plainchant in *Dodecachordon* (bk 2, chaps.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, plainchant 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 between 1507 and 1510. 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 (Cotto, but 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, and, by implication, the total number as 12, he cited Plato's *Republic* (*Dodecachordon*, prologue; MSD, vi, 38; cf Strunk, 1950, pp.4-5) and Aristoxenus (bk 1, chap. 21; MSD, vi, 102, presumably after Cleonides; cf Strunk, 44). But, in reality, 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' (bk 2, chap.37; MSD, vi, 197). And in arguing the logical case for dividing every octave at both the 4th and the 5th, Glarean observed (bk 2, chap.7; MSD, vi, 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 (GerbertS, 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 (bk 2, chap.2; MSD, vi, 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. Two more modes are mentioned but rejected, because their octaves cannot be properly divided. One is the Hyperaeolian, which shares its octave species *B-b* with the Hypophrygian, but can only be divided improperly into the diminished 5th *B-f* and the tritone *f-b*. Likewise the octave *f-f* of Hyperphrygian, the other rejected mode, is improperly divided into the tritone *f-b* and the diminished 5th *b-f* (bk 2, chaps.8, 18, 25; MSD, vi, 121, 150–51, 168–9). Despite their rejection, Glarean provided polyphonic examples for these two modes in Book 3 of the *Dodecachordon*. Table 9 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, Hypoastian and Hyperastian, 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, chapter 21, and Book 2, chapters 4, 7, 9, 10.

Ex.20 Glarean's 12 modes from seven mediated octave species
(see also Table 9)

The image displays 12 modes of music, each represented by a pair of staves. The top staff of each pair shows the mode name and its corresponding mode number. The bottom staff shows the scale pattern, with notes represented by circles and square markers indicating specific intervals or accidentals. The modes are arranged vertically as follows:

- mode 9:** Aeolian (A-a)
- mode 2:** Hypodorian (B-b)
- mode 4:** Hypophrygian (B-b)
- mode 11:** Ionian (c-c')
- mode 6:** Hypolydian
- mode 1:** Dorian (d-d')
- mode 8:** Hypomixolydian
- mode 3:** Phrygian (e-e')
- mode 10:** Hypoaeolian
- mode 5:** Lydian (f-f')
- mode 7:** Mixolydian (g-g')
- mode 12:** Hypoionian

Ex.20 Glarean's 12 modes from seven mediated octave species (see also table 9)

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^{\natural} with b^{\flat} in a mode with g final changes it from mode 7 to mode 1, replacing b^{\natural} with b^{\flat} 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^{\flat} 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^{\flat} 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’ (bk 2, chap.17; MSD, vi, 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 *synēmmenōntetrachord* [that is, by using b^{\flat}], which I do not condemn if it is done with good judgment’ (bk 2, chap.21; MSD, vi, 157). One such piece is the mode 1 antiphon *Ave Maria* (Gevaert’s *thème* 5) which Glarean wished to call Aeolian.

TABLE 9

(a)	(b)	(c)	(d)	(e)	(a)
$A-a$	{ Aeolian Hypodorian	9 $A-c, c-a$ 2 $A-d, d-a$	11 4	Aeolian Hypophrygian	} $A-a$
$B-b^{\natural}$	{ (Hyperaeolian) Hypophrygian	– $B-f, f-b$ 4 $B-c, c-a$	– 6	– Hypolydian	} $B-b^{\natural}$
$c-c'$	{ Ionian Hypolydian	11 $c-g, g-c'$ 6 $c-f, f-c'$	1 8	Dorian Hypomixolydian	} $c-c'$
$d-d'$	{ Dorian Hypomixolydian	1 $d-a, a-d'$ 8 $d-g, g-d'$	3 10	Phrygian Hypoionian	} $d-d'$
$e-e'$	{ Phrygian Hypoaeolian	3 $e-b^{\natural}, b^{\natural}-e'$ 10 $e-a, a-e'$	5 12	Lydian Hyperaeolian	} $e-e'$
$f-f'$	{ Lydian (Hyperphrygian)	5 $f-c', c'-f'$ – $f-b, b-f'$	7 –	Mixolydian –	} $f-f'$
$g-g'$	{ Mixolydian Hypoionian	7 $g-d', d'-g'$ 12 $g-c', c'-g'$	9 2	Ionian Hypodorian	} $g-g'$

Table 9

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 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’ (bk 1, chap.21; MSD, vi, 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’ (bk 2, chap.7; MSD, vi, 117).

Table 9(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 Hyperastian' (bk 2, chap.7; MSD, vi, 115-16).

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 (bk 2, chap.7; MSD, vi, 116; Strunk, pp.48-9); 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 (bk 2, chap.7; MSD, vi, 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. Hyperastian - '[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.

(b) Modal function and non-modal consonance species.

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 musice*, 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' (bk 2, chap.36; MSD, vi, 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' (bk 2, chap.37; MSD, vi, 197).

Glarean nowhere defined the term 'phrasis' (which in rhetoric means 'style' or 'diction'), but at one point he referred it back to 'certain rather easy and relatively common rules [for melodic movement] which ... certainly should not be neglected' (bk 1, chap.13, bk 2, chap.36; MSD, vi, 71, 195). 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). This is the most important meaning Glarean attached to *phrasis*, but not the only one. The term in fact covers a wide range of meanings, from octave species (bk 3, chap.16; MSD, vi, 256) to personal style (bk 3, chap.26; MSD, vi, 278).

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^b* 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 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. The title of Stoltzer's *Octo tonorum melodiae* refers to the same intervals, which are quite conspicuous in the tenors of these works (as are the octave species; Wiering, 1995, pp.168-70).

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

The image displays musical notation for eight modes, labeled 'mode 1' through 'mode 8'. Each mode is represented by a single staff with a treble clef and a key signature of one flat (B-flat). The notes are half notes, and the lyrics are written below the notes. Mode 1: *te la*. Mode 2: *te fa*. Mode 3: *mi / fa*. Mode 4: *mi la*. Mode 5: *fa / fa*. Mode 6: *fa la*. Mode 7: *ut sol*. Mode 8: *ut fa*. Below the main notation, there are two additional examples of melodic progressions. The first is for mode 5, showing *fa / sol* with the note *fa* on a lower line and *sol* on a higher line, labeled 'accotding to Cochlaeus and Wollick'. The second is for mode 8, showing *mi sol* with the note *mi* on a lower line and *sol* on a higher line, labeled 'accotding to Glarean'.

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

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, chapters 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 (bk 2, chap.23; MSD, vi, 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’ (bk 2, chap.23; MSD, vi, 160); but the Hypoaeolian ‘is infrequently used in our time, and one finds few songs in choirs [i.e. chant] according to it’ (bk 2, chap.24; MSD, vi, 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' (bk 2, chap.25; MSD, vi, 167). These are the *Tollite portas-Haec dies* mode 2 transposed graduals (see Apel, 1958, pp.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 [Hypoaolian] 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, 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' (bk 2, chap.24; MSD, vi, 162-3). (For a brief discussion of this melody type see Apel, 1958, pp.398ff.) Glarean also used the Hypoaolian 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).

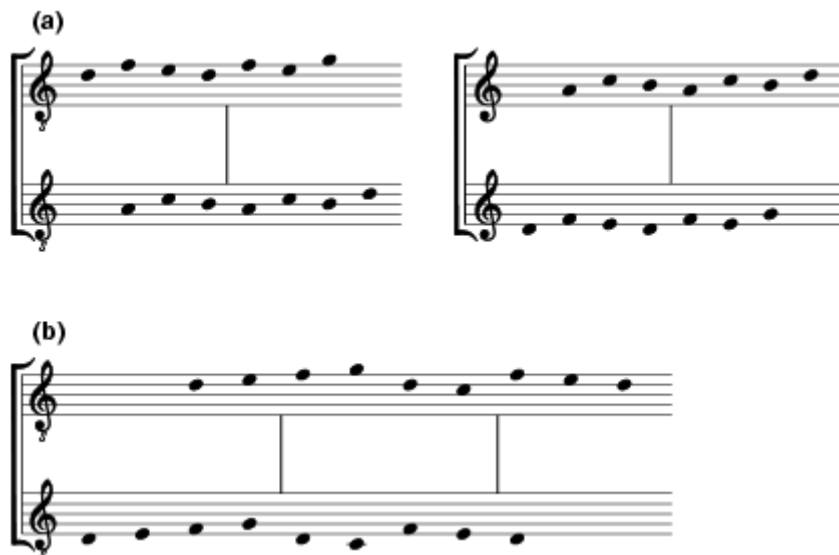
In applying his system to polyphony Glarean was limited in three ways. First, for him as for others the modes were monophonic, and a principle for integrating the voices was needed. Second, though the *Dodecachordon* includes a discussion of mensuration and proportion (bk 3, chaps.1-12), there is no 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 (bk 3, chap.13; MSD, vi, 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 *differentia*. 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.

Ex.17



Ex.17

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 Ramis de Pareia's little demonstration *fuga* in ex.17a: 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 *differentia* 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'*]' (bk 3, chap.20; MSD, vi, 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 *differentia* *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 (bk 3, chap.16; MSD, vi, 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_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 cumbersome 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, 2/1573); important concepts are also found in Part iii, on counterpoint. Zarlino adopted Glarean's system of the 12 modes; 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.

Zarlino had already used Glarean's names for the 12 modes in his early motet collection *Musici ... moduli* (1549) (see Flury, 1962). In the 1558 edition of the *Istitutioni* he retained Glarean's numbering, but did not use the classical names for the modern modes, since the intervals between the (modern) modal octave species did not agree with those of the classical modes (pt iv.8). Zarlino was generally much more sensitive to the differences between classical and Renaissance modality than Glarean was. In the *Dimostrationsi harmoniche* (1571, pp.270ff) Zarlino explained his views more fully, and 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 modes 11 and 12 (see above, Table 9(d)). This reordering was also used in the revised editions of the *Istitutioni* of 1573 and 1589. 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). Although he argued that the compasses of the modes could now be made to agree with classical sources, calling the *c* modes Dorian, the *d* modes Phrygian and so on, Zarlino hardly ever used the names again, apparently expecting the new usage to be confusing.

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. A survey of modal ethos according to Zarlino is given in Table 10 (translations after Cohen). 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.

TABLE 10

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' (pt iii.26; trans. Marco and Palisca, p.52). He went on to require that imitative voices enter on modal degrees (iii.28; 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 (iii.53; p.142):

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 ethnic 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. [iii.31; 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. [iii.59; 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 (iii.59; 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 (iii.10; pp.21-2):

TABLE 9

(a)	(b)	(c)	(d)	(e)	(a)
<i>A-a</i>	{ Aeolian Hypodorian	9 <i>A-e, e-a</i> 2 <i>A-d, d-a</i>	11 4	Aeolian Hypophrygian	} <i>A-a</i>
<i>B-b_♭</i>	{ (Hyperaeolian) Hypophrygian	- <i>B-f, f-b</i> 4 <i>B-c, c-a</i>	- 6	- Hypolydian	} <i>B-b_♭</i>
<i>c-c'</i>	{ Ionian Hypolydian	11 <i>c-g, g-c'</i> 6 <i>c-f, f-c'</i>	1 8	Dorian Hypomixolydian	} <i>c-c'</i>
<i>d-d'</i>	{ Dorian Hypomixolydian	1 <i>d-a, a-d'</i> 8 <i>d-g, g-d'</i>	3 10	Phrygian Hypoionian	} <i>d-d'</i>
<i>e-e'</i>	{ Phrygian Hypoaolian	3 <i>e-b_♭, b_♭-e'</i> 10 <i>e-a, a-e'</i>	5 12	Lydian Hyperaeolian	} <i>e-e'</i>
<i>f-f'</i>	{ Lydian (Hyperphrygian)	5 <i>f-c', c'-f'</i> - <i>f-b, b-f'</i>	7 -	Mixolydian -	} <i>f-f'</i>
<i>g-g'</i>	{ Mixolydian Hypoionian	7 <i>g-d', d'-g'</i> 12 <i>g-c', c'-g'</i>	9 2	Ionian Hypodorian	} <i>g-g'</i>

Table 9

the fifth, sixth, seventh, eighth, eleventh and twelfth [modes, numbered as in 1558, see Table 9(b) and (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.

TABLE 10

<i>Mode</i>	<i>Ethos</i>
1	somewhat sad
2	lamenting, humble and deprecatory
3	somewhat hard; moves one to weeping
4	lamenting sad; supplicant lamentation
5	joyous, modest and pleasing
6	devout and tearful
7	lascivious; cheerful; expressing threat, perturbation and anger
8	joy with great gaiety and sweetness
9	cheerful, sweet, soft and sonorous
10	not very different from that of modes 2 and 4
11	suitable for dances; lascivious
12	for texts about love that include lamenting

Table 10. A survey of modal ethos according to Zarlino

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 (see above, Table 10). Zarlino's recognition of the realities of compositional practice regarding 'irregular' cadences in the Phrygian has been quoted. The two-part examples in Part iv illustrate regular modal procedure, particularly for cadences. In addition, a number of multi-part compositions are listed for each mode, illustrating (among other things) that musical practice abounds with irregular cadences. 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 (iii.58; pp.178ff; see especially the table on pp.182-3). 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. Transition to major and minor keys.

(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 above, Table 9(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 (see Bossuyt, 1981). The 1577 *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, illustrating them in his *Hexachordum seu questiones musicae practicae* (1591) with chorales, polyphonic works and newly written canons, 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); these are only partly in cyclical order. Raselius also prepared a huge manuscript collection, the *Dodecachordi vivi ... exempla* (**D-Rp** 774), containing 12 works by different composers for each of the 12 modes in Glarean's ordering.

TABLE 11

(a)				
<i>Tone</i>	<i>Scale</i>	<i>Final</i>	<i>Putative transposition</i>	<i>'Natural' final</i>
1	–	<i>d</i>	–	
1	<i>b</i>	<i>g</i>	↑4	<i>d</i>
2	<i>b</i>	<i>g</i>	↑4	<i>d</i>
3	–	<i>e</i>	–	
4	–	<i>e</i>	–	
5	–	<i>c</i>	↓4	<i>f</i> (in <i>B\flat</i> scale)
6	<i>b</i>	<i>f</i>	–	
7	–	<i>g</i>	–	
8	–	<i>g</i>	–	
9	<i>b</i>	<i>d</i>	↓5	<i>a</i>
10	–	<i>a</i>	–	
11	<i>b</i>	<i>f</i>	↓5	<i>c'</i>
12	–	<i>c'</i>	–	

(b)				<i>name of mode</i>
1	<i>b</i>	<i>f</i>	↑4	<i>c</i> Dorian
2	<i>b</i>	<i>f</i>	↑4	<i>c</i> Hypodorian
3	<i>b</i>	<i>g</i>	↑4	<i>d</i> Phrygian
4	<i>b</i>	<i>g</i>	↑4	<i>d</i> Hypophrygian
5	–	<i>e</i>		Lydian
6	–	<i>e</i>		Hypolydian
7	–	<i>f</i>		Mixolydian
8	–	<i>f</i>		Hypomixolydian
9	–	<i>g</i>		Ionian
10	–	<i>g</i>		Hypoionian
11	–	<i>a</i>		Aeolian
12	–	<i>a</i>		Hypoaeolian

Table 11

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. Keyboard compositions using the 12 modes proliferated in the late 16th century and early 17th.

Luzzaschi's second book of *Ricercari* (1578 or earlier) is the oldest surviving of these; it is exceptional in using Zarlino's new numbering. Andrea Gabrieli's *Ricercari* of 1595 form a full set of extended compositions in all 12 modes (using the traditional numbering). Table 11a 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.

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.) Claude Le Jeune composed several modal cycles in this order. In his *Octonaires* (1606; ed. in MMFTR, i, 1924, and viii, 1928) 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 11b 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^{\natural} and the scale with b^{\flat} - 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 11 two preliminary illustrations may be extracted.

The Gabrieli *Ricercari* (see Table 11a) include two *f* modes, one authentic and one plagal, both with the b^{\flat} 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^{\flat} . 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^{\flat}) 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^{\flat} 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 11b). 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^{\natural} , the other b^{\flat} , 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^{\natural} and b^{\flat} , 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^{\flat} system) and *d* (in the b^{\natural} system).

TABLE 9

(a)	(b)	(c)	(d)	(e)	(a)
A-a	{ Aeolian Hypodorian	9 A-e, e-a 2 A-d, d-a	11 4	Aeolian Hypophrygian	} A-a
B-b ₄	{ (Hyperaeolian) Hypophrygian	- B-f, f-b 4 B-c, e-a	- 6	- Hypolydian	} B-b ₄
c-c'	{ Ionian Hypolydian	11 c-g, g-c' 6 c-f, f-c'	1 8	Dorian Hypomixolydian	} c-c'
d-d'	{ Dorian Hypomixolydian	1 d-a, a-d' 8 d-g, g-d'	3 10	Phrygian Hypoionian	} d-d'
e-e'	{ Phrygian Hypoeolian	3 e-b ₄ , b ₄ -e' 10 e-a, a-e'	5 12	Lydian Hyperaeolian	} e-e'
f-f'	{ Lydian (Hyperphrygian)	5 f-c', c'-f' - f-b, b-f'	7 -	Mixolydian -	} f-f'
g-g'	{ Mixolydian Hypoionian	7 g-d', d'-g' 12 g-c', c'-g'	9 2	Ionian Hypodorian	} g-g'

Table 9

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^{\natural} and b^{\flat} . *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 armoniali' 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. Cerone, who added four new examples to Pontio's eight tones for the psalms (*Melopeo*, 1613, pp.884ff), is one of the few authors who claimed the existence of 12 psalm tones.

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.22a); this is followed immediately by the eight psalm tones illustrated by the ancient and familiar couple of modal final with psalm-tone tenor (ex.22b – 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 (ex.23, from 1614, pp.70-71). He began with the 'intonation, middle and end of the plainchant' for each of the eight psalm tones at its regular position, ending each with its principal *differentia*. 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.22a.

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 \flat* in practice (see ex.22b); 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 *bⁿ* and *b^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^b*, thereby compressing the range of recitation tones to a minor 3rd, *g, a* and *b^b*.

Ex.22**(a) the eight modes**

mode 1 mode 3 mode 5 mode 7

mode 2 mode 4 mode 6 mode 8

● = final

(b) the eight tones

1 2 3 4 5 6 7 8

te la te fa mi fa mi la fa fa fa la ut sol ut fa

the other tone 5

ut sol

(c) the octaves and finals of the eight polyphonic tones

tone 1 tone 2

tone 3 tone 4

tone 5 tone 6

tone 7 tone 8

Ex.22

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.22c (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).

Ex.23

Plainchant middle end

Transposed for compositions in polyphony for the choir

intonation middle end cadences

tone 1

tone 2

tone 3

tone 4

tone 5

tone 6

tone 7

tone 8

Ex.23

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 *differentia*. 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^{\natural} 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^{\natural} median, *g* indifferent, and *e* final; but with more voices, because of the aforesaid impediments [arising] from the note b^{\natural} , cadences on the two notes contiguous to the b^{\natural} 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 pratico* (1673), ii.17, pp.121-2: 'Of the 12 tones ... there are seven that are normally used' (ex.24a, 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.24b (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.

Ex.24**(a) modes and psalm-tone keys**

○ : the mediated octaves ● : finals

(b) modes and key signatures

modes: 1 9 7 11

modes: 7 1 11 9

Ex.24

By a circuitous but traceable route through French- and German-speaking Catholic countries (documented in Lester, 1989), 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 12). As his source for this set of eight tones Mattheson 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*, 2/1921, pp.454-5). But shortly thereafter he returned to the 24 major and minor keys, first set out as a whole in 1711, only two years earlier, 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 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. Cycles through the psalm-tone keys continued to be written for a long time. One of the last, the so-called *Octo toni ecclesiastici*, was written by Beethoven's teacher Albrechtsberger in about 1760; it consists of a cadenza, six verses and a fugue for each *tono*.

(iii) The modal triad.

In his *Cartella musicale* Banchieri listed the cadential degrees for his eight modes (see ex.22a) and his eight psalm-tone keys (see 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 in versions 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, and 1989, pp.31-3).

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 (see Lester, 1989, pp.52-9). 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. [ex.25a and b] ... Other species of triad ... [ex.25c].

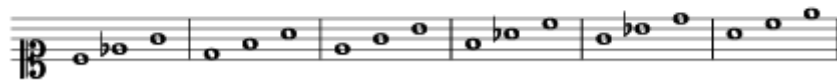
Crüger grouped the modes by the species of triad:

Ex.25

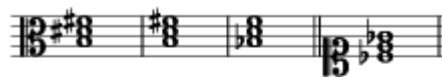
(a) natural triad, native and fictive species



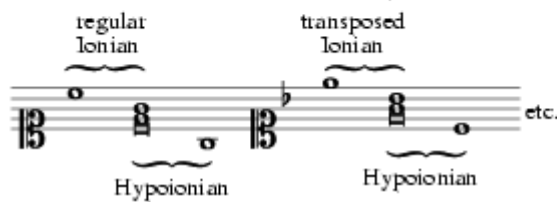
(b) soft triad



(c) other species of triad



(d) the modal triad and authentic and plagal modes



Ex.25

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 [ex.25d].

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.

Ex.22

(a) the eight modes

mode 1 mode 3 mode 5 mode 7

mode 2 mode 4 mode 6 mode 8

• = final

(b) the eight tones

1 2 3 4 5 6 7 8

te la te fa mi fa mi la fa fa fa la ut sol ut fa

the other tone 5

ut sol

(c) the octaves and finals of the eight polyphonic tones

tone 1 tone 2

tone 3 tone 4

tone 5 tone 6

tone 7 tone 8

Ex.22

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.

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IV. Modal scales and traditional music

1. Modal scales as a new musical resource.

James Porter

In the early 19th century the term 'mode' signified the major or minor scale; alternatively, it could refer to an ancient Greek mode, which would signify one of Glarean's 12 authentic or plagal octave species. By 1800 practising musicians on the Continent had come to believe that the major and minor modes had resulted from the historical reduction of earlier diverse scales to their essential features. Koch's *Musikalisches Lexikon* (1802) observed that 'our two modern modes are the descendants of the old Ionian and Aeolian'. Theorists in the 19th century usually began with the diatonic major and minor scales as the foundation of their teaching. Occasionally, however, composers could conceive of modality outside the major and minor conventions, as did Beethoven when he composed a four-part, chorale-like movement 'in the Lydian mode' in his String Quartet op.132. With this experiment Beethoven wished to evoke a reverent mood in a thankful release from illness. Composers from Schumann to Fauré, Grieg and Wolf used modality to extend this evocation of religious feeling or, alternatively, to suggest folk practice ('im Volkston').

Modes, as they evolved in popular tradition, arise from generalized types of melodic movement in existence before the abstract theories of ancient Greece or the medieval Church. The modern turn, around 1800, towards European folk music as a resource for composers was already evident in the settings of British folk tunes made by Beethoven, Haydn and others for the publisher George Thomson. In part this was the outcome of the stirrings of Romanticism, for the poetry of Ossian and Burns had drawn the attention of intellectuals to Scotland, where Allan Ramsay and others had been avidly collecting traditional song material throughout the 18th century. The settings by these composers, while often skilful and harmonious, misunderstand the modal character of the melodies. Indeed, this misunderstanding was nothing new. Composers such as Purcell and J.C. Bach tried to get to grips with

the 'gapped' pentatonic or hexatonic melodies that proliferate in Scottish folksong: the ambiguous modal character of these tunes, for instance, or the habit of ending on a note other than the presumed tonic, puzzled composers with a conventional major-minor harmonic vocabulary.

Throughout the 19th century folktunes were a constant well of inspiration as composers began to reflect national feeling: Chopin drew on the mazurka dances of Poland, for example, Liszt on Hungarian Gypsy traditions. Both employed folk scales, indigenous or derived from Romani practice, as well as novel rhythms and textures that were unfamiliar to concert audiences. Minorities, conscious of their cultural identity, made their mark through the original use of modality: Mahler, brought up in a Jewish enclave on the borders of Bohemia and Moravia, adapted formulae from both German-language and Moravian folksong, including the Lydian 4th, in his melodic style. Janáček's absorption of folk modes stemmed from his devotion to Moravian folk music, as collector and arranger, from the 1890s. His opera *Jenůfa* (1908) and his mature works display not only mastery of the principles of folk modality but his creative synthesis of these.

Eastern Europe, especially Russia, gave rise to novel conceptions of harmony and melody derived from folk modes. Glinka had already drawn on Russian folk melodies for his early works: his strong attachment to the 'foreign lands and peoples' announced in Schumann's *Kinderszenen* led him to travels in Italy and, notably, Spain, which inspired a number of his compositions and whose Andalusian Hispano-Arabic melos also generated pieces by Chabrier, Debussy, Ravel and others. Musorgsky, famously, mined the modality of Russian melodies in works deemed strange or crude by his contemporaries. The first version of his song *Kalistratushka* (1864), for example, is called 'a study in folk style' and the cadential dissolution of the harmony into bare octaves is typical of the genuine folk polyphony recorded by Yuliy Melgunov, Kastalsky and others. By contrast, Rimsky-Korsakov oscillated in his lyric operas and tone poems between a diatonic style suffused with Russian folk music and an 'oriental' style that is usually chromatic or based on a whole-tone scale in its specifically melodic inflection. His 'revision' of Musorgsky's work was a typical misunderstanding, by a conservatory-trained musician, of an original, folk-influenced melodist.

Saint-Saëns was just such an academician: believing Musorgsky to be deranged, he brought back from Russia a score of Musorgsky's *Boris Godunov* thereby, however, introducing a new element into French music. He himself experimented with scalar novelties and produced several works, such as *Samson et Dalila* (1877) that conjure up 'exotic' scales and are often in the minor key with a minor 6th and raised 7th. Verdi had also injected elements of modal exoticism into *Aida* (1871), conjuring up visions of the 'remote' lands where Aida lived by means of an oboe melody that wavers between major and minor. Attracted to the modal features of peasant melodies, the 'antique' modes of the Middle Ages or Renaissance or the melos of peoples outside Europe, composers explored scalar systems other than those of major-minor, and this had become a distinct trend by the turn of the 20th century (*see* Exoticism).

Debussy, who visited Solesmes and was fascinated, like his contemporary d'Indy, by Gregorian chant, explored a variety of pentatonic structures: many of his works, as well as 'exoticisms' like *Pagodes*, are saturated with pentatonicism. He conjures up an antique world, as in *Pelleas et Mélisande*, or one in which ambiguity is central, as in the *Chansons de Bilitis* by mixing modality (usually Dorian) and chromaticism. The attitude of Ravel, on the other hand, towards modal-melodic pastiche was sometimes ironic: he described his *Bolero* as being in the 'whining and monotonous style of Spanish-Arabian melodies'. But like Debussy he admired Javanese music and derived melodic and harmonic

elements from it, as in the tolling of temple bells in 'Laideronnette' from *Ma mère l'oye* (1911). Similarly in debt to Debussy as well as to plainchant and Hindu sources, Messiaen evolved 'modes of limited transposition' (i.e. modes able to be transposed by a semitone a limited number of times, after which the original set reappears). The importance of these modes in his composition is such that the horizontal line is harmonized exclusively by the notes of the mode.

Stravinsky, who had himself collected traditional tunes, transcended the inspiration of folk models by condensing, repeating or superimposing modals cells often derived from Russian folk sources as in, notably, the *Rite of Spring* (1913) or *Les noces* (1917). While his procedures in these early works have little to do with past modal practice, they do refer to diatonic pitch relations (e.g. the D- and G-scales or to hexachordal segments of these). The source of Stravinsky's well-documented octatonic pitch construction, on the other hand, which stretches over his entire output, may well have been Rimsky-Korsakov; it begins with the second tableau of *Petrushka* (1911). Bartók's complex use of modal structures reflects his interest not only in the Hungarian peasant music that motivated Kodály but also in the diffusion of melodic styles into Europe from the Middle East and North Africa. Nevertheless, Bartók stressed that in eastern Europe most of the old modes (Dorian, Phrygian, Mixolydian, Aeolian etc.) were robustly alive. His construction of harmonies by condensing these melodic patterns is a central feature of his style: the melodic mode articulated in the finale of the Sonata for Two Pianos and Percussion (1937) is a composite of the Lydian and Mixolydian modes (one used by Fauré, Debussy and Ravel) and makes for contrast with modal chromaticism because of its relationship to the open overtone series based on C.

From around 1900 the discovery and invention of modal procedure as a compositional resource evolved in two directions: first, towards a regional style of composing based on the collection of European folktunes; and second, towards works that incorporated musical elements from Africa, the Americas and Asia. The invention of the phonograph in 1877, the increased collecting of music in different parts of the world and the founding of phonograph archives at Berlin, London, Paris and Vienna permitted composers to absorb and adapt musical styles detached from their original context. At the same time, conferences such as the Congrès de musique arabe held in Cairo (1932) brought together composers (e.g. Bartók, Hába) and musicologists (e.g. Hornbostel, Lachmann, Sachs) from East and West to discuss topics such as melodic or rhythmic modes, and the 'musical scale' and, more broadly, to reach a greater understanding of both modal conceptions and musical difference.

The enthusiasm for folksong of English composers such as Holst and Vaughan Williams and of the Australian Percy Grainger stimulated them to fashion idioms based more on the open melodic style of traditional music than on its harmonic implications. This procedure emerges to some extent from the wider span of English-language folk tunes compared with the narrow-range melodies with which their east European colleagues were working. Grainger, instinctively drawn to the modal qualities of traditional music, also made arrangements of Balinese and Javanese music he transcribed from the recorded collection *Musik des Orients*. The collecting activity of Cecil Sharp in both England and the USA and the populist effect of singers and collectors in the USA before and after World War II helped move some American composers towards folk styles, among them Roy Harris, who made a systematic use of modes, sometimes combining one or more modal type, Colin McPhee, who studied gamelan music in Bali, and Henry Cowell, who took over drones, modal scales and other effects from Celtic, Amerindian and east European folk music. The adaptation of structural elements from African and

Asian music cultures (though not as models of sound) has continued in the music of Steve Reich, Philip Glass and John Adams, while the use of elements from European folk and liturgical sources has continued with Górecki, Pärt and Tavener.

2. Modal scales and melody types in Anglo-American folksong.

Harold S. Powers, revised by James Cowdery

During the second half of the 19th century, while continental composers were becoming ever more interested in indigenous traditional musical sources, English and American professional musicians remained dependent on the mainstream style as taught in continental conservatories. A few collections of British traditional songs with their melodies were published during this period by educated amateurs; one of the first was *Sussex Songs*, collected from agricultural workers and privately printed in 1843 by John Broadwood. 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. Grainger 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.158-9):

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.36–7):

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*, (1910–13), 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.

Ex.26

mode 1 mode 2

pentatonic

6-note scale A *

6-note scale B

A + B = Aeolian

mode 3 mode 4

A *

B

A + B = Ionian
(with \flat^3 = Mixolydian)

A + B = Dorian

mode 5

A

B

A + B = Phrygian

Ex.26

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^b and B^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'.

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 only with abstractions 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.125-6): [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 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.

While Bronson demonstrated the efficacy of the tune family concept for grouping tunes in collections, he criticized its use in theoretical ventures:

Obviously, the knowing annotator achieves a gratifying sense of mastery within his range of familiarity, and this is good for his psyche. The game can be fascinating to those who like to play it. But ... will clarification be the end product, or only a patternless complexity like that of the interrelations of the human generations that begot this melodic flux? (1969, p.141).

Facing similar concerns, later scholars have tended to avoid further theorizing about tune families, although several have adopted the idea as a tool for categorizing and generalizing in area studies. Shapiro developed systematic refinements to this procedure which are appropriate for organizing large collections (1975).

A proposal for an expansion of the concept involves three basic principles - outlining, conjoining, and recombining - which may be applied to describe relationships between tunes in a given repertory (Cowdery, 1984; 1990). Unlike previous theoretical work with tune families, which often involved diachronic speculation concerning 'earlier' and 'later' versions based on historical records of dubious credibility, these principles address synchronic relationships between co-existent tunes, illuminating the creative processes of traditional musicians.

Ex.27

(a) 94-F



(b) 94-A



(c) 35-R



(d) 35-P



(e) 35-L



(f) 35-C



Ex.27

Outlining refers to the overall relationships illustrated in ex.27. Conjoining denotes the common traditional practice of combining a new melody with an older one. This procedure is particularly evident in dance tunes; for example, the two Irish polkas in ex.28 have different first sections which are conjoined to similar second sections. Versions of these second sections may be found in Bayard's 1954 study of 'The Job of Journeywork', where they are similarly conjoined to unrelated sections. Tunes related through recombining draw from a pool of melodic motives which, through long association with each other, belong together somewhat like the characteristic features of explicit modal systems. The three Irish song melodies in ex.29 share certain melodic gestures - indicated as A, B and C - while their overall contours differ significantly. A and C are essentially the same motive at different pitch levels; this congenial symmetry may account for their frequent use together.

Ex.28

Musical score for Ex.28, a single melodic line in G major, 2/4 time, consisting of seven staves of music.

Ex.28

Ex.29

Musical score for Ex.29, a single melodic line in G major, 2/4 time, divided into three parts (a, b, c) with labeled phrases A, B, and C.

Ex.29

This augmentation of the tune family concept provides a link between theoretical and practical studies of traditional musics. Bayard himself acknowledged these three principles as compositional processes in his last major collection (1982, p.7), Quigley documented them in his study of a French Canadian fiddler and composer (1995, pp.104–5) and Jeffery noted similar evidence in the repertory of Gregorian chant (1992, pp.101–2).

(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.

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V. Middle East and Asia

1. Introduction: 'mode' as a musicological concept.

Harold S. Powers, revised by Richard Widdess

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 was with this sense that the term 'mode' was first applied to phenomena and practices in other musical cultures.

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 *diao* (see §5(i) below). The Iranian theoretical 84 was merely one of a number of Iranian and Arabic schemes, this one comprising the sum of 'twelve *makams* or *perdahs*, [plus] twenty-four *shobahs*, and forty-eight *gushas*', a scheme partly related to older Iranian and Arabic theories, and dimly reflected in present Iranian practice. The South Asian

‘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 South Asian 84 arises from six groups of 14 ‘modes’ each, each group of 14 comprising one *rāga* plus five *rāginīs* 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 Iranian ‘*makams* or *perdahs*’ and South Asian ‘*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 Iranian 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). Jones himself was well aware that: ‘*rāga*, which I translate as mode, properly signifies a *passion* or *affection* of the mind’, and he knew of more specific ethnic 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 *rāga* in South Asian 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 [ṭhāt]: *Rág* signifies rather “*tune*” or “*air*”. But Willard in fact had not moved *rāga* 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’. In short, Willard saw *rāga* 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 the 20th 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, ‘*Loctoëchos syrien*’ by the Benedictines Jeannin and Puyade in *Oriens christianus*, radically extended the scope of what had come to be understood as modal:

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 (see above, §I); 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):

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 (*oktōēchos*) with their melody types (1961): ‘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 *ēchos* are proposed as members of a larger metacultural musical entity:

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 *rāga* and Perso-Arabic *maqām*, as well as the Byzantine *ēchos*, 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 words in Asian musical cultures still farther east are now widely accepted. For instance: ‘*Pathet* is the Javanese system of classifying gamelan pieces, usually translated as mode’ (Becker, 1972); ‘these modes, or *chōshi* as they are known in Japanese’ (Garfias, 1975). The association of such culturally and linguistically diffused terms as

ēchos (Greek), *maqām* (Arabic), *rāga* (Sanskrit), *pathet* (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, Ki 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.

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.

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 whose comparison forms the focus of the following discussion 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*, Central Asian *makom* and particularly the Indian *rāga* are nearer the tune end; the *pathet* 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 West 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 West and South Asian spheres, the number of *maqāmā* or *rāga*, runs to many dozens, even hundreds; the sets of central Javanese *pathet* 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 West 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. Middle East and Central Asia: ‘maqām’, ‘makom’

Ruth Davis

(i) The basic terms.

Maqām (pl. *maqāmāt*; Turkish: *makam*, pl. *makamlar*) is an Arabic word meaning ‘position’, or ‘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 the pitches available in the system. The use of *maqām* in the sense of mode first became established in 15th-century Ottoman treatises written in Turkish, where it replaced the older Persian terms *pardeh* and *shedd*. The term *maqām* defined modal entities by their particular position on the general scale, thus introducing a new system of nominally equivalent note and *maqām* names. This system was adopted in Turkey and Arab countries of the Ottoman empire, but remained unknown in Persia. *Pardeh* continued to be used to denote ‘fret’ and latterly, ‘key’ of a piano; in this sense *pardeh* parallels the basic meaning of *maqām*, referring to a particular position in a general system of available pitches.

In contemporary usage, *maqām* is one of several terms used to denote two contrasting modal concepts: 1) tonal-melodic type and 2) cyclical genre. Analogous terms for *maqām* in the sense of tonal-melodic type are *naghma* (‘tune’, ‘voice’), *ṭab’* (‘nature’, ‘effect’) and *gushehh* (‘corner’, ‘piece’). *Naghma* is used interchangeably with *maqām* in speech, but rarely in published sources, in Arabic-speaking countries of the eastern Mediterranean. *Ṭab’*, the term traditionally used in the Maghreb (Algeria, Libya, Morocco and Tunisia), has largely been superseded by *maqām*. In Iran, individual modal entities called *gushehhs* are organized in 12 modal families called *dastgāh* (organization, system) and *maqām* refers only to scale type. Cyclical *maqām* genres include the Iranian *dastgāh*, Iraqi *maqām* (*maqām ‘irāqī*), Azeri *mugam* or *mugam-dastgāh*, *maqom*, Uighur *muqam*, Turkish *fasıl*, Mevlevi *ayin*, eastern Mediterranean *waşla* and North African *nūba*. Each of these genres comprises an ordered sequence of different kinds of performed items grouped together according to their modal character.

(ii) Modal entities and the general scale.

In Arab, Turkish and Iranian traditions, modal entities are composed of particular scale degrees which are conceived as belonging to a general background collection known as the general scale. The general scale of Arab and Turkish music is in turn capable of generating an infinitude of particular modal complexes. Each of these complexes, composed of a succession of tones linked by certain intervallic relationships with inherent melodic functions, constitutes a special mode, or *maqām*.

The general scale of all three traditions is ultimately derived from the 17-note-per-octave scale of medieval Arab and Persian music theorists. Şafī al-Dīn’s scale of 17 notes per octave, shown as frets on the *ūd*, is derived from Pythagorean limma/comma divisions of the octave into two conjunct tetrachords, each comprising two whole steps (lima, limma, comma) and a limma half step, followed by a whole step. This arrangement provided the principal model for subsequent generations of theorists. The treatise of Prince Dimitrie Dimitrie Cantemir (1700) divides the general scale into a total of 33 scale degrees over two octaves, *yegâh* (*D*) to *tîz hüseyinî* (*e’*), shown as fret positions on the *tanbur* (long-necked lute). Cantemir’s fundamental octave *dügâh* (*A*) to *muhayyer* (*a*) is divided into 17 named notes of which eight are *tamam perdeler* (literally, whole frets) or basic scale degrees, and seven are *na-tamam* or *nim perdeler* (literally incomplete or half frets) or secondary scale degrees (Table 13, after Feldman, 1996, p.203). Individual *makamlar* consist of basic scale degrees alone or a mixture of

basic and secondary scale degrees, but never of secondary scale degrees alone. Cantemir provides no precise interval measurements, but simply uses the note names to describe modal progressions or the tuning of the *tanbur*.

Table 13: *The fretting of the Ottoman tanbur*

(D)	yegâh*	_____			
			_____	'aşîrân	(E)
			_____	'acem 'aşîrânî	(F)
(F#)	'îrak	_____			
(F#)	rehâvî	_____			
			_____	rast	(G)
(G#)	zengüle	_____			
(A)	dügâh	_____			
			_____	nihavend	(Bb)
			_____	segâh	(Bd)
(B)	bûselîk	_____			
(c)	çârgâh	_____			
			_____	sabâ	(db)
(c#)*	'uzzal	_____			
			_____	neva	(d)
(d#)		_____		beyâtî	(eb)
(ed)	hisâr	_____			
(e)	hüseynî	_____			
			_____	'acem	(f)
			_____	evç	(f#)
(f#)	mâhûr	_____			
(g)	gerdânîye	_____			
(g#)	şehnâz	_____			
			_____	muhayyer	(f)
			_____	sünbüle	(fb)
(bd)	tîz segâh	_____			
(b)	tîz bûselîk	_____			
			_____	tîz çârgâh	(c')
			_____	tîz sabâ	(db)*
(c#)*	tîz 'uzzal	_____			
(d')	tîz nevâ	_____			
			_____	tîz beyâtî	(eb')
			_____	tîz hüseynî	(e')

* basic scale degrees

The fretting of the Ottoman tanbûr. Cantemir:Kitâb-i 'Ilm el-Mûsikî alâ Vech el-Hurûfât (Cantemir, c1700)

TABLE 13: The fretting of the Ottoman *tanbûr*. Cantemir:Kitâb-i 'Ilm el-Mûsikî alâ Vech el-Hurûfât (Cantemir, c1700)

The traditional 17-degree scale was first reconceptualised as a 24 quarter-tone (*rub'*; pl. *arbâ'*) per octave scale in Syria in the late 18th and early 19th centuries. The 24-tone scale was adopted in Egypt, Turkey and Persia in the early 20th century. In Arabic and Turkish usage, every degree has its own Arabic-Persian name, with Turkish versions differing slightly from the Arabic. In Persian music, number-position names, indicating the positions of the seven notes of the basic scale in numerical order, were used until the 18th century. In the 20th century, Persian music adopted French solfège terms, which are also used in Arab and Turkish music as alternatives to indigenous note names. Western staff notation is widely used in all three traditions.

TABLE 14: The 49 Notes of the Modern Arab Scale

g		JAWAB NAWA	
-	α -b-	-	jawab tik Hijaz
-	f^*	-	<i>fawab</i> Hijaz
-	f =/=	-	jawab nim Hijaz
f		MAHURAN	
-	e =/=	-	jawab tik Busalik
-	e	-	<i>fawab</i> Busalik
e-b-		BUZRAK	
-	eb	-	<i>Sinbulah</i>
-	d =/=	-	nim <i>Sinbulah</i>
d		MUHAYYAR	
-	d-b-	-	tik <i>Shahnaz</i>
-	c^*	-	<i>Shahnaz</i>
-	c =/=	-	nim <i>Shahnaz</i>
c		KIRDAN	
-	B =/=	-	tik Mahur
-	B	-	<i>Mahur</i>
-	B-b-	awi	
-	Bb	-	' <i>Ajam</i>
-	A =/=	-	nim ' <i>Ajam</i>
A		HUSAYNI	
-	A-b-	-	tik <i>Hisar</i>
-	Ab	-	<i>Hisar</i>
-	G =/=	-	nim <i>Hisar</i>
G		NAWA	
-	G-b-	-	tik Hijaz
-	F^*	-	<i>Hijaz</i>
-	F =/=	-	nim Hijaz
F		JAHARKAH	
-	E =/=	-	tik Busalik
-	E	-	<i>Busalik</i>
E-b-		SIKAH	
-	Eb	-	<i>Kurd</i>
-	D =/=	-	nim <i>Kurd</i>
D		DUKAH	
-	D-b-	-	tik <i>Zirkulah</i>
-	Db	-	<i>Zirkulah</i>
-	C =/=	-	nim <i>Zirkulah</i>
C		RAST	
-	BB1/2*	-	tik <i>Kawasht</i>
-	BB	-	<i>Kawasht</i>
-	BB1/2b	IRAQ	
-	BBb	-	' <i>Ajam</i> ' <i>Ushayran</i>
-	AA1/2*	-	nim ' <i>Ajam</i> ' <i>Ushayran</i>
AA		USHAYRAN	
-	AA1/2b	-	qarar tik <i>Hisar</i>
-	AAb	-	<i>qarar</i> <i>Hisar</i>
-	GG1/2*	-	qarar nim <i>Hisar</i>
GG		YAKAH	

Table 14. The 49 notes of the modern Arab scale

The general scale of Arab music comprises two octaves, from *yakāh* (G) to *jawāb tīk hijāz* (g'; see Table 14, after Marcus, 1989, p.99). The individual degrees fall into three hierarchical categories: 1) the fundamental scale degrees with independent Arabic-Persian names; these include the fundamental octave, from *rāst* to *kardān*: $c-d-e^{1/2}b-f-g-a-b^{1/2}b-c'$; 2) seven *arbā'* (half-tones, also *ansāf*) per octave, whose Arabic-Persian names are generally the names of the particular *maqām* they characterize; *qarār* (lower octave) and *jawāb* (upper octave) qualify a standard name at the extreme ends of the scale; and

3) five *nīmāt* and five *tīkāt* per octave, named as *nīm* ('low') or *tīk* ('high') plus a standard name, divide the remaining undivided half-tones. Theorists recognize basic melodic intervals of two, three, four and six quarter-tones; intervals of one and five quarter-tones are rare and their use is highly circumscribed. Although the 24-tone Arab scale was originally conceived as equal-tempered, this notion was challenged in the 20th century, and some Syrian theorists have adopted Pythagorean intonation under Turkish influence (*see also* Arab music, §I, 6).

The Turkish 24-tone scale is based on precise interval measurements according to the Pythagorean system of commas (Table 15, after Signell, 1977, p.28). Turkish convention uses letter names a 4th below the Arabic, that is, the fundamental octave is notated *rast* (*G*) – *gerdâniye* (*g*). Theorists recognize five basic melodic intervals: small half-tone (four commas), large half-tone (five commas), small whole-tone (eight commas), large whole-tone (nine commas) and augmented 2nd (12 commas). In practice, both Turkish and Arab musicians may deviate from the theoretical intervals, their intonation depending on factors such as modal and melodic context, regional custom and individual preference.

In Persian music theory, the 24 quarter-tone scale is conceived as equal-tempered. In practice, Farhat identifies five melodic intervals whose exact intonation is variable: small semitone (minor 2nd), small neutral tone, large neutral tone, whole-tone (major 2nd) and plus-tone (between a whole-tone and augmented 2nd). The whole-tone and semitone are relatively stable, the neutral tones are very flexible, and the plus-tone is particularly unstable (*see also* Iran, §II, 2).

(iii) Modal nucleus and modal complex in Arab and Turkish music.

In Arab and Turkish music theory, the smallest named modal entity is the tetrachord, or *jins* (pl. *ajnās*; Turkish *cins*; derived from Gk *genos*: 'genre') composed of four successive scale degrees (more rarely, trichords and pentachords are identified). An alternative term is *'iqd* (pl. *'uqūd*: 'necklace'). A fundamental concept of both Arab and Turkish music theory, tetrachords originated in medieval Arab treatises, but disappeared between the 16th and 20th centuries. They were reintroduced into Turkish music theory by Rauf Yekta and Sadettin Arel in the early 20th century, and to Arab music theory by Yekta's student, the Syrian 'Alī al- Darwīsh, principal informant of Rodolphe d'Erlanger. Tetrachords first appear in modern Arab music theory in the 1932 Cairo Congress publications (*Kitāb*, 1933; *Recueil*, 1934).

Individual *ajnās* combine in conjunct, disjunct, or overlapping combinations to form complex modal entities. The *ajnās* are identified by their root degree and intervallic structures, and they take the same name as the *maqām* in whose scale they appear as the initial, or root tetrachord. Arab music theory recognizes nine or 11 principal tetrachords; the larger grouping distinguishes *huzzām* (*sīkā* tetrachord) and *'irāq* (*sīkā* transposed to $B^{1/2}b$) from the *sīkā* trichord. Some 20 more *ajnās* are named in modern theoretical sources.

D'Erlanger presents the individual *maqāmāt* as separate ascending and descending scales of two or nearly two octaves comprising four to five consecutive *ajnās* in each direction, sometimes with alternative *ajnās*. The upper octaves do not necessarily replicate the lower. D'Erlanger's model influenced a generation of Arab music theorists, including al-Shawwā, al-Ḥilū and Maḥfūz. Present-day Arab and Turkish theorists have simplified this model: *maqāmāt* (*makamlar*) are typically presented as single octave ascending scales comprising two tetrachords.

(iv) **Turko-Arabic simple and mixed modal complexes.**

Turkish *makamlar* and their Arab equivalents can be mixed together to form compounds (Turkish *mürekkep*; Arabic *murakkab* or *tarkīb*) in two different ways. In the first, a single *makam* dominates the composition and the second enters for a deceptive final cadence, as in ex.30a, the last line of a *şarklof* the Turkish *makam beste-nigar* (*sabā* plus *irak*). Illustrations from the Arabic equivalent, the beginning and end of *taqsīm in bastah-nigār*, appear in ex.30b. The Turko-Arabic *makam beste-nigār* is composed of the modal nucleus of *makam Sabā* placed above that of *makam Irak*, with which *Sabā* has three scale degrees in common.

Ex.30
(a) Turkish: *makam beste-nigār* after Signell, 1977, p.108

voice

instrument

* makam sabā † makam irak makam sega

= common scale degrees
↓ karar (final)

(b) Arabic *taqsīm in bastah-nigār*

* sabā † irāq

= common scale degrees
↓ qarār (final)

Ex.30 (a) Turkish: *makam beste-nigār* (b) Arabic: *taqsīm in bastah-nigār*

In the second type of compound, the constituent *makams*, which may have the same or different finals, co-exist as more-or-less equal partners throughout the piece. A constituent *makam* in either kind of compound need not be 'complete'; it is sufficient that enough motivic or intervallic individuality, or both, be present for the *makam* to be identified (*see* Turkey, §IV, 2).

The phenomenon of creating new *makams* by compounding existing ones is associated with the development of the *taksîm* (a novel, non-metred performance-generated genre) in Turkey in the 17th and 18th centuries. Cantemir uses the term *terkîb* to cover all subsidiary modal entities, including compounds. Of the 30 ‘functioning’ *terkîb* he mentions, 12 belong to the first type of compound, and six to the second. New compounds proliferated from the middle to the end of the 18th century, when over 100 *terkîbs*, representing almost all the compounds known in modern Turkish music, were in use. The creation of *terkîbs* declined in the 19th century and virtually ceased in the 20th.

In modern Arab music, the phenomenon of compound *maqāmāt* is recognized more by theorists than by practising musicians, who tend to interpret combinations of *maqāmāt* as temporary modulations from a dominant *maqām*.

(v) Modal nucleus and modal complex in Persian music.

In the limited sense of modal nucleus, the term *gushehh* is equivalent to *maqām* (*makam*), although in terms of registral span a typical *gusheh* is comparable rather to a *jins*. However, a *gusheh* is also a specific melodic entity, and certain *gushehs* have formal as well as modal characteristics: while most *gusheh* names identify particular modal structures, others denote characteristic melodic-rhythmic patterns (e.g. *kereshmeh*) or fixed compositions in particular forms or styles (e.g. *pishdarāmad*, *chāhārmezrāb*, *tasnif*, *reng*), whose modal identity is variable.

The sense of a larger modal complex is implicit in the concepts of *āvāzor dastgāh*, used to denote whole collections of modally-related *gushehs* arranged in a fixed order. For example the expressions *dastgāh-e chāhārgāh* and *āvāz-e chāhārgāh* refer either to the complete series of *gushehs* whose principal modal nucleus is called *chāhārgāh*, or to a performance of selected items from the same series. However, both terms may also denote the principal modal nucleus itself, the *gusheh* called *darāmad* (introduction), presented at or near the beginning of the performance. In that sense, *dastgāh-e chāhārgāh* and *āvāz-e chāhārgāh* are synonymous with *darāmad-e chāhārgāh*. Ex.31 (after a synthesis of Farhat, 1990, pp.56–64; Nettl, 1972, *Daramad* and ‘Notes’; and the *santūr* performance by Nasser Rastegar-Nejad on Lyricord CD 7434: *In a Persian Garden*) presents the modal nuclei *gushehs* of *dastgāh-e chāhārgāh* in their characteristic order of performance, aligned to show the modal nuclei in overlapping registers. Also marked are the modal functions: \dot{A} = *āqāz* (‘initial’), F = *forud-e kāmel* (‘final’), S = *shāhed* (‘predominant’), and I = *ist* (‘temporary stopping-note’).

Ex.31

Ex.31. Modal nuclei gushehs of dastgāh-e chāhārgāh

(vi) Modulation.

The term is used in Western writings on Middle-Eastern music in three distinct senses. In the first, a modal nucleus is transposed in its entirety to another pitch level, as in ex.30a where *irakis* a downward transposition (by a 4th) of *segāh*. In the second, the intervallic structure of the modal nucleus and its position in the general scale remain constant, but there is a change in melodic emphasis, or melody type, as in ex.31, *mokhālef* and the version of *hesār* with f^{\sharp} and e^{\sharp} where g is replaced as predominant and final with $a^{1/2b}$. In the third, a modal nucleus is replaced by another at the same pitch level and with the same root degree, but with a different intervallic structure. This is a change in scale type, as in ex.32 (after Signell, 1977, p.83) where in the third line *makam sabā* on a is replaced by *makam hicaz* on a . All three senses may (but do not always) entail a change of *maqāmor gusheh*. The upward extension of *makam sabā* shown in ex.33a (reduced from Signell, 1977, p.62F) involves changes of pitch level, scale type, and necessarily melody type, yet it is simply part of the larger domain of *makam Sabā*. In the Arabic tradition, *nahāwand* on c remains *nahāwand* when transposed onto f , but may become *būsāl* when transposed onto d or g .

Ex.33

(a) modal composition of *makam sabā*

(i) *sabā* (ii) extension (iii) optional further extension

(b) *sabā*: simple scale type

Ex.33(a) modal composition of makam sabā (b) sabā: simple scale type

Evidence of modulation appears in 13th century treatises by Şafī al-Dīn and Quṭb al-Dīn, although in these early sources its substance remains obscure. Modulation, especially of the third type, was stimulated by the development of the *taksīm* in the 17th and 18th centuries. For Cantemir, the major significance of the *taksīm* was its ability to create ‘consonance’ by uniting the disparate modal entities of the *makam* system through modulation. The seventh chapter of his treatise (1700) closes with a verbal description of a *taksīm* titled ‘nağme-i külliyyât-i makamât’ (compendium of the makam) that modulates through the entire *makam* system, presenting a total of 41 modal entities (*makam* and *terkîb*).

Cantemir has no term for any of the modulations he describes except transposition (*şedd*); *geçki*, the current Turkish term for modulation, seems to be of 20th-century origin. Both Arabic and Turkish terminology distinguish between transposition (*taşwîr* in Arabic; *şetin* Turkish) and other types of modulation (*intiqāl*, *taḥwîl* and *taghyîr* in Arabic). Every *maqām* can in theory be transposed onto all 24 degrees, although in practice, transpositions are normally at a 4th or 5th (the intervals at which the fundamental scale repeats).

Ex.32

lines 1, 2, 4: *makam sabā* line 3: *makam hicaz*

Ex.32

Ex.30(a) Turkish: *makam beste-nigā* after Signell, 1977, p.108

Ex.30 (a) Turkish: makam beste-nigar (b) Arabic: taqsim in bastah-nigar

Modulation plays an essential role in defining compositional structure. In Turkish music, almost all genres, including the *taksîm*, have the basic *zemîn-miyân-zemîn* structure (*ABA*) where the *zemîn* (ground) presents the nominal *makam* and the *miyân* (middle) modulates to a higher tessitura or a new *makam*, as in ex.32, a Turkish *ilâhî* (hymn) in *makam Sabâ*. In the third line (coinciding with a change of rhyme) the melody enters *makam Hicaz*, at the same pitch level as *Sabâ* but with a completely different intervallic structure. The fourth line returns to *Sabâ*. In the instrumental *peşrevand saz semaisi* and their Arab counterparts, the *samâ'î* and *bashraf*, each of the four sections (*hanes*; Arabic *khaânât*) has a different *makam*, separated by a refrain (*teslîm*) in the nominal *makam*: AA' BA' CA' DA'.

(vii) Tonal function and melodic progression.

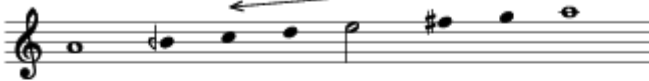
In the Turko-Arabic tradition, the concept of a distinctive melodic progression for individual *makams* around an octave framework (*seyirin* Turkish, from Arabic *sair*: 'travel', 'journey') distinguishes *makam* from non-*makam* genres. While Turkish treatises from as early as the 15th century include terms for the opening degree (*ağaze-i, mahreç*), final (*mahat, karar*) and (occasionally) one other characteristic

degree, Cantemir (1700) was the first Middle-Eastern music theorist both to define and create a term, 'hareket', for melodic progression. His prose descriptions of the characteristic melodic movement for each *makam* reflect a gradual development in the concept of *seyir* in 17th-century notated sources, a development that continued in both theoretical and practical traditions in the 18th and 19th centuries. In the 20th century, Turkish music theory, with its focus on tetrachords and intervals, has largely relegated *seyir* to the oral tradition of practical musicians. A notable exception is Rauf Yekta (1921) who provides notated *seyir* for 30 *makams*.


The *seyir* of each *makam* spans a framework of specific tonal centres: *karar* (final); *tiz durak* (octave above the final); *güçlü* (usually a 5th, 4th or occasionally a 3rd above the final) and *iptida* or *giriş* (entry tone, or tonal centre of the first musical phrase: generally the *karar*, *tîz durak* or *güçlü*). These degrees mark the beginning, middle and end points of temporary rest. *Makams* sharing the same scale, final and dominant are differentiated by their *seyir* and overall melodic direction, which may be either ascending (*karar, güçlü, karar*); descending (*tîz durak, güçlü, karar*); or ascending-descending (*güçlü, güçlü, karar*). *Hüseynî*, for example, may be considered the ascending-descending version of the descending *makam muhayyer* (ex.34, after Signell, 1977, pp.55-7). The direction that *makamlar* extend beyond their basic octave is related to their melodic direction: ascending *makamlar* tend to extend below the final, while descending *makamlar* extend into the octave above. Extending *makamlar* do not necessarily repeat at the octave (e.g. the upward extension of *makam sabâ*; see above, ex.33).

Ex.34

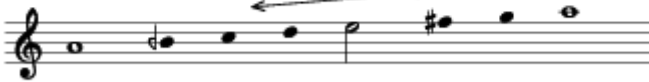
Melodic direction of *muhayyer*
Indicated by arrow




Schematic



Melodic direction of *hüseynî*
Indicated by arrow



Schematic



Ex.34

Arab music has no universally recognized term for melodic progression. Mikhā'il Mushāqa (1840), who describes specific melodic paths for each of 95 *maqāmāt*, is the last Arab source to present melodic progression as a factor, independent of scale and final, in determining the identity of a *maqām*. D'Erlanger (1933; 1949) introduced a new method of describing melodic movement by specifying the order of *jins* in performance. Present-day Arab music theorists generally disregard melodic factors in defining individual *maqāmāt*, a tendency that reflects the lack of a uniform approach in Arab composition. Musicians distinguish between pre-composed genres, whose melodic direction is unspecified, and performance-generated genres, notably the *taqsīm*, which ascend from the final in an

overall arch-like shape, regardless of *maqām*. Prior to the 1930s, *maqām* progressions were far more varied, reflecting Turkish concepts of melodic direction. Only 27 of Mushāqa's 95 *maqām* examples start on the final, and of the 68 that start above the final, 53 remain above until the final cadence. A maximum of 14 have an arch-like contour and one third have a clear descending progression. In d'Erlanger (1949) fewer than half the *maqāmāt* (only 45 of 101 illustrated) start with the root *jins*.

While some Western scholars have proposed that individual *maqāmāt* are defined by specific melodic motifs, the idea of obligatory, universally-recognized motifs, exclusive to particular *maqāmāt*, has been challenged by scholars such as Touma and al-Faruqi. However, it seems that both Arab and Turkish traditions use typical cliché phrases to evoke particular *maqāmāt*, especially in performances of *taqsīm*.

In Arabic music, the term *qarār* ('final', or 'resting place') has been replaced by *asās* ('fundamental', 'principal') and *rukūz* ('centre') in the 20th century, reflecting changes in concept and function. The 1932 Cairo Congress proceedings used *qarār* and *asās* interchangeably; later sources use *asās* and *rukūz*. All three terms embrace the concepts of both final and anchor degree, that is, the root degree of the *maqām* on the general scale. However, the *qarār* was not necessarily either the lowest degree (e.g. in '*ajam*, $b\flat$ not $B\flat$ is the final) nor the predominant, since it could be neglected until the end of the performance. When the *maqāmāt* began to be presented as scales around the turn of the century, the final acquired the status of principal degree, with a new prominence in performance. The final may also determine nuances of intonation, for instance, *maqām rāst* and *bayyātī* use identical scale degrees; however, $e^{1/2}\flat$ is slightly higher in *rāst* (final *c*) than in *bayyātī* (final *d*).

Mushāqa (1840) is the first to use the term *ghammāz* to signify the degree second in importance to the final and octave. For Mushāqa this degree was always the 5th. Starting with d'Erlanger (1949), the *ghammāz* could also be the 4th or 3rd from the tonic. Present-day theorists equate the *ghammāz* with the lowest degree of the upper *jins* (in most cases, *g*) although the term itself is rarely used outside academic circles. *Markaz* or *marākiz* (centre) is used by d'Erlanger (1949, p.100) to signify 'all passing, momentary or secondary stopping points', effectively the initial notes of the constituent tetrachords of a *maqām*. The term is virtually unknown in Arabic sources.

The concept of a fixed starting degree has been controversial since 1904, when al-Khulā'ī described this concept as distinguishing Turkish from Arab traditions. D'Erlanger follows Mushāqa in specifying a distinctive starting note, which is not necessarily the final, for each *maqām*, but the idea met with only limited approval from the Cairo Congress. There is no commonly accepted Arabic term for starting note, and Arabic sources use a variety of descriptive phrases instead. D'Erlanger's terms *mabdā* and *madkhal* (1949) have been taken up by European scholars, but are not found in any Arab source. Powers (1980) is the only source that uses *āgāz*. Arab theorists and musicians alike deny the existence of a fixed starting note in contemporary practice.

Ex.31

Ex.31. Modal nuclei gushehs of dastgāh-e chāhārgāh

While Persian music shares the same basic Turko-Arabic scales, it lacks the concept of octave division, or melodic progression (*seyir*) within the octave scale: most *gushehs* have an ambitus of no more than a 4th or 5th. Characteristic modal functions include the *āqāz* ('initial'), *forud-e kāmel* ('final'), *shāhed* ('predominant'), and *īst* ('temporary stopping-note'), as indicated above in ex.31.

(viii) Modal systems and cyclical genres.

The *maqāms* of Arab and Turkish music are indefinite in number. D'Erlanger's list of 119 *maqāmāt* (1949; produced around 1930) of which 'hardly 30 are in common use' is based on the 95 *maqāmāt* Shaykh Ali al-Darwish collected in Aleppo and elsewhere in Syria. Other comprehensive lists since the 1930s have identified between 74 and 108 separate *maqāmāt*; the general tendency, however, has been to reduce lists to as few as 12 or eight. Marcus (1989) estimates that in Cairo, about 12 *maqāmāt* are common in mainstream practice, and about 12 more are used occasionally. Signell (1977) estimates 60 to 70 *makamlar* in Turkey.

The predominant system of classifying the Arab *maqāmāt* is by their final degrees. Mushāqa recognized eleven groups, al-Khula'i ten, and d'Erlanger proposed first eight (1933) then nine (1949); eight groups are standard, but some contemporary Arab sources recognize only four based on finals *c*, *d*, $e^{1/2b}$ and *f*. An alternative classification system introduced by the 1932 Cairo Congress groups the *maqāmāt* into varying numbers of *fasīlahs* ('families') according to the identity of their lower *jins*. The *fasīlahs* may in turn be divided into fundamental *maqāmāt*, which share the same name as the unifying *jins* of each *fasīl*, and subsidiary or branch *maqāmāt* whose names are different. In a system proposed by an Egyptian government committee (1964), 46 basic *maqāms* are grouped into 11 *fasīlahs* which are further divided into two groups, according to whether or not the basic *jins* use three-quarter tone intervals.

All the above systems comprise phenomena of actual practice, and the criteria of categorization are purely musical (albeit rather mechanical or even arbitrary); as a result, the systems are on the whole non-symmetrical and potentially open-ended at each level. The fact that most of the older classification systems are wholly or partly symmetrical and evidently closed suggests that the classifying began with the system rather than with the phenomena, and that the 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 *maqāmāt*, 24 *shu'bas*, 48 *gushehs*, with each level double the previous level.

Between the 13th and 15th centuries, there developed a four-fold classification system: *pardeh* (*perde*), *shu'ba* (*šübe*)*āvāz* and *tarkīb* (*terkīb*). The distinctions were usually based on extra-musical, specifically astrological criteria. The 12 *maqāmāt* of al-Lādhīqī in the 15th century are correlated not only with three general ethical categories of Platonic origin, but also with the 12 zodiac signs and the four elements; his seven secondary *āvāz* correspond to the seven planets and his four *shu'bas* to the four elements. At the primary level, though, the *tarkīb* ('mixtures') are real musical entities, whose numbers are, in principle, infinite: 'in our time however there are about 30' (d'Erlanger, iv, p.428).

The ancient tension between open-ended and closed modal systems came to a head in Turkey in the 17th and 18th centuries, eventually resolving in distinctive Persian and Turko-Arabic traditions. It was, above all, the proliferation of mixed modal complexes (*terkīb*) in the *taksīm* that laid the foundation for the open-ended, non-hierarchical modal system of the Turko-Arabic tradition. By the 17th century, as concepts of *makam* and modal combination expanded, the standard four-fold divisions gave way to various two-fold systems, in which primary (*shedd*, *pardeh*, *maqām*, *naghma*) and secondary (*shu'ba*, *āvāz*, *tarkīb*) modal entities were distinguished according to purely musical criteria. During the 18th century, the various modal categories and their hierarchical relationships were gradually obliterated until by the mid-19th century all modal entities were called *makam*.

In Persian music, the core vocal repertory, *āvāz*, is based on memorized, non-metred melodic formulae called *gushehs*. *gushehs* began to replace the older Persian composed forms in the late 18th century, providing a tune-like basis for improvisation. Their fixed arrangement in 12 modal families (*dastgāh*) in the 19th century produced the closed, hierarchical modal system (*radif*: 'row') of modern Persian music.

The terms *dastgāh* and *āvāz* refer not only to a system of classifying modal entities, but also to their particular cyclical arrangement in performance. The presentation of the principal modal complex in the *darāmad* is followed by a selection of *gushehs*, generally at successively higher levels, culminating in

the highest point, or *owj*. The diverse modal entities are unified by the *forud* ('descent'), a cadential formula returning, both between *gushehs* and at the close of the performance, to the original modal area of the *darāmad*.

Like the Persian *āvāz*, the core vocal repertoires of both the Azeri *mugam*, or *mugam-dastgāh*, and the Iraqi *maqām* comprise more-or-less fixed, non-metred melodic models. Both are still theoretically open-ended systems, comparable in their basic organization to the Persian repertory before its codification in the late 19th century. The 130 or so named modal entities of the Azeri repertory include over a dozen main *mugams*; *sho'bes*, or secondary *mugams* which function primarily as pre-determined modulations within the main *mugam*; and *gushehs*, metred compositions whose melodic types may fit with more than one *mugam*. The *mugam-dastgāh* is an extended presentation of a principal *mugam* with excursions into other *mugams*, *sho'bes* and *gushehs*; unlike the *gushehs* of the Persian *dastgāh*, however, the precise arrangement of the Azeri melodies, including their sequence of modulations, is flexible.

The 50 or so Iraqi *maqāmāt* include some 30 modulatory pieces, or *quta'* which, like the Azeri *gushehs*, are transferable between *maqāmāt*. Like the Persian *dastgāh*, the modal-melodic features and overall structure of each *maqām* are pre-determined; the more complex *maqāms* ascend to a high register in a section called *al-meyāna*, comparable to the Persian *owj*.

The cyclical formats of the Iranian *dastgāh*, Azeri *mugam-dastgāh* and Iraqi *maqām* are characterized by tonal-melodic principles of sequencing. In the four national traditions of the North African *nūba* (pl. *nūbat*), in contrast, the fundamental principle of sequencing is rhythmic-metric. The core vocal repertory, allegedly of medieval Andalusian origin, is based on specific rhythmic-metric patterns called *īqā'āt*, and grouped *maqām* into a fixed number of *nūbāt*: 11 in Morocco, 12 in Algeria, and 13 in both Tunisia and Libya; each *nūba* is named after the *maqām* or predominant *maqām* of its component repertory. Within each *nūba*, the individual songs are arranged in a fixed order of *īqā'āt*. The *nūbat* themselves are conventionally performed in a fixed order, thus producing a macro-cycle based on tonal-melodic criteria. In theory, the *nūbat* are closed systems, admitting no new repertory.

In the various Ottoman cyclical concert formats (e.g. the Mevlevi *âyîn*, the various types of *fasıl* and the eastern Mediterranean *waşla*), the sequencing of individual items likewise emphasizes rhythmic-metric contrast, although the specific rhythmic-metric patterns (*uşûls*) are variable. In each of these cyclical formats, different types of pre-composed genres are grouped together with improvisatory genres in the same predominant *makam*, in a specific order of performance.

The fixed, metred compositions constituting the core vocal cycle of the Central Asian *shashmakom* form both rhythmic-metric and tonal-melodic cycles. The principal part, *sarakhbār*, introduces the essential tonal-melodic material of the entire cycle; the gradually ascending tone-groups in the principal *maqām* culminate in a melodic and emotional climax, *owj*, where modulations, or *namuds* ('reflections'), are introduced before a final descent to the initial modal nucleus. In its tonal-melodic organization, the *sarakhbār* thus follows the basic structure of the Iranian *dastgāh* or Iraqi *maqām* with *meyāna*. After a series of song genres in the same principal mode (*shu'ba*) but different rhythmic-metric patterns, a seamless transition (*suparish*) introduces a new *shu'ba*, whose principal part (*nasr*) is again followed by a song or series of songs with characteristic rhythmic-metric patterns. Normally two or three *shu'bes* constitute a single performance. Until the mid-20th century, it was customary for

a final *suparishṭo* lead back to the original *maqām*. With its sequencing of registral levels and modulations in the highest register, the *sarakhbār* foreshadows the sequencing of principal *maqām* followed by contrasting modal types (*shu'bes*) in the cycle as a whole.

3. South Asia: 'rāga'.

Harold S. Powers, revised by Richard Widdess

(i) *The basic terms.*

The two art musics of South Asia, Hindustani and Karnatak music, are similar and dissimilar in roughly the same degree as West Asian musics. Of the span of the scale-tune spectrum covered in West Asia by the Arabic word *maqām*, the major part, stretching towards the tune end, is designated in South Asia by the Sanskrit word *rāga* (*rāg* in North Indian languages, *rāgam* in the South). The feminine derivative *rāginī*, regularly found along with *rāga* in North Indian sources from the 16th century to the 19th, is identical with *rāga* 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 identity of a *rāga* 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 *rāga* 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 *rāga* and its scale-type.

The word *ṭhāt* ('framework', 'arrangement') is used in the North precisely to denote 'scale-type'. The *ṭhāt* of a *rāga* was originally the 'arrangement' of frets that would produce the intervals needed for the *rāga*. The term *ṭhāt* first appears in the commentary of a musical treatise of 1609 (Somanātha, *Rāga-vibodha*), where it is used as the equivalent of the Sanskrit *mela* ('assembly'), an assembly of degrees of a scale. 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*, theoretically connected with the idea of mode, are often encountered in the literature on Indian music, but refer to the musical systems of the pre-Islamic period. *Mūrcchanā* 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 in this sense. *Jāti* – literally 'genre' or 'type' – is now used in only one restricted musical sense. It denotes the type of a *rāga* in terms of the number of scale degrees it includes within an octave: the *jāti* of a *rāga* can be *auḍava*, *ṣāḍava* or *sampūrṇa*, 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 *Nāṭyaśāstra* must have been a classification for modal structures similar to *rāga*; the word *rāga* is not used as a technical musical term in the *Nāṭyaśāstra*, however, and appears for the first time in that sense only in about the 8th century (see India, subcontinent of, §III, 2, (ii)).

(ii) Modal entities and the general scale.

There are a few evident parallels between South Asian and West 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 are very different from West 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 seven independent note names – *sa ri ga ma pa dha ni*– as compared with 14 in the central octave of the West 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 West 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’. ‘Altered’ scale degrees have the same names as ‘basic’ 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 designation of pitch as ‘pure’ or ‘modified’ had been adapted to the 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 *rāga* of contemporary practice, and named for them; each of these was known as a *mela* or *ṭhāt*.

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 Karnatak music. The particular scale-types may be considered either as abstractions from *rāga* (modal entities) or as selected subsets of all the available pitch positions.

(iii) *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 a specific modal complex (the *rāga*) is directly related to a basic feature of Indian music that radically differentiates it from West Asian music. Every Indian *rāga* has a tonic, the *svara* named *sa*, which occurs in every *rāga* and which has only one *svrasthāna*, that is, no higher or lower varieties. In terms of the Indian general scale all *rāga* have the same tonic, unlike the Turkish, Arabic or Iranian *maqām*. (The scale degree *pa*, a 5th above *sa*, also has no higher or lower varieties, but it is omitted altogether in some *rāga*, such as those illustrated below in ex.35 and 36.) All the abstract seven-degree scale-types (*ṭhāṭ* and *mela*) take *sa* as the first degree. The pitch used by a performer for *sa* is the system tonic for every item he or she may render. In Hindustani music it is the *sur*, in Karnatak music the *śruti* or *ādhāra-ṣaḍja*.

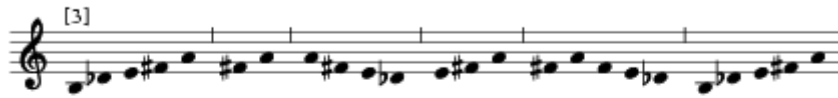
Note that 'tonic' does not mean 'final' nor 'predominant' nor any other modal function. The tonic in Indian music belongs to the system as a whole, not to individual modal complexes. Every *rāga*, like every *maqām*, has its own set of modal functions and its own internal melodic and harmonic relationships, 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 West 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 may well have a modal function specific to the *rāga* 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 *rāga* being performed but in a universal sense. In the Hindustani *rāga Mārvā*, for example (see ex.35a, after O. Thakur, *Sangītāñjalī*, iv, 134), the degree *sa* (*c*) is mostly avoided, and this avoidance is a most essential element in the individuality of the *rāga*. 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 system tonic, in short, pervades and overrides all *rāga*; by being a required part of each it is a definitive part of none.

Ex.35

(a)

(i) *calanin rāg Mārvā*



(ii) *mukhyāṅga*

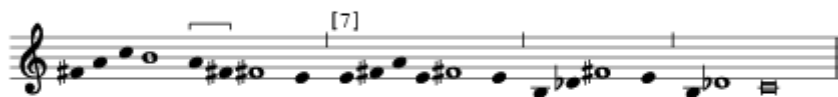


(iii) *āroha-avaroha*



(b)

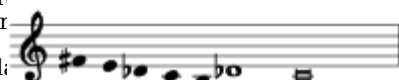
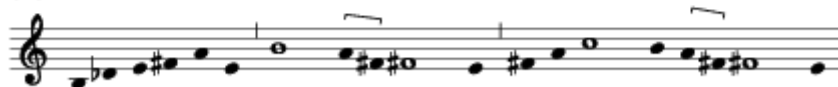
(i) *calanin rāg Pūriyā*



(ii) *mukhyāṅga*



(iii) *āroha-avaroha*



There is no tonic of this kind in West 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 West Asian modal entities have different tonics, in terms of the background system. So for example simple melodies in the Arabic *maqām sīkā* and *maqām rāst* work with the same basic aggregate of intervals – the nucleus may be written $c'-d'-e-\frac{1}{2}b'-f'-g'$ – and are distinguished sometimes only by whether they cadence finally to $e-\frac{1}{2}b'$ (*sīkā*) or c' (*rāst*). In Indian music the system tonic and the general scale are inseparable, and together they provide the frame of reference for the individual modal entities, the *rāga*. In West Asian music there is a general scale as frame of reference, but no system tonic.

(iv) Modal nucleus and modal entity.

An Indian *rāga* in performance is developed in the same general way as a Persian *āvāz* (see above, ex. 32): low-register modal nuclei are brought in first; then the general tessitura moves up through ever higher-pitched modal nuclei (with occasional *forud*-like gestures back to the original cadential material); after the highpoint has been established a return to the original register is made. (Ex.35a(i), b(i), after O. Thakur, iv, pp.109–10, shows typical though compressed sequences of phrases in two Hindustani *rāga*.)

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’ – may be coupled with various attributives to designate different ‘components’ of a *rāga*. The compounds *pūrvāṅga* and *uttarāṅga* designate formal and registral components or both, *mukhyāṅga* and *rāgāṅga* designate thematic or motivic components, which are referred to specific *rāga* by compounds with the *rāga* names, such as *kānaḍāṅga* or *bihāgāṅga*. 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 word *rāgaṅga* is used in Karnatak music with a different meaning, where it signifies a *rāga* which is used as a scale-type, a *melekarta*.)

The two principal components of a *rāga* are the *pūrvāṅga* ‘prior component’ and *uttarāṅga* ‘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 *rāga* the lower-pitched material is in fact supposed to appear first, the higher-pitched afterwards as a ‘response’ (another meaning of *uttara*). Ex.36a, b, shows three registrally delineated components (*aṅga*) of the Hindustani *rāga Mārvā* and *rāga Pūriyā*, based on the epitomes in ex.35a(i), b(i). The first *aṅga* to be fully developed in performance, even before the full elaboration of the *pūrvāṅga*, is the *mandra* (‘low [register]’); in a full rendition there would also be an extension of the *uttarāṅga* into the *tāra saptaka* (‘high heptad’) before the return to the *pūrvāṅga*. (In ex.36 T = *sa* (‘system tonic’), V = *vādī* (‘predominant’), S = *saṃvādī* (‘secondary predominant’).)

Ex.36**(a) rāg Mārvā****(b) rāg Pūriyā**

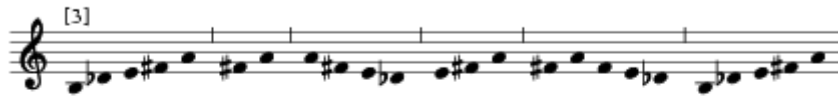
Ex.36

The registral components of an Indian *rāga* contrast with their West Asian counterparts in yet another way. In addition to other features, a *rāgais* almost always characterized by one or more striking motivic tags, by recognizable thematic elements. Such ‘stereotyped motifs’ are not merely ancillary to the *rāga* system, they are its central feature. One term for such an element is *mukhyāṅga*, ‘chief component’. Ex.35a(ii), b(ii), show *mukhyāṅga* for *rāga Mārvā* and *Pūriyā*. Emphasis on their modal degrees is of course part of the identity of each *rāga*, but in *Pūriyā* particularly there are characteristic melodic ideas dominating every stage of the proceedings (see ex.35b (i)). In the *pūrvāṅga* 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 *ga* resolved from a long held *ma*). In the *uttarāṅga* the configuration *ma-dha-s* ‘aestabliishing the upper tonic is striking, but this motif is found in a number of other Hindustani *rāga*. Absolutely characteristic for *Pūriyā*, though, is the way of making the descent from *ni* to *ga* that is shown in unit [6]. In any rendition (improvised or otherwise) of a *rāgasome* such absolutely characteristic phrases, or group of phrases, of the *rāga* must be heard first, before anything else, so that the identity of the *rāgais* unmistakably clear.

Ex.35

(a)

(i) *calanin rāg Mārvā*



(ii) *mukhyāṅga*



(iii) *āroha-avaroha*



(b)

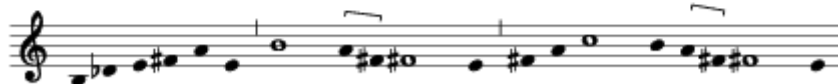
(i) *calanin rāg Pūriyā*



(ii) *mukhyāṅga*



(iii) *āroha-avaroha*



A glance through the sample procedures (*calan*) for *Mārvā* and *Pūriyā* shown in ex.35 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*, *pūrvāṅga*, *uttarāṅga* and return to *pūrvāṅga*, 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 *rāga* is to show its *āroha* and *avaroha*, its ascent and descent. Indian theoretical descriptions tend to summarize *rāga* 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 *ṭhāt* (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.35a (iii), b (iii) shows the *āroha* and *avaroha* for *Mārvā* and *Pūriyā* as given by Omkarnath Thakur. 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 the system tonic *sa* (C) is characteristically omitted (*varjya*) in the ascent.

TABLE 16

General scale	$\left\{ \begin{array}{l} \text{all the 12 scale} \\ \text{degrees (svrasthāna)} \\ \text{a particular scale} \\ \text{type (ṭhāt)} \end{array} \right\}$	system tonic (sur)
Particular scale		

Table 16

lines 1, 2, 4: *makam sabā* line 3: *makam hicaz*

Ex.32

The conventional type of ascent-descent description adds yet another stage to the progressive crystallization of modal individuality from the general to the particular scale. The points on the scale-tune continuum for a Hindustani *rāga* can be summed up as in Table 16, reading from top to bottom. The same scheme would apply to the description of a Karnatak *rāgam*, substituting the words *mela* for *thāt*, *sañcāra* for *calan* and *śruti* for *sur*.

(v) ‘Pure’ and ‘mixed’ modal entities.

An old tripartite classification divides *rāgas* into *śuddha* (‘pure’), *chāyāлага* (‘[with] tinges added’ from other *rāgas*), and *sankīrṇa* (‘mixed’). This appears not unlike the distinction of simple and compound *maqāmin* Turkish and 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 *rāga* is directly apprehended. ‘Pure’ means uncontaminated by melodic configurations audibly reminiscent of other *rāga*. 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, comm.; cf. Kallinātha comm. *Saṅgīta-ratnākara*, ii, 133).

This conception is still current. O. Thakur (ii, 1954, p.1) began by defining ‘purity’ of *rāga* the same way, then speculated that a concomitant feature of ‘pure’ *rāga* may be parallel tetrachords:

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 *pūrvāṅg* and *uttarāṅg* [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 *bihāgare* like this: [ex.37a].

Thakur then showed an *āroha-avaroha* (‘ascent-descent’) incorporating these figures (ex.37b), and a simple rising-falling scale (ex.37c).

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


Ex.38a (after O. Thakur, i, 39) shows a few configurations illustrating the pentatonic Hindustani *rāga Sārang*. A *chāyā* ('tinge') of this *rāga* in turn strongly permeates the large and important group of Kānaḍārāga, of which one, *Darbārī Kānaḍā*, may be the most widely performed and recorded of all Hindustani *rāga*.

The link among all *rāga* of the *Kānaḍā* class is a recognizable melodic configuration with several elements (Ratanjankar, 1951, 103):

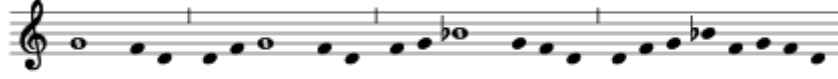
Ex.38

(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'



Ex.38

The mark of the Kanhada [Kānaḍā] *anga* [component] is an oscillating Komal Gandhara [*ga*], Komal Ni-Pancham Swara Sangati [*ni-pa* interval] and Vakra Gandhara in the *avaroha* [out-of-order *ga* in the descent]. To illustrate: [see ex.38b]. Every Kanhada variety must have this passage, whatever else it may have.

Ex.39a is a *calan* for the *rāga 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 *rāga Darbārī Kānaḍā* because of the prominence of two of its principal elements as parts of the *Kānaḍā* component (O. Thakur, v, 122):

The very sustenance of this *rāg*[*Darbārī Kānaḍā*] is coming onto these *Sārang*notes *b^b'-g'* [*ni-pa*] and *f-d'*[*ma-ri*]; ... 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^b'* [*ga*] and *a^b'* [*dha*] in the *Sārang* degrees of the scale [i.e. *ni-pa* and *ma-ri* become *dha-ni-pa* and *ga-ma-ri*]. These *Sārangelements* are found in almost all *rāg* of the *Kānaḍā* type.

The addition of *dha* in the *ni-pa* component to make the *uttarāṅga* descent in *Darbārī Kānaḍā* is not a matter of a different scale-type for *Darbārī* than for *Sārang*. The *rāga Sahānā* (ex.39d) uses *śuddha dha*, and *Nāyakī* (ex.39c), 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 *uttarāṅga* because of the *ni-pa*.

The *Kānaḍā* component, as a whole or in part, provides much of the descent material for the *rāga* in the *Kānaḍā* group, as may be seen in the four *rāga* illustrated in ex.39a-d; the *Kānaḍā* component is marked *. Each has its own melodic individuality as well as its own *rāgāṅga-rāga* component - that is, its characteristic motivic configurations (marked with daggers in ex.39).

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

Ex.39

(a) *Darbārī-Kāṇḍā*

(b) *Aḍāṇā*

(c) *Nāyākī*

(d) *Sañāṇā*

Ex.39

Thus the *Kāṇḍā rāga* illustrated in ex.39 show a twofold layering of purely melodic allusion. All the *rāga* have the elements of the *Kāṇḍā* component, a common *rāgāṅga*; but in addition the *Kāṇḍāṅgain* all its contexts incorporates a shading, a ‘tinge’, of the ‘pure’ *rāga Sārang*.

None of these *Kāṇḍā rāga*, however, would be called *sankīrṇa*, that is ‘mixed’, since none of the individuating non-*Kāṇḍā* components by itself suggests any different *rāga*. It is quite otherwise with another much-performed and recorded Hindustani *rāga*, a variety of *Bihāg* called *Māru Bihāg*, in which virtually every element is also an element in another fully independent *rāga*. The configurations of *Māru Bihāg* are illustrated in ex.40; bracketed numbers in ex.40a are keyed to O. Thakur’s analysis (ii, 15):

Ex.37(a) 'in the *pūrvāṅ* and *uttarāṅ* . . . the same motif'

(b) 'ascent-descent'



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



Ex.37

This *rāg* [*Māru Bihāg*] has obtained a widespread currency these days. Going *sarinisa*, *ga-ma* [1] and then back to *ga* is quite like *Bihāg*; but if one makes a pause on *ma* 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 *uttarāṅ*, 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 *uttarāṅ* in the *Bihāg* fashion, as in the second unit of ex.37a, do the same notes in such a way as to call to mind the *rāga 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.40b a typical *calan* of *Māru Bihāgis* shown. Of the elements not already identified in the above analysis only the *sa-ga-ma-ga* in the last segment is special to *Māru Bihāg*. The approach to and descent from the upper tonic are found in the already mentioned *rāga Nand*, which is itself a mixed *rāga*; the upper register descent, considered separately, shows a *chāyā* ('tinge') of *Kalyāṇ*. Ex.40c is a less elaborate form of the first three segments of ex.40b, the *rāgāṅgaor pakaḍ* ('catch') for *Māru Bihāg*.

Ex.40

(a)

(b)

(c)

Ex.40

(vi) 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 *Nāṭyaśāstra*, 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 *rāga*. In ex.36 and ex.39 – the *Mārvā* and *Pūriyā* registral segmentations and the outline of four *Kānaḍā* type *rāga* – these two modal functions are marked 'V' and 'S'. *Vādī* is analogous to the Iranian *shedd*; *saṃvādī* would be analogous to the *shedd* of a principal *gusheh* in another register (see §V, 2(i) above and ex.31).

Two things may be observed of the *Mārvā* and *Pūriyā* modal functions (and compare also the melodic outlines in ex.35). First, the two *rāga* 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 *komal* ('flat') *ri* and *dha*. The chief degrees of *Pūriyā* are *ga* – the normal phrase final in both *pūrvāṅga* ascent and *uttarāṅga* descent, in both cases usually following a prolonged *tīvra* ('sharp') *ma* – and *niat* 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.

Ex.39

(a) *Darbārī-Kāṇḍā*

(b) *Aḍāṇā*

(c) *Nāyakī*

(d) *Sahāṇā*

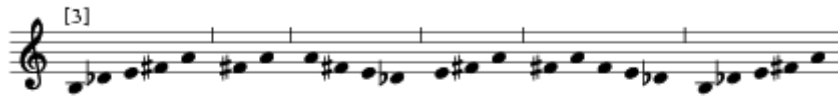
Ex.39

The registral placement of predominant and secondary predominant degrees - *vādī* and *saṃvādī* in the four *Kāṇḍā rāga* illustrated in ex.39- 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 *Sahāṇā*), one is established in the ascent (*Aḍāṇā*), and the oscillating *komal ga* of *Darbārī* is approached freely from both sides. (According to a different view, the *vādī* of *Darbārī* is *ri* and the *saṃvādī* is *pa*.)

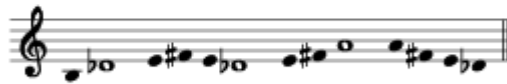
Ex.35

(a)

(i) *calanin rāg Mārvā*



(ii) *mukhyāṅga*

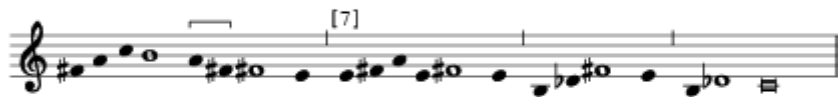


(iii) *āroha-avaroha*



(b)

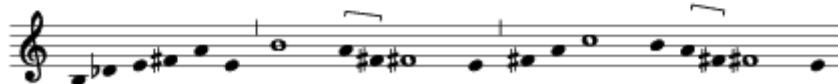
(i) *calanin rāg Pūriyā*



(ii) *mukhyāṅga*



(iii) *āroha-avaroha*



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 *rāga* characteristics – *rāga-lakṣaṇa* – is typical; it is taken proximately from Śarṅgadeva (ii, 23–4), where it is said that the degrees of the scale exhibiting these features of a *rāga* must be made manifest in an *ālāpa*, that is, in an improvised exposition:

1. *graha*: initial
2. *amśa*: predominant
3. *mandra*: low point
4. *tāra*: high point
5. *nyāsa*: final
6. *apanyāsa*: secondary final
7. *alpatva*: weakness: a degree of the scale that is not repeated (*anabhyāsa*), and is ‘skipped over’ (*langhana*), that is, omitted or ‘touched lightly’ as a passing note
8. *bahutva*: strength: a degree of the scale which can be repeated (*abhyāsa*), and is not ‘skipped over’ (*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 *varjatva* – is covered by characteristics 9 and 10. The two criteria for strength/weakness of a degree are reiteration (or presumably prolongation) and temporary omission or ‘touching lightly’ (see Śarṅgadeva, i.7, 49–50; Widdess, 1995, 264–7). 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 *rāga* to see points where to ascend or descend beyond a certain degree of the scale would require further movement in the same direction in order to complete the gesture thereby begun. For instance, in the Hindustani *rāg Pūriyā* illustrated in ex.35b and ex.36b, the note *ga* is a phrase ending in descent. To go below a low *ga* in the *mandra* register would require continuing through low *ri* to low *sa*, with the sequence *ma-ga-ri-sa*, since *ri* can neither begin nor end a phrase in *Pūriyā*; hence, low *ga* is an effective lower limit to a rendition of *Pūriyā* for most singers.

TABLE 17

<i>Sanskrit</i>	<i>Persian</i>
graha	āqāz
aṃśa	shāhed
nyāsa	forūd[-e kāmel]
apanyāsa	īst

Table 17. The four principal modal functions in the modal entities of West Asia

The remaining four modal functions – nos. 1, 2, 5 and 6 – are analogous to the four principal modal functions in the modal entities of West Asia, as suggested in Table 17.

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, since in most sources the *aṃśa* and *graha* are invariably the same degree. The distinction is between two aspects of modal predominance. The *aṃśa* was a temporal-formal predominant, marked by frequency, reiteration, prolongation etc. *Vādī* refers not only to the ‘strength’ of the *aṃśa* but also to its support by the consonant *saṃvādī*. In time the terms became effectively synonymous.

Ex.41 illustrates these modal functions; it is a metrical melody illustrating the *rāga Madhyama-grāma* preserved in the *Saṅgīta-ratnākara* (ii, 2, 67–8; Widdess, 1995, pp.264–5). As transcribed here, the initial (*graha*) and predominant (*aṃśa*) are C, the low point (*mandra*) C, the high point (*tāra*) E \flat , the final (*nyāsa*) F, the secondary final (*apanyāsa*) C (note the cadence on this pitch at the end of the fourth bar, half-way through the melody), the weak notes D and A, and the strong notes C, E \flat , F and B \flat . The strong notes are all frequently reiterated, whereas D and A occur only singly (*i*), or are omitted altogether (*ii*). The last bar perhaps illustrates ‘touching lightly’ (*iii*). G is less strong than the strong notes: it is sometimes reiterated, sometimes used singly and sometimes omitted.


Ex.41

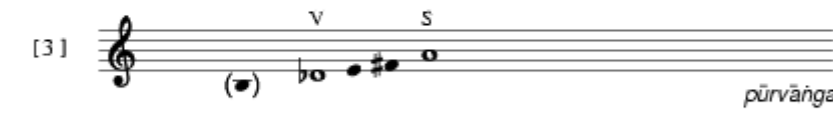
Ex.41

Another historical confusion around the terms *graha-amśa-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 *rāga*; only in a few evidently exceptionally striking cases are other degrees of the scale reported as having any modal function.

Ex.36

(a) *rāg Mārvā*


[1, 2, 5]  *mandra*

[3]  *pūrvāṅga*

[4]  *uttarāṅga*

(b) *rāg Puriyā*

[1, 2]  *mandra*

[3, 4, 7]  *pūrvāṅga*

[5, 6]  *uttarāṅga*

Ex.36

Other than the *vādī-saṃvādī* couple in Hindustani music, few terms for modal functions are used consistently by practising musicians, North or South. In Karnatak 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 *nyāsais* 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’).

(vii) *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 *Saṅgīta-ratnākara* was written) music theory was quite independent of dramaturgy, and post-13th-century modal systems are clearly akin to modern ones.

The number of *rāga* current in either Hindustani or Karnatak music is indeterminate (see India, subcontinent of, §III, 2, (i), (c)). 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 (1935) and Bhatkhande (c1930). An outline of three models still current will indicate the range of possibilities:

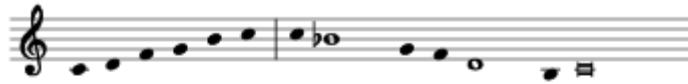
A traditional group of *rāga* still respected by some older musicians is called the 'Hanuman doctrine'. It is a closed symmetrical system of 36 entities comprising six *rāga* personified as male, to each of which are assigned five (female) *rāginī*. This system is known with two slightly differing distributions of *rāginī*. One 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 *rāga* or *rāginī* is depicted in some stylized indoor or outdoor setting. There are several older schemes which also have superordinate classification levels of six *rāga*; in some the six *rāga* are specifically assigned to the six seasons of the year in North India: cold season, spring, summer, rainy season, autumn, winter. 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 *rāga*. The systems are purely traditional associations of *rāga* 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 *rāga* can be demonstrated to have taken place during the long period over which the names of these *rāga* have been classed together. The earliest fully comprehensible source for both scale-type and melody-type for a complete set of 36 *rāga* and *rāginī* is the treatise *Saṅgīt-sār*. 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.

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 Venkaṭamakhin of Thanjavur in the 17th century. In his time only between 12 and 23 scale types had been inferred from existing *rāga* (he himself mentioned 19). Venkaṭamakhin 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 (see India, ex.7). Within each scale-type, however, an infinite number of ascent-descent patterns are possible, since in actual *rāga* 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. *rāga* 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 the 20th 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 Venkaṭamakhin’s predecessors and contemporaries, however, using the fewest scale-types possible that might still be made to accommodate modal entities existing in musical practice.

Ex.38

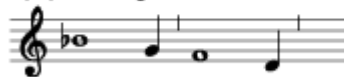
(a)
(i) ‘ascent-descent’



(ii) ‘these note groups are taken repeatedly’



(iii) ‘*Sārang* comes into view in just these notes’



(b)
‘Every Kanhada variety must have this passage’



Ex.38

In South India the term for a *rāga* whose degrees are taken as representing one of the 72 scale types is *rāgāṅga-rāga*. In North Indian usage, however, the word *rāgāṅga* means the *aṅga* – melodic ‘component’ – that characterizes a *rāga*, as the *kāṇḍāṅga* (ex.38b) characterizes the *rāga Darbārī Kāṇḍā* and a number of other *rāga* (ex.39), or as the *bihāgāṅga* (ex.37a, first unit) characterizes a small group of *rāga* including *Māru Bihāg* (ex.40).

Ex.39**(a) Darbārī-Kāṇḍā**
(b) Aḍāṇā
(c) Nāyākī
(d) Sāhānā

Ex.39

Musicians and theorists (including V.N. Bhatkhande) often draw attention to the fact that there are many clusters of *rāga* like the *Kāṇḍā* and *Bihāg* groups in Hindustani music. 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 *rāgāṅga*, and discussed five of them, including the *kānaḍāṅga* (see above and ex.39c).

A number of motivically characterized components (*rāgāṅga*), each dominating a group of its own, is of course as much a two-layer modal system as any formally symmetrical *rāga-rāginī* system or any rationally ordered *ṭhāt-rāga* 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 *rāga* 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.

4. South-east Asia: *pathet*.

(i) *Introduction*.

Harold S. Powers, revised by Marc Perlman

What have been deemed to be modes and modal systems in South-east and East Asia contrast strikingly with the *rāga* and *maqām* systems. In heterophonic ensemble music such as that of the Javanese gamelan, a given underlying melodic or modal structure will be expressed in very different ways by the various instrumental and vocal parts. These parts are rendered distinctive by their strongly contrasting idioms, distinguished by tone colour, range and rhythmic density. The melodic phrases (*cèngkok*) of the *gendèr barung* (metallophone) and multi-octave *gambang* (xylophone) parts are pulsed and relatively rapid; the corresponding phrases (*gatra*) of the single-octave *saron* metallophone are also metrically bound, but in much longer note-values. The *rebab* (spike fiddle) and *suling* (flute) parts are rhythmically free, as is the vocal line of the *pesindhèn* (female solo singer). These parts have diverse ways of expressing affiliation with the *pathet* (modal category).

(ii) *Pathet*.

(a) South-east Asian modal systems.

Harold S. Powers, revised by Marc Perlman

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 Myanmar (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 *saung-gauk* have to be retuned. In traditional Vietnamese music there are two modal categories called *diêu* - named *bac* ('north') and *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.

Harold S. Powers, revised by Marc Perlman

There are two different tunings for the fixed-pitch instruments of Javanese gamelan, called *laras pélog* and *sléndro*. 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; *pélog* and *sléndro* 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. *Sléndro* is always an anhemitonic pentatonic tuning, with only five named degrees of the scale. *Pélog* 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 18 as though naming the keys of two single-octave metallophones *saron* (one tuned for *pélog* and one for *sléndro*), with Javanese names and modern cipher equivalents, to which are added Western equivalents. The Roman letter A is arbitrarily set as though it were a common pitch (*tumbuk*) for the degree *nem/6* 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. Degree 4 (*pélog*) is normally much closer to 5 (*lima*) than to 3 (*dhadha*); degree 3 (*dhadha*) in *sléndro* may be closer to 5 (*lima*) than to 2 (*gulu*) in certain gamelan. In short, the note *pélog* might as well have been represented by F* and *dhadha* (degree 3) in *sléndro* 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 *pathet* ('mode') even within a single gamelan ensemble.

TABLE 18

<i>Pélog</i>			<i>Sléndro</i>		
barang	7	B	C	1	barang
nem	6	A	A	6	nem
lima	5	G#	G	5	lima
pelog	4	F#			
dhadha	3	E	E+	3	dhadha
gulu	2	D	D	2	gulu
panunggul	1	C#	C	1	barang

Table 18. The degrees of Sléndro and Pélog

Table 18

In the Central Javanese gamelan, traditional repertory items in each *laras* are assigned to one of three *pathet*; *pathet* is the term customarily rendered as 'mode'. To consider each *laras* - *sléndro* and *pélog* - 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 *pathet* 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*, *sléndro* and *pélog*, there are only three *gammes particulières*, the three *pathet*. Furthermore, each of the three *sléndro pathet* 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 pélog* just such selections of *gammes particulières* are made: *pélog pathet barang* uses scale degree 7 (*barang/B*) to the virtual exclusion of scale degree 1 (*panunggul C#*); the latter is featured in the other two *pélog pathet*, where degree 7 plays a subsidiary role, normally being omitted altogether. Degree 4 (*pélog/F#*) is an 'exchange note' (*sorogan*), normally for degree 3 (*dhadhal/E*) in two *pélog pathet* and normally for degree 5 (*lima/G#*) in the third, *pélog pathet barang*. Thus in *pélog* 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 *sléndro*, on the other hand, each *gamme particulière* is coextensive with the *échelle générale*.

(c) Pathet versus rāga.

Harold S. Powers, revised by Marc Perlman

Both the number of entities – six *pathet* 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 Javanese musicians the closest quantitative equivalent to the dozens of *rāgas* an Indian musician must control is not the six *pathet* but the hundreds of *gendhing* – compositions set in gong cycles – that they know and can play. Indian musicians must know compositions too, but they are conceived as the embodiments of *rāgas*, and any major performance is dominated by the artist's own ad hoc elaborations in the *rāga*, 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 *gendhing*, conversely, is a fixed pattern attached to that particular *gendhing*; if it foreshadows anything, it is no so much the *pathet* in general but rather specific passages of the *gendhing* itself. A musician is not at liberty to transfer a *bubuka* belonging to one piece to some other piece in the same *pathet*. So too the closing soloistic *pathetan* after a *gendhing* is an instrumental elaboration not on the *pathet* as an abstract modal entity but rather on a specific vocal composition in that *pathet*, traditionally attached to the *gendhing*. In short, where a *rāga* 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 *pathet* 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.

Harold S. Powers, revised by Marc Perlman

The task of explicitly identifying the distinguishing characteristics of the *pathet* has received a great deal of attention both from Javanese musicians and foreign scholars. Since this work has come to focus increasingly on the musical tradition of the city of Surakarta (Solo) rather than the closely related, but distinct, tradition of Yogyakarta, the following description applies to the Surakarta style unless otherwise indicated.

Clear and distinct separate modal functions like predominant, final and the like cannot be established for the *pathet*. 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 *pathet*, however, are neither finals nor necessarily predominant; they are simply those degrees of the scale that tend to occur more often at important structural positions. Of equal or greater importance in *pathet*-recognition, however, is the general avoidance in each *pathet* 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 ageng* ('large gong'), and their goal notes are gong notes. Each *gongan* in turn is divided into two or more *kenongan*; mid points of *kenongan* are sometimes marked by the gong *kempul*. 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 *pathet* 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 *pélog pathet* is summarized in Table 19, with comments following. (For Javanese note names and approximate intervals, see above, Table 18.) Degree 1 (*panunggul/C#*) is rare in *pathet barang*, as is degree 7 (*barang/B*) in *pathet lima* and *pathet nem*.

TABLE 19

<i>Pathet</i>	<i>Basic pentatonic</i>		<i>With 4 (pélog)</i>	<i>Weak/absent</i>
	<i>(strong)</i>	<i>(others)</i>	<i>substituted</i>	
lima	1,5	2,3,6	1 2 4 5 6	7
nem	6,5	1,2,3	1 2 4 5 6	7
barang	6,2	3,5,7	2 3 4 6 7	1

Table 19

TABLE 21: The proportion of pitches that fall at *kenong*- and *gong*-trokes in all but the smallest compositions of the three *sléndro pathet*. Two octaves of the conceptual ambitus of the *balungan* (skeleton are represented

The three *pélog pathet* can be distinguished most concretely by the tonal resources they exploit. The unique pitch content of *pathet barangis* reflected in the provision of separate fixed-pitch idiophones (the *gendèr barung*, *gendèr panerus* and sometimes the *gambang*) for use in *pathet barang*: for example, the *gendèr barung* used for *pathet barang* contains a key for *barang* (7/B) but not for

panunggul (1/C#), while the other, used for *pathet nem* and *pathet lima*, has *panunggul* but not *barang*. The latter two *pathet* are identical in pitch content (indeed, the Yogyakarta tradition refers to them collectively as *pélog bem*) but they differ in range. *Pathet lima* makes use of *panunggul* (1/C#) in the lower octave, a tone not used in any other *pathet*; to reach it, the *rebab* strings must be tuned to *lima* (5/G#) and *panunggul* (1/C#), one step lower than their usual tuning (apparently this retuning is not practiced in Yogyanese style). The other distinguishing marks of *pathet lima* and *pathet nem* involve the relative strength of degrees as structural goal tones; for example, degree 6 (*nem/A*) is more probable at points of structural weight in *pathet nem* than in *pathet lima*.

The strength and avoidance of degrees at structurally significant points is also important in identification of the *sléndro pathet*, where each *pathet* uses all five tones of the *laras*, and hence no *pathet* can be distinctive for its unique pitch content. (However, there are *pathet*-related differences in the use of *barang miring*, the importation into *sléndro* compositions of *pélog*-like interval patterns by singers and *rebab*.)

Table 20 compares the relative strength of pitch classes in the *sléndro pathet*. The strongest contrast is that between *pathet sanga* and *pathet manyura*. *Sanga* is in fact the most distinct of the *sléndro pathet*, and the frequency of degree 5 (*lima/G*) at the goal tones of *gongan* and *kenongan* contributes most strongly to this distinctiveness. *Pathet manyura* by contrast avoids degree 5 at strong goal notes; strong positions in *sangain* turn avoid 3 (*dhadha/E*), a note correspondingly emphasized in *manyura*.

TABLE 20: Relative strength of pitch classes in *sléndro pathet*

<i>Pathet</i>	'Tonic'	Also strong	Avoided
<i>nem</i>	2	6, 5	—
<i>sanga</i>	5	2	3
<i>manyura</i>	6	2, 3	5

Relative strength of pitch classes in *sléndro pathet*

TABLE 20: Relative strength of pitch classes in *sléndro pathet*

Distinctions between *pathet nem* and *pathet manyura* are less evident when only the functions of pitch classes are considered, as these two *pathet* share strong degrees 2 and 6. *Pathet nem* is distinctive in that it accords roughly equal strength to degrees 5 and 6, whereas *manyura* emphasizes the latter at the expense of the former. The individual profile of *pathet nem* becomes even clearer if we examine the functions of pitches rather than pitch classes. The statistics in Table 21 show the distinctive emphasis of *pathet nem* on degree 2 in the lower octave. By contrast, almost all *kenong*-strokes coinciding with 2 in *manyura* compositions fall on middle-octave 2.

TABLE 21
 Percentage of all kenong strokes (including gong strokes) in
 gendhing and ladrang of the sléndro pathet which fall on given
 balungan pitches (based on Mloyowidodo, 1977, i; columns do
 not total 100 due to rounding off of figures)

<i>Pitch</i>	<i>Nem</i>	<i>Sanga</i>	<i>Manyura</i>
1̇	1	2	2
6	6	7	11
5	4	17	3
3	5	3	19
2	20	10	23
1	3	18	7
6̇	21	4	26
5̇	21	35	1
3̇	5	1	6
2̇	13	2	1

Dots below numerals indicate tones in the lower octave; dots above indicate the higher octave.

The proportion of pitches that fall at kenong- and gong-strokes in all but the smallest compositions of the three sléndro pathet. Two octaves of the conceptual ambitus of the balungan (skeleton are represented

TABLE 19

While these features are diagnostic of the *pathet nem* repertory taken as a whole, they are not always useful in identifying the *pathet* of individual compositions, which may avoid low 2 and stress either 5 or 6 but not both. This can lead to disagreement over the assignment of *pathet* labels to particular compositions. Furthermore, emphasis on degrees 5 and 6 (the ‘tonics’ of *pathet sanga* and *pathet manyura*, respectively) gives *pathet nem* something of the nature of a mixture of these two *pathet*. In fact, *pathet* mixture is quite common and even compositions in the other two *pathet* frequently modulate outside of their home *pathet*. In attempting to explicate these aspects, scholars have come increasingly to study not only the use of scale degrees as structural goal tones but also the manner of approach to those tones.

(e) Melodic aspects: balungan.

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Goal tones are points of convergence, where the elaborating parts sound the same pitch-class as the ‘core melody’ (*balungan*). These points of convergence occur at *gong*- and *kenong*-strokes, but also more frequently, normally at the end of every four-beat *balungan* phrase (*gatra*). (The *gatra*, essentially a metric unit, is usually, though not invariably, coextensive with melodic phrases.) It has become customary, in teaching certain elaborating parts, to isolate a number of re-usable *gatra*-length melodic phrases, called *cèngkok* (for this and other senses of this polyvalent term, see Perlman, 1994, pp.555-77).

TABLE 20: Relative strength of pitch classes in sléndro pathet

<i>Pathet</i>	'Tonic'	<i>Also strong</i>	<i>Avoided</i>
nem	2	6, 5	—
sanga	5	2	3
manyura	6	2, 3	5

Relative strength of pitch classes in sléndro pathet

The *cèngkok* of certain parts have more-or-less marked *pathet* associations and there have been attempts to find similar associations in *gatra*-length *balungan* phrases. Hood was the first to study the latter. He proposed several four-tone 'cadential formulas' (1954, p.124) for each *pathet*. Becker's sophisticated statistical study, the most ambitious to date (1980, pp.78-88), widened the inquiry to encompass all *balungan gatra* in a much larger corpus, nearly 300 compositions. She pointed to significant correlations between *pathet* and the *gatra* appearing at certain structural positions. Her sample has been criticized as unrepresentative (Supanggah, 1985, p.180). It is true that Becker's study mixes idiomatically distinct Yogyanese and Solonese *balungan*, conflates certain two-*gatra* units with normal *gatra*, ignores registral information and includes non-canonical compositions while omitting the extremely common *jineman*, *ayak-ayakan* and *srepegan* genres; nevertheless, its results are consistent with the pattern of pitch-class strength in Table 20, for example regarding the distinctiveness of *sléndro sanga*. This suggests both the robustness of this overall pattern and the soundness of Becker's analysis, at least as far as these broad tendencies are concerned.

Few, if any, of these four-beat phrases are exclusive to any *pathet* and in any case the most distinctive *balungan gatra* are not prominently displayed; they seem to be used less frequently than those *gatra* shared equally by all *pathet*. Hence no single *gatra* functions as a modal identifying tag, like a North Indian *pakaḍ* or a South Indian *piṭuppu* ('catch'). The combination of *balungan gatra* with structural position is more informative: thus 6 5 3 2 is found in all three *sléndro pathet*, but while it is common at gong positions in *nem* and *manyura*, in *sanga* it is extremely rare.

Pathet is more easily deduced from *balungan* phrases longer than a single *gatra*. The Javanese theorist Martopangrawit identified certain two-*gatra* phrases as diagnostic of particular *pathet*. Ex.42 shows these 'fixed patterns' (*cèngkok mati*) for the *sléndro pathet* (Sri Hasanto, 1985, pp.87-8).

Ex.42**(a) sléndro nem**

balungan: 
 5 6 5 3 2 1 6̣ 5̣


 6 6 1̣ 6 5 3 2 3 . 1 6̣


 5̣ 1 2 1 6̣

(b) sléndro sanga

balungan: 
 3 5 3 2 . 1 2 6̣


 1 6 5 6 5 3 2 1 5 6 1̣


 6 5 3 2 1 3 5 3 2 . 1 6̣ 5̣

(c) sléndro manyura

balungan: 
 3 5 6 1̣ 6 5 3 2


 3 3 . . 6 5 3 2 3 5 6


 1̣ 6 5 2 3 5 6 5 3 2 1 2 6̣

Ex.42 (a) Sléndro nem; (b) Sléndro sanga; (c) Sléndro manyura

(f) Melodic aspects: garap.

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The *balungan* is one of the main reference-points for the group of ‘elaborating’ parts. The instruments and voices of this *garap* group (so-called because they ‘work’ or interpret the *balungan*) include multi-octave fixed-pitch instruments such as the *bonang* (gong-chime), *gendèr barung* and *gendèr panerus* (metallophones) and *gambang* (xylophone), the metrically-bound unison melodies of the *gérong* male chorus, as well as three parts which contribute more-or-less unmetrical elaborations: the spike-fiddle, end-blown flute and solo female voice (*rebab*, *suling* and *pesindhèn*).

Balungan passages which, considered in isolation, are ambiguous with respect to *pathet* can be given a clear *pathet* identity by the elaborating parts (Brinner, 'Knowing Music...', 1995, p.62). Indeed, Martopangrawit defines *pathet* in terms of *garap* (1984, p.47), though in this statement *garap* should not be understood to refer narrowly to the elaborating parts, but broadly, to performance practice in general. The elaborating parts are not the only ones to reinforce or clarify the *pathet* implications of the *balungan*; on occasion even the form-defining or colotomic parts play this role. When, in a *sléndro* composition, the *balungan* goal-tone middle-register 1 falls at a *kenongor kempul* stroke, the pitch played by those instruments depends on the *pathet*: 1 in *manyura*, 5 in *sanga*. On the other hand, neither are all of the elaborating parts governed by *pathet*. For example, the *pipilan* playing technique of the *bonang* (which involves anticipation of and oscillation between pairs of notes) is too tightly tied to the *balungan* to give any *pathet* indications.

Individual parts have idiomatic ways of marking *pathet*. The *bonang barung* and *bonang panerus* indicate *pathet* through their interlocking figuration (*imbal*). The higher hand positions on the *rebab* distinguish between *sléndro sanga* and *sléndro manyura*: for *sanga* the index finger produces the tones 2 and 5, for *manyura* 3 and 6. The *gendèr* can use choice of register to display *pathet*. When 2 and 3 appear as goal-tones in the middle octave of the *balungan*, the *gendèr* can often choose to represent these pitches with 2 and 3 in either its low or high register. In such cases, use of the low register can suggest *sléndro nem*.

However, recent research has focussed on the patterns (*cèngkok*) which form the more-or-less standardized vocabulary of certain elaborating parts. Some of the principles governing these *cèngkok* seem to apply as well to parts (such as the *gérong*) which are not taught by means of standardized *cèngkok*.

Normally the performer will force an ambiguous *balungan* phrase to be heard in a certain *pathet* by choosing a *cèngkok* with a strong flavour of that *pathet*. However, there are cases in which the performer does not (or cannot) do so, using, for example, a *cèngkok* of *manyura* even though he or she considers the *balungan* to be in *sléndro nem* (McDermott and Sumarsam, 1975, pp.242-3; Mendonça, 1990, p.68). To some extent this may be due to the fact that *cèngkok* with distinctive *pathet* identities are not evenly distributed across *pathet* categories. There are few *cèngkok* diagnostic of the *pélog pathet*, and within *sléndro* there are fewer *cèngkok* strongly associated with *nem* than with *sanga* or *manyura*. The discussion that follows will consequently be limited to the latter two *pathet*.

Cèngkok can be more-or-less strongly stamped with *pathet*, defining characteristics, and the various instrumental and vocal *cèngkok* mark *pathet* in various ways. While some *pathet* markers may be purely conventional, it is nevertheless clear that some of the same tonal emphases and avoidances operative in the *balungan* also define *pathet* in *cèngkok*. This is most easily seen in *cèngkok* approaching tones which have no strong associations with either *sanga* or *manyura* (such as tones 1 or 2). The manner of approach to the goal-tone can signal a particular *pathet* by featuring tones with distinctive modal roles, such as 3 and 5. Since 3 is the 'avoided' tone of *sanga* - rarely used at strong metrical positions - its prominence in *manyura* patterns prevents any hint of *sanga* from appearing. 5 is the 'avoided' tone of *manyura* (as well as the tonal focus of *sanga*), so its prominence in *sanga* patterns reduces the feeling of *manyura* and reinforces the sense of *sanga*. Three means for emphasizing such diagnostic tones are illustrated here: the final simultaneities of patterns, the internal caesura tones of the patterns and the pitch boundaries of the cadential gestures of patterns. Ex.43 shows *cèngkok* used by the *pesindhèn* (female solo vocalist), *gendèr barung* metallophone, and *gambang* xylophone to reach the goal-tone 1/C.

Two sets of *cèngkok* are presented, one for *pathet manyura* (ex.43a) one for *pathet sanga* (ex.43b). They are represented with the *balungan gatra* · 2 · 1, though they can be used with other *gatra*, such as 2321. Each *gatra* is common in both *pathet*.

Ex.43

(a) manyura

The musical score for Ex.43(a) Manyura consists of five staves. The top staff is labeled 'pesindhè' and contains a melodic line. The second staff is labeled 'gendèr barung' and contains a rhythmic pattern with a [7] time signature. The third staff is labeled 'gambang' and contains a rhythmic pattern with a [7] time signature. The fourth staff is labeled 'pesindhè' and contains a melodic line. The fifth staff is labeled 'balungan' and contains a rhythmic pattern with a [-] time signature. Below the balungan staff, there are two notes: a '2' and a '1', indicating the gatra pattern.

(b) manyura

The musical score for Ex.43(b) Sanga consists of five staves. The top staff is labeled 'pesindhè' and contains a melodic line. The second staff is labeled 'gendèr barung' and contains a rhythmic pattern with a [7] time signature. The third staff is labeled 'gambang' and contains a rhythmic pattern with a [7] time signature. The fourth staff is labeled 'pesindhè' and contains a melodic line. The fifth staff is labeled 'balungan' and contains a rhythmic pattern with a [-] time signature. Below the balungan staff, there are two notes: a '2' and a '1', indicating the gatra pattern.

Ex.43 Gendèr parts from Martopangrawit, 1976: (a) Manyura; (b) Sanga

Final simultaneity acts as a *pathet* marker primarily in the *cèngkok* of the *gendèr barung*, though also in the patterns of the *gendèr panerus* and the *celempung* zither (not shown). The cadential pitch of a *gendèr cèngkok* is played by the left hand; the right hand will either duplicate this pitch at the upper octave (*gembyang*) or will strike a tone one *kempyung* (three scale-steps) above it. The interval used is sometimes dictated by the cadential pitch itself. When the cadential pitch is tone 1/C, however, the choice is determined by *pathet*: *gembyang* indicates *manyura*; while in *sanga* the right hand strikes 5/G against 1/C in the left, forming the *kempyung* interval.

The pitches occurring at caesura points within the *cèngkok* also bear *pathet* significance. For the metrically-bound parts, chief metrical stress falls on the final stroke (the goal-tone), with secondary stress at the midpoint. For the unmetred *pesindhèn* line, a caesura may usually be identified at the third syllable from the end, where she would pause, if necessary, to wait for a drum cue in certain genres (Brinner, 1995, pp.234–44; Walton, 1987, p.32). In *manyura*, the *gendèr* and *gambang* patterns have 3/E at their midpoints, while the corresponding location in the *sanga* patterns has 5/G. Similarly, the caesura tone in the *pesindhèn* patterns is 3/E in *manyura*, 5/G or 2/D in *sanga*.

Each of the illustrated melodic patterns approaches its destination with a gesture that occupies a certain segment of tonal space. The pitches forming the outer boundaries of this segment (and in this way given prominence) can usually be correlated with the *pathet* of the pattern. The cadential gestures in the *gendèr* part are played by the left hand. The gesture approaching the final 1/C in the *manyura* pattern has 3/E as its lower limit, compared with 5/G in the *sanga* pattern. The same holds true for the *gambang* patterns (as can be seen by comparing the final four notes in each) and for the *pesindhèn* patterns to upper-octave 1/C.

There have been other attempts to locate general *pathet* markers in the elaborating parts. Hood (1988) analyses these parts motivically, viewing them as successions of elaborated, extended and elided versions of three- and four- tone cadential patterns specific to each *pathet*.

(g) Transposition, transformation and the relationships between pathet.

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Ex.43

(a) manyura

(b) manyura

Ex.43 Gendèr parts from Martopangrawit, 1976: (a) Manyura; (b) Sanga

In ex.43 above, the opening gestures of the *pesindhèn cèngkok* for middle-octave 1 in *sanga* and *manyura* share the same contour: the first seven tones are identical under transposition. The relationship implied here - in which the *manyura* melodic shape is identical to *sanga*, but located one *sléndro* step higher - is in fact generally recognized by Javanese musicians and theorists. Compositions and *cèngkok* can be transposed between *pathet* within one tuning-system, and also 'translated' between tuning-systems. We may look to these possibilities of transposition to study the general relationships between *pathet*; however, they do not describe a consistent system.

Transposition of compositions: between laras. The performance of *sléndro* compositions in the *pélog* tuning system is very common, though the reverse is rare. Due to the conceptual equivalence of tones between the tuning systems, the transformed compositions are not thought of as shifting scale position: the tone *lima* in *sléndro* becomes *limain pélog*, *dhadha* becomes *dhadha* etc. The *sléndro* tone *barang* becomes *panunggul* in *pélog nem*, *barangin pélog barang*. The tone *pélog* is sometimes

substituted for *dhadha* (in *pélog nem*) or for *lima* (in *pélog barang*). *Sléndro gatra* which would sound unidiomatic if translated literally into *pélog* are often modified, usually preserving the goal-tone: thus in *pélog barang*, the *sléndro* pattern 2321 may become not 2327 but 3567.

In general, compositions in *sléndro sanga* become *pélog nem*, while compositions in *manyura* become *pélog barang*. Compositions in *sléndro nem* display no regular pattern of transformation; in *pélog* they may become *pathet lima* (e.g. *gendhing Rèndèh*), *pathet nem* (e.g. *gendhing Titipati*) or *pathet barang* (e.g. *gendhing Majemuk*). Even in *sanga* and *manyura*, some compositions have multiple possibilities of transformation. *Gendhing Bondhèt sléndro sanga* can be played (under different names) in both *pélog nem* and *pélog barang*; some pieces in *manyura* have, besides the usual *pélog barang* transposition, a *pélog nem* one as well (for which the term *nyamat* or *pélog manyura* is sometimes used).

Transposition within laras: sléndro. Transposition of compositions within *sléndro* is less common than *sléndro-pélog* transformation. Virtually all such cases involve *sanga* and *manyura*, with the *manyura* version one step above the *sanga* version. Most of these compositions are in the smaller forms (*ladrang, ketawangor jineman*); the few large compositions that shift *pathet* may alter considerably in the process.

TABLE 20: Relative strength of pitch classes in *sléndro pathet*

<i>Pathet</i>	'Tonic'	Also strong	Avoided
<i>nem</i>	2	6, 5	—
<i>sanga</i>	5	2	3
<i>manyura</i>	6	2, 3	5

Relative strength of pitch classes in *sléndro pathet*

Exceptions to this generalization occur in the repertory of songs (*sulukan*) sung by the *dhalang* (puppet master) in the *wayang kulit* shadow-play. (The instrumental parts to these songs are played as preludes and postludes to compositions in gamelan performances, when they are known as *pathetan*.) Many *sulukan* in *manyura* have melodies identical to those of *sanga sulukan*, transposed up one step. However, some *manyura sulukan* are longer than the corresponding *sanga* versions, containing additional phrases at the end. There is also an unusual case of a melody which is played at three pitch-levels, representing all three *sléndro pathet*: it is known as *sendhon Pananggalan* in *nem*, *sendhon Rencasih* in *sanga*, and *sendhon Sastradatan* in *manyura*. Remarkably, the *manyura* version is located one step below the *sanga* version, rather than above it (Perlman, 1997). The *sanga* version is two scale-steps above the *nem* version, as might be expected from Table 20. However, there is also a contrary example of the *nem-sanga* transpositional relationship: the *sulukan ada-ada Manggalan* in *pathet sanga* (Probohardjono, 1984, p.470) has the same melody as *ada-ada Girisa* in *pathet nem*, but lowered by one step.

Transposition within laras: pélog. Transposition of compositions between *pélog pathet* is less common than in *sléndro*. The few cases of transposition between *pélog nem* and *pélog barang* involve only the replacement of tone 1 by 7 (e.g. *ladrang Saron* and *ladrang Kagok Liwung*). More common is

transposition between *pélog lima* and *pélog barang*. The *pathet barang* version is usually one tone higher than the *pathet lima* version (e.g. *ladrang Retnaningsih pélog lima* and *ladrang Retna-asih pélog barang*), though transposition by one *kempyung* is also found in sections of certain compositions (parts of *gendhing Dhenggung Sulur Kangkung pélog lima* and *gendhing Silir Banten pélog barang*).

Transposition of garap: between laras. Most *sléndro cèngkok* have *pélog* equivalents. In the case of the *bonang*, *gendèrand gambang*, the *pélog* patterns often have contours identical to their *sléndro* cognates; this is not the case with vocal lines and *rebab* parts, which may undergo considerable reshaping (ex.44).

Ex.44 Excerpt from the vocal part of *Kinanthi*, comparing *sléndro manyura* and *pélog barang* versions (based on Supanggih, 1985 p.156)

Ex.44 Excerpt from the vocal part of *Kinanthi*, comparing *sléndro manyura* and *pélog barang* versions (based on Supanggih, 1985, p.156)

Transposition within laras: sléndro. As mentioned above, the transpositional equivalence of *sanga* and *manyura cèngkokis* generally assumed by Javanese musicians. Indeed, published compilations of *cèngkok* often notate either *sanga* or *manyura* forms, but not both, instructing the reader to generate the omitted forms by transposition (Martopangrawit, 1976; Supadmi, 1984). Nevertheless, there are also some untransposable *cèngkok*. A certain degree of transpositional equivalence is found in elaborating parts such as the *rebabor bonang*. However, these parts also have idiomatic formulae attached to certain absolute positions of the scale, which are never transposed; for example, both *rebab* and *bonang* (when using the *pipilant* technique) have distinctive ways of approaching the tone 6 in the lower register, regardless of *pathet*. Hence Martopangrawit (1984, p.48) points out that the performance practice of a composition can never be transposed intact between *sanga* and *manyura*.

Transposition within laras: pélog. Many *cèngkokin pélog* are regarded as derived from *sléndro* and their *pathet* identities are labelled with the names of *sléndro pathet* (especially *sanga* and *manyura*) rather than *pélog pathet*. Musicians do not speak of the relationships of *pélog lima cèngkok* with *pélog nem cèngkok*; instead, they discuss the relative appropriateness of *cèngkok* of *sléndro sanga* or *sléndro manyura* for compositions in *pélog lima* or *pélog nem* (Martopangrawit, 1984, p.136–7).

The only significant example of the transposition of performance practice between *pélog pathet* concerns the *rebab*. Its strings are tuned to 1 and 5 for *pélog lima*, one tone lower than the usual tuning. As a result, the *rebab* can often use the same fingering for *pélog lima* and *pélog barang*: the hand position for the tones 5–6–1–2 in *pélog lima* will produce, with slight adjustments of intonation, the tones 6–7–2–3 in *pélog barang*. Many of the idiomatic *rebab* gestures for *pélog barang* are transpositions up one tone of *pélog lima* gestures.

(h) Pathet and intonation.

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It has long been recognized that the intonation of the *sléndro* and *pélog* tuning systems varies from one set of gamelan instruments to another; such variants are called *embat*. Individual musicians are also said to have their own *embat* (Perlman, 1994, pp.534–40). Martopangrawit (1984) suggested that the different *sléndro pathet* imply different patterns of intonation, and that some of the variability of tuning in *sléndro* is due to the variety of ways to reconcile these conflicting intonational demands. Table 22 schematically illustrates the key features of the ideal *embat* for *sanga* and *manyura*.

TABLE 22: Two alternative distribution patterns of wide and narrow intervals along a portion of the *sléndro* scale, corresponding to two different pathet; based on Martopangrawit, 1984, p.45

The intonation pattern for *manyura* is clearly a transposition upwards by one tone of the *sanga* pattern, as is consistent with the general relationship between the *cèngkok* of these two *pathet*. This produces a conflict in the tuning of the intervals 6–1 and 1–2 on fixed-pitch instruments, as intervals which should be tuned wide to accord with the feeling of *sanga* must be narrow to accommodate *manyura*, and vice versa. The tuning of the fixed-pitch instruments in actual gamelan sets is a compromise between these possibilities, but musicians identify certain sets as leaning more-or-less strongly towards one or another of the two (*sléndro* instrument tunings are not usually associated with *pathet nem*).

TABLE 22: Two alternative distribution patterns of wide and narrow intervals along a portion of the *sléndro* scale, corresponding to two different pathet; based on Martopangrawit, 1984, p.45

	6	1	2	3	5	6
<i>sanga</i> :		< narrow >	< wide >			< wide >
<i>manyura</i> :	< wide >		< narrow >	< wide >		

Two alternative distribution patterns of wide and narrow intervals along a portion of the *sléndro* scale, corresponding to two different pathet; based on Martopangrawit, 1984, p.45

It is possible that flexible-pitch instruments and voices shade their intonation contextually, expanding the 5–6 and 1–2 intervals in *sang* compositions, the 6–1 and 2–3 intervals in *manyura*. Hatch (1980, pp. 130–58) attempted to test this proposition by analyzing the vocal intonation of a *dhalang* (shadow puppet master) during the progression of a performance through *nem*, *sang* and *manyura*. Setting the boundary between narrow and wide *sléndro* intervals at 250 cents, Hatch's summary findings (no pitch measurements are provided) suggest a tendency to approximate the theoretical pattern of Table 22 increasingly closely during the course of a performance.

It is plausible that Javanese musicians feel more cadential weight in a *sléndro* tone which is approached from above by a relatively large interval and tend to contextually exaggerate this effect (such a practice would be comparable to the sharpening of the leading-tone in Western tonal music, where a tone has more cadential significance when approached from below by a relatively small interval). However, this hypothesis has not yet been rigorously tested. Current research focusses once again on the tunings of the fixed-pitch instruments (cf. Arom, Léothaud and Voisin, 1997, pp.22–5). However, it is reasonable to expect individual variation in *pathet*-related ideals of *embat*. Musicians do not always agree on the *pathet* tendency of a given *sléndro* instrument: a tuning heard by some as suitable for *sang* may be judged by others as suggestive of *manyura*. This fact alone implies that idealized *pathet* intonation profiles, if they exist, may differ from one musician to another.

(i) The nature of pathet.

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As a modal system, *pathet* is not clearly ordered on consistent, uniform lines. This is due only in part to the existence of modally-ambiguous repertory items, or to compositions whose traditional *pathet* labels seem not to match their melodic content. More fundamentally, *pathet* distinctions are not made by a uniform set of diacritic features: 'a given parameter may be significant in one part of the system and insignificant in another' (Becker, 1981, p.533). The distinguishing features of certain *pathet* are not obvious, even to Javanese musicians and theorists.

Taking these facts into account, recent research has moved away from the attempt to reduce *pathet* to a determinate set of musical characteristics, considering instead how *pathet* functions as a category of musical thought, knowledge or discourse. This has drawn attention to processes of historical change, to the use of the *pathet* system itself to confer social legitimacy and to individual variation in interpreting the *pathet* of specific compositions.

Javanese musicians may differ among themselves concerning the criteria of modal identification, differences which will be reflected in both their conceptualization and practice. As in other modal traditions (Wiering, 1995, pp.101–41), these differences may be conditioned by differing individual experiences or musical roles. But musicians may also respond to the tension between multiple representations of *pathet* embedded in their tradition (Perlman, 1997). Javanese musicians find *pathet* embodied more-or-less clearly in the traditional repertory and norms of performance practice, as well as in the traditional *pathet* labels for compositions. They also inherit cultural tools for ordering and making sense of modal practice, such as traditional styles of discourse about *pathet* (including homiletic, poetic and mystical styles; see Sastrapustaka, 1984) and a cultural schema organizing the *pathet* categories. The latter, an arrangement of six *pathet* in two parallel tripartite groups, one for each tuning system, represents what Brinner terms a 'cultural matrix' (1995, p.437).

This matrix serves most concretely to regulate the sequence of compositions in a performance (whether it be *wayang kulit* shadow-puppet play or *klenengan*, a musical gathering). A typical evening event has three sections, each divided from the next by the playing of a specific *pathetan*. The first contains compositions in *sléndro pathet nem* and *pélog pathet lima*, played alternately. The second is devoted to compositions in *sléndro pathet sanga* and *pélog pathet nem*, the third to *sléndro pathet manyura* and *pélog pathet barang*. (A daytime performance follows the same pattern, except that *sléndro pathet nem* and *pélog pathet lima* are replaced by *sléndro pathet manyura* and *pélog pathet barang*.)

This matrix of six *pathet* thus plays a practical role in organizing performances. It also reflects broad aesthetic and melodic relationships between the *pathet*. For example, within each tuning system the sequence of *pathet* corresponds to a progression of moods from the calm or majestic to the mirthful or lighthearted. These emotional associations seem to have certain musical concomitants. The solemnity of *sléndro nem* and *pélog lima* is attributable in part to the fact that they both exploit the lowest register more than the other *pathet* and their repertoires contain a relatively large number of compositions in the very largest forms (Table 23). Finally, the six-*pathet* schema shapes historical change by channelling innovation, creating new items to fill modal ‘gaps’ in the repertory (Brinner, ‘Cultural Matrices ...’, 1995, p.448).

TABLE 23: Distribution of Solonese compositions by size and formal structure; percentages of total number of compositions in each *pathet*. Based on Mloyowidodo, 1977.

		Larger ←		→	Smaller	
		64 beats/N	32 beats/N	16 beats/N	8 beats/N	
		k4a & k8k	k4k & k2a	k2k	Ldr	Ktw
S						
L						
É	<i>nem</i>	13.3	28	30.7	26.7	1.3
N	<i>sanga</i>	6.8	11.6	28.1	36.9	16.5
D	<i>manyura</i>	2.4	10.6	32.0	37.7	18.0
R						
O						
P						
É	<i>lima</i>	19.5	17.2	36.1	20.8	7.0
L	<i>nem</i>	5.4	10.2	14.3	53.7	16.3
O	<i>barang</i>	9.6	10.3	14.0	52.6	13.3
G						

Key: ‘N’ = *kenongan*
 k8k = *kethuk 8 kerep*
 k4a = *kethuk 4 arang*
 k4k = *kethuk 4 kerep*
 k2a = *kethuk 2 arang*
 k2k = *kethuk 2 kerep*
 Ldr = *ladrang*
 Ktw = *ketawang*

A small number of compositions not classifiable under these headings have been omitted; rows do not sum to 100 due to rounding off.

Table 23

The matrix also functions to some extent as a cultural artifact in its own right; it has, for example, been exported into the rather different gamelan tradition of Banyumas (western Central Java), where it was superimposed on local practice, conferring some of the social legitimacy of the court style on this marginal tradition (Sutton, 1986, pp.88–91).

This schema was not designed as an analytical tool, however, and does not capture all of the modal distinctions one might make between compositions based on their melodic behaviour. Both Javanese and non-Javanese theorists have tried to refine and extend it, identifying a fourth explicitly-labelled *pélog pathet* (*nyamat* or *manyura*), two or three unlabelled modal entities within *pélog barang* (Sri Hastanto, 1985, pp.160–76) and a more-or-less distinct sub-*pathet* within *sléndro manyura* (called *galong* in the Yogyakarta tradition).

Moreover, the melodic relationships implicit in the matrix are only partially consistent with the actual practice of transposing compositions and do not hold with respect to *garap*. Although the matrix might lead us to expect similarities between the *garap* of *sléndro nem* and *pélog lima*, of *sléndro sanga* and *pélog nem*, and of *sléndro manyura* and *pélog barang*, this is not generally true. *Garap* in *pélog lima* is closer to that of *sléndro sanga* overall, and the other two *pélog pathet* each draw on both *sanga* and *manyura garap*.

This fact is consistent with research documenting differences in the means of *pathet* expression between *balungan* and *garap*. This has led some to argue that *pathet* is not a unitary system, but two or more distinct systems operating simultaneously. Taking this view, the internal plurality of the *pathet* concept is a by-product of historical processes of change, either the merger of a voice-dominated ensemble with a purely instrumental one (Walton, 1987, pp.85–92) or the ‘superimposition of a three-part theatrical structure upon a two-part, contrastive musical division’ (Becker, 1981, p.530), though there is also evidence that the present tripartite schema may have replaced a more differentiated fourfold system (Perlman, 1997). In either case, the ‘haziness’ of the *pathet* concept may play a functional role in Javanese musical culture, permitting individual flexibility and innovation in practice and conceptualization.

Ex.43**(a) manyura**
(b) manyura

Ex.43 Gendèr parts from Martopangrawit, 1976: (a) Manyura; (b) Sanga

Other scholars, while admitting the ambiguities and internal heterogeneity of *pathet*, are reluctant to analytically decompose it into distinct systems. Sri Hastanto attributes the differences in *pathet* expression noticed by Walton to the general differences between *balungan* and *garap* and between the various *garap* idioms (1985, p.84). Taking this view, *balungan* and *garap* represent differing concrete embodiments of stable abstract *pathet* characteristics (just as the modal functions of the tones 5 and 3 are reflected in various ways in the elaborating parts in ex.43).

The extent to which surface variability is anchored by underlying uniformity is also at issue in studies of individual performers' use of *garap* to clarify *pathet*. Martopangrawit's association of *pathet* with *garap* links it to the latter concept's connotations of flexibility and individuality, and indeed performers differ in *pathet* interpretation just as they do in other aspects of *garap*. Such differences are particularly evident in the performance of compositions of ambiguous *pathet*, compositions which contain

modulation, and in compositions in *sléndro nem*, which tend to mix elements of *sanga* and *manyura*. In these cases, different performers may agree on the presence of modulation in a piece, but differ in their judgements of its extent or exact location (Soetarno, 1982; Mendonça, 1990, p.69).

In such cases there is still agreement on the modal duties and implications of *garap*; that is, these performers agree on the general fact that *cèngkok* bear *pathet* affiliations and on the specific affiliations of particular *cèngkok*. However, performers may also differ in the scope they allow for such affiliations.

To master fully *garap*, the Javanese musician must acquire not only a vocabulary of melodic patterns but also a set of organizational strategies with which to analyze and make sense of the order within the music. Some of these strategies are associative, making connections between musical items or contexts, while other are diacritic, drawing distinctions (Perlman, 1994, pp.397–467). The various analytical tools presented in §4(ii) (f) above are precisely diacritic resources which musicians may use to distinguish between compositions or *garap*. Since the diacritic act is ultimately an individual one, individual musicians may differ in the ways they use these common resources. Further, they may be more-or-less motivated to draw distinctions at a given level of subtlety.

Thus with regard to *pathet*, some musicians hyperdiscriminate perceiving micromodulations even within a single *cèngkok*, or alternatively deliberately stripping a *cèngkok* of its most conspicuous *pathet* markers, making it 'indistinct' (*samar*) and hence appropriate for modally ambiguous passages. The three *gendèr* patterns in ex.45 are all suitable for the goal-tone 2/D. The use of 3/E at the midpoint of ex.45a and its use an octave higher in the right-hand part, clearly suggest *sléndro manyura*. The appearance of 5/G at the midpoint of ex.45b and in the cadential gesture is consistent with *sléndro sanga*. The unusual pattern ex.45c, however, is ambiguous. While it resembles ex.45a, it avoids 3/E at the midpoint, and upper-octave 3/E throughout. This attenuated modal affiliation is appropriate for a composition like *gendhing Danaraja*, officially classified as *sléndro sanga* but containing many passages which invite *manyura* treatment.

Ex.45**(a)** Martopangrawit, 1977, p.6

i 2̣ i . i 2̣ i 3̣ i 2̣ i 3̣ i 2̣ i 6̣

gendèr
barung

. . 1 2 3 . 3 . 1 . 6̣ 1 2 6̣ 1 2

(b) Soewita, *gendhing Danaraja Chamber Music of Central Java* King KICC 5152 (1992)

. 6̣ . 6̣ i . 6̣ i 5̣ i 6̣ i 5̣ 2̣ 3̣ 5̣ 6̣

gendèr
barung

2 3 . 3 . 2 1 2 2 3 . . 1 6̣ 5̣ . 5̣ 6̣ 1 6̣ 5̣ 6̣ 1 2

(c) Soewita, *gendhing Danaraja Chamber Music of Central Java*, King KICC 5152 (1992)

i 6̣ i . 6̣ i 2̣ i 6̣ i 2̣ i 6̣ i 2̣ i 6̣

gendèr
barung

. . . 1 2 2 3 2 1 2 6̣ . 6̣ 1 6̣ 1 2 . 3 2 1 2

Ex.45 (a) Martopangrawit, 1977, p.6; (b) Soewita, *gendhing Danaraja*, Chamber Music of Central Java, King KICC 5152 (1992); (c) Soewita, *gendhing Danaraja*, Chamber Music of Central Java, King KICC 5152 (1992)

On the other hand, not all musicians distinguish between ex.45a and ex.45b on the basis of *pathet*: some consider them interchangeable, or distinguish between them on some other basis. Musicians' degrees of discrimination may be an aspect of their personal styles of interpretation, and musicians of comparable experience and training may differ in this regard. However, there seems to be a certain amount of social prestige attached to hyperdiscrimination, and a corresponding tendency to stigmatize hypodiscrimination. Thus the failure to make certain *pathet* distinctions in *garap* is sometimes associated with village musicians and female players (Weiss, 1993; Perlman, 1998).

The prestige of hyperdiscrimination may have historical implications. It is possible that *garap* in the Surakarta tradition has come increasingly under *pathet* constraints over the past century (Perlman, 1998). Lindsay suggests that something similar happened in the Yogyakarta tradition, possibly as late as the 1920s, when dance-style drumming, interlocking *bonang* techniques and male choral singing were adopted into the court performance style (1985, pp.249–55).

5. East Asia: diao and chōshi.

China, Japan and Korea, to some extent, share a concept of mode, called in Chinese *diao*, in Japanese, *chō* or *-jō*; the Vietnamese *diêu* is similar. As is the case with the terms 'mode' and *maqām*, interpretations of these concepts vary considerably over time and by region; they also often imply melody or tuning. Ancient Chinese modal theory was exported to Japan and Korea and adapted there

over a long period, while continuing to evolve in China. This section mainly discusses the evolution of modal practice in one genre, Japanese *gagaku*, on which detailed work has been done, but first a brief introduction to Chinese systems will serve.

(i) China: *diao*.

Stephen Jones

In recent years Chinese theoretical sources and excavated instruments have been supplemented by study of the key systems of living folk traditions, such as *kunqu*, *nanguan* and northern temple music. The work of Yang Yinliu and Huang Xiangpeng has done much to relate ancient theory and living practice.

As Picken has observed, in early Chinese sources the term *diao* may be described as mode-key, made from combining the 12-note *lü* fixed-pitch system with the five- or seven-note scale-degree system. These systems were combined as early as the pre-Qin period, with ample theoretical writings as well as archaeological evidence such as the set of bronze bells from the 5th-century BCE tomb of the Marquis Yi of the Zeng state (see China, People's Republic of, §II; Zhong).

The *lü* system is a series of 12 fixed pitches within the octave derived from the circle of 5ths. Parallel to this was a *solfeccio*-like system of scale degrees, not on fixed pitches, with both pentatonic and heptatonic scales from early times (see China, People's Republic of, §II). The (anhemitonic) pentatonic system consists of the scale degrees *gong shang jiao zhi yu*, equivalent to I II III V VI or *doh ray me soh lah*. A mode was defined by the final (and sometimes the initial) note of the melody. Thus a pentatonic *shang* mode consists of the degrees II III V VI I.

The basic *gong* heptatonic scale fills in the larger (minor 3rd) gaps of the anhemitonic pentatonic series to give a Lydian series with the intervals T T T S T T S. The added degrees (written below in lower case), which occur a semitone below degrees I (*gong*) and V (*zhi*) of the heptatonic series, were conceived of as 'altered' (*bian*) or 'auxiliary' versions of the degrees a semitone above them, and were named as such: *biangong* (vii) and *bianzhi* (iv).

Another type of seven-note scale (called 'new' by Yang Yinliu) has been traced to the pre-Qin period, with semitones between the vii and I, and between III and iv, effectively a *zhi* mode, Ionian. At least before the 6th century CE a *qingshang diao* was also recognized. This was a *shang* (Mixolydian) scale with semitones between the third and fourth, and between the sixth and seventh degrees.

In practical music-making, mode-keys were created by combining the two systems of fixed pitch and mode, as we might describe a 'Lydian mode on G'. Thus *Huangzhong gong* was a *gong* mode with the fixed pitch *Huangzhong* as its tonic. At different periods, and in different sources, the number of mode-keys varied.

Multiplying all 12 *lü* fixed pitches by all seven scale degrees produced a theoretical model of 84 *diao*; multiplying them by the five pentatonic degrees made 60 *diao*. But since not all pitches and modes were commonly used in practice, more practical systems were described, multiplying only four common fixed pitches by the five pentatonic scale degrees (producing 20 *diao*), or multiplying them by the seven heptatonic scale degrees (giving 28 *diao*; some scholars also described this as being engendered by transposing the four common modes *gong*, *shang*, *jiao* and *yu* to seven fixed pitches).

Though the full system of 84 *diao* was never practised in full, it was enduringly cited as a comprehensive model. As Yang observes, 'theoretical definitions and descriptions of modes must be a drastic simplification of what happened in practice, where recognition of melodic identity undoubtedly involved much more than a mechanical use of beginning and ending notes.' The note-weighting of early melodies known from early scores or current practice (such as music for the zither *qin*, or vocal dramatic music) also shows complexity of modal usage within a single piece.

In later times the terms *gong*, *gongdiao* and *yun* were also used. Vocal dramatic music of the Ming and Qing dynasties (14th–19th centuries), notably the 'Northern and Southern arias' (*nanbeiqu*) and *kunqu*, show continuity with the Tang instrumental system, in which 28 *diao* were reduced in practice to 13; in the later period 9 *diao* were also commonly cited. Rather than any musical impoverishment, this historical reduction in the number of mode-keys may show an increasing reflection of practice in written texts. Though these later mode-keys were also extensively codified, the system is still poorly understood. The 13 *diao* consist in principle of 6 *gong* modes, 5 *shang* modes and 2 *yu* modes, while the 9 *diao* comprise 5 *gong* and 4 *shang* modes, but Yang Yinliu found no consistent modal identity in analysing pieces in the different *diao*. Though the pre-Tang *yanyue* system is said to be evident in *gongche* folk instrumental systems today, the four keys of genres such as northern Chinese ceremonial music or *nanguan* seem to have no intrinsic modal implications. However, versions of the 'same piece' in different keys in opera, or in the ceremonial music of Xi'an, are not mere transpositions but also modal variants.

(ii) Japan: *chōshi*.

Allan Marett

(a) Scales and modes in Japanese court music.

While features of early Chinese modal usage surviving in folk practice or early scores today deserve attention, the system of Japanese *gagaku*, deriving from Tang dynasty (618–907) China, is better reflected in Western scholarship. The Tang system was exported to Japan and Korea (*Tangak*), and has evolved in Japan to the present day.

The *tōgaku* ('Tang music') repertory of Japanese court music as it is played today embodies in some form an audible ancient system of East Asian ensemble modalities, the *chōshi*. All of the six principal models used in *tōgaku* today may be traced to Chinese sources of the Tang period, such as the stone engraving dated 754, recorded in the mid-10th century compendium *Tang huiyao*, or the late 9th-century source *Yuefu zalu*. Of these, five (*Ichikotsuchō*, *Hyōjō*, *Taishikichō*, *Ōshikichō* and *Banshikichō*) preserve the modal species and relative key relations that they had during the Tang period. The other (*Sōjō*) appears to have been modified by Japanese musicians during the Heian Period (794–1185) in order to accommodate technical limitations of the *shō*, the only fixed-pitch instrument in the Japanese *tōgaku* ensemble.

As we saw, the Tang Chinese modal system of 84 theoretical *diao* was generated by (a) taking each of the seven degrees of a heptatonic Lydian series as the final of one of seven modal species and (b) transposing each of the resultant seven modal species to one of 12 keys.

The names of modal degrees of the basic series from which modal species were generated are as follows (Chinese readings are given first, separated by a slash from Japanese readings): *gong/kyū* (I), *shang/shō* (II), *jiao/kaku* (III), *bianzhi/henchi* (iv), *zhi/chi* (V), *yu/u* (VI) and *biangong/henkyū* (vii). By the mid-8th century, when China was exerting its greatest cultural influence on Japan, modal species were formed on only four of these degrees: a Lydian series on I (*gong/kyū*); a Mixolydian series on II (*shang/shō*); an Aeolian series on III (*jiao/kaku*) and a Dorian series on VI (*yu/u*). No modal species were formed on V (*zhi/chi*) or on either of the auxiliary degrees (iv) and (vii). Each of these modal species was transposed to seven keys to give a total of 28 modes. Of these, 13 were popular in practice; it is to six of these that the present-day *tōgaku* modes may be traced.

TABLE 24: The six principal modes of *tōgaku* as they appear in the Tang source *Gongfeng yuequ kaiming biao* (754)

Modal Degrees	<i>gong/kyū</i> I	<i>shang/shō</i> II	<i>jiao/kaku</i> III	<i>bians=zhi/henchi</i> IV	<i>zhi/chi</i> V	<i>yu/u</i> VI	<i>biangong/henkyū</i> VII
Pitches							
D	D	E ¹	F [#]	G [#]	A	B ⁴	C [#]
F	F	G ²	A	B	C	D	E
G	G	A	B	C [#]	D	E ⁵	F [#]
A	A	B	C [#]	D [#]	E	F [#]	G [#]
C	C	D ³	E	F [#]	G	A ⁶	B

KEY

Shang/shō modes (Mixolydian)

1. *Tashidiao/Taishikichō* (final E)

2. *Shuangdiao/Sōjō* (final G)

3. *Yiyuediao/Ichikosuchō* (final D)

Yu/u modes (Dorian)

4. *Banshediao/Banshikichō* (final B)

5. *Pingdiao/Hyōjō* (final E)

6. *Huangzhongdiao/Ōshikichō* (final A)

Table 24. The six principal modes of *tōgaku* as they appear in a Chinese rock inscription of 754 recorded in the 10th century source Tang Huihao

Table 24 shows the position that the six present-day *tōgaku* modes had within the Tang modal system. Modal-degree names, which are applied both to individual notes and modal species, are listed at the top of the table. Only two of the mid-Tang modal species (Mixolydian on II (*shang/shō*) and Dorian on VI (*yu/u*)) survive in modern Japanese practice. Listed vertically to the left of the table are five of the seven pitches (D, F, G, A or C) to which modal species were transposed in the mid-Tang period. Just as the number of modal species is reduced in modern practice, so too is the number of keys (from seven to five). In giving Western equivalents to Chinese pitch names, the fundamental Chinese pitch, *huangzhong/ōshiki*, has been read as C; this strategy, which is supported by historical evidence, brings the ancient Chinese system into line with that of modern *tōgaku*. Within the table, the final of each of the six surviving modes is highlighted in bold and identified in the key below. In order to derive the notes of the mode, pitches should be read from left to right, returning to the column *gong/kyū* when the extreme right of the table is reached: thus *Pingdiao/Hyōjō* comprises the pitches E F[#] G A B C[#] D.

TABLE 25: Comparison of Tang-period Chinese forms of modes with those of present-day *tōgaku*

	<i>Tang form</i>	<i>Present-day form</i>
<i>Yiyuediao/Ichikotsuchō</i>	D E F# G A B C	same
<i>Pingdiao/Hyōjō</i>	E F# G A B C# D	same
<i>Tashidiao/Taishikichō</i>	E F# G# A B C#	same
	D	
<i>Shuangdiao/Sōjō</i>	G A B C D E F	G A B C D E F#
<i>Huangzhongdiao/Ōshikichō</i>	A B C D E F# G	same
<i>Banshediao/Banshikichō</i>	B C# D E F# G#	same
	A	

Table 25. Comparison of Tang-period Chinese forms of modes with those of the present-day *tōgaku*

Of the six modes listed in Table 24, five maintain in modern practice the same modal species (Mixolydian or Dorian) and the same final that they had in the Tang sources. The sixth, *Shuangdiao/Sōjō*, has had its modal species transformed from a *shang/shō* (Mixolydian) mode to an Ionian mode by sharpening the seventh degree (Table 25).

This change was perhaps made to accommodate the limitations of the single fixed-pitch instrument in the Japanese ensemble, the *shō*. In its present-day form, the *shō* cannot play the F[♯] necessary to realize *Shuangdiao/Sōjō* in its original Chinese form. Traynor and Kishibe (1951, pp.49-50) have suggested that on early Japanese mouth organs such as the 8th-century *Kuretake-shō* preserved in the *Shōsōin*, a pipe sounding F[♯] could have been substituted for the pipe sounding F whenever *Shuangdiao/Sōjō* was to be played. Evidence from the flute score *Hakuga no fue-fu* suggests that the original Mixolydian form of the mode continued in use until at least the mid-10th century.

In present-day *tōgaku* practice, all modes are classified as belonging to one of two families. Modes that were of the *shang/shō* (Mixolydian) modal species (*Taishikichō*, *Sōjō*, *Ichikotsuchō*) are now classified as *ryo* modes; those that were of the *yu/u* (Dorian) modal species (*Banshikichō*, *Hyōjō*, *Ōshiki*) are now classified as *ritsu*, though some individual pieces do not conform to this generalization.

In addition to adopting different terms to describe the two families of modes, the modes are re-theorized in modern Japanese practice. While Tang theory conceived all *shang/shō* modes (that is the parents of the modern *ryo* modes) as having their finals on II, in modern Japanese practice the finals of *ryo* modes, while the same pitch, are reconceived as degree I (*gong/kyū*) (compare Table 26 with Table 24). Similarly, while Tang theory conceived *yu/u* modes as having their final on VI, in modern practice the equivalent *ritsu* modes are reconceived as having their finals on I. In the case of *ryo* modes the underlying anhemitonic pentatonic modal structure remains essentially the same as in Chinese theory, that is T T m3 T m3. In the *ritsu* modes, however, it becomes T m3 T T m3. In order to accommodate

this change, the degree *kaku/jiao*, which in the Chinese was always degree III, is reconceived as degree IV, though it remains III in *ryo* modes. In order to distinguish them the former is called *ryo-kaku* and the latter *ritsu-kaku*.

In ancient Chinese theory the terms '*lü/ryo*' and '*lü/ritsu*' referred to alternate pairs of semitones. Every successive tone in the scale was divided into two semitones, the lower of which was conceived of as *lü/ryo* and the upper as *lü/ritsu*. Thus, when modern Japanese theory applies the terms *ryo* and *ritsu* to the degree-name *kaku*, it signifies that *ryo-kaku* is the lower form of *kaku* (that is a major 3rd above the final) and *ritsu-kaku* is the higher form (a 4th above the final). It seems likely that it is this distinction, between the lower and higher forms of *kaku*, that provides the basis for the nomenclature for the two families of modes in modern practice.

In the Chinese system, the pentatonic structure was expanded by adding exchange tones a semitone below the degrees I and V. In modern Japanese theory, conversely, exchange tones are normally conceived of as occurring a semitone above degrees III and VI in *ryo* modes and above degrees II and VI in *ritsu* modes (Table 26). In *ritsu* modes they are regarded as sharp (*ei*) forms of the tones below. In *ryo* modes the situation is more complex; for *Sōjō* (the single mode altered from its Tang form by the adoption of F# in place of F[♮] – see above Table 25), for example, a variety of theoretical strategies are adopted.

TABLE 26: Modern *tōgaku* modes showing position of exchange tones

Ryo modes							
Modal degrees	<i>kyū</i> (gong) I	<i>shō</i> (shang) II	<i>ryo-kaku</i> (jiao) III	<i>ritsu-kaku</i> (jiao) IV	<i>chi</i> (zhi) V	<i>u</i> (yu) VI	<i>various</i> VII
<i>Taishikichō</i>	E	F#	G#	A	B	C#	D
<i>Sojō</i>	G	A	B	C	D	E	F#
<i>Ichikotsuchō</i>	D	E	F#	G	A	B	C
Ritsu modes							
Modal degrees	<i>kyū</i> (gong) I	<i>shō</i> (shang) II	<i>ei-shō</i> III	<i>ritsu-kaku</i> (jiao) IV	<i>chi</i> (zhi) V	<i>ei-u</i> (yu) VI	<i>ei-u</i> VII
<i>Banshikichō</i>	B	C#	D	E	F#	G#	A
<i>Hyojō</i>	E	F#	G	A	B	C#	D
<i>ōshikichō</i>	A	B	C	D	E	F#	G

TABLE 27: Alteration of modal degree (*ritsu*) in the melodies of the *hichiriki* and *ryūteki*

Modal degrees according to <i>shō</i> and <i>biwa</i> practice	<i>kyū</i> (gong) I	<i>shō</i> (shang) II	<i>ei-shō</i> III	<i>ritsu-kaku</i> (jiao) IV	<i>chi</i> (zhi) V	<i>u</i> (yu) VI	<i>ei-u</i> VII
<i>Banshikichō</i>	B	C#>C	(D)	E	F#	G#>G	(A)
<i>ōshikichō</i>	A	B>B ^b	(C)	D	E	F#>F	(G)
<i>Hyojō</i>	E	F#>F	(G)	A	B	C#>C	(D)

Table 26. Modern *tōgaku* modes showing position of exchange tones

TABLE 26: Modern *tōgaku* modes showing position of exchange tones

(b) Modal individuality and transposition especially within the three *ritsu chōshi*.

The principal reason why the modifications described above were made to the modal theory of *tōgaku* is that Japanese modal practice, over the centuries, became more complex than it was at the time *tōgaku* was imported from China. In particular, from the 14th century onwards the two principal melodic instruments, the *ryūteki* (flute) and the *hichiriki* (double-reed pipe), evolved new versions of the melodies that increasingly deviated from the original melodies inherited from China. In time, as the link between the newly evolved melodies and the original melodies weakened, the original diatonic modality gave way to influence from non-diatonic modes found in Japanese folk music and in classical music that developed from the 16th century onwards.

Theoretical descriptions of the melodies now carried by the *ryūteki* and *hichiriki* cannot be fully worked out here. Nonetheless, we may observe that when these instruments perform in *ritsu* modes, degrees iii and vii (the degrees not regarded as part of the underlying pentatonicism) tend to be seriously weakened and frequently omitted, particularly in descent, while degrees II and VI are often flattened a semitone (Table 27). This gives rise to a pentatonic modal series closely related to the *in* scale (see further below), with the intervals S m3 T S m3. In *ryo* modes, that is the group whose underlying pentatonicism is closer to the classical Chinese model, the melodies remain closer to the diatonic modal structures of Chinese theory. Nonetheless, modern Japanese attraction to the descending m3 S tetrachord asserts itself from time to time and in varying degrees, even in *ryo* modes.

TABLE 27: Alteration of modal degree (*ritsu*) in the melodies of the *hichiriki* and *ryūteki*

Modal degrees according to <i>shō</i> and <i>biwa</i> practice	<i>kyū</i> (<i>gong</i>) I	<i>shō</i> (<i>shang</i>) II	<i>ei-shō</i> III	<i>ritsu-kaku</i> (<i>jiāo</i>) IV	<i>chi</i> (<i>zhi</i>) V	<i>u</i> (<i>yu</i>) VI	<i>ei-u</i> VII
<i>Banshikichō</i>	B	C♯>C	(D)	E	F♯	G♯>G	(A)
<i>Ōshikichō</i>	A	B>B♭	(C)	D	E	F♯>F	(G)
<i>Hyōjō</i>	E	F♯>F	(G)	A	B	C♯>C	(D)

Alteration of modal degree (*ritsu*) in the melodies of the *hichiriki* and *ryūteki*

TABLE 27: Alteration of modal degree (*ritsu*) in the melodies of the *hichiriki* and *ryūteki*

Such modal deviations are for the most part not notated but are carried in the oral tradition. They are executed by maintaining the fingering while lowering the breath pressure, or even altering the fingerings themselves, in order to alter the pitch of certain degrees of the scale. When and how these procedures are applied is complex and inconsistent, depending not only on formulaic practice but also on such things as melodic direction (alteration is more prominent in descent than in ascent) and the duration of pitches (pitches held longer tend to adhere more closely to the pitches of the older Chinese modal system). In general these procedures are applied more frequently in the *hichiriki* part than in that for *ryūteki*. At the same time the *shō*, *biwa* and *gakusō* continue to be bound to a large extent by Chinese modal practice. This modal inconsistency between the instruments produces many of the melodic clashes that give *tōgaku* so much of its characteristic dissonant character. Some further appreciation of this may be gleaned from the following discussion of the piece *Etenraku*.

Versions of *Etenraku* exist today in each of the three *ritsu chōshi*. Ex.46 shows an early form of the melody (first two sections only) in *Banshiki* mode, based on that in the *Shinsen shōteki-fu* of 1308. This tune may have originated from Central Asia – it has been suggested that the characters used to write ‘Eten’ (‘raku’ simply means music) may have been those used by the Tang Chinese for Khotan, an ancient city in Central Asia once famous for its jewel bazaar. Supportive of this theory is the fact that the melody exhibits a number of features, notably the falling 7th figure that begins the melody, and the repeated notes at the end of each phrase, that Picken (1967) identified as typical of ancient Central Asian music. Below the staff are written the degree names that would have been ascribed to each pitch according to Tang Chinese theory.

Ex.46 *Etenraku*, *shō* mouth-organ part (1308)

Ex.46 *Etenraku*, *shō* mouth-organ part (1308)

Ex.47a shows the same two sections transcribed from the modern part-books of *tōgaku* (Tōgi, 1884) for *shō*. In most cases, these pitches form the lowest note of the cluster chords (*aitake*) performed by the *shō* in modern practice. It can be seen that once the octave transpositions inherent in the limited pitch set of the *shō* are taken into account along with an increase of note values by four (to reflect the relatively slower tempo of the music), the melody is virtually identical to that in ex.46. Ex.47b and c are the modern *shō* version of *Etenraku* in the other two *ritsu* modes, *Ōshiki* and *Hyōjō*. Apart from octave transpositions, they are (with the exception of a single note, circled) exact transpositions of ex.47a. Underneath the staff of each are written the degree names the pitches are ascribed according to modern practice. These are identical for all three modern versions, but quite different from those of ancient Chinese theory shown in ex.46.

Ex.47 *Etenraku*, modern *shō* part in three modal versions

(a) *Banshikichō*

(b) *Ōshikichō*

(c) *Hyōjō*

Ex.47 *Etenraku*, modern *shō* part in three modal versions

If this were all there was to modal difference in modern practice, the differences between the different versions of *Etenraku* might be regarded purely as a matter of key. But this is not the case. As stated above, both the *ryūteki* and the *hichiriki* have evolved significantly different melodies for each mode, each with its own modal character. Some of the grosser differences between the *hichiriki* versions can be seen in ex.48 (first two sections only). These are summarized in ex.49, which gives scale types extracted from the actual *hichiriki* parts of ex.48, omitting note heads that only indicate articulations.

Ex.48

(a) *Barshikichō*


(b) *Ōshikichō*

(c) *Hyojō*


Ex.48

Ex.49 Transformation of *ritsu* scales in *hichiriki* performing practice
scales of *hichiriki* part in *Etenraku*


Banshikichō (6) 1 2 4 5 6 (1)



Ōshikichō 1 2 4 5 6 1



Hyōjō 4 5 6 1 2 4



The image shows three musical staves in treble clef. The first staff is for *Banshikichō* with notes G4, A4, B4, C5, D5, E5, F5, G5. The second staff is for *Ōshikichō* with notes G4, A4, B4, C5, D5, E5, F5, G5. The third staff is for *Hyōjō* with notes G4, A4, B4, C5, D5, E5, F5, G5. Fingerings are indicated by numbers 1-6 above the notes.

Ex.49 Scales of *hichiriki* part in *Etenraku* *banshikichō*

In general, the principles of *ritsu chōshi* outlined earlier hold in these particular examples and endow each of the melodies with its distinct modal character. In particular the basic pentatonic structure of the theoretical *ritsu* scales is maintained along with auxiliary tones. Secondary degrees are, however, regarded as upper-auxiliary semitones rather than lower-auxiliary semitones as they were in Chinese practice. Certain pitches, in particular those on degrees II and VI, are lowered a semitone so that they frequently clash with the pitches carried by the string parts and the *shō*. These factors, combined with the particular formulaic practices peculiar to each mode, mean that despite being underpinned by the same core *Etenraku* melody, each *hichiriki* melody is in fact different. Such difference makes a *chōshi* a modal entity and not just a tonality.

(c) Transformation and transposition: modes, scales and tunings.

In Japanese theory associated with traditions such as the *zokusō koto* that evolved from the 16th century, the scale types are no longer discussed in terms of *ritsu* and *ryo*. 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.50a (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. Ex.50b (after Malm, 1963, p. 61) shows the five forms of the *in* scale used for the *shamisen* in *nagauta*.

Ex.50

(a)

yo-sen

in-sen

(b)

Ex.50

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). 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.51 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.51b).

Ex.51

(a) *Etenraku*

(b) *Fuki*

7 6 7 11 10

7 8 6 7 11 12 11 10 etc.

8 7 8 12 12

8 9 7 8 12 11 10 12 etc.

7 6 7 11 13

7 8 6 7 11 12 13 etc.

8 7 8 12 12

8 9 7 8 12 11 10 12 etc.

Ex.51 (a) ritsu-scale tunings for the gaku \bar{o} (koto) in gagaku; (b) in scales tunings for the koto (17th century and later)

Note that it is not the background basic shape of *Etenraku* that was used but the *koto*'s particular version of it. Ex.52 (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 *shizugaki* (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.53a (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.52 will produce the figuration shown in the staff notation. 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.53a (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.53b (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.

Ex.52

banshikichō

string nos. 4 3 4 ↗ 8 (56) 10 3 2 3 ↗ 7 (45) 7

(basic shape)

modal degrees 2 5 1 1

ōshikichō

string nos. 4 3 4 ↗ 8 (56) 10 3 2 3 ↗ 7 (45) 7

(basic shape)

modal degrees 2 5 1 1

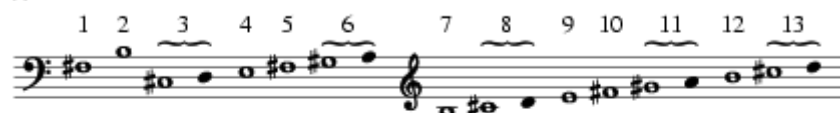
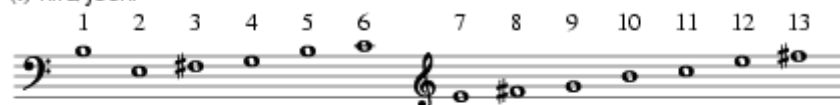
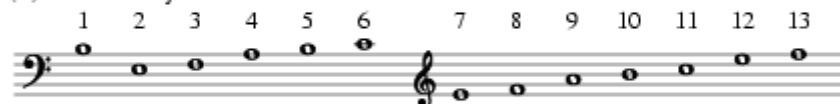
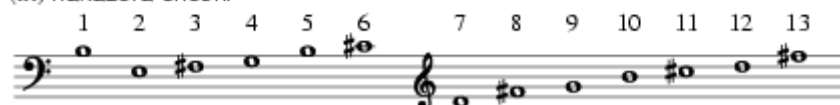
hyōjō

string nos. 4 3 4 ↗ 8 (56) 10 3 2 3 ↗ 7 (45) 7

(basic shape)

modal degrees 2 5 1 1

Ex.52 Banshikicho, Oshikicho, Hyojo

Ex.53**(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.53 (a) *ritsu*-scale tunings for the *gakuso* (*koto*) in *gagaku* (b) *in*-scale tunings...

Two other Edo-period (1603–1868) *koto* tunings are shown in ex.53b (ii), (iii); like the *shamisen* scales of ex.50b, 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.52). Perhaps the combination of changing tessituras of the different *in* scales and the constant strings 1 and 2 (ex. 53b) 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.

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